



**Health Sector Support Program (HSSP)
Including
Additional Financing**

Updated ENVIRONMENTAL MANAGEMENT FRAMEWORK

July, 2018

**MINISTRY OF HEALTH AND FAMILY WELFARE
Government of the People's Republic of Bangladesh**

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Abbreviations

BDT	Bangladeshi Taka
CC	Community Clinic
DGHS	Director General Health Services
DLI	Disbursement Linked Indicator
DP	Development Partner
ECA	Environmental Conservation Act
ECR	Environment Conservation Rule
EMF	Environmental Management Framework
GOB	Government of Bangladesh
HCF	Health Care Facility
HNP	Health, Nutrition and Population
HSSP	Health Sector Support Project
IEC	Information, Education and Communication
MOHFW	Ministry of Health and Family Welfare
MWM	Medical Waste Management
OP	Operational Policy
PDO	Project Development Objective
PPE	Personal Protective Equipment
UHC	Upazila Health Complex
WHO	World Health Organization

Executive Summary

The Government of Bangladesh (GOB) and development partners (DPs) have pursued a sector-wide approach (SWAp) since 1998, adopting a series of multi-year strategies, programs and budgets for management and development of the health nutrition and population (HNP) sector, with support from both domestic and international financing. The Ministry currently implementing its fourth Sector Program titled ‘4th Health, Population and Nutrition Sector Program (4th HPNSP)’ covering a 5.5-year period between January 2017 and June 2022 with an estimated cost of US\$ 14.7 billion. The 4th HPNSP encompasses three components: (a) Governance and Stewardship, (b) HNP Systems Strengthening, and (c) Provision of Quality HNP Services. The Program’s objective is “to ensure that all citizens of Bangladesh enjoy health and well-being by expanding access to quality and equitable healthcare in a healthy and safe living environment.” Like the previous three sector programs, it is expected that a significant proportion of DPs support will be channeled through on-budget financing. Since October 2017, the World Bank is implementing its Health Sector Support Project (HSSP) having three components through which the Bank is providing support to the 4th HPNSP. The original HSSP is consistent with the GOB’s program and policies and will play an important role in advancing key results areas with the use of disbursement-linked indicators (DLIs).

2. The original HSSP will use a set of 16 DLIs in responding to the key HNP challenges. In supporting parts of the GOB’s 4th HPNSP– including the strengthening of national level systems – HSSP will benefit, directly and indirectly, the entire 160 million population of Bangladesh, including 50 million in Sylhet and Chittagong divisions, who are of particular focus for several indicators. Out of the 16 DLIs included in original HSSP, 8 are focused on improving service delivery including maternal and child health and nutrition services in Chittagong and Sylhet (two out of the eight administrative divisions of Bangladesh). The original HSSP encompasses three components which are as follows:

Component 1. Governance and Stewardship
1. Enhancing the Recipient’s citizen feedback system for its health services, including making the performance of the system and the responses to the messages received more transparent to the public
2. Improving budget efficiency and allocation in the HNP sector through the increase of budget allocation and execution towards repair and maintenance to support basic service delivery.
Component 2. HNP Systems Strengthening
1. Improving the Recipient’s financial management, procurement, supply chain management and asset management systems in the HNP sector.
2. Improving the quality of the health management information system through the completeness of the reporting and inclusion of gender, for gender-disaggregated report, from the community clinic level.
3. Improving human resource in the HNP sector through the appointment and retention of qualified midwives at Upazila Health Complexes
Component 3. Provision of Quality HNP Services
1. Improving coverage of essential services at the primary and first-referral levels for reproductive (including family planning), maternal, neonatal, child, and adolescent health and nutrition, including reducing geographic inequalities.
2. Supporting the Recipient in addressing emerging areas through the strengthening of the coordination mechanisms with the Ministry of Local Government, Rural Development and Cooperatives and urban local governments and the development and implementation of a pilot to address non-communicable diseases (hypertension), starting from screening and referral services at the community clinic level.

3. The original HSSP, through the use of its DLIs, is supporting system development at all levels and service delivery results at the Upazila level and below. Services are delivered by both DGHS and DGFP, operating through parallel systems. The lowest-level facility is the community clinic (CC),

...serving at the ward level as the first point of contact for primary health care services, including immunization, family planning, and health education.

Additional Financing (AF):

4. The proposed Additional Financing of the World Bank to its HSSP under a new (fourth) component will strengthen the capacities of the Ministry of Health and Family Welfare (MOHFW) for planning, coordination, management and monitoring; support the expansion and provision of HNP services with a focus on Camps of forcibly displaced Myanmar nationals (FDMNs) and Host Communities across Cox’s Bazar District; and enhance community-level interventions, as well as services to address gender-based violence and psychosocial needs. The sub-components of fourth component of HSSP for additional financing are as follows:

Component 4. Development of HNP Services for FDMNs in Cox’s Bazar District
1. Enhancing the Recipient’s planning, coordination, monitoring and management capacities for providing scaled up and new HNP services providing care to the FDMNs in Cox’s Bazar District, including for disease surveillance and outbreak response, service management referral systems, and medical waste management.
2. (a) Enhancing delivery of the Essential Service Package to the FDMNs at community clinics and similar facilities in Cox’s Bazar District; (b) Enhancing delivery of the Essential Service Package to the FDMNs at union level and similar facilities in Cox’s Bazar District; and (c) Supporting integrated communication and outreach strategies focused on improving HNP-related household knowledge and behaviors in Cox’s Bazar District.
3. Enhancing the delivery of the Essential Service Package to the FDMNs at <i>Upazila</i> Health Complexes and the District Hospital in Cox’s Bazar District.

5. **Rational behind additional financing:** Since August 2017, more than 700,000 people from the Rohingya community have crossed the border from Myanmar, with the majority settled in a large congested camp, along with smaller camps across Cox’s Bazar District, and some living amongst host communities. The large influx of displaced population outnumbers the host community in the affected localities, including significant exposure to natural and health risks and potential conflict with the host communities. The GOB intends to use the financial assistance under the IDA18 Regional Sub-Window for Refugees and Host Communities across Cox’s Bazar District to strengthen public services in the affected areas, as well as develop its own capacity to respond to this crisis.

6. Under the additional financing, existing structures would be used to serve as community clinics or health service delivery points. However, these existing structures may need to be strengthened or enhanced, and some cases small scale temporary structure also may need to be constructed at vacant land within the camp.

Environmental Instrument

7. Environmental issues associated with the health sector creating adverse impact on environment vary widely in nature. Although environmental issues are gaining awareness in health sectors they are not properly addressed in hospitals. Of them medical waste management (MWM) is considered to be the most significant issue. Under component 3 of the proposed project, a number of healthcare interventions will be carried out in almost 5000 upazila healthcare facilities and community clinics in Sylhet and Chittagong divisions. The detailed baseline scenario and status of medical waste management in these clinics and facilities are unknown at the moment. Therefore, an Environmental Management Framework (EMF) was designed in March 2017 in an effort to control the medical waste to be implemented at hospital/health facilities premises and improve environmental performance.

8. Under the additional financing, it may be required to upgrade existing facilities or build small scale structures to provide health services to FDMNs. Hence, site specific environment screening along with supplementary mitigation measures will be required to ensure low impact on physical environment and the health and safety of service providers and communities in Cox's Bazar District. In addition, the health-workers delivering service to the refugees may be exposed to a complex variety of health and safety hazards and they are at risk. Another additional impact would be on the existing community clinics and upazila health complexes of Cox's Bazar as these would be receiving huge number of additional patients (the FDMNs) which will generate more medical waste than usual. Especially the extensive vaccination campaigns may increase the quantity of glass and sharps waste that the facility has to manage.

9. This EMF is updated to cover all the relevant activities to be supported under AF, and to also incorporate the lessons learnt from the existing operations. The EMF provides a template for screening these facilities, designing suitable MWM protocols and a format for monitoring and record-keeping.

Environment Issues

10. Medical waste management (MWM) is considered to be the most significant environment issue. Medical wastes contain both general wastes (approximately 75–80%) and infectious wastes (about 20–25%). Medical waste constitutes a public health hazard, if not managed properly. Although majority of the medical waste is no more dangerous than household/municipal waste, the hazardous waste, if exposed to the people or environment in an untreated form, pose various kinds of danger. Thus, the main concern relates to the portion of medical that are defined as hazardous. In particular, medical waste poses particular health risks to the staff of health care facilities (HCFs), to the patients and visitors, to workers collecting, transporting and treating the waste and to the society and environment in general. Thus, there is a need of special effort for proper management of MW by the concerned authorities.

11. The following table summarizes the key observations related to MWM in Bangladesh:

Observations related to key issues in MWM in Bangladesh

Sl. No.	Issues of MWM	Observation
1.	Awareness and motivation on MWM	Lack of awareness among the HCF professionals (in most cases) affecting understanding of proper MWM and its severe adverse impact on environment.
2.	Use of specific color coded bin	Only few HCFs have introduced use of specific color bins for segregation of MW at source and no uniformity in using specific colored bins in most of the HCFs
3.	Segregation of HCF waste at source	Not properly done in most HCFs; segregation done by sweepers need further monitoring and quality control.
4.	Management of sharps	Some cut off the nozzle of needle from syringe, some do not.
5.	Intermediate storage	Lack of availability/ use of secured intermediate storage facility for MW.
6.	Internal transport	Trolleys are not used regularly for transport of MW to outside containers.
7.	Occupational health and safety measures for workers.	Adoption of security/protective measure taken by sweepers on very few occasions.

Sl. No.	Issues of MWM	Observation
8.	Transport and ultimate disposal of MW	<ul style="list-style-type: none"> • Non-segregated MW directly dumped to public container; • Segregated MW waste is dumped in closed pits at hospital premise; • Segregated wastes are dumped in open pit for burning (burning is incomplete in most cases); • Segregated MW are disposed in incinerator for burning, having no temperature control as required. • Few HCFs follow strict code of MWM.

12. Under the previous sector programs, the DGHS has taken initiatives to address some of these issues related to medical waste management in the health sector. In this regard, the DGHS has developed an online record-keeping, reporting and monitoring system for in-house waste management, conducted training on MWM at various levels, explored the feasibility of different out-house waste management options in several hospitals in the country. DGHS has also developed new IEC materials promoting awareness campaign on MWM. However due to weak institutional capacity, inadequate monitoring and lack of awareness and enforcement, the issues associated with Medical waste management are still persisting.

13. Due to the influx, temporary camps have been set up in various locations within the settlement to provide healthcare services. Their locations are not fixed and there is limited access in and out of the camps. The staff at all levels have very limited knowledge of medical waste management, waste segregation at service delivery point is rarely done. There is minimal monitoring of correct waste disposal even in those facilities which have the ability to segregate waste. Often chemical disinfection is practiced exposing the healthcare workers to toxic chemicals risk. Often open burning is practiced which exposes the surrounding people to air pollution. Probability of installing an incinerator is not feasible due to lack of space, energy requirement and dedicated manpower.

14. In Upazila Health Complexes, there is limited physical infrastructure to manage waste safely within the facility. The influx of FDMNs has resulted in a surge of patients in these facilities of Cox's Bazar. This has been compounded by the extensive vaccination campaigns which have increased the quantity of glass and sharps waste that the facility has to manage.

Existing Legislative/Regulatory Framework for MWM

15. The GOB's environmental laws and policies are deemed adequate for both protection and conservation of resources, although enforcement capacity needs to be improved significantly. The assessment highlights that the Program may generate medical waste and GOB has comprehensive laws and policies for management of medical waste.

- National Environmental Policy 1992
- Bangladesh Environmental Conservation Act (ECA), 1995 amended 2002
- Environment Conservation Rules (ECR) 1997 amended 2003
- Environment Court Act, 2000
- Medical Waste (Management and Treatment) 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

World Bank Policy

16. The World Bank Safeguard Policy OP/BP 4.01 is triggered because some activities during the operation will produce negative environmental impacts that should be prevented and mitigated. However, the potential negative impact is mainly from generation of medical waste. A Medical Waste Management Plan is therefore prepared as an instrument to safeguard against the effects of medical waste on the environment and human health. In this regards the project is classified as Category B according with the OP/BP 4.01. The EMF will be disclosed according to the Bank's policy of information disclosure.

Measures to Improve MWM

17. Basic best environmental management practice for the health-care sector includes efficient infection control measures, adequate water supply and sanitation, occupational health and safety of staff, and proper disposal of infectious wastes and wastewater.

18. The measures to improve MWM under HSSP(2017–2022) are as follows:

Measures to improve MWM under HSSP

Issues	Measures to improve MWM
Strengthen policy and legal framework	Under the existing regulatory framework, the health facilities that generate medical are not sufficiently held accountable for proper handling and managing of medical waste. At the upazila level, the health facilities can be made more accountable by ensuring proper record-keeping, assigning a focal person for supervision of medical waste management (MWM) activities, and constructing burial pits for sharps and infectious wastes.
Strengthen institutional capacity and compliance	Improve health care waste management, particularly focused on the Upazila Health Complex and below, by ensuring: <ul style="list-style-type: none"> ● use of color-coded bins in health facilities in accordance with Medical Waste Management Rules 2008; ● segregation of waste in all facilities by using the established color coding system and recordkeeping of medical waste generated; ● storage of waste in designated temporary storage areas before disposal; ● destruction of sharps before its final disposal in in-house deep-burial pits as per existing HCWM guidelines; and ● availability and visibility of information, education and communication materials on health care waste management in health facilities.
Strengthening implementation	<ul style="list-style-type: none"> ● Monitoring and reporting on the implementation of MWM, particularly focused on the Upazila Health Complex and below. ● Capacity building for health workers on MWM, particularly focused on the Upazila Health Complex and below. Appropriate capacity enhancement training on infection control as well as management of sharps will be conducted for the relevant staff of HCFs. ● Standard Operating Procedures (SOPs) to be finalized and promoted extensively among all HCFs. ● Appropriate training program will be initiated on Occupational Health and Safety protocols for all employees involved in handling of “in-house” and out-house MWM needs to be developed with an effective monitoring mechanism.

19. As mentioned earlier, the sparsely located FDMN health camps and the UHCs in Cox’s Bazar will face challenges regarding MWM due to the influx of Rohigya population. Some measures to improve MWM are the following:

Table: Measures to improve MWM for the FDMNs

Issues	Measures to improve MWM
MWM in temporary camps	Since installing MWM infrastructure and its maintenance will be challenging in this setting, a short term measure could be to contracted out to third party for safe final disposal of medical waste. This will have to be integrated with provision of color coded bins, collection points and an extensive training and monitoring exercise for the personnel associated with health service delivery.
MWM in Cox's Bazar UHCs	<ul style="list-style-type: none"> • Construct deep burial pits for permanent disposal of sharps and hazardous solid waste. Construction and operation of deep burial pits should follow the guidelines described in Annex F. This measure will be helpful in the long run as there will no longer be a requirement to store the MWM in designated bags to be shipped out to district level hospitals where incinerators are available. If space is available on site then final treatment and disposal on site may be more realistic as this is a permanently located facility. • Monitoring and safety measures of deep burial pits should be in place. This includes: <ul style="list-style-type: none"> ○ Monitoring and regular reporting of groundwater quality around the burial pits. Suggested parameters for monitoring are: Total and Fecal coliform, pH, Fe, Mn, As, heavy metals, Total Dissolved Solids ○ Ensure that proper precautionary signage in place at the location near and around the burial pits ○ Ensure that the burial pit is constructed with proper impermeable lining materials at the sides and bottom • All other measures mentioned in the previous section.

Institutional Arrangement

20. The DGHS currently has a MWM monitoring arrangement. As per agreed measures of EMF, a Medical Waste Management (MWM) Monitoring Cell has been constituted at the Directorate General of Health Services (DGHS). A Program Manager and a Deputy Program Manager have been assigned for MWM under the operational plan (OP) of Hospital Services Management (HSM). The MOHFW has hired two consultants to support the MWM Monitoring Cell. The Deputy Director of DGHS is responsible for MWM activities. The HCFs under the proposed program will report to this section of DGHS. This includes carrying out screening and assessment with recommended actions (see Annex C: 'Screening form for healthcare facilities' for template). The HCF will be responsible for performing the screening of the corresponding facility and report to the DGHS waste management cell in Dhaka. The MWM team of DGHS will collect, analyze and summarize the information from HCFs and share their findings to the World Bank team in a quarterly basis.

21. The same institutional arrangement as stated above will be followed for MWM in the camps of FDMNs. However, in this case international organizations (e.g.WHO) will be assisting the DGHS to implement the EMF. This includes filling up screening and assessment forms for camps of FDMNs (Annex D and E) and improving medical waste management measures as stated in Table 5. There are already some activities being carried out by WHO and other development partners in the EWARS which are in line with the basic principles of this EMF:

- ☑ Interaction with partners to develop SOPs for medical waste management
- ☑ Education of health care facility staff in medical waste management (by WHO)
- ☑ Provision of PPE and sharps containers to health facilities to enable safe disposal at point of use (by WHO).

☐ Monitoring of compliance to be carried by partners and centrally through the WHO IPC Program, on an ongoing basis.

22. The DGHS medical waste management cell will closely coordinate with the international organizations, and share their findings to the World Bank team in a quarterly basis.

General recommendations

23. The proposed program provides an opportunity to improve the medical waste management scenario in Sylhet and Chittagong in Bangladesh. This may reduce the disease burden associated with infection and improve the quality of life. It may also reduce the risk of vector-borne diseases from solid waste dumping sites and pollution of water bodies, which could have a community-wide impact. In-house management is proposed for primary HCFs and specific set of activities should follow starting from waste segregation and application of medical waste management guidelines. Since currently the medical waste is inadequately managed in healthcare facilities primarily due to weak institutional monitoring mechanism and inadequate enforcement of existing rules and guidelines, there is scope for improving the scenario and thereby generating a visible positive outcome from this project. Activities associated with the service-delivery related DLIs can increase the use of syringes and sharps, recyclable fluid bags, and consequently increase sharp wastes, recyclable wastes, infectious wastes as well as increase the risk of infection and contamination. Through effective implementation of HCWM activities in line with the GOB's MWM 2008, the risks can be adequately mitigated. Specific activities will include capacity building of relevant personnel, proper segregation of waste, disposal of sharps and introducing deep burial pits for sharps and infectious wastes/body parts.

24. Monitoring of the implementation of this EMF will be detailed out in the relevant operational manual. Some general recommendations for dealing with MWM in the HSSP are given below:

- An MWM monitoring cell with representation of DGHS, DGFP, and other relevant GOB departments and ministries should be set up to oversee the implementation of EMF related to MWM;
- Training and awareness building needs to be imparted for carrying out proper MWM;
- Surveys need to be conducted on the status of MWM carried out by the HCFs;
- The MWM monitoring cell should closely supervise MWM of HCFs.

1. Introduction

Original Project:

1. The Government of Bangladesh (GOB) and development partners (DPs) have pursued a sector-wide approach (SWAp) since 1998, adopting a series of multi-year strategies, programs and budgets for management and development of the health nutrition and population (HNP) sector, with support from both domestic and international financing. The Ministry of Health and Family Welfare (MOHFW) has implemented three consecutive Sector programs in between July 1998 and December 2016. The MOHFW is currently implementing its Fourth Sector Program titled ‘4th Health, Population and Nutrition Sector Program (4th HPNSP)’ covering the 5.5 year period (between January 2017 and June 2022) with an estimated cost of US\$ 14.7 billion. The 4th HPNSP’s overall objective is “to ensure that all citizens of Bangladesh enjoy health and well-being by expanding access to quality and equitable healthcare in a healthy and safe living environment.” Like the previous three sector programs, it is expected that a significant proportion of DPs support will be channeled through on-budget financing. Since October 2017, the World Bank is implementing its Health Sector Support Project (HSSP) having three components through which the Bank is providing support to the 4th HPNSP.

2. The MOHFW considers the 4th HPNSP as a first, foundational, program towards the achievement of the Sustainable Development Goals by 2030. The 4th HPNSP builds on a successful history of the previous sector programs, with well-established planning and consultation processes as well as monitoring and coordination mechanisms. It encompasses three components: (i) Governance and Stewardship, (ii) HNP Systems Strengthening, and (iii) Provision of Quality HNP Services. The original HSSP is consistent with the GOB’s program and policies and will play an important role in advancing key results areas with the use of disbursement-linked indicators (DLIs).

3. As Bangladesh builds on significant progress in the HNP sector and pursues progress towards the SDGs, it will face important challenges. These can be characterized in three ways: (i) foundational financing and system development priorities; (ii) the unfinished agenda relating to the Millennium Development Goals; and (iii) emerging challenges. The World Bank’s original HSSP, is using a set of 16 DLIs in responding to these key challenges. In supporting parts of the GOB’s Fourth Sector Program – including the strengthening of national level systems. The HSSP will benefit, directly and indirectly, the entire 160 million population of Bangladesh, including 50 million in Sylhet and Chittagong divisions, who are of particular focus for several indicators. Out of the 16 DLIs included in original HSSP, 8 are focused on improving service delivery including maternal and child health and nutrition services in Chittagong and Sylhet (two out of the eight administrative Divisions of Bangladesh).

4. The Project Development Objective of HSSP is to strengthen the HNP sector’s core management systems and improve delivery and utilization of essential HNP services, with a focus on selected geographical areas. The original HSSP encompasses three components as follows:

Component 1. Governance and Stewardship
1. Enhancing the Recipient’s citizen feedback system for its health services, including making the performance of the system and the responses to the messages received more transparent to the public
2. Improving budget efficiency and allocation in the HNP sector through the increase of budget allocation and execution towards repair and maintenance to support basic service delivery.
Component 2. HNP Systems Strengthening

1. Improving the Recipient’s financial management, procurement, supply chain management and asset management systems in the HNP sector.
2. Improving the quality of the health management information system through the completeness of the reporting and inclusion of gender, for gender-disaggregated report, from the community clinic level.
3. Improving human resource in the HNP sector through the appointment and retention of qualified midwives at Upazila Health Complexes
Component 3. Provision of Quality HNP Services
3. Improving coverage of essential services at the primary and first-referral levels for reproductive (including family planning), maternal, neonatal, child, and adolescent health and nutrition, including reducing geographic inequalities.
4. Supporting the Recipient in addressing emerging areas through the strengthening of the coordination mechanisms with the Ministry of Local Government, Rural Development and Cooperatives and urban local governments and the development and implementation of a pilot to address non-communicable diseases (hypertension), starting from screening and referral services at the community clinic level.

5. The MOHFW is responsible for implementation of the GOB’s 4th HPNSP as a whole, including achievement of the results to be supported by the Project. The Ministry encompasses a number of entities: Directorate General of Health Services (DGHS), Directorate General of Family Planning (DGFP), Directorate General of Health Economics Unit (DGHEU), Directorate General of Drug Administration (DGDA), Directorate General of Nursing and Midwifery (DGNM) and Health Engineering Department (HED).

6. Government health facilities are situated at different administrative levels: national, division, district, upazila, union, and ward. HSPP, through the use of its DLIs, is supporting system development at all levels and service delivery results at the Upazila level and below. Services are delivered by DGHS, DGFP and DGNM, operating through parallel systems. The lowest-level facility is the community clinic (CC), serving at the ward level as the first point of contact for primary health care services, including immunization, family planning, and health education. Each CC is intended to serve 6,000 people; currently, 13,442 CCs are functioning. At the union level, three kinds of facilities, each of which include physicians on staff, provide outpatient care: rural health centers, union sub-centers, and union health and family welfare centers. At the Upazila level, services are provided by Upazila Health Complexes, with inpatient capacity of 30–50 beds. Some of these facilities provide first-referral (secondary) care including comprehensive emergency obstetrical care. At the district level, district/general hospitals of different sizes (100–250 beds) provide secondary care, while some districts also have government medical colleges providing tertiary care. In addition, at the district level there are 10-20 bed maternal and child welfare centers providing family-planning as well as maternal care services. The government also runs a number of tertiary and specialized hospitals at the division and national levels.

Additional Financing (AF):

7. **Rationale behind additional financing:** Since August 2017, more than 700,000 people from the Rohingya community have crossed the border from Myanmar, with the majority settled in a large congested camp, along with smaller camps across Cox’s Bazar District, and some living amongst host communities. The large influx of displaced population outnumbers the host community in the affected localities, including significant exposure to natural and health risks and potential conflict with the host communities. The GOB intends to use the financial assistance under the IDA18 Regional Sub-Window for Refugees and Host Communities across Cox’s Bazar District to strengthen public services in the

affected areas, as well as develop its own capacity to respond to this crisis. To enhance the capacity of the MOHFW to respond to the crisis and support it in extending HNP services to the FDMNs in Cox’s Bazar district, a fourth component has been added in the HSSP to channel the Bank’s additional financing. Direct beneficiaries of the 4th component of HSSP are the FDMNs, whereas, the same for the original three components are Bangladeshi nationals.

8. The proposed Additional Financing will be a new (fourth) component of the original HSSP and strengthen the capacities of the MOHFW for planning, coordination, management and monitoring; support the expansion and provision of HNP services with a focus on FDMN Camps and Host Communities across Cox’s Bazar District.; and enhance community-level interventions, as well as services to address gender-based violence focusing on mental health needs. The sub-components of Component 4 of HSSP are as follows:

Component 4. Development of HNP Services for FDMNs in Cox’s Bazar District
1. Enhancing the Recipient’s planning, coordination, monitoring and management capacities for providing scaled up and new HNP services providing care to the FDMNs in Cox’s Bazar District, including for disease surveillance and outbreak response, service management referral systems, and medical waste management.
2. (a) Enhancing delivery of the Essential Service Package to the FDMNs at community clinics and similar facilities in Cox’s Bazar District; (b) Enhancing delivery of the Essential Service Package to the FDMNs at union level and similar facilities in Cox’s Bazar District; and (c) Supporting integrated communication and outreach strategies focused on improving HNP-related household knowledge and behaviors in Cox’s Bazar District.
3. Enhancing the delivery of the Essential Service Package to the FDMNs at <i>Upazila</i> Health Complexes and the District Hospital in Cox’s Bazar District.

9. Under the AF, existing structures would be used to serve as community clinics or health service delivery points. However, these existing structures may need to be strengthened or enhanced, and some cases small scale temporary structure also may need to be constructed at vacant land within the camp.

Environmental Instrument

10. Environmental issues associated with the health sector creating adverse impact on environment vary widely in nature. Although environmental issues are gaining awareness in health sectors they are not properly addressed in hospitals. Of them medical waste management (MWM) is considered to be the most significant issue. Under component 3 of the proposed project, a number of healthcare interventions will be carried out in almost 5000 upazila healthcare facilities and community clinics in Sylhet and Chittagong divisions. The detailed baseline scenario and status of medical waste management in these clinics and facilities are unknown at the moment. Therefore, an Environmental Management Framework (EMF) was designed in March 2017 in an effort to control the medical waste to be implemented at hospital/health facilities premises and improve environmental performance.

11. Under the AF, it may be required to upgrade existing facilities or build small scale structures to provide health services to FDMN. Hence, site specific environment screening along with supplementary mitigation measures will be required to ensure low impact on physical environment and the health and safety of service providers and communities in Cox’s Bazar District. In addition, the health-workers delivering service to the refugees may be exposed to a complex variety of health and safety hazards and they are at risk. Another additional impact would be on the existing community clinics and upazila health complexes of Cox’s Bazar as these would be receiving huge number of additional patients (the FDMNs) which will generate more medical waste than usual. Especially the

extensive vaccination campaigns may increase the quantity of glass and sharps waste that the facility has to manage.

12. The EMF provides a template for screening these facilities, designing suitable MWM protocols and a format for monitoring and record-keeping.

13. The MOHFW prepared two Environmental Assessment and Action Plans in 2004 and 2011. This report builds on the findings and implementation progress of the previous plans. The report also includes a gap analysis of the present MWM system and an action plan for the period 2017–2022, including tentative budget.

2. Environmental issues related to the HNP sector

14. Medical activities safeguard the health of the community but their functioning results in the production of wide varieties of wastes. Medical waste, which is also referred as clinical waste, has to be handled and disposed in a proper manner to eliminate the possibility of injury or infection and safeguarding the environment in general. The impacts associated with improper MWM can damage the environment and adversely affect public health directly and indirectly.

15. Medical wastes contain both general wastes (approximately 75–80%) and infectious wastes (about 20–25%). Medical waste constitutes a public health hazard, if not managed properly. Although majority of the medical waste is no more dangerous than household/municipal waste, the hazardous waste, if exposed to the people or environment in an untreated form, pose various kinds of danger. Thus, the main concern relates to the portion of medical that are defined as hazardous. In particular, medical waste poses particular health risks to the staff of health care facilities (HCFs), to the patients and visitors, to workers collecting, transporting and treating the waste and to the society and environment in general. Thus, there is a need of special effort for proper management of MW by the concerned authorities.

16. According to the World Health Organization (WHO) medical wastes are categorized as follows:

- Infectious: Materials containing pathogen in sufficient quantities, that if exposed can cause diseases.
- Sharps: Disposable needles, syringes, saw, blades, broken glasses, nails or any other item that could cause a cut.
- Pharmaceuticals: Drugs and chemicals that return from wards, spilled, outdated, contaminated or are no longer required.
- Radioactive: Solids, liquids and gaseous wastes contaminated with radioactive substances used in diagnosis and treatment of diseases (e.g. toxic goiter).
- Others: Wastes from office, kitchen, room including bed linen, utensils, paper etc.
- While the adoption of disposable sharps provides safety to health workers reducing risk from needle pricks and sharp-cuts it has caused sudden increase of the MW production and it has also created problem of plastic waste and the repacking and resale of MW such as improperly treated contaminated syringes, needles and other recyclable items used for treatment which can result in community exposure to infection such as HIV/AIDS, sepsis, hepatitis and multi-drug resistant bacteria. Proper MWM helps control of hospital acquired infections (nosocomial diseases), and

negative long-term health effects like cancer, from the environmental release of toxic substances e.g. dioxin, mercury and others.

17. The major components of MWM includes:

- Proper waste collection and segregation at source – use of standardized color-coded bins for different wastes;
- Waste streams - general, contaminated, cytotoxic/pharmaceuticals, body parts;
- Storage and transport - cold storage for contaminated waste and body parts, transport in safe and leak proof containers;
- Waste treatment – sterilization of contaminated waste (steam autoclave), incineration of cytotoxics, pharmaceuticals and body parts in incinerator meeting relevant standards and statues.
- The hospitals (especially the large-sized) have the opportunity to take a proactive role in the community by:
 - Increasing commitment to quality assurance activities to maximize patient protection against adverse outcome;
 - Promoting environmental health by support for waste reduction, reuse and recycling; use of energy efficient, environment-friendly building; and greener and organic gardens.

18. The original HSSP focuses on improving health service delivery in primary level healthcare facilities in Sylhet and Chittagong. Improving health services would entail generation of medical waste, which will have risks associated with it regarding its handling and treatment. Some general risks associated with medical waste is described below.

19. Medical wastes cause numerous health risks directly or indirectly. There is risk of spread of infection through poorly managed (i) sharp waste (e.g., hypodermic needles, scalpels etc.); (ii) chemical waste (e.g., reagents, solvent etc.); pathological waste (e.g., human tissues, body parts, fetus, etc.); (iii) infectious waste (e.g., blood and body fluids etc.); (iv) pharmaceutical waste (e.g. outdated medications, etc.); and (v) waste with high heavy metal content (e.g., batteries, thermometers etc.). Unhygienic and unsanitary conditions at healthcare facilities can increase the risk and potential for patients to get Hospital Acquired Infections.

20. Poor infection control and occupational health and safety practices due to lack of usage of Personal Protective Equipment (PPE) and lack of training, awareness and understanding of health risks of such poor practices can contribute to increased risk of infection in healthcare facilities. When the workers expose to the hospital environment and do not use appropriate personal protective equipment (PPE) they become vulnerable to different diseases.

21. Additional poor practices with regard to general (non-infectious) waste, such as inadequate storage, poor collection and untimely disposal can attract stray animals and rag pickers and become breeding grounds for vector- borne, water-based and fecal-oral infections. There is also the risk of contamination of water bodies through inadequate disposal of drug waste, expired pharmaceuticals, heavy metals such as mercury, phenols and disinfectants which can potentially affect a larger community beyond the hospital workers and rag-pickers.

22. The original HSSP will finance a slice of the GOB's 4th HPNSP through IPF-DLI mechanism to support provision of services at the upazila and below levels. Almost 5000 such facilities are likely to be supported by the project. Such activities will generate healthcare waste and the improper management of this may pose significant environmental risk. In Bangladesh, at the upazila level the low amount of waste generated does not encourage outhouse facilities to be developed as it is not

financially viable. Moreover, although the policies and regulations related to HCWM are there, the healthcare waste management and monitoring/enforcement institutions are weak at the central level. The institutional limitations are percolated downwards and also likely to be reflected in the primary healthcare facilities. But the volume of waste generated in these facilities are generally low and therefore the negative impact will be not be as high as in district hospitals for most upazila health complexes.

23. Activities planned under the proposed addiitoinal financing will include some small-scale physical interventions such as construction, rehabilitation or renovation works. These will be constructed in existing healthcare facilities. No land acquisition will be required. Negative environmental effects, any loss or conversion of natural habitats, any changes in land or resource use, are not anticipated. The present scenario of MWM in Bangladesh has generally improved, although much more improvements can be done. Section 3 provides an assessment of the current situation of MWM.

3. Review of Present Scenario of MWM in Bangladesh

3.1. Current Status of MWM in Bangladesh

24. According to the Dhaka City Corporation's research report, 3700 metric tons of wastes are generated per day in Dhaka City and about 200 tons are hospital waste of which 40 tons are infectious wastes (Bangladesh Observer, 2000). Estimated amounts of hazardous wastes in Bangladesh, tons/year, 2009-2015 are shown in the following table (which includes all facilities that do not fall under the scope of HSSP):

Table 1: Hazardous waste generated, tons/year

Area/HCF	2009	2010	2011	2012	2013	2014	2015
Dhaka	1275	1313	1353	1392	1435	1478	1522
Chittagong	663	683	703	724	746	769	792
Rajshahi	920	948	976	1005	1035	1066	1098
Khulna	388	400	412	424	437	450	463
Barisal	270	278	286	295	304	313	322
Sylhet	292	301	310	319	329	339	349
Maternal and Child Welfare Centers	161	166	171	176	181	187	192
Total Public HCFs	3969	4088	4211	4337	4467	4601	4739
Private HCFs	4239	4366	4497	4632	4771	4914	5062
Total	8208	8454	8708	8969	9238	9515	9801

25. During implementation of EMP 2011, the following challenges were identified:

- The Medical Waste Generators by and large do not maintain any proper record of the different streams of medical waste generated. Inadequate number of color-coded bins, often improperly placed, results in different waste streams getting mixed.
- The segregation of waste is delegated to the ward boys and the sweepers who do not have formal training. 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.
- There is lack of uniformity in color-coding and segregation procedures among the facilities.

- Needles and syringes were not destroyed before disposal. The needle cutters were not functional (blades becoming blunt after one or two uses) and more often the needle-cutters are usually kept inside the cupboards and are not used. It was also observed that bins used for sharps are not properly designed as per international standards. There is a general reluctance of destroying the sharps and needles.
- Information, education and communication (IEC) materials were not visible at the appropriate places in the facilities.
- The waste trolleys have become defunct and instead the trolleys used for ferrying patients were used for transporting the waste from the wards.
- The temporary storage of the different streams of Medical Waste is not done properly at the HCFs especially in the Public Hospitals.
- The use of personal protective equipment (PPE) such as gloves, masks, boots, etc. is partial. The employees/waste pickers also do not undergo immunization at regular periods, as is required under the Infection Control guidelines.

26. The following table summarizes the key observations related to MWM in Bangladesh:

Table 2: Observations related to key issues in MWM in Bangladesh

Sl. No.	Issues of MWM	Observation
1.	Awareness and motivation on MWM	Lack of awareness among the HCF professionals (in most cases) affecting understanding of proper MWM and its severe adverse impact on environment.
2.	Use of specific color coded bin	Only few HCFs have introduced use of specific color bins for segregation of MW at source and no uniformity in using specific colored bins in most of the HCFs
3.	Segregation of HCF waste at source	Not properly done in most HCFs; segregation done by sweepers need further monitoring and quality control.
4.	Management of sharps	Some cut off the nozzle of needle from syringe, some do not.
5.	Intermediate storage	Lack of availability/ use of secured intermediate storage facility for MW.
6.	Internal transport	Trolleys are not used regularly for transport of MW to outside containers.
7.	Occupational health and safety measures for workers	Adoption of security/protective measure taken by sweepers on very few occasions.
8.	Transport and ultimate disposal of MW	Non-segregated MW directly dumped to public container; Segregated MW waste is dumped in closed pits at hospital premise; Segregated wastes are dumped in open pit for burning (burning is incomplete in most cases); Segregated MW are disposed in incinerator for burning, having no temperature control as required. Few HCFs follow strict code of MWM.

27. Under the previous sector programs, the DGHS took initiatives to address some of these issues related to medical waste management in the health sector. In this regard, the DGHS has developed an online record-keeping, reporting and monitoring system for in-house waste management, conducted

training on MWM at various levels, explored the feasibility of different out-house waste management options in several hospitals in the country. DGHS has also developed new IEC materials promoting awareness campaign on MWM. However due to weak institutional capacity, inadequate monitoring and lack of awareness and enforcement, the issues associated with Medical waste management are still persisting.

28. HSSP provides an opportunity to enhance systems to ensure provision of safe, clean and hygienic health services while also providing an opportunity to improve measures for waste recycling and minimization. This may reduce the disease burden associated with infection and improve the quality of life. It may also reduce the risk of vector-borne diseases from solid waste dumping sites and pollution of water bodies, which could have a community-wide impact. In-house management should be the only discourse in this case and specific set of activities should follow starting from waste segregation and application of medical waste management guidelines. Since currently the medical waste is inadequately managed in healthcare facilities primarily due to weak institutional monitoring mechanism and inadequate enforcement of existing rules and guidelines, there is scope for improving the scenario and thereby generate a visible positive outcome from this project. Activities associated with the service-delivery related DLIs can increase the use of syringes and sharps, recyclable fluid bags, and consequently increase sharp wastes, recyclable wastes, infectious wastes as well as increase the risk of infection and contamination.

29. MWM at Upazila level HCFs are in progress. Since 2006, the MOHFW has prioritized MWM as an activity under improved hospital service component. The MOHFW also incorporated the waste management initiative for HCFs at the Upazila and below as a component of essential service delivery in line with the national goal to ensure safe, environment-friendly, cost-effective and sustainable management of medical wastes derived from curative, diagnostic, preventive and rehabilitative health care services both in public and private sectors.

30. To implement proper MWM at primary health care level the following strategies are being used:

- a) Development of pits (for infectious, sharps, general and recyclable waste) in Upazila Health Complexes.
- b) Regular supply of logistics for collection and transportation of waste and the safety material for the waste handles.
- c) Training/orientation of personal on proper MWM.
- d) Community awareness on waste, its management and individual responsibility.

3.2. Existing Legislative/Regulatory Framework for MWM

31. The GOB's environmental laws and policies are deemed adequate for both protection and conservation of resources, although enforcement capacity needs to be improved significantly. The assessment highlights that the Program may generate medical waste and GOB has comprehensive laws and policies for management of medical waste.

National Environmental Policy 1992

32. The concept of environmental protection through national efforts was first recognized and declared in Bangladesh with the adoption of the Environment Policy, 1992 and the Environment Action Plan, 1992. The major objectives of Environmental policy are to i) maintain ecological balance and overall development through protection and improvement of the environment; ii) protect country against natural disaster; iii) identify and regulate activities, which pollute and degrade the

environment; iv) ensure environmentally sound development in all sectors; v) ensure sustainable, long term and environmentally sound base of natural resources; and vi) actively remain associate with all international environmental initiatives to the maximum possible extent.

Bangladesh Environmental Conservation Act (ECA), 1995 amended 2002

33. This umbrella Act includes laws for conservation of the environment, improvement of environmental standards, and control and mitigation of environmental pollution. It is currently the main legislative framework document relating to environmental protection in Bangladesh, which repealed the earlier Environment Pollution Control ordinance of 1977. The first sets of rules to implement the provisions of the Act were promulgated in 1997 (see below: "Environmental Conservation Rules 1997"). The Department of Environment implements the Act. Under the Act, operators of industries/projects must inform the Director General of the Department of Environment of any pollution incident. In the event of an accidental pollution, the Director General may take control of an operation and the respective operator is bound to help. The operator is responsible for the costs incurred and possible payments for compensation.

Environment Conservation Rules (ECR) 1997 amended 2003

34. These are the first set of rules, promulgated under the Environment Conservation Act 1995. Among other things, these rules set (i) the National Environmental Quality Standards for ambient air, various types of water, industrial effluent, emission, noise, vehicular exhaust etc., (ii) requirement for and procedures to obtain Environmental Clearance, and (iii) requirements for environmental impact assessment according to categories of industrial and other development interventions. Any proponent planning to set up or operate an industrial project is required to obtain an "Environmental Clearance Certificate" from the Department of Environment, under the Environment Conservation Act 1995 amended in 2002. The wastewater generated from healthcare facilities are subjected to the discharge standards set in ECR 1997.

Environment Court Act, 2000

35. The aim and objective of the Act is to materialize the Environmental Conservation Act, 1995 through judicial activities. This Act established Environmental Courts (one or more in every division), set the jurisdiction of the courts, and outlined the procedure of activities and power of the courts, right of entry for judicial inspection and for appeal as well as the constitution of Appeal Court.

Medical Waste (Management and Treatment) Rules 2008

36. The Government of Bangladesh promulgated the Medical waste (management and processing) Rule, 2008 for processing and management of MW in Bangladesh. It was prepared through active participation of MOHFW, MOL and MOEF mainly with the objective of proper management of medical waste and protecting the environment.

37. The Medical Waste (Management and Treatment) Rules 2008 forms the base of management of all medical waste in the country. The rules are applicable only to waste management facility/operators i.e. those involved in 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. The institutions or agencies involved in collection, transport, storage, have to obtain authorization from the Department of Environment.

38. The existing Environment conservation Act, 1995 and the Environment Conservation Rules, 1997 had no specific by laws directly related to management of MW management. According to Bangladesh Environment Conservation Act wastes are classified under section 2(1) as “any liquid, solid and radioactive substance that is discharged, disposed or dumped which may cause adverse/ negative change to the environment. All these procedures were very general for all kind of establishments and not specific for Management of MW. The shortcoming has been addressed by the new medical waste rules, 2008.

39. Broadly the rule has classified the medical waste (schedule-1) with examples and environment-friendly technologies of management. It also contain suggestion for use of different color bins (schedule-3) for segregation of medical –waste at source and symbol to be used on the packaging of medical-waste (schedule-4) for transporting. In schedule -6 the rule specifies the standard Incineration/ Autoclaving, standard of liquid waste with permissible limits, standard of microwaving, standard for deep burial and standard for radioactive waste treatment and disposal along with other issues related to MWM (The important part of the Medical waste Rule, 2008 has been enclosed in the annexure).The new medical waste rule has urged for ‘formation of authority’ within 3 months of proclamation which will be will be in charge of all activities related to MWM of their area.

40. The regulation specified for different (6 nos.) color bins to be used for segregation of different MW along with specification of container, standard for operation of equipment, effluent and emission standards.

Manual for Hospital Waste Management 2001

41. DGHS has developed a manual for 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.

Guidelines on Infection Prevention and Control (IPC) and Biosafety 2016

42. 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.

GOB 7th 5-year Plan (FYP)

43. Under the 7thFYP, the government aims to attain a number of broad goals, including good governance in environmental sustainability, addressing population growth, ensuring the sustainability of cities with improved infrastructure, production and economic activity with minimal degradation, meeting national air and water quality standards, protecting endangered species, sustainable conservation of the Sundarbans Mangrove Forest and reducing potential economic losses from natural disasters. Among the array of activities that will be implemented under 7th FYP, it is mentioned that the GOB will take the following steps to counteract the harmful effects of pollution due to medical wastes:

44. GOB will take measures to improve medical waste management in the country by delivering specific disposal training and with strict enforcement of separate collection & disposal systems.

- a. GOB will establish environmentally acceptable treatment centers for infectious wastes in each divisional city.

b. Strict compliance of Medical Waste Rules along with in-house and off-the-house management should be established.

Environmental Assessment and Action Plan for HPNSDP, 2011-2016

45. The action plan concentrates on review and mitigation of the potential impacts of MW disposal on environment and focuses on status of MWM in Bangladesh, in which some efforts have been initiated presently. This was a sector-wide assessment and action plan of MWM issues in Bangladesh. It provides recommendations for improvement of medical waste management scenario for Bangladesh. The current Environmental management framework is actually a subset of the previous assessment and action plan of 2011-2016. This EMF has been tailored to suit the specific conditions of the primary level healthcare facilities of Chittagong and Sylhet divisions. Since the scope of the EMF is only primary HCF in selected regions in the country, many of the policy-level and broad-based recommendations as well as specific MWM features of big hospitals are excluded.

3.3. World Bank Policy

46. The World Bank Safeguard Policy OP/BP 4.01 is triggered because some activities during the operation will produce negative environmental impacts that should be prevented and mitigated. However, the potential negative impact is mainly from generation of medical waste. A Medical Waste Management Plan is therefore prepared as an instrument to safeguard against the effects of medical waste on the environment and human health. In this regards the project is classified as Category B according with the OP/BP 4.01 and this category will be retained for Additional Financing. The EMF will be disclosed according to the Bank's policy of information disclosure.

3.4. Compliance Assessment former Project HSDP

47. Under the third Sector program HPNSDP, DGHS took initiatives to address some of these issues related to medical waste management in the health sector. Traditionally, medical waste used to be mixed with municipal wastes from the bins and disposed of, using the conventional disposal methods like burying or incineration. The issue of medical waste management (MWM) is becoming important gradually as the amounts of hazardous/ infected waste is increasing. This has necessitated more attention to blood safety, disposal of needles, syringes and other infectious wastes. To address the issue - the MWM program was introduced during the second Sector Program. It has developed an online record-keeping, reporting and monitoring system for in-house waste management, conducted training on MWM at various levels, explored the feasibility of different out-house waste management options in several hospitals in the country. DGHS has also developed in house operational guidelines, training modules, pocketbook for service providers and new IEC materials promoting awareness campaign on MWM. However due to insufficient institutional capacity, inadequate monitoring and lack of participation, insufficient inter-ministerial coordination and enforcement, the issues associated with Medical waste management are still persisting. Till June, 2015, 14 MCH, 15 DH and 8 specialist hospitals introduced standard in-house medical waste management. All the public and private HCFs of Dhaka, Comilla and private health care facilities of Chittagong city are now under the MWM scheme of NGOs such as PRISM and INNOVATION. An NGO named SHOPNO have contracted to take care of the MWM of all the HCFs of fBagura, Rangpur and Dinajpur. For the rest of the country, no out-house medical waste management operations exist.

48. Assessments were carried out on the status of medical waste management in Bangladesh in several instances by MOHFW and World Bank¹. The following recommendations were provided:

- proper record of the different streams of MW generated should be kept .
- Formal training on MWM practices to nurses, ward boys and the cleaners needs to be carried out
- the used needles and syringes should be properly destroyed before disposal.
- The IEC materials should be visible at the appropriate places in the HCF during the visit to these facilities.
- Proper transportation of the medical waste from the wards by waste trolleys should be done
- The temporary storage of the different streams of Medical Waste should be done properly.
- The use of PPE such as Gloves, Masks, Boots, etc. should be available as required.
- The regulatory framework for medical waste management does not comprehensively cover the primary producers of medical waste. Also the licenses obtained by the Health Care facilities i.e. Operating License from DGHS and Trade License from the City Corporation do not provide any cross linkages to the medical waste management. Under the existing institutional mechanism, the regulatory authorities do not have any information about the waste generated, treated and disposed. Neither the healthcare facilities nor the CTDE Operators provide any information to the regulators in this regard. In this regard, the loopholes in the regulatory framework should be corrected and the institutional mechanism on MWM should be more coordinated. However, this would require policy interventions involving three different ministries.
- Timely collection, transportation and disposal of medical waste should be done by city corporation/ pourashava
- Enhance capacity building for managing of Medical Waste in the organizations i.e. DGHS, Pourashavas/city corporations and MoEF/DoE.

3.5. Institutional Framework for MWM

49. In house medical waste management is the responsibility of MOHFW while the out-house medical waste management (collection, transportation and final disposal of medical waste) is the responsibility of MOLGRDC (by City Corporation / Pouroshova). City corporation/Pourosova can contract out-house management through NGOs. Government hospital pays service charge to the City Corporation /Pourashova for MWM. At the ministry level, a National Implementation Coordination Committee (NICC) and committee for different administrative level for Out-house management for MWM is formed.

50. In the Upazila level government health care facilities, the current directives state that out-house MWM will be conducted by the hospital authority within the hospital premises by pit method till Pourashovas develop sufficient capacity for MWM or NGOs are available to contract out the MWM.

¹ Environmental Assessment and Action Plan for HPNSDP, 2011-2016 and Environmental Safeguards Assessment Report: Review of EMP Implementation: Health, Population And Nutrition Sector Development Program, 2014

51. The DGHS has the responsibility to provide technical support to MWM programme at all Government hospital and Private clinics. It provides waste management related logistics to all healthcare facilities, facilitation of training and dissemination of IEC materials.

3.6. Gaps and Challenges in implementation of MWM

52. There has not been significant or widespread improvement in MWM implementation since the Rule was promulgated. The primary reasons are as follows:

- Low awareness and capacity in the HCFs
- Inadequate legal provisions
- Lack of sufficient expertise on the issue
- Resource constraints.
- Inter-ministerial coordination and cooperation
- Insufficient supervision and monitoring

53. Lack of manpower (in DoE, various hospitals etc.), lack of coordination (among the implementers of MWM), lack of required fund are the main reasons for delay in the implementation of proper MWM in the country.

54. Implementation of proper MWM requires both investments in equipment and on human resources (employees and staff) for building their capacity in managing MWM activities. Achieving improved performance on a sustainable basis also demands investments in creating appropriate systems and frameworks. The increased budget required for improved MWM is not normally included in the regular health budget, which is considered as a significant barrier to improve the MWM. Appropriate allocation by introducing a budget line in the HCF operation budget can solve the problem.

3.7. Additional Challenges for MWM due to influx of FDMNs

55. Due to the influx of FDMNs, temporary camps have been set up in various locations within the settlement to provide healthcare services. Their locations are not fixed and there is limited access in and out of the camps. Currently over 75 partners are involved in the provision of healthcare service through static and mobile health care facilities (HCFs) scattered across all camps of the settlement areas. These facilities are of varying capacity and as of 3 June 2018, over 170 static centers had been registered with the Early Warning Alert and Response Systems (EWARS) network as centers providing patient care services. This includes both inpatient and outpatient service provision in the field. Table 3 summarizes the main diseases that have been reported through EWARS from epidemiological week 1 up to week 22 (ending 03 June 2018).

Table 3: Summary of main diseases reported through EWARS from epidemiological week 1 up to week 22 (ending 03 June 2018).²

Diseases/Syndromes	<5 cases	5+ cases	Total cases
Unexplained fever	70,621	157,307	227,928

² WHO Briefing on the communicable disease situation in Cox’s Bazar, Bangladesh

Acute respiratory infection	115,026	108,625	223,651
Acute watery diarrhoea	45,085	64,860	109,945
Bloody diarrhea	24,687	25,027	49,714
Other diarrhea	10,475	22,426	32,901
Suspected malaria	528	19,232	19,760
Acute jaundice syndrome	5,020	7,822	12,842
Suspected measles/rubella	687	1,566	2,253
Mumps	1,110	264	1,374

56. There is also very limited space within the camps for a separate infrastructure for medical waste management on-site. The staff at all levels have very limited knowledge of medical waste management, waste segregation at service delivery point is rarely done. There is minimal monitoring of correct waste disposal even in those facilities which have the ability to segregate waste. Often chemical disinfection is practiced exposing the healthcare workers to toxic chemicals risk. Often open burning is practiced which exposes the surrounding people to air pollution. Probability of installing an incinerator is not feasible due to lack of space, energy requirement and dedicated manpower.

57. In Upazila health complexes, there is already lack of physical infrastructure to manage waste safely within the facility. The influx of FDMNs has resulted in a surge of patients in these facilities of Cox's Bazar. This has been compounded by the extensive vaccination campaigns which have increased the quantity of glass and sharps waste that the facility has to manage.

58. The Concerns regarding medical waste management at health care facilities in camps for FDMNs, Cox's Bazar are the following:

- Incorrectly managed medical waste, including sharps, are now visible on the ground or are just below the ground surface in areas within the camps in public areas
- Sharps have been burnt inappropriately and remnants of sharps broken vaccine vials, are visible on the ground close to some health care centres.
- Waste is not always being sorted appropriately which can result in excess quantities of infectious waste and non-infectious waste being processed together.
- Low temperature burning of waste can result in hazardous by products. The smoke from burning of both infectious and non-infectious waste can contribute to disease in the FDMN population via inhalation of irritants and carcinogenic dioxins.
- Correct management of medical waste by many of the health care facilities within the camps may not currently be possible due to a lack of waste management infrastructure.
- Managing infectious medical waste at each health facility will not be sustainable as, there are now approximately 770,000 people living within the camps and finding suitable space for burying waste ash will become increasingly problematic over time.

59. The MOHFW will require additional capacity to plan, coordinate, manage and monitor the management of medical waste in DGHS facilities that are experiencing additional patient load and the large number of new facilities.

4. Improving MWM under the HSSP

4.1. Measures to Improve MWM

60. Basic best environmental management practice for the health-care sector includes efficient infection control measures, adequate water supply and sanitation, occupational health and safety of staff, and proper disposal of infectious wastes and wastewater.

61. The measures to improve MWM under HSSP(2017–2022) are as follows:

Table 4: Measures to improve MWM under HSSP

Issues	Measures to improve MWM
Strengthen policy and legal framework	Under the existing regulatory framework, the health facilities that generate medical waste are not sufficiently held accountable for proper handling and managing of medical waste. At the upazila level, the health facilities can be made more accountable by ensuring proper record-keeping, assigning a focal person for supervision of medical waste management (MWM) activities, and constructing burial pits for sharps and infectious wastes. Construction and operation of deep burial pits should follow the guidelines described in Annex F.
Strengthen institutional capacity and compliance	<p>Improve health care waste management, particularly focused on the Upazila Health Complex and below, by ensuring:</p> <ul style="list-style-type: none"> • use of color-coded bins in health facilities in accordance with Medical Waste Management Rules 2008; • segregation of waste in all facilities by using the established color coding system and recordkeeping of medical waste generated; • storage of waste in designated temporary storage areas before disposal; • destruction of sharps before its final disposal in in-house deep-burial pits as per existing HCWM guidelines; and • availability and visibility of information, education and communication materials on health care waste management in health facilities.
Strengthening implementation	<ul style="list-style-type: none"> • Monitoring and reporting on the implementation of MWM, particularly focused on the Upazila Health Complex and below. • Capacity building for health workers on MWM, particularly focused on the Upazila Health Complex and below. Appropriate capacity enhancement training on infection control as well as management of sharps will be conducted for the relevant staff of HCFs. • Standard Operating Procedures (SOPs) to be finalized and promoted extensively among all HCFs. • Appropriate training program will be initiated on Occupational Health and Safety protocols for all employees involved in handling of “in-house” and out-house MWM needs to be developed with an effective monitoring mechanism.

4.2. Measures to improve MWM in FDMN camps and Cox’s Bazar UHCs

62. As mentioned earlier, the sparsely located FDMN health camps and the UHCs in Cox’s Bazar will face challenges regarding MWM due to the influx of Rohigya population. Some measures to improve MWM are the following:

Table 5: Measures to improve MWM for the FDMN Population

Issues	Measures to improve MWM
MWM in temporary camps	Since installing MWM infrastructure and its maintenance will be challenging in this setting, a short term measure could be to contract out to third party for safe final disposal of medical waste. This will have to be integrated with provision of color coded bins, collection points and an extensive training and monitoring exercise for the personnel associated with health service delivery.
MWM in Cox's Bazar UHCs	<ul style="list-style-type: none"> • Construct deep burial pits for permanent disposal of sharps and hazardous solid waste. This measure will be helpful in the long run as there will no longer be a requirement to store the MWM in designated bags to be shipped out to district level hospitals where incinerators are available. If space is available on site then final treatment and disposal on site may be more realistic as this is a permanently located facility. Construction and operation of deep burial pits should follow the guidelines described in Annex F. • Monitoring and safety measures of deep burial pits should be in place. This includes: <ul style="list-style-type: none"> ○ Monitoring and regular reporting of groundwater quality around the burial pits. Suggested parameters for monitoring are: Total and Fecal coliform, pH, Fe, Mn, As, heavy metals, Total Dissolved Solids ○ Ensure that proper precautionary signage in place at the location near and around the burial pits ○ Ensure that the burial pit is constructed with proper impermeable lining materials at the sides and bottom • All other measures mentioned in the previous section.

4.3. Funding for implementation of MWM Action Plan

63. The MOHFW has estimated cost of implementing MWM for the period 2017-2022. The following table provides the tentative budget:

Table 6: Estimated budget for MWM, 2017-2022

Item	BDT lakh	US\$	The mitigation measure issues addressed
Supplies and logistics	1176	1,507,692	Strengthen institutional capacity and compliance
Disposal of general waste by Municipality from Upazila Health Complex	64.5	82,692	Strengthen institutional capacity and compliance
Activation of different committee for facilitating MWM	16	20,513	Strengthen policy and legal framework
Capacity development/Training on MWM (Foreign)	750	961,538	Strengthening implementation
Capacity development/Training on MWM	175	224,359	Strengthening implementation
TV show, audio visual materials, radio program etc.	50	64,103	Strengthen institutional capacity and compliance
Development of IEC & BCC materials	50	64,103	Strengthen institutional capacity and compliance
Printing & distribution of Manuals	50	64,103	Strengthening implementation

Item	BDT lakh	US\$	The mitigation measure issues addressed
Technical assistance requirement	20	25,641	Strengthening implementation
Total	2356.5	3,021,154	

4.4. Monitoring of implementation of the MWM action plan

64. Monitoring of the implementation of MWM is essential to ensure the reduction of infection from wastes generated from HCFs and ensuring restoration of environmental qualities in general to ensure the quality of human life and sustainable environment for future perspective. Monitoring of the status of present practices of the HCFs is also important. The MWM situations of various HCFs are quite different in different areas. Some HCFs, where training has been imparted and logistics are available have got different scenario than those HCFs, where no training has been arranged, no and no logistics available.

65. There is a need of preparation of a uniform format for reporting of MWM activities at all the HCFs of the country, which will furnish information/data regarding the present status of MWM in the particular HCF, to be submitted to DGHS/DGFP annually. Moreover, monitoring of the MWM activities of HCFs who have already practicing MWM as per guidelines is also crucial, as there might exist many gaps in some HCFs which might require further improvement. Information related to the following would be monitored on a yearly basis:

- Training of total hospital staff
- Segregation efficiency and disinfection and storing quality;
- Transporting efficiency and safety;
- Occupational health and safety aspects of related health workers;
- Environmental impacts around disposal sites Emission and effluents characteristics from facilities;
- Monitoring the total MWM in the light of Environmental Regulation of MWM 2008.

66. At the upazila and below level facilities, the relevant guidelines of MWM 2008 will be adopted. Different colour bins will be supplied to the UHCs for collection of waste at their generation points. Mainly nurses and cleaners will segregate and collect the waste while the doctors will be responsible for their monitoring. The UHCs will also be provided with trolley for transporting the segregated waste to storage.

67. As per agreed measures of EMF, a Medical Waste Management (MWM) Monitoring Cell has been constituted at the DGHS. A Program Manager and a Deputy Program Manager have been assigned for MWM under the operational plan (OP) of Hospital Services Management (HSM). The MOHFW has hired two consultants to support the MWM Monitoring Cell. The Deputy Director of DGHS is responsible for MWM activities. The HCFs under the proposed program will report to this section of DGHS. This includes carrying out screening and assessment with recommended actions (see Annex C: 'Screening form for healthcare facilities' for template). The HCF will be responsible for performing the screening of the corresponding facility and report to the DGHS waste management cell in Dhaka. The MWM team of DGHS will collect, analyze and summarize the information from HCFs and share their findings to the World Bank team in a quarterly basis.

68. The same institutional arrangement as stated above will be followed for MWM in the camps of FDMNs. However, in this case international organizations (e.g.WHO) will be assisting the DGHS to

implement the EMF. This includes filling up screening and assessment forms for camps of FDMNs (Annex D and E) and improving medical waste management measures as stated in Table 5. There are already some activities being carried out by WHO and other development partners in the EWARS which are in line with the basic principles of this EMF:

- ☑ Interaction with partners to develop SOPs for medical waste management
- ☑ Education of health care facility staff in medical waste management (by WHO)
- ☑ Provision of PPE and sharps containers to health facilities to enable safe disposal at point of use (by WHO).
- ☑ Monitoring of compliance to be carried by partners and centrally through the WHO IPC Program, on an ongoing basis.

69. The DGHS medical waste management cell will closely coordinate with the international organizations, and share their findings to the World Bank team in a quarterly basis.

5. Consultation

70. As part of preparation of the Government's program, the MOHFW discussed the project objective and its impacts with the relevant stakeholders in different geographic divisions of the country including Chittagong and Sylhet. Also, a national level consultation meeting held at Dhaka on March 14, 2017, the EMF was presented. Representatives from different districts (both government, CSOs and TPs) participated in the meeting (Consultation details and List of participants provided in Annex -A).

71. As part of preparation of the AF under the new component 4, MoHFW has held consultations with a group of stakeholders (list of the participants provided in the Annex – B.) involving the government, NGOs & civil society, and UN agencies active in Cox's Bazar with the FDMNs on August 13-15, 2018 and subsequently on 2-6 September 2018. The August consultations also involved focus group discussions (FGDs) with the FDMNs including one held with the orphan children.

6. General recommendations

72. The proposed program provides an opportunity to improve the medical waste management scenario in Sylhet and Chittagong in Bangladesh. This may reduce the disease burden associated with infection and improve the quality of life. It may also reduce the risk of vector-borne diseases from solid waste dumping sites and pollution of water bodies, which could have a community-wide impact. In-house management is proposed for primary HCFs and specific set of activities should follow starting from waste segregation and application of medical waste management guidelines. Since currently the medical waste is inadequately managed in healthcare facilities primarily due to weak institutional monitoring mechanism and inadequate enforcement of existing rules and guidelines, there is scope for improving the scenario and thereby generating a visible positive outcome from this project. Activities associated with the service-delivery related DLIs can increase the use of syringes and sharps, recyclable fluid bags, and consequently increase sharp wastes, recyclable wastes, infectious wastes as well as increase the risk of infection and contamination. Through effective implementation of HCWM activities in line with the GOB's MWM 2008, the risks can be adequately mitigated. Specific activities

will include capacity building of relevant personnel, proper segregation of waste, disposal of sharps and introducing deep burial pits for sharps and infectious wastes/body parts.

73. Monitoring of implementation of this EMF will be detailed out in the relevant operational manual. Some general recommendations for dealing with MWM in the HSSP are given below:

- An MWM monitoring cell with representation of DGHS, DGFP, and other relevant GOB departments and ministries should be set up to oversee the implementation of EMF related to MWM;
- Training and awareness building needs to be imparted for carrying out proper MWM;
- Surveys need to be conducted on the status of MWM carried out by the HCFs;
- The MWM monitoring cell should closely supervise MWM of HCFs.

Annex A: Public Consultation for HSSP

A stakeholder discussion was organized by the MOHFW on 14 March, 2017 in the Conference Room of MOHFW, Bangladesh Secretariat on the Environment Management Plan. A wide range of stakeholders (participant list below) including Health Ministry officials (MOHFW, DGHS), Local Government officials (City Corporations), Public works department, health care facilities from Sylhet and Chittagong division attended the meeting (Figure A1). The meeting was chaired by Joint Chief, MOHFW.



Figure A1: Consultation workshop organized by MOHFW on 14 March, 2017

A general introduction and salient features of the Environmental Management Plan was presented through PowerPoint slides. Various limitations of the MWM system in Bangladesh, with particular emphasis in the Sylhet and Chittagong Divisions were discussed. The participants in general agreed that healthcare waste management should be given more priority by the concerned authorities involved. A summary of their feedback and response from the PMU team is given below:

Comments	Response
It was brought to notice that the monitoring of MWM activities generally received very small budget allocation. The allocation for monitoring should be increased to have a positive outcome in this regard.	The PMU agreed with the feedback. PMU informed that a separate budget has been allocated in 2017-2022 for medical waste management. The PMU will look into issues of monitoring.
In most of the upazila health complexes (UHCs, 20-bed/10-bed health clinics), there is no system for segregating solid and liquid medical waste. Even all UHCs have not been provided color-coded bins as specified in the medical waste management guidelines. Open dumping is practiced in these cases.	The MOHFW officials assured that they will take measures to provide color-coded bins to all UHCs under the current program.
The health official from Sylhet informed that although the waste is segregated in some of his facilities, when the city corporation collects the waste they take away the whole thing together which undermines the effort of segregation. This is because the city corporation does not have a separate facility to manage the medical waste and treats medical waste and municipal solid waste in the same manner.	PMU informed that segregation has to be done in the HCF. And disposal of sharps and hazardous waste need to be done at the facility and should not be handed over to city corporations.

Comments	Response
<p>In many clinics in Sylhet, there are no separate bins for different kind of medical wastes. This indicated that the MWM efforts by MOHFW have not reached some of the locations in this region and there is need to ramp up efforts in the region.</p>	<p>The MOHFW officials assured that they will take measures to provide color-coded bins to all UHCs under the current program.</p>
<p>Some participants stated that all primary HCFs should have burial pits for treating a part of the medical wastes since out-house medical waste management facilities are not available in these regions. Some other participants mentioned that not all primary HCFs may have enough space to construct a burial pit.</p>	<p>The MOHFW officials assured that they will take measures to construct burial pits under the current program as per current directives of MWM.</p>
<p>Some participant opined that some sort of indicator for the performance of medical waste management may be incorporated in the DLIs so that its progress can be tracked over time.</p>	<p>The PMU will look into it in future.</p>
<p>Some participants stated that the Chittagong hill tracts and Bandarbands have different geographic features (i.e. hilly regions) compared to other flat regions in Bangladesh and hence the traditional medical waste collection and management system may face challenges (geographically remote areas, inaccessible areas etc.). These should be addressed in the medical waste management plan.</p>	<p>The feedback was acknowledged by the PMU. The PMU will look into devising appropriate MWM options on a case by case basis.</p>
<p>One of the participants mentioned that the Expanded Programme on Immunization (EPI) is facing challenges in managing its sharp wastes. Often the sharps are not collected for a very long time, remain stacked up in storage places for extended periods of time before they are transported from primary health complex to secondary and tertiary facilities. This is because the primary level UHCs do not have the facility to dispose EPI sharps and these had to be transported to higher facilities. Since the collection of wastes from primary HCFs occur very infrequently, the waste is stacked there for extended period which is not safe. In such situations, in-house sharps management facility needs to be developed.</p>	<p>Feedback acknowledged by the PMU. Onsite sharps burial pits can relieve the pressure of storage of EPI sharps under the proposed program.</p>
<p>Some participant mentioned that there is both coordination and information gap between the health ministry and the LGRD ministry regarding MWM. The efforts from both ministries need to be well-coordinated to improve the MWM scenario of Bangladesh in general.</p>	<p>The PMU will bring these issues forward in inter-ministerial meetings.</p>

Participant list of Stakeholder Consultation on EMF, FPPP & SMF for the 4th Health Population & Nutrition Sector Program (HPNSP) of Ministry of Health and Family Welfare (MOHFW)

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52.	Md. Ibrahim Khalil	SAC, MOHFW	01709600472
53.	Md. Akteruzzaman	PMMU	

Annex B: Stakeholder Consultation for HSSP Additional Financing

List of Participants for the Micro Planning Workshop for sub-window fund for FDMN Hotel Sayeman, Cox's Bazar,

Sl.	Name, Designation & Organization	Contact Details
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Issues covered during these meetings:

- ☐ Identifying HNP needs of the beneficiaries based on disease burden recorded thus far and disease surveillance data.
- ☐ Mapping of the various health posts inside the camp and health facilities outside the camp that are providing HNP services to the FDMNs . This also included capacity assessment of each of the health facility/post in terms of doctors, nurses, medicines, equipment, etc. available.
- ☐ Identifying specific needs of women and children as well as victims of gender-based violence (GBV). Capacity assessment of the Women Friendly Spaces that deal with GBV and sexual and reproductive health issues.
- ☐ Taking stock of the vaccination campaign held to understand the future needs for immunization of children.
- ☐ Identifying the needs for family planning interventions and commodities, as well as scoping of implementation modality.
- ☐ Assessment of the ongoing nutrition interventions to identify additional treatment needs to deal with moderate and severely malnourished children. The assessment also included identifying needs/activities for prevention of malnutrition among children and pregnant women.

Annex C: Screening Form for Healthcare Facilities (HCFs)

1. Name & Address of the :
Hospital/Healthcare centre
2. Type of Healthcare Centre :
3. Name & Designation of :
Responding Person
4. Population of City/Town :
5. No. of Beds in HCF – what is occupancy rate? How many OPD patients on an average?
6. What kind of care is primarily provided – eg immunization, deliveries, HIV, TB, Minor Surgeries, OPD etc.
7. Are you aware of the MWM concept and the Policy? Is your facility in compliance? Have you received all the necessary clearances for implementing the policy?
8. What steps have been undertaken to improve the MW Management in your Healthcare facility I? How has MW Management progressed over time with the implementation of the various Government 's initiative in the Health Sector ?
9. What is the quantity and mode of disposal of different types of wastes generated at your hospital?

SI No.	Nature of Waste	Quantity Generated Per Day	Method of Treatment/ Disposal
1	Outdated Drugs, Chemicals and disinfectants used in Labs & for Decontamination of Needles etc.		
2	Syringes, Conules, Catheters, (Infectious Plastics)		
3	Pathological and anatomical Waste, Infectious Waste, Infected Blood, Cytotoxic waste, etc.		
4	Glass Waste (both broken and non-broken)		
5	Needles, Blades and Scalpels		

10. Do you use reusable syringes? Do you have sterilization equipment in place?

11. What is the mode of collection and transportation of different types of waste generated at the Healthcare Unit ?
12. Is there any color-coding used being for collection of different types of wastes? Please elaborate.

Type of Waste	Color of Container and markings	Type of container
Highly Infectious Waste	Red	Strong Leak-proof plastic bag or container capable of being autoclaved
Other infection waste, pathological and anatomical waste	Yellow	Leak-proof plastic bag or container
Sharps	Yellow, marked "SHARPS"	Puncture-proof container
Chemical and Pharmaceutical waste	Brown	Plastic bag or container
Radioactive Waste	-	Lead box, labeled with the radioactive symbol
General Healthcare waste	Black	Plastic bag

13. Is there any wastage (eg small volumes in large bags etc)?
14. What is the durability of the bins provided under the project? Please elaborate.
15. Do you have in-house facilities for treatment of infectious wastes & other wastes? If yes, please give details.
16. Do you have deep burial pits for final disposal?
17. If yes, are the following monitoring activities carried out associated with the burial pits
 - a. Is the groundwater quality around the burial pits monitored?
 - b. Are the bottom and sides of the burial pit constructed with impermeable materials?
 - c. Are appropriate safety precautionary signage provided with the burial pits?
18. Is there a recycling system in place for the plastics and glass?
19. How durable are the needle cutters/destroyers?
20. Are they being effectively used in all wards?

21. If No, are you using external facilities such as Common Waste Treatment Facilities (CWTFs) for treatment & disposal of waste?
22. How is the MW transported to the CWTF?
23. What are charges per tonne of MW paid to CWTF?
24. What is the average quantity of MW sent to CWTF for treatment? Please Elucidate.
25. What is the level of awareness and training provided to the different levels of staff for better MW management in the hospital?
26. How often has training been provided? Is there ongoing refresher training?

Type Level	General Ongoing Awareness	Refresher Training	About MWM	Frequency
Doctors				
Nurses				
Technician				
Sanitary & Lower Level Staff				

27. Who monitors the effective implementation at each facility?
28. How often does the MWM Team meet?
29. What do they discuss and evaluate?
30. Who is in charge of daily operations?
31. Did you experience any difficulty in obtaining clearances/assistance from the regulatory bodies? Please elaborate.
32. Did you receive adequate assistance from the Ministry of Public Health/Project Management Unit?
33. Have any guidelines/plans been provided to you by the Government?
34. What has been the attitude of the community /NGOs/people at large?
35. Have they contributed towards achieving better MW Management at the HCF?
36. Are you aware of the environmental and health implications of MWM?
37. Which major difficulties/constraints have you faced in implementing better MW Management Systems at the HCF?

38. Which are the critical issues (Both External & Internal) ?
39. Which are the 3-4 major actions you have taken to improve the MW management at the Facility?
40. Are any External Agencies such as Independent M&E organizations and/or NGOs who are working with you? Please provide details
41. What kind of support do you get from different agencies such as City Corporations/Pourashava DoE, NGOs, DGHS etc. ? Kindly elaborate

Annex D: Screening Form for Health Camps for FDMNs

1. Name & Designation of _____ :
Staff member in charge

2. What kind of care is primarily provided – e.g. immunization, deliveries, HIV, TB, Minor Surgeries, OPD etc.

3. Are you aware of the MWM concept and the Policy?

4. Are you aware of the environmental and health implications of MWM?

5. What is the quantity and mode of disposal of different types of wastes generated at the camp? (Give approximate estimates if actual information is not available)

Sl No.	Nature of Waste	Quantity Generated Per Day	Method of Treatment/ Disposal
1	Outdated Drugs, Chemicals and disinfectants used in Labs & for Decontamination of Needles etc.		
2	Syringes, Conules, Catheters, (Infectious Plastics)		
3	Pathological and anatomical Waste, Infectious Waste, Infected Blood, Cytotoxic waste, etc.		
4	Glass Waste (both broken and non-broken)		
5	Needles, Blades and Scalpels		

6. Do you use reusable syringes? Do you have sterilization equipment in place?

7. What is the mode of collection and transportation of different types of waste generated at the Healthcare Unit ?

8. Is there any color-coding used being for collection of different types of wastes? Please elaborate.

Type of Waste	Color of Container and markings	Type of container

Highly Infectious Waste	Red	Strong Leak-proof plastic bag or container capable of being autoclaved
Other infection waste, pathological and anatomical waste	Yellow	Leak-proof plastic bag or container
Sharps	Yellow, marked "SHARPS"	Puncture-proof container
Chemical and Pharmaceutical waste	Brown	Plastic bag or container
Radioactive Waste	-	Lead box, labeled with the radioactive symbol
General Healthcare waste	Black	Plastic bag

9. Is medical waste burnt at the site?
10. Do you have in-house facilities for treatment of infectious wastes & other wastes? If yes, please give details.
11. Is there a third party available in the area for contracting out medical waste management services?
12. Are needle cutters/destroyers available on-site?
13. What is the level of awareness and training provided to the different levels of staff for better MW management in the hospital?
14. Have any guidelines/plans for MWM been provided to you by the Government?

Annex E: Screening for temporary health camp construction and Risk of Health Workers

Guideline Construction Issues

Will the construction work generate significant amounts of dust, odour or noxious gases that are likely to disturb FDMNs and host communities?
Will the construction work cause a noise nuisance due to the operation of heavy machinery and other on-site activities?
Will the construction work produce significant amounts of runoff, change drainage patterns and/or erosion?
Will the construction work disrupt traffic (pedestrian and vehicular) or distributing relief?
Will the construction of the sub-project affect access to existing land uses (for example, will the movement and location of heavy equipment, trenching, etc. for rural roads, large drains, interfere with access to private property)?
Is the location suitable for treated wastewater or grey water re-use?
Is the location easily accessible for differently-able (physically challenged) individuals?

Health and safety: Health-workers

Will Health-workers be exposed to a complex variety of health and safety hazards?
Will the required measures be provided for the protection of health workers from these workplace hazards (PPE, masks etc.)?
Is there an emergency response plan in the event of an accident on site (e.g. fire)?

Annex F: Design Aspects and Specifications of a Deep Burial Pit

Design Aspects of Sharps Disposal Pit

Since sharps are usually the main cause of concern, and make up only a small quantity of the total health care waste, they may be appropriately disposed of on-site. The remaining waste may be sent to the municipal (or common) disposal site. A system that may be used in small health care centres is described below.

A circular or rectangular pit is dug and lined with brick, masonry or concrete rings or any other impermeable material. The pit is covered with a heavy concrete slab that is with an internal diameter of about 200mm. Needles and scalpel blades (without the syringe body or drip tubing) are dropped into the pit through the steel pipe. When the pit is full it can be sealed permanently after another has been prepared. Advantages of such pits are that these discourage recycling of sharps by scavengers due to their inaccessibility. The height of the pipe discourages children from dropping soil or stones into the pit filling it up prematurely.

The Specification for a Waste Burial Pit

The specification for a waste burial pit is provided below.

- 1 A pit or trench should be dug about 2 meters deep. It should be half-filled with waste, and then covered with lime up to 50 cm of the surface, before filling the rest of the pit with soil.
- 2 Animals should not have any access to the waste burial sites. Covers of galvanized iron/wire meshes may be used to protect the area from trespassing. There should be adequate safety precautionary signage around the burial pit
- 3 On each occasion, when wastes are added to the pit, a layer of 10 cm of soil shall be added to cover the wastes.
- 4 Waste disposal into the pits should be performed under close and dedicated supervision.
- 5 The deep burial site should be relatively impermeable and no shallow well should be close to the site.
- 6 The pits should be distant from habitation, and sited so as to ensure that no contamination occurs of any surface water or ground water. The area should not be prone to flooding or erosion. Regular groundwater monitoring around the burial pit area should be conducted.
- 7 The location of the deep burial site should be authorized by the prescribed authority
- 8 The institution should maintain a record of the kind of waste sent for deep burial.
- 9 A permanent Record of the size and location of all burial pits needs to be strictly maintained and displayed at strategic place with due precautions to prevent construction workers, builders and other from digging in those areas in the future

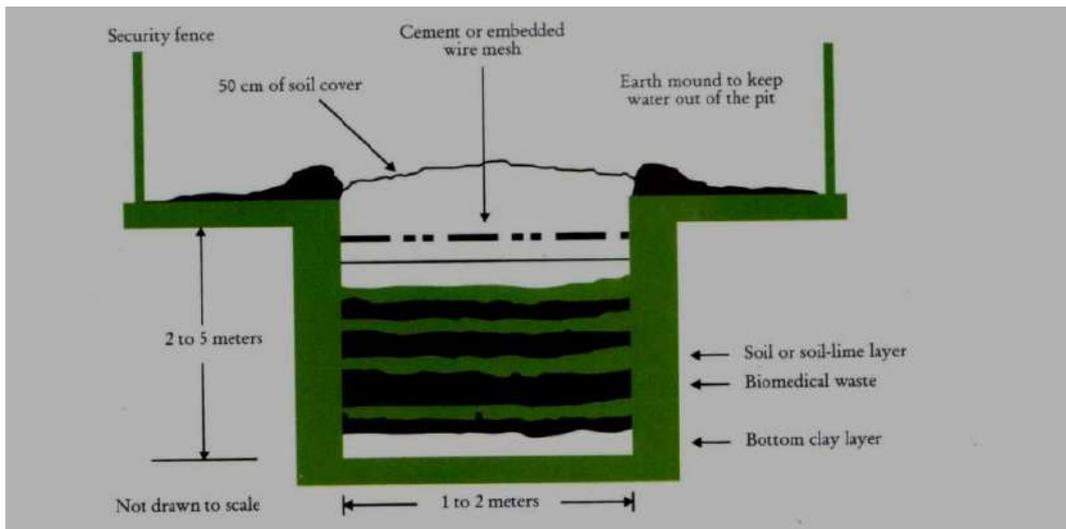


Figure: Layout Specifications for Burial Pit
(Source "Implementation Experience in India & Tool-Kit for Managers, The World Bank")