SUPPORTING HUMAN CAPITAL ACCUMULATION IN PUNJAB BY EARLY INVESTMENT (SHAPE)

GOVERNMENT OF PUNJAB
PRIMARY & SECONDARY HEALTHCARE DEPARTMENT

ENVIRONMENTAL & HEALTHCARE WASTE MANAGEMENT PLAN (EHCWMP) OF PUNJAB HUMAN CAPITAL INVESTMENT PROJECT

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Acronyms

BHU	Basic Health Unit	MICS	Multiple Indicator Cluster Surveys
BMI	Body Mass Index	MO	Medical Officer
CITES	Convention on International	MO	Medical Officer
	Trade in Endangered Species	MEAs	Monitoring & Evaluation Assistants
CTF	Combined Treatment Facility	MSM	Men who have sex with men
DFID	Department for International Development	MS	Medical Superintendent
DHQ	District Head Quarter (Hospital)	M&E	Monitoring and evaluation
DoH	Department of Health	NEQS	National Environmental Quality Standards
DMO	District Monitoring Officer	NGO	Non-governmental organizations
EA	Environmental Assessment	OPD	Out patients department
ECA	Employment of Child Act	Pak-EPA	Pakistan Environmental Protection agency
CEO	Chief Executive Officer	PEPA	Pakistan Environmental Protection Act
HCWMS	HealthCare Waste Management Specialist	PEPC	Pakistan Environmental Protection Council
EIA	Environmental Impact assessment	PHSRP	Punjab Health Sector Reforms Program
EMP	Environmental management plan	POPs	Persistent Organic Pollutants
EHCWMP	Environmental Healthcare waste Management Plan	PPE	Personal protective equipment
EPA	Environmental Protection Agency	PRSP	Punjab Rural Support Program
HCW	Health Care Waste	RHC	Rural Health Centre
HCWM	Health care waste management	SIM	Sector Investment and Maintenance (Loan)
HNP	Health, Nutrition and Population	THQ	Tehsil Head Quarter (Hospital)
HSRU	Health Sector Reform Unit	ToT	Training of Trainers
IEE	Initial Environmental Examination	WB	World Bank
IMR	Infant Mortality Rate	WMO	Waste Management Officer
LAA	Land Acquisition Act	WMP	Waste management plan
RHC	Rural Health Center	WMT	Waste Management Team

EXECUTIVE SUMMARY

This document presents the Environmental and Health Care Waste Management Plan (EHCWMP) of the proposed Punjab Human Capital Investment Project (PHCIP) being initiated by Primary & Secondary Health Department (PSHD), Government of Punjab (GoPb), and being considered for financing by World Bank (WB). The present EHCWMP has been prepared in compliance with the national regulatory requirements and WB Operational Policies.

The Project[1]

Project Development Objective (PDO)

The proposed project development objective (PDO) is to increase the utilization of quality health services, and economic and social inclusion programs, among poor and vulnerable households in select districts in Punjab.

Project Components

The Project has following three components with brief description provided below[2]:

Component 1 : Health services quality and utilization: The ultimate goal of this component's activities is to improve children's health, especially those coming from poor and vulnerable households. Thus, this component aims to address short-term health challenges by improving the quality and utilization of key health services that are critical to a strong start in a child's first 1,000 days.

Sub-component 1.1: Quality of health services: This sub-component will strengthen primary health-care facilities to provide quality services. To ensure that key health services are of good quality, support will be provided for each targeted health facility to meet the minimum service delivery standards (MSDS). For this purpose, about 75 percent of existing normal Basic Health Units (BHUs) in the target districts will be upgraded to 24/7 BHUs to provide services around the clock, every day of the week. Also, selected Rural Health Centers (RHCs) will be upgraded to RHC Plus to intensify neonatal care on a pilot basis. Any facilities that will be rehabilitated under the project will also include measures (e.g., a wheelchair ramp) to facilitate access to health care by persons with different abilities.

Sub-component 1.2: Utilization of health services: This sub-component aims to increase the utilization of key health services among the poor and vulnerable. For this purpose, a nutrition-

[1] PHCIP PAD
[2] PAD-PHCIP

sensitive CCT program, compensating for the financial and non-financial costs of visiting health facilities, is being planned in selected districts of Punjab.

On safeguard perspective (environmental and social), the relevant project activities under this component such as refurbishing, rehabilitations and up-gradation of existing BHUs/RHCs and greater utilization of health facilities are expected to result in increased health-care waste.

Component 2: Economic and social inclusion: Supplementary activities to improve households' economic and social inclusion would be introduced. These can also contribute to building early childhood human capital among poverty-stricken households.

Sub-component 2.1: Economic inclusion: This sub-component aims to support income-generating activities of young parents (ages 18 to 29) from poor and vulnerable households who have children under the age of 5. A holistic package of efforts to support their economic inclusion will be provided, and this includes (i) the labor market (LM) readiness package, (ii) livelihood support, and (iii) intensive coaching. *PSPA will lead these activities by working with local NGOs and community support groups*.

Sub-component 2.2: Social inclusion for education: This sub-component aims to strengthen select education initiatives in Punjab to support the inclusion of poor and vulnerable households and help ensure their children build a strong foundation for social and economic success in the future. An existing program in Punjab relevant for human capital accumulation in the early and foundational years includes ECE (Early Childhood Education). There are 3,400 ECE classrooms in the project's target districts and communities, but most of them do not meet the minimum ECE Quality Standards prescribed in the 2017 Punjab ECE Policy. In order to ensure access to quality ECE in these disadvantaged districts, the School Education Department (SED) has identified a number of interventions to improve the ECE model, including provision of quality teaching and learning materials and improved teacher training.

On safeguard perspective (environmental and social), the relevant project activities under this component include up-grading of the quality of ECE in existing class rooms in the selected PHCIP districts[3].

Component 3: Efficiency and sustainability through SP service delivery systems and project management: To improve the efficiency and sustainability of Punjab's interventions for poor and vulnerable households, the existing SP service delivery and governance structures will be modernized and strengthened. To this end, the proposed project will support improved

[3]Early Childhood Education conducive class rooms

coordination, modernization, and interoperability of SP institutional and administrative arrangements, and turn these into an efficient and cutting-edge SP service delivery platform.

Policy & Regulatory Framework

The present Plan has been prepared in compliance with the World Bank Operational Policy 4.01, which requires environmental assessment of projects proposed for Bank financing. The Plan essentially seeks to effectively implement the Hospital Waste Management Rules 2014 framed by GoPb. The Plan also broadly complies with the Pakistan Environmental Protection Act, 1997, which requires proponents of every development project in the country to submit either an Initial Environmental Examination or an Environmental Impact Assessment to the concerned environmental protection agency.

Study Objectives

The main objective of this assignment is to institutionalize environment and healthcare waste management plan in primary healthcare settings supported by World Bank[4]. The study includes carrying out a situation assessment of the prevailing medical waste management practices in the government healthcare facilities in the Province and preparing an environment and healthcare waste management plan for these facilities.

Situation Assessment

The current situation of the medical waste management has been assessed based upon: (a) the literature review; (b) experience of the recently closed WB supported Punjab Health Sector Reform Program (PHRSP; and (c) as well as field observations during visits to healthcare facilities in the province, as part of conducting this study. The key findings are described here below:

a) **Literature review**. A comprehensive country-wide survey was conducted in May2007 covering a total of 78 health care facilities in four provinces, Azad Jammu and Kashmir, and Federal capital area. The study confirmed the dismal state of medical waste management in the country. The study results showed that only 30 percent of hospitals surveyed had Health Care Waste Management (HCWM) teams or Infection Control Teams in place; 41 percent had the guidelines or internal rules of the health care waste management; only 27 percent had the plan for healthcare waste management (HCWM) and of these, only 12 percent were applying the program for assessing the

[4] Though it has been planned for WB supported facilities, but general guidelines presented in the document could be used for other primary HCFs, while taking care of the environmental and socio-economic context

health care waste (HCW); 23 percent of the hospitals had regular training programs on the HCWM, and a similar percentage had received training on HCWM; about 67 percent of staff were aware about the hazards of HCW and its associated risk factors; and routine health surveillance for the staff was available in only 22 percent and reporting system existed in only 33 percent of the facilities. Another study from Lahore highlighted that the majority (85.5 percent) of sweepers were aware that the job is harmful for their health; however they had to continue it for economic reasons. About 71 percent sweepers did not use any protective covering and thought that only rich nations take such measures. Most of the employee did not understand the meaning of "training" and only 14.5 percent of employees were trained by the hospital authorities. As reported by sweepers, the most detrimental aspect of hospital waste management was that hospital management failed to take precautions for waste disposal. The majority (76.4 percent) of sweepers stated that hospital waste is directly thrown into the waste bins and 23.6 percent said that part of the waste gets incinerated and rest gets recycled.

b) **Experience of Punjab Health Sector Reform Program (PHRSP):** *Punjab Health Sector Reform Program and Implementation of Hospital waste Management Rules, 2014 in selected 17 districts of Punjab***.** Based on the grave situation of healthcare waste management, as assessed in a country-wide survey (2007), an "Environmental Health and Medical Waste Management Plan" (EH&MWMP) was developed in 2013 by Policy & Strategic Planning Unit and implementation was agreed with the World Bank for the achievement of agreed disbursement linked indicators (DLIs) while implementing PHRSP. The EMWMP was prepared in compliance with the national regulatory requirements and WB Operational Policies. The Plan was prepared to effectively implement the Hospital Waste Management Rules, framed by the Government of Pakistan in 2005 and adapted by GoPb in 2014.The plan was divided in to two phases. Phase-1 was to implement the HWM Rules, 2014 in pilot health care facilities in two districts; while the phase-2 was the scale up plan to replicate the same practices in the health care facilities (DHQs/THQs) of the selected 15 districts of the province. The effective implementation of this EHCWMP contributed in achieving the DLIs successfully. The DLIs were achieved successfully and disbursement was made to the GoPb after the physical verification of implemented process by Bank and a good third

-party validation report was submitted by PSPU (PHSRP). The results of the TPV are described at section-5.The preparation of this document largely benefitted from PHRSP's EHCWMP, which was successfully tested in the field of secondary healthcare facilities by the Department of Health.

c) **Field Assessment** ***Healthcare waste management at Primary Healthcare facilities:*** Hospital waste management through PHSRP was implemented in DHQs/THQs of the province. The primary healthcare facilities (PHFs) were not included in the program, however master trainers from all primary healthcare facilities were trained across Punjab.

To assess the situation regarding the waste management at PHFs a rapid assessment was conducted in the selected 11 districts of Punjab. The data was collected through a standardized check list (duly approved by PHSRP, EDP and PHC). The field assessment results showed a dismal situation of waste management both at RHCs and BHUs. Less than 20% RHCs have notified waste management committees and no meetings were observed at RHCs and BHUs. No segregation of waste by color, and improper color coding were observed at health facilities. Only 30 % RHCs and 26% BHUs had placed color-coded waste bins for different categories of waste. Waste was not properly stored at wards levels and no record was maintained in properly color-coding registers. In addition, waste was not transported through dedicated four-wheeled trolleys it was observed that waste was being transported in open waste bags, and burnt in open air, thereby polluting the surrounding air. At RHCs waste was not found to be stored properly and it was mixed with municipal waste stream and disposed at dump sites. A large quantity of the waste was being burnt in the vicinity of the RHCs as a final disposal. No proper burial pits are constructed for the environment friendly disposal of the gynae and OT waste. Personal protection was also compromised -mostly healthcare works were not immunized against infectious diseases.

Impacts & Mitigation

Hazards for Health

The health hazards for staff, patients, and nearby communities are by far the most significant potential risk associated with the healthcare facility operation. These are mostly caused by not following the infection control protocols, not using proper personal protective equipment (PPE), and not employing proper procedures for HCW collection, transportation, storage, and final disposal. In addition, recycling of medical waste also poses very serious health risks for the workers involved in recycling and also consumers using these recycled products.

Mitigation. Proper management of HCW and effective implementation of the Hospital Waste Management Rules of 2014 can minimize the risks, both within and outside healthcare facilities. The first priority is to segregate wastes, preferably at the point of generation, into reusable and non-reusable, hazardous and non-hazardous components. Other important steps are the institution of a sharps management system for the handling of sharp items, waste reduction, avoidance of hazardous substances whenever possible, ensuring worker safety, providing secure methods of waste collection and transportation, and installing safe treatment and disposal mechanisms.

Safety Hazards

Impacts Safety hazards in the healthcare facilities are generally associated with handling of sharps (needles, cutters), gases, autoclaves, and other similar equipment. Open burning of HCW also poses safety risks for the staff carrying out this activity. These hazards include risk of cuts, pricks, gas poisoning, burning, and other bodily injuries. The healthcare facility staffs as well as patients are susceptible to these safety hazards.

Mitigation. Strictly following standard operating procedures to handle sharps and proper use of PPE particularly prick-proof gloves and masks is of foremost importance to avoid safety hazards associated with sharps, gases, and others. In addition, thick/puncture resistant plastic bags to collect HCW and rigid/puncture proof boxes to dispose needles/other sharps will be used.

Soil and Water Contamination

Impacts. Soil and water contamination can be caused by the direct burial of infectious wastes within the facility premises, or at the municipal waste dumping site if the healthcare waste is

disposed along with municipal waste. Open burning of infectious waste can also potentially cause soil contamination. Improper sewage disposal at the healthcare facility can also contaminate soil.

Mitigation. The infectious waste will be segregated from the other non-infectious waste and will not be sent to the municipal waste dumping site/landfill, except where dedicated landfill for medical waste is available. If on-site burial of infectious waste is carried out, it will be done in lined pits. The sewage from the healthcare facilities within the cities will be discharged in city sewerage, otherwise on-site treatment such as septic tank and soaking pit will be upgraded according to international standards.

Air Quality Deterioration

Impacts. Air quality deterioration can take place by open burning of the HCW. Similarly, incineration of infectious waste can also pollute the air. Of particular concern are dioxins which are produced by burning of the plastic and polyethylene products. The dioxins are carcinogenic and can affect the healthcare facility staff carrying out the waste burning, other nearby staff, patients, and nearby communities. Open burning of the HCW particularly if it contains plastics/polyethylene will be avoided since it produces dioxins in addition to other toxic gases.

Mitigation. If infectious waste is incinerated, then it will be ensured that:

i)incinerators specifically designed for HCW are used;

ii) properly trained staff operate the incinerators according to standard operating procedures;

iii) appropriately high(more than 1200°C) temperature is achieved in the incinerator to avoid dioxin discharge;

iv) the flue gases are properly treated (e.g. with the help of water scrubbers) before their release to the atmosphere;

and v) there is no leakage of gases from the first chamber of the incinerator to avoid any release of dioxins before they can be destroyed in the second chamber.

Healthcare Management Plan

Institutional arrangements. The overall responsibility of implementing the environmental and healthcare waste management issues particularly the present HCWMP will rest with the CEO

Punjab Health facility Management Company (PHFMC), Within PHFMC, a dedicated; fulltime Health Care Waste Management Specialist(HCWMS) will be appointed as the Health Care Waste Management Focal Point (HCWMFP). At the district level, the Chief Executive Officer – Health (CEO-Health) of each district will be the focal point for performing/supervising the environment and healthcare waste management functions particularly implementing the present EHCWMP in the respective district. Finally, at the facility level, the Waste Management Officer (WMO) will be designated as the focal point for EHCWMP implementation. In addition, a Waste Management Team (WMT) will be constituted in each healthcare facility[5], and an appropriate officer designated as WMO in accordance with the Hospital Waste Management Rules of 2014.

Hospital Waste Management Plan. Each healthcare facility will prepare and implement a waste management plan (WMP), in accordance with the Hospital Waste Management Rules of 2014 and as suggested by this document. The facility specific Plan will include: i) a plan/layout of the healthcare facility showing waste disposal points for every ward and department, indicating whether each point is for risk waste or non-risk waste, and showing the sites for central storage facility for risk waste and central storage facility/arrangements for non-risk waste; ii) details of the types, numbers, and estimated cost of containers, waste bags, and trolleys required annually; iii) timetable including frequency of waste collection from each ward and department; iv) duties and responsibilities of each category of healthcare facility staff involved in waste generation and management; v) an estimate of number of staff required for waste management; vi) procedures for the management of waste requiring treatment such as autoclaving before final disposal; planned waste disposal sites/methods; viii) contingency plans for storage or disposal of risk waste in the event of breakdown of incinerators; ix) training courses and program on waste management; and x) emergency procedures. Comprehensive documentation will be maintained for the implementation of each element of the WMP.

Environmental management plan. A site-specific environmental management plan(EMP) will be prepared[6] and implemented for each facility to be renovated or rehabilitated as suggested in the PHCIP ESMF.

[5] The committee may comprise of 3-5 members as per designated staff. At BHU it comprises of MO, Staff Nurse and Sanitary supervisor; while at RHC, SMO will head this committee and will also act as Focal Person, other members include: MOs, Infection Control Nurse and Sanitary Supervisor.

[6] This plan may be integrated with WMP as a one document for convenience and practical purposes.

Monitoring. The facility level monitoring will be carried out on the basis of the WMP and EMP of each facility. Monitoring checklists will be prepared on the basis of these Plans, to be filled periodically. The district level monitoring will be carried out with the help of Monitoring and Evaluation Assistants (MEAs) who already conduct monitoring of the DoH‟s healthcare facilities in their respective districts. In addition to the above, the CEO (Health) and his/her staff will also conduct random monitoring of the EHCWMP in healthcare facilities. The HCWMS will also carry out random visits of the healthcare facilities in the Province to monitor the Plan implementation.

Review of Plan and Third-Party Validation. The PIU/DoH will conduct an internal review and commission a third-party validation (TPV) of the EHCWMP implementation on an annual basis. On the basis of these reviews, the EHCWMP may need to be revised and updated.

Capacity Building. The facility-level capacity building will be an integral part of the WMP discussed above. At the provincial level, the PIU/DoH will plan and conduct training of trainers (ToT) for the selected relevant staff particularly WMT members from each district on the EHCWMP implementation.

Documentation. The WMP of each facility will define the facility-level documentation requirements for EHCWMP implementation. At the district level, the EDO (Health) will compile the District EMWMP report on a monthly basis and send it to the PIU. The MEAs through DMOs will also send their filled checklists/data to the HSRU. At the provincial level, the MWMFP will compile the reports received from the CEOs(Health) and prepare overall project reports on EHCWMP implementation on quarterly basis. These reports can be combined with the reports on infection control plan implementation.

EHCWMP Implementation Approach

Implementation of the EHCWMP will be carried out in close coordination with the implementation of Hepatitis & Infection Control Program Punjab. The infection control program Punjab is now implementing the hospital waste management rules, 2014 in all DHQs/THQs across the Punjab through an outsourced Firm. The firm collects segregates, store and transport the waste to disposal sites. Daily waste generation and disposal of the waste is maintained through Electronic Medical Records (EMR). At primary healthcare facilities the PHFMC will work in close coordination with H&ICP to implement the same protocols while collecting and disposing the waste by outsourced firm.

EHCWMP Implementation Cost

The cost for EHCWMP implementation has been estimated to be **PKR 26.78 million**. This includes the cost of EHCWMP, TPV, and capacity building at provincial and district level. The detailed district-wise budgets need to be prepared after the preparation of the WMPs for each facility.

حکومت پنجاب

پرائمری اور ثانوی صحت کی دیکھ بھال کا ادارہ

پنجاب کے ماحولیاتی اور ہسپتالوں سے متعلقہ فضلات کے انتظام کا منصوبہ
انسانی سرمایہ کا ری کا منصوبہ

عملی خلاصہ

یہ دستاویز مجوزہ پنجاب ہیومن کیپٹل انویسٹمنٹ پروجیکٹ (پی ایچ سی آئی پی) کا ماحولیاتی اور صحت کی دیکھ بھال کے ضیاع کے انتظاماتی منصوبے (پی ایچ سی آئی پی) کو پیش کرتی ہے جو پرائمری اینڈ سیکنڈری ہیلتھ ڈیپارٹمنٹ (پی ایس ایچ ڈی) ، حکومت پنجاب (جی او پی بی) کے ذریعہ شروع کی گئی ہے ، اور اس کے لئے مالی اعانت کے لئے غور کیا جارہا ہے۔ ورلڈ بینک (WB) موجودہ EHCWMP قومی ضابطہ کار کی ضروریات اور WB آپریشنل پالیسیوں کی تعمیل میں تیار کیا گیا ہے۔

پروجیکٹ ڈویلپمنٹ کا مقصد (PDO)

مجوزہ منصوبے کی ترقی کا مقصد (PDO) پنجاب کے منتخب اضلاع میں غریب اور کمزور گھرانوں میں معیاری صحت کی خدمات ، اور معاشی اور سماجی شمولیت کے پروگراموں کے استعمال میں اضافہ کرنا ہے

منصوبہ

پروجیکٹ کے اجزا

پروجیکٹ کے ذیل میں مختصر وضاحت کے ساتھ تین اجزا درج ہیں:

اجزاء 1: صحت کی خدمات کے معیار اور استعمال:

اس جزو کی سرگرمیوں کا حتمی مقصد بچوں کی صحت کو بہتر بنانا ہے ، خاص کر غریب اور کمزور گھرانوں سے آنے والے افراد کی۔ اس طرح ، اس جز کا مقصد اہم صحت کی خدمات کے معیار اور استعمال کو بہتر بناتے ہوئے قلیل مدتی صحت کے چیلنجوں سے نمٹنا ہے جو بچے کے پہلے ایک ہزار دن میں مضبوط آغاز کے لئے اہم ہیں۔

ذیلی جزو 1.1: صحت کی خدمات کا معیار:

یہ ذیلی اجزا صحت کی دیکھ بھال کرنے والی بنیادی سہولیات کو معیاری خدمات فراہم کرنے کے لئے مضبوط بنائے گا۔ اس بات کو یقینی بنانے کے لئے کہ کلیدی صحت کی خدمات اچھے معیار کی ہوں ، کم سے کم سروس کی فراہمی کے معیار (ایم ایس ڈی ایس) کو پورا کرنے کے لئے ہر ہدف صحت کی سہولت کے لئے مدد فراہم کی جائے گی۔ اس مقصد کے لئے ، ہدف والے اضلاع میں تقریبا 75 normal فیصد موجودہ عام بنیادی ہیلتھ یونٹس (بی ایچ یو) کو 7/24 بی ایچ یو میں اپ گریڈ کیا جائے گا تاکہ ہفتے کے ہر دن چوبیس گھنٹے خدمات فراہم کی جاسکیں۔ نیز ، پیدائشی بنیادوں پر نوزائیدہ دیکھ بھال کو تیز کرنے کے لئے منتخب دیہی صحت مراکز (آر ایچ سی) کو RHC Plus میں اپ گریڈ کیا جائے گا۔ کسی بھی سہولیات کے تحت بحالی کی جائے گی ۔منصوبے میں مختلف صلاحیتوں والے افراد کے ذریعہ صحت کی دیکھ بھال تک رسائی کی سہولت کے لیے اقدامات (جیسے ، وہیل چیئر ریمپ) بھی شامل ہوں گے۔

ذیلی اجزاء 1.2: صحت کی خدمات کا استعمال:

اس ذیلی اجزا کا مقصد غریبوں اور کمزور لوگوں میں کلیدی صحت کی خدمات کے استعمال کو بڑھانا ہے۔ اس مقصد کے لئے ، ایک غذائیت سے متعلق حساس سی سی ٹی پروگرام ، پنجاب کے منتخب اضلاع میں صحت کی سہولیات کا دورہ کرنے کے مالی اور غیر مالی اخراجات کی تلافی کرنے کا منصوبہ بنا رہا ہے۔حفاظتی نقطہ نظر (ماحولیاتی اور معاشرتی) پر ، اس جز کے تحت متعلقہ پروجیکٹ کی سرگرمیاں جیسے بحالی ، بحالی اور موجودہ BHUs / RHCs کی اپ گریڈیشن اور صحت کی سہولیات کے زیادہ سے زیادہ استعمال سے صحت کی دیکھ بھال کے فضلہ میں اضافے کی توقع کی جاتی ہے۔

اجزاء 2: معاشی اور معاشرتی شمولیت:

گھرانوں کی معاشی اور معاشرتی شمولیت کو بہتر بنانے کے لئے اضافی سرگرمیاں متعارف کروائی جائیں گی۔ یہ غربت زدہ گھرانوں میں ابتدائی بچپن میں انسانی سرمائے کی تعمیر میں بھی معاون ثابت ہوسکتے ہیں۔

ذیلی اجزاء 2.1: معاشی شمولیت:

اس ذیلی اجزاء کا مقصد نوجوان والدین (18 سے 29 سال کی عمر تک) کی آمدنی پیدا کرنے والی سرگرمیوں کی حمایت کرنا ہے جو 5 سال سے کم عمر کے بچے ہیں۔ معاشی شمولیت فراہم کی جائے گی ، اور اس میں (i) لیبر مارکیٹ (ایل ایم) کے لئے تیاری کا پیکج ، (ii) معاش کا سہارا ، اور (iii) انتہائی کوچنگ شامل ہے۔ پی ایس پی اے مقامی این جی اوز اور کمیونٹی سپورٹ گروپس کے ساتھ مل کر ان سرگرمیوں کی قیادت کرے گی۔

ذیلی جزو 2.2: تعلیم کے لئے معاشرتی شمولیت:

اس ذیلی اجزا کا مقصد پنجاب میں غریب اور کمزور گھرانوں کی شمولیت کی حمایت کرنے کے لئے منتخب تعلیمی اقدامات کو مضبوط بنانا ہے اور مستقبل میں معاشرتی اور معاشی کامیابی کے لئے اپنے بچوں کو ایک مضبوط بنیاد بنانے میں مدد کرنے کے لئے ان کی مدد کرنا ہے۔ پنجاب میں دو موجودہ تعلیمی پروگرام جو ابتدائی اور بنیاد سالوں میں انسانی سرمایہ جمع کرنے کے لئے موزوں ہیں ان میں شامل ہیں: ای سی ای (ابتدائی بچپن کی تعلیم) اور ابتدائی گریڈ لرننگ (گریڈ 1-3)۔ منصوبے کے ہدف والے اضلاع اور کمیونٹیز میں 3،400 ای سی ای کے کلاس روم ہیں ، لیکن ان میں سے سبھی 2017 کی ای سی ای پالیسی میں طے شدہ کم سے کم ای سی ای معیار کے معیار پر پورا نہیں اترتے ہیں۔ مزید برآں ، ای سی ای تک رسائی کی پیمائش کے عمل میں ، اسکول ایجوکیشن ڈیپارٹمنٹ (ایس ای ای ڈی) نے ای سی ای ماڈل کو بہتر بنانے کے لئے متعدد مداخلتوں کی نشاندہی کی ہے۔ اس طرح ، اس پروجیکٹ کے ذریعے ، ایس ای ڈی کا مقصد اس منصوبے کے اضلاع میں موجود کلاس رومز کے معیار کو مزید مستحکم کرنا ہے۔

حفاظتی نقطہ نظر (ماحولیاتی اور معاشرتی) پر ، اس جز کے تحت متعلقہ پروجیکٹ کی سرگرمیوں میں ECE کلاس رومز کے قیام کے لئے موجودہ اسکولوں میں کلاس رومز کی تجدید اور اپ گریڈنگ شامل ہے۔

اجزاء 3: ایس پی سروس کی ترسیل کے نظام اور پروجیکٹ مینجمنٹ کے ذریعہ استعداد اور استحکام:

غریباور کمزور گھرانوں کے لئے پنجاب کی مداخلت کی کارکردگی اور استحکام کو بہتر بنانے کے لئے ، موجودہ ایس پی سروس کی فراہمی اور گورننس ڈھانچے کو جدید اور مستحکم بنایا جائے گا۔ اس مقصد کے لئے ، مجوزہ پروجیکٹ ایس پی کے ادارہ جاتی اور انتظامی انتظامات میں بہتر کوآرڈینیشن ، جدید کاری ، اور باہمی تعاون کی حمایت کرے گا اور ان کو ایک موثر اور جدید ترین ایس پی سروس ڈلیوری پلیٹ فارم میں تبدیل کرے گا۔

پالیسی اور ریگولیٹری فریم ورک

موجودہ منصوبہ عالمی بینک آپریشنل پالیسی 4.01 کی تعمیل میں تیار کیا گیا ہے ، جس میں بینک کی مالی اعانت کے لئے تجویز کردہ منصوبوں کے ماحولیاتی تشخیص کی ضرورت ہے۔ اس منصوبے میں ضروری ہے کہ وہ GoPb کے ذریعہ تیار کردہ ہسپتال کے کچرے کے انتظام کے قواعد 2014 کو موثر انداز میں نافذ کرے۔ اس منصوبے میں پاکستان انوائرمنٹل پروٹیکشن ایکٹ 1997 کی بھی وسیع پیمانے پر تعمیل کی گئی ہے ، جس کے تحت ملک کے ہر ترقیاتی منصوبے کے حامیوں کو ماحولیاتی تحفظ کی متعلقہ ایجنسی کو ابتدائی ماحولیاتی امتحان یا ماحولیاتی اثرات کا اندازہ پیش کرنے کی ضرورت ہے۔

مطالعہ کے مقاصد

اس تفویض کا بنیادی مقصد عالمی بینک کے ذریعہ تعاون یافتہ صحت کی دیکھ بھال کی ترتیبات میں ماحولیات اور صحت سے متعلق فضلہ کے انتظام کے منصوبے کو ادارہ بنانا ہے۔ اس مطالعے میں صوبے میں سرکاری صحت کی سہولیات میں موجود طبی فضلہ کے انتظام کے طریق کار کی صورتحال کا جائزہ لینا اور ان سہولیات کے لئے ماحولیات اور صحت سے متعلق فضلہ کے انتظام کا منصوبہ تیار کرنا بھی شامل ہے۔

صورتحال کا اندازہ

طبی فضلہ کے انتظام کی موجودہ صورتحال کا اندازہ اسی بنیاد پر کیا گیا ہے: (ا) ادب کا جائزہ؛ (ب) حال ہی میں بند ڈبلیو بی کے تجربہ نے پنجاب ہیلتھ سیکٹر ریفارم پروگرام (پی ایچ آر ایس پی؛ اور (سی) کے ساتھ ساتھ دوروں کے دوران فیلڈ مشاہدات کی حمایت کی۔

اس مطالعے کے انعقاد کے تحت صوبے میں صحت کی سہولیات۔ کلیدی نتائج کو ذیل میں بیان کیا گیا ہے۔

a) ادب کا جائزہ۔ مئی ۲۰۰7 میں چار صوبوں ، آزاد جموں و کشمیر ، اور وفاقی دارالحکومت کے علاقوں میں صحت کی دیکھ بھال کی کل سہولیات پر محیط ایک جامع ملک گیر سروے کیا گیا۔ اس تحقیق نے ملک میں طبی فضلہ کے انتظام کی خراب حالت کی تصدیق کی ہے۔ مطالعے کے نتائج سے معلوم ہوا ہے کہ سروے کیے گئے صرف 30 فیصد اسپتالوں میں ہیلتھ کیئر ویسٹ مینجمنٹ (ایچ سی ڈبلیو ایم) کی ٹیمیں یا انفیکشن کنٹرول ٹیمیں موجود ہیں۔ 41 فیصد کے پاس صحت کی دیکھ بھال کے فضلہ کے انتظام کے رہنما خطوط یا داخلی اصول تھے۔ صرف 27 فیصد کے پاس صحت کی دیکھ

بھال کے فضلے کے انتظام (HCWM) کے لئے منصوبہ تھا اور ان میں سے صرف 12 فیصد صحت کی دیکھ بھال کے فضلے (HCW) کا اندازہ کرنے کے لئے اس پروگرام کو استعمال کر رہے تھے۔ 23 فیصد اسپتالوں میں HCWM پر باقاعدہ تربیتی پروگرام تھے ، اور اسی طرح کے فیصد نے HCWM پر تربیت حاصل کی تھی۔ تقریبا 67 67 فیصد عملہ HCW کے خطرات اور اس سے وابستہ خطرے کے عوامل سے آگاہ تھا؛ اور عملے کے لئے معمول کی صحت کی نگرانی صرف 22 فیصد میں دستیاب تھی اور رپورٹنگ کا نظام صرف 33 فیصد سہولیات میں موجود تھا۔ لاہور سے ہونے والی ایک اور تحقیق میں روشنی ڈالی گئی کہ جھاڑو دینے والوں کی اکثریت (85.5 فیصد) جانتی ہے کہ یہ ملازمت ان کی صحت کے لئے نقصان دہ ہے۔ تاہم انہیں معاشی وجوہات کی بناء پر اسے جاری رکھنا پڑا۔ تقریبا 71 71 فیصد جھاڑو دینے والوں نے کوئی حفاظتی احاطہ استعمال نہیں کیا اور یہ خیال کیا کہ صرف دولت مند قومیں ہی ایسے اقدامات کرتی ہیں۔ زیادہ تر ملازمین کو "تربیت" کے معنی نہیں سمجھتے تھے اور صرف 14.5 فیصد ملازمین کو اسپتال کے حکام نے تربیت دی تھی۔ جیسا کہ جھاڑو صاف کرنے والوں کے ذریعہ اطلاع دی گئی ہے ، ہسپتال کے کچرے کے انتظام کا سب سے زیادہ نقصان دہ پہلو یہ تھا کہ ہسپتال انتظامیہ کوڑے کے تلف ہونے کے لئے احتیاط برتنے میں ناکام رہی۔ جھاڑو دینے والوں میں سے اکثریت (76.4 فیصد) نے بتایا ہے کہ ہسپتال کا فضلہ براہ راست کچرے کے ڈبوں میں ڈال دیا جاتا ہے اور 23.6 فیصد نے کہا کہ اس کوڑے دان کا حص inc ہ بھڑک جاتا ہے اور باقی چیزوں کو ری سائیکل کیا جاتا ہے۔

b) پنجاب ہیلتھ سیکٹر ریفارم پروگرام (پی ایچ آر ایس پی) کا تجربہ: پنجاب کے ہیلتھ سیکٹر ریفارم پروگرام اورپنجاب کے منتخبہ 17 اضلاع میں ہسپتال کے کچرے کے انتظام کے قواعد ، 2014 پر عملدرآمد۔ صحت کی دیکھ بھال کے فضلہ کی سنگین صورتحال کی بنیاد پر مینجمنٹ ، جیسا کہ ایک ملک وسیع سروے (2007) میں اندازہ کیا گیا ہے ، پالیسی اور اسٹریٹجکپلاننگ یونٹ کے ذریعہ ایک "ماحولیاتی صحت اور میڈیکل ویسٹ مینجمنٹ پلان" 2013 (EH & MWMP) میں تیار کیا گیا تھا اور اس پر عمل درآمد پر اتفاق رائے کے حصول کے لئے عالمی بینک سے اتفاق کیا گیا تھا۔ پی ایچ آر ایس پی کو نافذ کرتے ہوئے منسلک اشارے (ڈی ایل آئی) سے متعلق ادائیگی کریں۔ ای ایم ڈبلیو ایم پی قومی ضابطہ کار کی ضروریات اور ڈبلیو بی آپریشنل پالیسیوں کی تعمیل میں تیار کیا گیا تھا۔ یہ منصوبہ حکومت پاکستان کی جانب سے 2005 میں تیار کردہ اور 2014 میں جی او پی کے ذریعہ وضع کردہ اسپتال ویسٹ مینجمنٹ قواعد کو موثر انداز میں نافذ کرنے کے لئے تیار کیا گیا تھا۔ دو مراحل فیز 1 میں دو اضلاع میں پائلٹ صحت کی دیکھ بھال کی سہولیات میں HWM قواعد ، 2014 کو نافذ کرنا تھا۔ جبکہ مرحلہ 2 اس منصوبے کو صوبے کے منتخب 15 اضلاع کی صحت کی دیکھ بھال کی سہولیات (DHQs / THQs) میں نقل تیار کرنے کا منصوبہ تھا۔ اس EHCWMP کے موثر نفاذ نے DLs کو کامیابی کے ساتھ حاصل کرنے میں معاون ثابت کیا۔ بینک کے ذریعہ عملدرآمد کی جسمانی توثیق کے بعد ڈی ایل آئی کو کامیابی کے ساتھ حاصل کیا گیا اور جی او پی بی کو تقسیم کیا گیا اور پی ایس پی یو (پی ایچ ایس آر پی) کے ذریعہ ایک اچھی تیسری پارٹی کی توثیق کی رپورٹ پیش کی گئی۔ ٹی پی وی کے نتائج کو سیکشن 5 میں بیان کیا گیا ہے۔ اس دستاویز کی تیاری کا بڑی حد تک پی ایچ آر ایس پی کے ای ایچ سی ڈبلیو ایم پی سے فائدہ اٹھایا گیا ، جس کا محکمہ صحت نے ثانوی صحت کی سہولیات کے میدان میں کامیابی کے ساتھ تجربہ کیا۔

ج) ابتدائی صحت کی دیکھ بھال کی سہولیات میں فیلڈ تشخیص صحت کی دیکھ بھال کے فضلہ کے انتظام: صوبہ کے ڈی ایچ کیو / ٹی ایچ کیو میں پی ایچ ایس آر پی کے توسط سے ہسپتال کے فضلہ

کے انتظام کو نافذ کیا گیا۔ پروگرام میں صحت کی بنیادی سہولیات (پی ایچ ایف) کو شامل نہیں کیا گیا تھا ، تاہم تمام بنیادی صحت کی سہولیات سے ماسٹر ٹرینرز کو پنجاب بھر میں تربیت دی گئی تھی۔

پی ایچ ایف میں کچرے کے انتظام سے متعلق صورتحال کا جائزہ لینے کے لئے پنجاب کے منتخب 11 اضلاع میں تیزی سے جائزہ لیا گیا۔ اعداد و شمار کو ایک معیاری چیک لسٹ کے ذریعے اکٹھا کیا گیا تھا (پی ایچ ایس آر پی ، ای ڈی پی اور پی ایچ سی کے ذریعہ منظور شدہ)۔ فیلڈ تشخیص کے نتائج نے آر ایچ سی اور BHUs دونوں پر فضلہ کے انتظام کی مایوس کن صورتحال کا مظاہرہ کیا۔ 20٪ سے بھی کم RHCs نے کچرے سے متعلق انتظامی کمیٹیوں کو مطلع کیا ہے اور RHCs اور BHUs میں کوئی میٹنگ نہیں دیکھی گئی۔ رنگ کے ذریعہ فضلہ کو الگ نہ کرنا اورصحت کی سہولیات پر رنگین کوڈنگ کا غلط استعمال کیا گیا۔ صرف 30 R RHCs اور 26٪ BHUs نے مختلف قسم کے فضلہ کے لئے رنگین کوڈڈ فضلہ کے ڈبے رکھے تھے۔ وارڈوں کی سطح پر کچرے کو صحیح طریقے سے ذخیرہ نہیں کیا گیا تھا اور رنگین کوڈنگ رجسٹروں میں کسی ریکارڈ کو برقرار نہیں رکھا گیا تھا۔ اس کے علاوہ ، وقف کو چار پہیے والی ٹرالیوں کے ذریعہ بھی نہیں پہنچایا گیا تھا جس میں یہ مشاہدہ کیا گیا تھا کہ کچرے کو کھلے کچرے کے تھیلے میں لے جایا جارہا تھا ، اور کھلی ہوا میں جلایا گیا تھا ، جس سے آس پاس کی ہوا کو آلودہ کیا جاتا تھا۔ RHCs میں فضلہ ٹھیک سے ذخیرہ کرنے کے لئے نہیں پایا گیا تھا اور اسے میونسپل فضلہ ندی کے ساتھ ملایا گیا تھا اور ڈمپ سائٹوں پر ٹھکانے لگایا گیا تھا۔ حتمی ضائع ہونے کے ناطے آر ایچ سی کے آس پاس میں کثیر مقدار میں کچرا جلایا جارہا تھا۔ گیانا اور او ٹی فضلہ کے ماحول دوست تصفیے کے لئے تدفین کے مناسب گڑھے نہیں بنائے گئے ہیں۔ ذاتی تحفظ سے بھی سمجھوتہ کیا گیا تھا - صحت کی دیکھ بھال کے کاموں کو متعدی بیماریوں سے حفاظتی ٹیکے نہیں لگائے گئے تھے

اثرات اور تخفیف

صحت کے لئے خطرات

عملے ، مریضوں اور قریبی برادریوں کے لئے صحت سے متعلق مضر صحت کی دیکھ بھال کی سہولت کے آپریشن سے وابستہ سب سے زیادہ ممکنہ خطرہ ہے۔ یہ زیادہ تر انفیکشن کنٹرول پروٹوکول کی پیروی نہ کرنے ، مناسب ذاتی حفاظتی سامان (پی پی ای) کا استعمال نہ کرنے اور ایچ سی ڈبلیو جمع کرنے ، نقل و حمل ، اسٹوریج ، اور حتمی تصرف کے لئے مناسب طریقہ کار پر ملازمت نہ کرنے کی وجہ سے ہیں۔ اس کے علاوہ ، طبی فضلے کی ری سائیکلنگ سے ری سائیکلنگ میں شامل کارکنوں اور ان ری سائیکل مصنوعات کو استعمال کرنے والے صارفین کے لئے بھی صحت کے لئے بہت سنگین خطرہ ہیں۔

تخفیف۔ ایچ سی ڈبلیو کا مناسب انتظام اور ہاسپٹل ویسٹ مینجمنٹ رولز 2014 کے موثر نفاذ سے صحت کی سہولیات کے اندر اور باہر دونوں خطرات کو کم کیا جاسکتا ہے۔ پہلی ترجیح یہ ہے کہ ترجیحی طور پر نسل کے نقطہ پر ، ضائع ہونے والے سامان کو دوبارہ سے منسلک اور غیر قابل استعمال ، مضر اور غیر مضر اجزاء میں الگ کریں۔ دوسرے اہم اقدامات تیز چیزوں کو سنبھالنے ، فضلہ کی کمی ، مؤثر مادوں سے بچنے کے جب بھی ممکن ہو ، کارکنوں کی حفاظت کو یقینی بنانا ، فضلہ جمع کرنے اور نقل و حمل کے محفوظ طریقے مہیا کرنے اور محفوظ علاج اور ضائع کرنے کے طریقہ کار کو نصب کرنے کے لئے تیز انتظامات کے نظام کا ادارہ ہیں۔

حفاظت کے خطرات

اثرات صحت کی دیکھ بھال کی سہولیات میں حفاظتی خطرہ عام طور پر تیز (سوئیاں ، کٹر) ، گیسیں ، آٹوکلیوز اور دیگر مماثلت سامان کی روک تھام سے وابستہ ہیں۔ ایچ سی ڈبلیو کو کھلی جلانے سے یہ سرگرمی انجام دینے والے عملے کے لئے بھی حفاظتی خطرات لاحق ہیں۔ ان خطرات میں کٹوتیوں ، چٹانوں ، گیس سے زہر آلود ہونے ، جلانے اور جسمانی چوٹ کے دیگر خطرہ ہیں۔ صحت کی دیکھ بھال کی سہولت کے عملے کے ساتھ ساتھ مریض بھی حفاظت کے ان خطرات کا شکار ہیں۔

تخفیف۔ تیزیاں سنبھالنے کے لئے معیاری آپریٹنگ طریقہ کار پر سختی سے عمل کرنا اور پی پی ای کا خاص طور پر پرک پروف دستانے اور ماسک کا استعمال انتہائی اہمیت کا حامل ہے تاکہ تیزیاں ، گیسوں اور دیگر سے وابستہ حفاظتی خطرات سے بچا جاسکے۔ اس کے علاوہ ، HCW جمع کرنے کے لئے موٹے / پنکچر مزاحم پلاسٹک کے تھیلے اور سوئیاں ضائع کرنے کے ل to سخت / پنکچر پروف بکس استعمال کریں گے / دیگر تیزیاں استعمال کی جائیں گی۔

مٹی اور پانی کی آلودگی

اثرات۔ مٹی اور پانی کی آلودگی سہولیات کے احاطے میں متعدی کچرے کے براہ راست تدفین کی وجہ سے ہوسکتی ہے ، یا میونسپل کچرے کے ڈمپنگ سائٹ پر اگر صحت کی دیکھ بھال کے فضلہ کو میونسپل کچرے کے ساتھ ساتھ ضائع کیا جاتا ہے۔ متعدی کچرے کی کھلی جلتی مٹی بھی آلودگی کا باعث بن سکتی ہے۔ صحت کی دیکھ بھال کرنے والی سہولت میں گندے نالے کا ناجائز استعمال بھی مٹی کو آلودہ کرسکتا ہے۔

تخفیف۔ متعدی فضلہ کو دوسرے غیر متعدی فضلہ سے الگ کر دیا جائے گا اور اسے میونسپل ویسٹ ڈمپنگ سائٹ / لینڈ فل پر نہیں بھیجا جائے گا ، سوائے اس جگہ کے جہاں طبی فضلے کے لئے لینڈفل دستیاب ہو۔ اگر متعدی کچرے کی جگہ پر تدفین عمل میں لائی جاتی ہے تو ، یہ قطار میں کھڑے گڈڑوں میں کی جائے گی۔ شہروں میں صحت کی دیکھ بھال کی سہولیات سے نکلنے والے گند نکاسی کو شہر کے نکاسی آب میں خارج کیا جائے گا ، بصورت دیگر سائٹ سے متعلق علاج جیسے سیپٹک ٹینک اور گڑھا بین الاقوامی معیار کے مطابق تعمیر کیا جائے گا۔

ہوا کے معیار کا کھوج

اثرات۔ ہوا کے معیار میں صحت کے متعلقہ فضلہ(HCW)کو کھلی جلانے سے ہوسکتا ہے۔ اسی طرح ، متعدی فضلہ جلانے سے بھی ہوا آلودہ ہوسکتی ہے۔ خاص طور پر تشویش کی بات یہ ہے کہ ڈائی آکسین ہیں جو پلاسٹک اور پولی تھیلین مصنوعات کو جلا کر پیدا ہوتے ہیں۔ ڈائی آکسین کارسنجینک ہیں اور صحت کی دیکھ بھال کرنے والے عملہ کو ضائع کرنے والے دیگر عملے ، مریضوں اور آس پاس کی کمیونٹیز کو متاثر کرسکتے ہیں۔ خاص طور پر اگر اس میں پلاسٹک / پولی تھیلن موجود ہو تو ایچ سی ڈبلیو کو کھلی جلانے سے بچا جائے گا کیونکہ اس سے دیگر زہریلی گیسوں کے علاوہ ڈائی آکسین بھی تیار ہوتا ہے۔
تخفیف۔ اگر متعدی کچرے کو نذر آتش کیا گیا ہے ، تو یہ یقینی بنایا جائے گا کہ:
i) خاص طور پر ایچ سی ڈبلیو کے لئے ڈیزائن کردہ آتش گیروں کا استعمال کیا جاتا ہے۔

ii) مناسب طریقے سے تربیت یافتہ عملہ معیاری آپریٹنگ طریقہ کار کے مطابق انجنریٹرز کو چلاتا ہے۔
1200 (iii) ڈگری سنٹی گریڈ سے زیادہ ڈائی آکسین کو کم کرتا ہے
جاتا ہے۔
iv) فلو کی گیسوں کا ماحول میں رہائی سے پہلے مناسب طریقے سے علاج کیا جاتا ہے (جیسے پانی کی صفائی کرنے والوں کی مدد سے)۔
اور v) انجنریٹر کے پہلے چیمبر سے گیسوں کا کوئی ریزیج نہیں ہے تاکہ وہ دوسرے چیمبر میں تباہ ہونے سے قبل ڈائی آکسین کے اخراج سے بچ سکیں۔

ہیلتھ کیئر منیجمنٹ پلان

ادارہ جاتی انتظامات۔ ماحولیاتی اور صحت کی دیکھ بھال کے فضلہ کے انتظام کے امور کو عملی جامہ پہنانے کی مجموعی ذمہ داری خاص طور پر موجودہ ایچ سی ڈبلیو ایم پی ، سی ای او پنجاب ہیلتھ سہولت مینجمنٹ کمپنی (پی ایچ ایف ایم سی) کے ساتھ ہوگی۔فل ٹائم ہیلتھ کیئر ویسٹ مینجمنٹ اسپیشلسٹ (ایچ سی ڈبلیو ایم ایس) کو ہیلتھ کیئر ویسٹ مینجمنٹ فوکل پوائنٹ (ایچ سی ڈبلیو ایم ایف پی) مقرر کیا جائے گا۔ ضلعی سطح پر ، ہر ضلع کا چیف ایگزیکٹو آفیسر - ہیلتھ (سی ای او - صحت) ماحولیات اور صحت کی دیکھ بھال کے فضلہ سے متعلق انتظامات کو خاص طور پر متعلقہ ضلع میں موجودہ ای ایچ سی ڈبلیو ایم پی کے نفاذ / کارکردگی کا مرکز بنائے گا۔ آخر میں ، سہولت کی سطح پر ، ویسٹ مینجمنٹ آفیسر (ڈبلیو ایم او) کو ای ایچ سی ڈبلیو ایم پی کے نفاذ کے فوکل پوائنٹ کے طور پر نامزد کیا جائے گا۔ اس کے علاوہ ، ایک ویسٹ مینجمنٹ ٹیم (WMT) ہوگی

WMPصحت کی ہر سہولت میں تشکیل دیا گیا ہے ، اور ایک مناسب آفیسر جو 2014 کے ہسپتال کے کچرے کے انتظام کے قواعد کے مطابق WMO کے نامزد کیا گیا ہے۔

ہسپتال کے فضلے کے انتظام کا منصوبہ۔

ہیلتھ کیئر کی ہر سہولت 2014 کے ہسپتال کے کچرے کے انتظام کے قواعد کے مطابق اور اس دستاویز کے مطابق تجویز کردہ ، کوڑے کے انتظام کے منصوبے (ڈبلیو ایم پی) کو تیار اور نافذ کرے گی۔ اس سہولت سے متعلق خصوصی پلان میں شامل ہوں گے: i) صحت کی دیکھ بھال کی سہولت کا ایک منصوبہ / ترتیب جس میں ہر وارڈ اور محکمہ کو ضائع کرنے کے مقامات کو دکھایا گیا ہے ، اس بات کی نشاندہی کرتے ہیں کہ آیا ہر نقطہ خطرہ کے ضائع ہونے یا غیر خطرے کے ضائع ہونے کے لئے ہے ، اور مرکزی ذخیرہ کرنے کی سہولت کے لئے جگہیں دکھاتا ہے۔ خطرے کے ضائع ہونے اور سنٹرل اسٹوریج کی سہولت / غیر خطرے والے کوڑے کے انتظامات۔ ii) سالانہ درکار کنٹینرز ، فضلہ بیگ ، اور ٹرالیوں کی اقسام ، نمبروں اور تخمینی لاگت کی تفصیلات۔ iii) ٹائم ٹیبل جس میں ہر وارڈ اور محکمہ سے کچرا جمع کرنے کی تعدد شامل ہے۔ iv) فضلہ کی پیداوار اور انتظام میں شامل صحت کی سہولت کے عملے کے ہر زمرے کے فرائض اور ذمہ داریاں؛ v) فضلہ کے انتظام کے لئے ضروری عملے کی تعداد کا تخمینہ؛ vi) ضائع ہونے کے انتظام کے طریقہ کار جن میں علاج معالجے کی ضرورت ہوتی ہے جیسے حتمی ضائع ہونے سے پہلے آٹوکلیو کرنا۔ viii) انکنیٹروں کے ٹوٹنے کی صورت میں خطرے کے ضیاع کو ذخیرہ کرنے یا ضائع کرنے کے لئے

ہنگامی منصوبے۔ ix) تربیتی کورس اور فضلہ کے انتظام سے متعلق پروگرام۔ اور x) ہنگامی طریقہ کار۔ WMP کے ہر عنصر کے نفاذ کے لئے جامع دستاویزات کو برقرار رکھا جائے گا۔

ماحولیاتی انتظام کا منصوبہ۔

پی ایچ سی آئی پی ESMF میں تجویز کردہ ہر سہولت کی تزئین و آرائش کے لئے سائٹ سے متعلق ماحولیاتی انتظام کا منصوبہ (EMP) تیار اور نافذ کیا جائے گا۔
نگرانی ہرہسپتال کے ڈبلیو ایم پی اور ای ایم پی کی بنیاد پر کی جائیگی۔ ان منصوبوں کی بنیاد پر مانیٹرنگ چیک لسٹ تیار کی جائیں گی ، جو وقتا. فوقتا be بھری جائیں گی۔ ضلعی سطح کی نگرانی مانیٹرنگ اینڈ ایویلیوایشن اسسٹنٹس (ایم ای اے) کی مدد سے کی جائیگی جو پہلے ہی اپنے اپنے اضلاع میں ڈی ایچ ایچ کی صحت کی دیکھ بھال کی سہولیات کی نگرانی کرتے ہیں۔ مذکورہ بالا کے علاوہ ، سی ای او (صحت)
اور اس کا عملہ صحت کی سہولیات میں EHCWMP کی بے ترتیب نگرانی بھی کرے گا۔ HCWMS منصوبے پر عمل درآمد کی نگرانی کے لئے صوبے میں صحت کی سہولیات کا بے ترتیب دورے بھی کرے گا۔

پلان اور تیسری پارٹی کی توثیق کا جائزہ۔

PIU / DoH اندرونی جائزہ لے گا اور سالانہ بنیادوں پر EHCWMP عمل درآمد کی تیسری پارٹی کی توثیق (TPV) کمیشن کرے گا۔ ان جائزوں کی بنیاد پر ، EHCWMP میں ترمیم اور اپ ڈیٹ کرنے کی ضرورت ہوسکتی ہے۔

صلاحیت کی تعمیر.

سہولت کی سطح کی گنجائش کے بارے میں مذکورہ بالا WWMP کا لازمی حصہ ہوگا۔ صوبائی سطح پر ، EHCWMP, PIU / DoHکے نفاذ پر ہر ضلع سے منتخب شدہ متعلقہ عملہ خاص طور پر WMT ممبروں کے لئے ٹرینرز (ٹی او ٹی) کی تربیت کا منصوبہ بنائے گی اور کرے گی۔
دستاویزات ہر سہولت کا ڈبلیو ایم پی ای ایچ سی ڈبلیو ایم پی کے نفاذ کے لئے سہولت کی سطح کے دستاویزاتی تقاضوں کی وضاحت کرے گا۔ ضلعی سطح پر ، ای ڈی او (صحت) ماہانہ بنیادوں پر ضلعی ای ایم ڈبلیو ایم پی کی رپورٹ مرتب کرے گا اور اسے پی آئی یو کو بھیجے گا۔ ڈی ایم اوز کے توسط سے ایم ای اے اپنی بھری ہوئی چیک لسٹ / ڈیٹا ایچ ایس آر یو کو بھی بھیجیں گے۔ صوبائی سطح پر ، ایم ڈبلیو ایم ایف پی سی ای اوز (صحت) سے موصولہ رپورٹس مرتب کرے گی اور سہ ماہی بنیادوں پر ای ایچ سی ڈبلیو ایم پی کے نفاذ سے متعلق مجموعی پروجیکٹ رپورٹس تیار کرے گی۔ ان رپورٹوں کو انفیکشن کنٹرول پلان پر عمل درآمد سے متعلق رپورٹوں کے ساتھ ملایا جاسکتا ہے۔

EHCWMP عمل درآمد

EHCWMP کا نفاذ ہیپاٹائٹس اینڈ انفیکشن کنٹرول پروگرام پنجاب کے نفاذ کے ساتھ قریبی ہم آہنگی میں عمل میں لایا جائے گا۔ انفیکشن کنٹرول پروگرام پنجاب اب آؤٹ سورس فرم کے توسط سے پنجاب کے تمام ڈی ایچ کیو / ٹی ایچ کیو میں ہسپتال کے کچرے کے انتظام کے قواعد ، 2014 کو نافذ کررہا ہے۔ یہ فرم الگ الگ مقامات کو جمع کرتا ہے ، کوڑے دان کو ضائع کرنے اور محفوظ کرنے کی جگہوں تک لے جاتا ہے۔ روزانہ کچرے کی پیداوار اور اس کو ضائع کرنے کا کام الیکٹرانک میڈیکل ریکارڈز (EMR) کے ذریعے برقرار رکھا جاتا ہے۔ صحت کی بنیادی سہولیات میں پی ایچ ایف ایم

سی H & ICP کے ساتھ قریبی ہم آہنگی میں کام کرے گی تاکہ آؤٹ سورس فرم کے ذریعہ کوڑے کو جمع کرنے اور ضائع کرنے کے دوران اسی پروٹوکول پر عمل درآمد کیا جاسکے۔

EHCWMP نفاذ لاگت

ای ایچ سی ڈبلیو ایم پی کے نفاذ کے لئے لاگت کا تخمینہ پی کے آر 26.78 ملین لگایا گیا ہے۔ اس میں ای ایچ سی ڈبلیو ایم پی ، ٹی پی وی ، اور صوبائی اورضلعی سطح پر صلاحیت سازی کی لاگت شامل ہے۔ ہر سہولت کے لئے ڈبلیو ایم پی کی تیاری کے بعد تفصیلی ضلعی وار بجٹ تیار کرنے کی ضرورت ہے

1. INTRODUCTION

This document presents the Environmental Healthcare Waste Management Plan (EHCWMP) of the proposed Punjab Human Capital Investment Project. The Project is being initiated by Primary & Secondary Health Department (PSHD), Government of Punjab (GoPb), and being considered for financing by World Bank (WB). The present EHCWMP has been prepared in compliance with the national regulatory requirements and WB Operational Policies. The EHCWMP identifies potentially negative environmental impacts of the project and proposes appropriate mitigation measures to minimize impacts on environmental degradation and potential risks to human health.

1.1. PROJECT OVERVIEW

The proposed project aims to support the implementation of the GoPb‟s medium term health program 2021-2025. The GoPb's program aims for a reduction in the morbidity and mortality in most common illnesses especially among the vulnerable groups, by a) enhanced coverage, quality and access to essential health care especially for the poor and the vulnerable and in under developed districts; and b) improved PSHD‟s ability and systems for accountability and stewardship functions.

The proposed project will have the following three components:

Component 1 : Health services quality and utilization: The ultimate goal of this component's activities is to improve children's health, especially those coming from poor and vulnerable households. Thus, this component aims to address short-term health challenges by improving the quality and utilization of key health services that are critical to a strong start in a child's first 1,000 days.

Component 2: Economic and social inclusion: Supplementary activities to improve households' economic and social inclusion would be introduced. These can also contribute to building early childhood human capital among poverty-stricken households.

Component 3: Efficiency and sustainability through SP service delivery systems and project management: To improve the efficiency and sustainability of Punjab's interventions for poor and vulnerable households, the existing SP service delivery and governance structures will be modernized and strengthened. To this end, the proposed project will support improved

coordination, modernization, and interoperability of SP institutional and administrative arrangements, and turn these into an efficient and cutting-edge SP service delivery platform.

1.2. INSTITUTIONAL ARRANGEMENTS

Given the multi-sectoral operations, the project is proposed to be implemented jointly through multiple entities with Punjab Social Protection Authority (PSPA) as a lead agency and other entities include: School Education Department (SED) and Primary and Secondary Health Department through Punjab Health Facilities Management Company (PHFMC). Other entities in Punjab such as the Integrated Reproductive Maternal & Newborn Child Health & Nutrition Program (IRMNCH & NP) and Population Welfare Department Punjab (PWD) will provide support.

1.3. PROJECT DURATION

The proposed project is expected to be implemented for the five years, and covering the period from FY 2021 through FY 2025.

Key principles of the proposed project are as described below;

- **Poverty targeting:** For the objective targeting based on the household poverty status, the NSER will be used. The NSER is currently being updated, and new information is expected to be available by early 2020 with authentication through the identification system (Computerized National Identity Card, CNIC). In case the updating of the NSER is delayed, until the new information becomes available, the project would be supported by the existing NSER database.

- **Geographic targeting:** The most vulnerable districts are selected considering poverty and key human capital indicators. The number of districts to be covered by the project depends on the scope and cost of the planned activities, as well as available resources. Initially, a total of 11 out of 36 districts in Punjab will be prioritized.

- **Gender focused:** The project will aim to address constraints faced by women by not only initiating and strengthening women focused programs, but also providing gender-sensitive solutions to reduce the gender gaps.

- **Integrated, but selective:** Integrated (addressing both demand and supply challenges), multi-sectoral (health, education, social protection) interventions will be supported to contribute to improving human capital, but given that several other initiatives exist, the project would be selective in the area of intervention

1.4. PROJECT PROPONENT

The proposed project will be implemented by the Primary and Secondary Health Department (PSHD), GoPb, through the Punjab Social Protection Authority (PSPA)

&Punjab Health Facility Management Company (PHFMC). A brief introduction of the Department is presented below.

Department of Health Punjab

PSHD delivers quality healthcare services to the community through an efficient and effective service delivery system that is accessible, equitable, culturally acceptable, affordable and sustainable. Health Department aims to improve the health and quality of life of all, particularly women and children, through access to essential health services. Health Department strives to reform and strengthen the critical aspects of the health systems and enable it to:

- Provide and deliver a basic package of quality essential health care services
- Develop and manage competent and committed health care providers
- Generate reliable health information to manage and evaluate health services
- Adopt appropriate health technology to deliver quality services
- Finance the costs of providing basic health care to all

1.5. REGULATORY AND POLICY FRAMEWORK

The present Plan has been prepared in compliance with the World Bank Operational Policy 4.01 (OP 4.01), which states that "The Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making".

The Plan also seeks to effectively implement the Hospital Waste Management Rules, framed by the Government of Pakistan in 2005. The Plan also broadly complies with the Pakistan Environmental Protection Act, 1997 (PEPA 1997), which requires the proponents of every development project in the country to submit either an Initial Environmental Examination (IEE) or "where the project is likely to cause an adverse environmental effect," an Environmental Impact Assessment (EIA) to the concerned environmental protection agency (EPA). The IEE/EIA Regulations 2000 issued under the PEPA 1997 provide separate lists for the projects requiring IEE and EIA. (The Act, Regulations, and Rules are further discussed later in the document).

1.6. STUDY OBJECTIVES

The main objective of this assignment is to institutionalize environment and medical waste management plan in the DoH's Health Program supported by World Bank. The specific objectives of the assignment are:

- To identify potential impacts of the proposed project on the natural and human environment of the area, to predict and evaluate these impacts, and determine their significance, in light of the technical and regulatory concerns,
- To propose appropriate mitigation measures that will be incorporated in the design of the project to minimize if not eliminate the potentially adverse impacts,
- To assess the compliance status of the proposed activities with respect to the national environmental legislation and WB‟s OPs,
- Conducting situation assessment for capturing current status of implementation, gaps, and capacity needs.
- Based on situation assessment and impact assessment, developing environment and healthcare waste management and capacity development plans that can be integrated with ongoing project activities.

1.7. SCOPE OF STUDY

The present study covers the health components of the proposed HCIP with particular focus on activities under Component I that are likely to cause environmental and public health hazards.

The project will be implemented regarding the healthcare waste management from collection to final disposal of the waste primary healthcare facilities (RHCs/BHUs) in selected eleven districts of the Punjab. The study addresses the potential environmental and social impacts that may be encountered during the design and operational phases of the proposed project.

1.8. STUDY METHODOLOGY

The assignment methodology was essentially based upon the WB Operation Policies and national environmental guidelines - with necessary adaptation to cater the special needs of the project.

2. LEGAL, REGULATORYANDPOLICYREVIEW

This Chapter discusses national legislation and regulations relevant to the environmental and social aspects of the Project. Also covered in the Chapter is the WB safeguard polices, national and international environmental guidelines, and multilateral environmental agreements.

2.1. National Laws and Regulations

Pakistan's statuary books contain a number of laws concerned with the regulation and control of the environmental and social aspects. However, the enactment of comprehensive legislation on the environment, in the form of an act of parliament, is a relatively new phenomenon. Most of the existing laws on environmental and social issues have been enforced over an extended period of time and are context-specific. The laws relevant to the developmental projects are briefly reviewed below.

2.1.1. Pakistan Environmental Protection Act, 1997

The Punjab Environmental Protection Act, 1997 (the Act) is the basic legislative tool empowering the government to frame regulations for the protection of the environment (*the 'environment' has been defined in the Act as:(a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the inter-relationships between any of the factors specified in sub-clauses 'a' to 'f'*). The Act is applicable to a broad range of issues and extends to socioeconomic aspects, land acquisition, air, water, soil, marine and noise pollution, as well as the handling of hazardous waste. The discharge or emission of any effluent, waste, air pollutant or noise in an amount, concentration or level in excess of the National Environmental Quality Standards (NEQS) specified by the Pakistan Environmental Protection Agency (Pak-EPA) has been prohibited under the Act, and penalties have been prescribed for those contravening the provisions of the Act. The powers of the federal and provincial Environmental Protection Agencies (EPAs), established under the Pakistan Environmental Protection Ordinance 1983, have also been considerably enhanced under this legislation and they have been given the

power to conduct inquiries into possible breaches of environmental law either of their own accord, or upon the registration of a complaint.

The requirement for environmental assessment is laid out in Section 12 (1) of the Act. Under this section, no project involving construction activities or any change in the physical environment can be undertaken unless an initial environmental examination (IEE) or an environmental impact assessment (EIA) is conducted, and approval is received from the federal or relevant provincial EPA. Section 12 (6) of the Act states that the provision is applicable only to such categories of projects as may be prescribed. The requirement of conducting an environmental assessment of the proposed project emanates from this Act. The present Plan broadly addresses the requirements given in the Act.

2.1.2. Pakistan Environmental Protection Agency Review IEE & EIA Regulation 2000

The Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, 2000 (the „Regulations"), developed by the Pak-EPA under the powers conferred upon it by the Act, provide the necessary details on preparation, submission and review of the initial environmental examination (IEE) and the EIA. Categorization of projects for IEE and EIA is one of the main components of the Regulations. Projects have been classified on the basis of expected degree of adverse environmental impacts. Project types listed in Schedule I are designated as potentially less damaging to the environment, and those listed in Schedule II as having potentially serious adverse effects. Schedule I projects require an IEE to be conducted, provided they are not located in environmentally sensitive areas. For the Schedule II projects, conducting an EIA is necessary.

The proposed project falls under the Schedule II of the Regulations.

2.1.3. National Environmental Quality Standards

The National Environmental Quality Standards (NEQS), promulgated under the PEPA 1997, specify the following standards:

- Maximum allowable concentration of pollutants in gaseous emissions from industrial sources,
- Maximum allowable concentration of pollutants in municipal and liquid industrial effluents discharged to inland waters, sewage treatment and sea (three separate set of numbers).
- Maximum allowable emissions from motor vehicles.
- Ambient air quality standards.

- Drinking water standards
- Noise standards.

The above NEQS‟s is presented in Tables in annexure. Some of these standards will be applicable to the gaseous emissions and liquid effluents discharged to the environment as well as noise generation from the activities under the proposed project.

2.1.4 Punjab Hospital Waste Management Rules, 2014

Every hospital, public or private, shall responsible for the proper management of the waste generated by it till its final disposal in accordance with the provisions of the Act and the rules.

Waste Management. - (1) Waste management plan shall be prepared by the waste management officer for approval by the hospital waste Management team and shall be based on internationally recognized environment management standards such as the international organization for standardization series.

(2) The waste management plan shall include:

(a) a plan of the hospital showing the waste disposal points for every Ward and department, indicating whether each point is for risk waste or non-risk waste and showing the sites of the central storage facility for risk waste and the central storage facility for non-risk waste;

(b) details of the types, numbers and estimated cost of containers, waste bags and trolleys required annually;

(c) time tables indicating frequency of waste collection from each ward and departments;

(d) duties and responsibilities for each of the different categories of hospital staff members, generating hospital waste and be involved in the management of waste;

(e) an estimate of the number of staff members required for waste collection;

(f) procedures for the management of waste requiring special treatment such as autoclaving before final disposal;

(g) Contingency plans for storage or disposal of risk waste in the event of breakdowns of incinerators or of maintenance or collection arrangements;

(h) Training courses and programmers on waste management; and

(i) Emergency procedures.

(3) A representative of a local council responsible for the collection and disposal of waste from the hospital shall be consulted in preparing and finalization of the waste management plan.

(4) The waste management plan shall be regularly monitored, review, revised and updated by the hospital waste management team as and when necessary.

- The Rules also include guidelines for waste segregation, collection, transportation, storage, and disposal and responsibilities of the health workers. As for as Punjab has already implemented the HWMR, 2014 so the plan has prepared in accordance to the standard protocols that would be implemented at primary healthcare facilities across the Punjab.

2.1.5. Land Acquisition Act, 1894

The Land Acquisition Act (LAA) of 1894 amended from time to time has been the de-facto policy governing land acquisition and compensation in the country. The LAA is the most commonly used law for acquisition of land and other properties for development projects. It comprises of 55 sections pertaining to area notifications and surveys, acquisition, compensation and apportionment awards and disputes resolution, penalties and exemptions.

No land acquisition is envisaged under the proposed project.

2.1.6. Punjab Wildlife (Protection, Preservation, Conservation and Management) Act, 1974

This law has been enacted to protect the province's wildlife resources directly and other natural resources indirectly. It classifies wildlife by degree of protection, i.e., animals that may be hunted on a permit or special license, and species that are protected and cannot be hunted under any circumstances. The Act specifies restrictions on hunting and trade in animals, trophies, or meat. The Act also defines various categories of wildlife protected areas, i.e., National Parks, Wildlife Sanctuaries and Game Reserve.

This Act is not likely to be applicable for the proposed project since most of the project activities will be confined to the existing healthcare facilities which are usually located

within urban areas/communities. However, it will be ensured that no facility expansion or waste disposal is carried out inside any wildlife protected areas.

2.1.7. Forest Act, 1927

The Act authorizes Provincial Forest Departments to establish forest reserves and protected forests. The Act prohibits any person to set fire in the forest, quarry stone, remove any forest-produce or cause any damage to the forest by cutting trees or clearing up area for cultivation or any other purpose.

Much like the Punjab Wildlife Act described above, the Forest Act is also not likely to be applicable for the proposed project. No project activities will however be carried out in any protected forests, and no unauthorized tree cutting will be carried out for any facility expansion or waste disposal.

2.1.8. Punjab Local Government Ordinance, 2012

This ordinance, which is based upon the Punjab Local Government Ordinance of 2001 promulgated under the devolution plan, defines the roles of the district governments and also addresses the land use, conservation of natural vegetation, air, water and land pollution, disposal of solid waste and wastewater effluents, as well as matters relating to public health – aspects that are relevant to the proposed project.

2.1.9. Antiquity Act, 1975

The Antiquities Act of 1975 ensures the protection of cultural resources in Pakistan. The Act is designed to protect „antiquities" from destruction, theft, negligence, unlawful excavation, trade and export. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or
cultural interest, and national monuments. The law prohibits new construction in the proximity of a protected antiquity and empowers the Government of Pakistan to prohibit excavation in any area that may contain articles of archaeological significance.

Under this Act, the project proponents are obligated to:

- Ensure that no activity is undertaken in the proximity of a protected antiquity, and
- If during the course of the project an archaeological discovery is made, it will be protected and reported to the Department of Archaeology, Government of Pakistan, for further action.

This Act will be applicable in case of discovery of any antiquities during facility expansion or waste disposal as part of the proposed project. The “chance find” procedures will be in place for this purpose.

2.1.10. Factories Act, 1934

The clauses relevant to the proposed project are those that address the health, safety and welfare of the workers, disposal of solid waste and effluents, and damage to private and public property. The Act also provides regulations for handling and disposing toxic and hazardous substances. The Pakistan Environmental Protection Act of 1997 (discussed above), supersedes parts of this Act pertaining to environment and environmental degradation.

2.1.11. Employment of Child Act, 1991

Article 11(3) of the Constitution of Pakistan prohibits employment of children below the age of 14 years in any factory, mines or any other hazardous employment. In accordance with this Article, the Employment of Child Act (ECA) 1991 disallows the child labour in the country. The ECA defines a child to mean a person who has not completed his/her fourteenth years of age. The ECA states that no child shall be employed or permitted to work in any of the occupation set forth in the ECA (such as transport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in the Act is carried out. The processes defined in the Act include carpet weaving, *biri* (kind of a cigarette) making, cement manufacturing, textile, construction and others).

The project proponent and their contractors will be bound by the ECA to disallow any child labour at the project sites/facilities.

2.1.12 Pakistan Penal Code, 1860

The Code deals with the offences where public or private property or human lives are affected due to intentional or accidental misconduct of an individual or organization. The Code also addresses control of noise, noxious emissions and disposal of effluents. Most of the environmental aspects of the Code have been superseded by the Pakistan Environmental Protection Act, 1997.

2.1.13. Acts Governing Healthcare Services

The following laws govern various aspects of the healthcare services in the Province:

- Public Health (Emergency Provisions) Ordinance, 1944
- West Pakistan Epidemic Diseases Act, 1958
- Punjab Vaccination Ordinance, 1958
- Punjab Juvenile Smoking Ordinance, 1959
- Punjab Prohibition of Smoking in Cinema Houses Ordinance, 1960
- Punjab Pure Food Ordinance, 1960
- Eye Surgery (Restriction) Ordinance, 1960
- Pakistan College of Physician & Surgeons Ordinance, 1962
- Medical and Dental Council Ordinance, 196
- Allopathic System (Prevention of Misuse) Ordinance, 1962
- *Unani*, *Ayurvedic* and Homoeopathic Practitioners Act, 1965
- Pharmacy Act, 1967
- Medical Colleges (Governing Bodies) (Punjab Repeal) Ordinance, 1970
- Pakistan Nursing Council Act, 1973
- Drugs Act, 1976
- Medical and Dental Degrees Ordinance, 1982
- Punjab Health Foundation Act, 1992
- Punjab Transfusion of Safe Blood Ordinance, 1999
- Mental Health Ordinance for Pakistan, 2001
- University Of Health Sciences Lahore Ordinance, 2002
- Prohibition of Smoking and Protection of Non-Smokers Health Ordinance, 2002
- Protection of Breast-Feeding and Child Nutrition Ordinance, 2002
- Punjab Medical and Health Institutions Act, 2003
- Injured Persons (Medical Aid) Act, 2004
- King Edward Medical University Lahore Act, 2005
- Transplantation of Human Organs and Tissues Act, 201
- Punjab Healthcare Commission Act, 2010.

However, the above laws have a limited relevance for the environmental and waste management aspects.

2.2. Punjab Health Sector Strategy (PHSS, 2019-2030)

The Punjab Government has launched PHSS and committed to the principle of universal health care for all members of the society - combining mechanisms for health financing and service provision - and improving the health status of the population. Punjab Health Sector Strategy is designed to pull together the big strands of work that will help make Punjab a healthier place to live in years to come. The Strategy will support the Department of Health (DoH) to progress further with a sense of direction, purpose and urgency by prioritizing policy related interventions consistent with availability of financial resources.

2.2.1 ONE HEALTH

The "ONE HEALTH" subject has also incorporated in PHSS. A strategic plan of action regarding environmental health, animal health that described zoonotic diseases, wild life and public health. Strategy is the outcome of a great deal of thinking, debate, evidence gathering and consultation across a wide range of stakeholders including governmental departments, health managers, service providers, private sector organizations, NGOs, development partners, individuals and local communities.

The Strategy attempts to address the key challenges faced by the Province relating to the health care. These include challenges in service delivery, efficient health sector governance and accountability, availability of adequate health workforce, Health Information Systems, Essential Drugs and Medical Technologies, and Environmental and social impacts.

2.3 The World Bank Operational Policies

The WB Operating Policies (OPs) and Bank Procedures (BPs) relevant to the proposed project are discussed in the following sections.

2.3.1. Environmental Assessment (OP 4.01)

The World Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making.[7] The OP defines the EA process and various types of the EA instruments.

The proposed project consists of activities which have environmental and social consequences, including:

- Health hazards associated with handling of medical waste for the workers at the healthcare facilities

- Health hazards associated with improper disposal of medical waste for the nearby communities
- Deterioration of air quality,
- Water contamination and consumption,
- Safety hazard.

Since none of the potential impacts of the project are likely to be large scale, unprecedented and/or irreversible, the project has been classified as Category B, in accordance with OP 4.01. Furthermore, the present study has been carried out in accordance with this OP, to identify the extent and consequences of these impacts, and to develop an environmental and medical waste management plan for their mitigation.

2.3.2. Involuntary Resettlement (OP 4.12)

The WB's experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community institutions and social networks are

Weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. This policy includes safeguards to address and mitigate these impoverishment risks. [8]

The overall objectives of the Policy are given below.

- Involuntary resettlement will be avoided where feasible, or minimized, exploring all viable alternative project designs.

- Where it is not feasible to avoid resettlement, resettlement activities will be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons will be meaningfully consulted and will have opportunities to participate in planning and implementing resettlement programs.

- Displaced persons will be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels

or to levels prevailing prior to the beginning of project implementation, whichever is higher.

The project activities are not likely to cause any land acquisition or involuntary resettlement; therefore, this OP is not triggered.

2.3.3. Natural Habitat (OP 4.04)

The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions.

All of the proposed project components would be located in areas where the natural habitat has already been significantly modified, as a result of human habitation and associated activities. Therefore, the OP 4.04 is not triggered for the proposed project.

2.3.4. Forestry (OP 4.36)

The objective of this Policy is to assist the WB‟s borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests.

None of the project components would be located inside any forested areas. Hence the OP 4.36 is not triggered.

2.3.5. Pest Management (OP 4.09)

Through this OP, the WB supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides (and fertilizers).

This OP is not relevant for the proposed project since none of the proposed activities will involve purchasing, handling, or using pesticides or fertilizers.

2.3.6. Safety of Dams (OP 4.37)

The Policy seeks to ensure that appropriate measures are taken, and sufficient resources provided for the safety of dams the WB finances. However, this OP is not relevant since the proposed project does not involve construction of dams.

2.3.7. Projects on International Waterways (OP 7.50)

This OP defines the procedure to be followed for projects the WB finances that are located on any water body that forms a boundary between or flows through two or more states. This OP is not triggered since waterways are not relevant to the proposed project.

2.3.8. Cultural Property (OP 4.11)

The World Bank's general policy regarding cultural properties is to assist in their preservation, and to seek to avoid their elimination. The specific aspects of the Policy are given below.

- The Bank normally declines to finance projects that will significantly damage non-replicable cultural property and will assist only those projects that are sited or designed so as to prevent such damage.

- The Bank will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving that protection to chance. In some cases, the project is best relocated in order that sites and

  structures can be preserved, studied, and restored intact in situ. In other cases, structures can be relocated, preserved, studied, and restored on alternate sites. Often, scientific study, selective salvage, and museum preservation before destruction is all that is necessary. Most such projects will include the training and strengthening of institutions entrusted with safeguarding a nation's cultural patrimony. Such activities will be directly included in the scope of the project, rather than being postponed for some possible future action, and the costs are to be internalized in computing overall project costs.

- Deviations from this policy may be justified only where expected project benefits are great, and the loss of or damage to cultural property is judged by competent authorities to be unavoidable, minor, or otherwise acceptable. Specific details of the justification will be discussed in project documents.

- This policy pertains to any project in which the Bank is involved, irrespective of whether the Bank is itself financing the part of the project that may affect cultural property.

Since the project activities will be carried out in inhabited areas, it is unlikely that any sites of cultural, archaeological, historical, or religious significance will be affected. However, in case of discovery of any such sites or artefacts during the project implementation, the work will be stopped at that site and the provisions of this Policy will be followed.

2.3.9. Indigenous People (OP 4.10)

For purposes of this policy, the term "Indigenous Peoples" is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees.

- self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;

- collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
- customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and

- an indigenous language, often different from the official language of the country or region.

The OP defines the process to be followed if the project affects the indigenous people.

No indigenous people - with a social and cultural identity distinct from the dominant society that makes them vulnerable to being disadvantaged in the development process – are known to exist in Punjab. Therefore, this OP is not triggered.

2.3.10. Projects in Disputed Areas (OP 7.60)

Projects in disputed areas may raise a number of delicate problems affecting relations not only between the Bank and its member countries, but also between the borrower and one or more neighboring countries. In order not to prejudice the position of either the Bank or the countries concerned, any dispute over an area in which a proposed project is located is dealt with at the earliest possible stage. The Bank may proceed with a project in a disputed area if the governments concerned agree that, pending the settlement of the dispute, the project proposed for country A will go forward without prejudice to the claims of country B. [12]

This OP is not triggered since no part of Punjab province is located in any disputed territory.

2.3.11. Public Disclosure of Information (BP 17.50)

This BP deals with the World Bank policy on disclosure of information. It is a mandatory procedure to be followed by the borrower and Bank and supports public access to information on environmental and social aspects of projects. In accordance with this requirement, the present EHCWMP will be disclosed to public.

2.3.12. Applicability of Safeguard Policies

Applicability of the WB safeguard policies – on the basis of the discussion in **Sections 2.2.1** to **2.2.10** above - with respect to the environmental and social issues associated with the proposed project is summarized below.

Table 2.3.12 : WB Safeguard Policy

Operational Policy	Triggered
Environmental Assessment (OP 4.01)	Yes
Involuntary Resettlement (OP 4.12)	No
Natural Habitat (OP 4.04)	No
Forestry (OP 4.36)	No
Pest Management (OP 4.09)	No
Safety of Dams (OP 4.37)	No
Projects in International Waters (OP 7.50)	No
Cultural Property (OP 4.11)	No

Indigenous People (OP 4.10)	No
Projects in Disputed Area (7.60)	No
Public Disclosure of Information (BP 17.50)	Yes

2.4. Obligations under International Treaties

Pakistan is signatory of several Multilateral Environmental Agreements (MEAs), including

- UN Convention on the Law of Seas (LOS),
- Stockholm Convention on Persistent Organic Pollutants (POPs),
- Cartagena Protocol.

These MEAs impose requirements and restrictions of varying degrees upon the member countries, in order to meet the objectives of these agreements. However, the implementation mechanism for most of these MEAs is weak in Pakistan and institutional setup mostly non-existent.

The most applicable MEAs for the Project are Basel Convention, which addresses trans-boundary movement of hazardous wastes, and the Stockholm Convention on Persistent Organic Pollutants (POPs), under which certain chemicals such as Dichloro-diphenyl trichloroethane (commonly known as DDT) cannot be used.

2.5. Institutional Setup for Environmental Management

The apex environmental body in the country is the Pakistan Environmental Protection Council (PEPC), which is presided by the Chief Executive of the Country. Other bodies include the Pakistan Environmental Protection Agency (Pak-EPA), provincial EPAs (for four provinces, Azad Jammu and Kashmir. and Gilgit Baltistan), and environmental tribunals.

The EPAs were first established under the 1983 Environmental Protection Ordinance; the PEPA 1997 further strengthened their powers. The EPAs have been empowered to receive and review the environmental assessment reports (IEEs and EIAs) of the proposed projects, and provide their approval (or otherwise).

The proposed project would be located in Punjab. Hence this EMWMP will be sent to the Punjab EPA for review. In addition, that Punjab EPA will also be involved during the implementation of the project for conducting inspections, monitoring and enforcement of standards/plans.

2.6. Environmental and Social Guidelines

Two sets of guidelines, the Pak-EPA‟s guidelines and the World Bank Environmental Guidelines are reviewed here. These guidelines address the environmental as well as social aspects.

2.6.1. Environmental Protection Agency's Environmental and Social Guidelines

The Federal EPA has prepared a set of guidelines for conducting environmental assessments. The guidelines derive from much of the existing work done by international donor agencies and non-governmental organizations (NGOs). The package of regulations, of which the guidelines form a part, includes the PEPA 1997 and the NEQS. These guidelines are listed below.

- Guidelines for the Preparation and Review of Environmental Reports,
- Guidelines for Public Consultation,
- Guidelines for Sensitive and Critical Areas,
- Sectoral Guidelines.

It is stated in the Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, 2000 that the EIA or IEE must be prepared, to the extent practicable, in accordance with the Pakistan Environmental Protection Agency Environmental Guidelines.

2.6.2. World Bank Environmental and Social Guidelines

The principal World Bank publications that contain environmental and social guidelines are listed below.

- Health Care Waste Management Guidance Note
- Environment, Health, and Environment (EHS) Guidelines prepared by International Finance Corporation and World Bank in 1997.
- Pollution Prevention and Abatement Handbook 1998: Towards Cleaner Production
- Environmental Assessment Sourcebook, Volume I: Policies, Procedures, and Cross-Sectoral Issues.
- Social Analysis Sourcebook

3. PROJECTDESCRIPTION

3.1. Project Background

The proposed project aims at making concerted efforts to support poor and vulnerable households with young children to improve key areas that are critical for human capital accumulation.

First, for the immediate needs of a child's healthy survival, the proposed project will help vulnerable households utilize key health services. The underutilization of key health services is associated with financial and nonfinancial barriers such as lack of money for health services, opportunity costs for both patient and those accompanying them, and low perceived benefits from utilizing health services due to the poor quality of the services. To address some of these barriers, the project includes support for poor and vulnerable households through CCTs. In addition, efforts to enhance the availability and quality of essential health care services will be made to promote their higher take-up, building on the GoPb's efforts to improve access to primary healthcare services by upgrading selected regular basic health units (BHUs) to operate 24/7 (including provision of key equipment, supplies, and qualified providers), upgrading selected rural health centers (RHCs) to RHC Plus with a neonatal care unit and strengthening capacity to provide quality health services (e.g., training, monitoring and evaluation [M&E]).

Second, root causes of households limited human capital accumulation will be addressed through support for social and economic empowerment. Economic inclusion support builds on support for basic consumption, but includes additional support for livelihoods and social empowerment. Since there are limited labor market opportunities in the private sector, support focuses on the self-employment of young parents with children. This may involve support for combinations of livestock, crop, trade, and retail activities through the transfers of assets (e.g., in kind or cash), as well as technical and business training. More importantly, given the level of skills of potential beneficiaries, coaching services will be provided throughout the intervention period. In addition, the project strengthens social inclusion support for Punjab's existing initiatives that are closely related to children's human capital, including ECE and early grade learning, both of which are untargeted and have previously made limited effort to address the needs of poor and vulnerable households. For the ECE of children ages three to five, the project will support

strengthening and providing improved services in remote and disadvantaged areas; and in line with the GoPb's efforts to improve learning and basic competencies of primary age children under the project will support more targeted efforts for a greater proportion of girls (and boys) from poor and vulnerable households to be prepared for, attend and complete primary school.

Key principles of the proposed project: Following are the key project principles:

- **Poverty targeting:** For the objective targeting based on the household poverty status, the NSER will be used. The NSER is currently being updated, and new information is expected to be available by early 2020 with authentication through the identification system (Computerized National Identity Card, CNIC). In case the updating of the NSER is delayed, until the new information becomes available, the project would be supported by the existing NSER database.

- **Geographic targeting:** The most vulnerable districts are selected considering poverty and key human capital indicators. The number of districts to be covered by the project depends on the scope and cost of the planned activities, as well as available resources. Initially, a total of 11 out of 36 districts in Punjab will be prioritized.

- **Gender focused:** The project will aim to address constraints faced by women by not only initiating and strengthening women focused programs, but also providing gender-sensitive solutions to reduce the gender gaps.

- **Integrated, but selective:** Integrated (addressing both demand and supply challenges), multi-sectoral (health, education, social protection) interventions will be supported to contribute to improving human capital, but given that several other initiatives exist, the project would be selective in the area of intervention.

3.2. Project Objectives

Project Development Objective (PDO)[7]

The proposed project development objective (PDO) is to increase the utilization of quality health services, and economic and social inclusion programs, among poor and vulnerable households in select districts in Punjab.

[7]PAD; Punjab HCIP

3.3. Project Context

To achieve the PDO, the proposed project is expected to: (i) strengthen the quality of primary health care services; (ii) introduce a CCT program; (iii) support economic inclusion for young parents with children for poverty alleviation; (iv) strengthen the quality of ECE and early primary education (Grades 1-3); and (v) strengthen efforts to increase the efficiency and sustainability of Punjab's pro-poor initiatives.

3.4. Project Components

Project has following three components:

Component 1: Health services quality and utilization: The ultimate goal of this component is to improve children's health, especially those coming from poor and vulnerable households. Thus, this component aims to address short-term health challenges by improving the quality and utilization of key health services that are critical to a strong start in a child's first 1,000 days.

Sub-component 1.1: Quality of health services: This sub-component will strengthen primary health-care facilities to provide quality services. To ensure that key health services are of good quality, support will be provided for each targeted health facility to meet the minimum service delivery standards (MSDS). For this purpose, about 75 percent of existing normal BHUs in the target districts will be upgraded to 24/7 BHUs to provide services around the clock, every day of the week. Also, selected RHCs will be upgraded to RHC Plus to intensify neonatal care on a pilot basis. Any facilities that will be rehabilitated under the project will also include measures (e.g., a wheelchair ramp) to facilitate access to health care by persons with different abilities. In addition, support will be provided for hiring and/or training of skilled and support personnel (pediatricians, medical officers, lady health workers [LHWs], lady health visitors [LHVs][8], etc.) and the procurement of essential equipment, medicines, and supplies to meet the MSDS. Provision of population welfare services, conducted in close coordination with the Population Welfare Department, and nutrition services through outdoor therapeutic program (OTP) counters would also be supported under this sub-component. Furthermore, scale-up of an electronic medical

[8]Lady health workers (LHWs) and lady health visitors (LHVs)are primarily responsible for promoting community health by working with individuals, families, and communities for the welfare of mother and children, whether at health clinics (in the case of LHVs) or by visiting homes (LHWs). They are responsible for providing pre-, intra-, and postnatal care to expectant mothers, including tetanus toxoid immunizations, sharing appropriate family planning methods, supporting adequate feeding and care for mothers and children, monitoring and promoting babies' growth, treating minor diseases, and providing referrals in case of complications.

record (EMR) system and implementation of a health care waste management plan (HCWMP) for all target primary health care facilities would be supported, which would bring positive spillovers to the entire province beyond the target districts. The Primary and Secondary Health Care Department (PSHD) would lead these activities.

Sub-component 1.2: Utilization of health services: This sub-component aims to increase the utilization of key health services among the poor and vulnerable. For this purpose, a nutrition-sensitive CCT program, compensating for the financial and non-financial costs of visiting health facilities, is being planned. The target population includes pregnant and lactating women (PLWs) as well as children up to the age of two from poor and vulnerable households, as identified through the NSER. Conditionality include regular health checkups of PLWs, skilled birth delivery and birth registration, growth promotion, and immunization of children under two years of age. Furthermore, participation in counseling and awareness sessions on population welfare, hygiene and feeding and caring practices, and children's cognitive development would be encouraged.

The operational manual for the CCT was prepared jointly by the PSPA and PSHD, and it describes the details of operational procedures and implementation arrangements. The service delivery process will include beneficiary outreach through information campaigns, social mobilization, and LHWs,[9] and service delivery will be mainly at primary and secondary health-care facilities. Upon verification of compliance with co-responsibilities (conditionalities), the transfer will be made digitally to the individuals' bank accounts.[10] The business processes related to the program will be supported by the service delivery platform described in Component 3. The amount of transfers would be greater for services which is critical for child's health and nutrition, and for which the take-up has been low. Based on the number of BISP beneficiary women and assumptions regarding the likelihood of pregnancy, conditionality schedules, and coverage of children up to the age of two, the project financing of approximately US$60 million (tentative) would be used for cash benefits to beneficiaries in select districts, and the remaining US$5 million would be used for social mobilization and empowerment support by PSPA. Through this operation, up to one million beneficiaries would be informed and sensitized for CCT.

[9]Ibid.

[10] "Digital payment" means a payment that is transferred to a recipient's individual transactional account and withdrawn through an electronic instrument (e.g., debit cards, mobile phones, national identification cards, etc.) using enhanced authentication measures (e.g., personal identification number, fingerprints, finger veins, etc.).

Component 2: Economic and social inclusion: Supplementary activities to improve households' economic and social inclusion would be introduced. These can also contribute to building early childhood human capital among poverty-stricken households.

Sub-component 2.1: Economic inclusion: This sub-component aims to support income-generating activities of young parents (ages 18 to 29) from poor and vulnerable households who have children under the age of 5. A holistic package of efforts to support their economic inclusion will be provided,[11] and this includes (i) the labor market (LM) readiness package, (ii) livelihood support, and (iii) intensive coaching. Prior to receiving a productive asset (either in cash or in-kind), individuals from target households will participate in a LM readiness component, which will include training on basic literacy and numeracy, social and health awareness, and confidence-building. Given the low literacy rates, education and self-esteem common among the extreme poor, it is critical to address these aspects before households receives assets to prepare them to effectively engage in livelihood activities. Basic literacy and numeracy will equip households with record-keeping skills needed to manage a livelihood. Lastly, through messaging and guidance on building a long-term vision, participants will be able to build a positive mindset, which will form the foundation for their sustained progress both during and after the program. The completion of the LM readiness package will lead to technical skills development (e.g., animal husbandry, entrepreneurship, financial literacy).

Meanwhile, local market analyses will be carried out to identify the options for viable livelihoods. The market analysis and beneficiary profiling exercises (regarding participant skillsets, interest, care burden and resources) conducted during the LM readiness course will recommend a list of livelihood packages that are viable for the target poor in the area of implementation taking into account of beneficiary characteristics and capacity. Livelihood support, including the transfer of productive assets (e.g., cash, livestock, tools, etc.), will then be accompanied by bimonthly coaching services. The entire series of graduation support will last up to 24 months since the completion of LM readiness package. This activity will coordinate closely with a similar initiative conducted by the DFID

[11]BRAC's four pillar framework of graduation to be adapted to the local context in Punjab include: (i) social protection -- protective and promotive mechanisms to support basic needs such as BISP benefits and nutrition sensitive CCT; (ii) livelihoods Promotion -- regular and diverse income streams for households to support consumption, asset accumulation, and economic empowerment; (iii) financial inclusion to provide improved income and risk management and financial empowerment; and (iv) social empowerment to equip families with a confident mindset and promotes community inclusion and positive behavior change. Interventions include life skills training, community mobilization, and coaching that cuts across all four pillars.

targeting women—the Women's Income Growth and Self-reliance (WINGS) Program. The project financing would support service providers' activities in the LM readiness package, productive asset transfers, and technical and social coaching, and the PSPA will lead these activities by working with local NGOs and community support groups.

Sub-component 2.2: Social inclusion for education: This sub-component aims to strengthen select education initiatives in Punjab to support the inclusion of poor and vulnerable households and help ensure their children build a strong foundation for social and economic success in the future. An existing program in Punjab relevant for human capital accumulation in the early and foundational years includes ECE (Early Childhood Education). There are 3,400 ECE classrooms in the project's target districts and communities, but most of them do not meet the minimum ECE Quality Standards prescribed in the 2017 Punjab ECE Policy. In order to ensure access to quality ECE in these disadvantaged districts, the School Education Department (SED) has identified a number of interventions to improve the ECE model. Thus, through this project, the SED aims to further strengthen the quality of existing classrooms in the project's districts by: (i) conducting an initial, comprehensive ECE needs assessment of the 3,400 ECE classrooms infrastructures, condition and status of existing learning kits, and capacity of existing ECE teachers and caregivers; (ii) filling the gaps in physical facilities and supplies (e.g., learning kits, tablets) and capacity of teachers and caregivers; (iii) developing detailed lessons to operationalize the new Punjab 2-year ECE curriculum and complementary new activities, (iv) conducting a specialized ECE social mobilization campaign; and (v) establishing and building capacity for a new special Foundational Learning Cell in the SED which is better able to ensure close monitoring, sustainability and ultimately innovation in early learning interventions moving forward. These activities are expected to reach 150,000 children, 20,400 teachers, and 1,300 recently empowered Administrative Education Officers (AEOs)[12] as well as 3,400 ECE classrooms. These will help better provide a strong institutional and individual foundations for initial human capital investment in the early years, and then for ongoing and accelerated human capital accumulation in subsequent life-stages.[13]

With respect to early grade learning, renewed efforts will be made to build strong early literacy and numeracy foundations of pre-primary and primary students through a new

[12] This training will be provided through the Quad-e-Azam Academy for Education Development (QAED).
[13] These activities will be staggered so as not to overlap with activities of PESP-III which are supporting the establishment of 7,000 ECE classrooms that meet quality standards, the training of teachers, AEOs, caregivers and head teachers and the creation of an ECE cell. Activities under PESP-III conclude in 2021.

pedagogy (e.g., play-based learning) and provision of a small library/reading corner in Grades Pre-primary – Grade 3. This approach would ensure a close link between the newly enhanced approach to ECE, promoting greater transition from ECE to primary school, and primary school completion especially of children from poor and vulnerable households. Given the strong correlation between children's early foundational learning and an improvement in a range of future human development outcomes of adolescents and adults, the strengthening of early grade learning to increase completion rates of primary school children (and especially girls) would have important implications for the human capital of future mothers and children. Similar to ECE activities, the project would support the strengthening of the capacity of primary school teachers, head teachers, school councils and support staff (such as AEOs) and improvement of the quality and availability of teaching and learning, reading, and other support materials particularly focusing on early grade literacy and numeracy acquisition.

Component 3: Efficiency and sustainability through SP service delivery systems and project management: To improve the efficiency and sustainability of Punjab's interventions for poor and vulnerable households, the existing SP service delivery and governance structures will be modernized and strengthened. To this end, the proposed project will support improved coordination, modernization, and interoperability of SP institutional and administrative arrangements, and turn these into an efficient and cutting-edge SP service delivery platform. The project financing will support hiring of qualified experts and specialists, the capacity building of staffs, and development of back-end IT systems. The platform aims to support all relevant institutions in the GoPb (including, but not limited to, the PSHD, SED, and departments of population welfare, agriculture, social welfare, zakat, women's development, and labor, as well as the Punjab Disaster Management Authority [PDMA]) that provide services to poor and vulnerable households through their programs. In addition to supporting Components 1-2 activities, two additional areas are worth highlighting. First, PSPA will work closely with PDMA to identify priority areas for further strengthening to improve the province's resilience to natural and man-made disasters by enhancing the adaptiveness of SP programs. Second, PSPA will further strengthen SED's ZeT program,[14] to further encourage girls from poor and

[14]Zevar-e-Taleem (ZeT) was initially introduced to increase demand and improve access for secondary girls' education in lagging districts of Punjab, with a modest payout of PRs 200 per girl each month in 2002–03. In 2017, the stipend program was rebranded as ZeTand was converted into a CCT program in public schools in 16 districts of Punjab. The CCT program is operated jointly by the PSPA and SED, with an agreement that the PSPA makes quarterly payments to beneficiary families

vulnerable households to attend and remain in school. Targeted mobilization for BISP families and WeT graduates can be considered.

In order to develop the platform, PSPA has already started building a beneficiary database and program dashboards to keep track of major initiatives and beneficiaries' information in Punjab. In addition to this horizontal coordination and collaboration, the platform aims to vertically coordinate with federal entities and build interoperable systems.

3.5. Project Implementation Arrangements

Given the multi-sectoral nature of the proposed operations, multiple entities are expected to implement the project. To the extent possible, existing institutional structures may be used to implement and oversee the project. The PSPA would serve as the lead implementing agency without establishing a separate project management implementation unit (PMIU). The responsibilities of overall coordination, planning, and reporting will reside with the PSPA. In addition, the PSPA will take the lead in demand-side engagement: CCTs (sub-component 1.2) and economic inclusion components (sub-component 2.1) as well as social mobilization of all project activities. The PSPA will also manage the SP service delivery platform (Component 3).

For health services (sub-component 1.1), the PSHD will be responsible for implementing activities. The PSHD will use the existing systems at the provincial and district levels to ensure timely implementation of various activities: The Punjab Health Facilities Management Company (PHFMC) will manage the sub-component at the provincial level along with the existing programs such as the Integrated Reproductive, Maternal, Newborn, and Child Health & Nutrition Program (IRMNCH&NP), which is already responsible for the LHWs Program, the Maternal, Newborn and Child Health (MNCH) Program; the Nutrition Program; and 24/7 Basic Emergency Obstetric and Newborn Care services; EPI Program; and Hepatitis Control Program. The District Health Authorities will be responsible for implementation and management of the district level activities. To support additional responsibilities, and effective and efficient implementation and management of the planned activities, the project will finance key implementation support personnel as well as the incremental operating costs.

To strengthen ECE and Early Grade Learning (sub-component 2.2), the SED would take the overall lead by providing direct oversight and ensuring alignment and adherence of the

through biometrically verified automatic teller machine (ATM) cards once the SED verifies eligible girls and confirms school attendance of 80 percent or higher. The program is supported by the World Bank's Punjab Primary Education Sector Reform Project III (PESP III).

interventions with the new ECE policy requirements and evidence-based Early Grade Learning global good practice, respectively. Based on lessons learned from the model scaled by the PESP III, the SED will continue, through its PMIU, to work closely with the Quaid-e-Azam Academy for Education Development (QAED) to implement the ECE strengthening and roll out of upgrading ECE provision in government-run primary schools. The SED would also have primary responsibility for implementing and strengthening school-level early-grade literacy and numeracy teaching and learning practices, provision of teaching and enriched learning materials, establishment of reading corners in classrooms, and improved training and capacity-building activities for AEOs, head teachers, school councils, and teachers. To support additional responsibilities, and effective and efficient implementation and management of the planned activities, the project will finance the establishment of a Foundational Learning Cell in the PMIU with key implementation support personnel as well as the incremental operating costs.

4. BASELINE ENVIRONMENTAL AND SOCIOECONOMIC PROFILE

This section provides a quick overview of the baseline environmental and social profile of Program's geophysical extent i.e., the province of Punjab.

4.1 Geography

Punjab having 205,345 sq. km area and population of 8.90 million[15] is bound on the north by Kashmir, on the east by international border with India, on the south by Sindh province, and on the west by the provinces of Baluchistan and NWFP. The physical coordinates are 29°.30'N to 31°.44'N and 73°.55'E to 76°.50'E.

4.2 Topography

The province of Punjab is predominantly a fertile region along the river valleys, while sparse deserts can be found in southern part of the province. Owing to its geographical disposition, the province exhibits wide variations of physical, ecological, socio-cultural, and environmental features down from north to south and across from east to west[16]. Topographically, Punjab can be divided into following five landforms[17]:

- Upper hilly region
- Potohar plateau
- Central plain lands (Doab[18])
- Desert like plains
- Cholistan and Thal deserts

The upper hilly region is a southward continuation of the Himalaya foothills of Kashmir. High rainfall, coniferous trees, and a cold weather characterize the region. Murree, with an altitude of 2,300 meter[19], is a popular hill station and a summer resort. The Potohar Plateau, which also includes the Salt Range, is a land of undulating terrain. It lies in between rivers Indus and Jehlum. Besides a number of important archaeological sites, the region is distinguished by diverse wildlife. The central part of the province comprises low-lying floodplains along the rivers. This geographical relief has facilitated large-scale cultivation, development of an extensive irrigation network, construction of roads, railways, and other infrastructure. The general trend of gradient in plains is from north to south and from west to east. The desert like

[15]Punjab Development Statistics, Government of Punjab, as on 31.12.2007
[16]Punjab Sustainable Development Strategy, Environment Protection Department, GoPb, Final Report, 2008
[17]Ibid
[18]Doab in local language is an area between two rivers
[19]Informatory Brochure on Tourism Development Corporation of Punjab on Murree Hills

plains present a transition zones between floodplains and the deserts of Cholistan and Thal. Development of surface irrigation, to some extent, has transformed their morphology into irrigable tracts. Thal and Cholistan exhibit true desert features. Cholistan, locally known as Rohi, spans over an area of 16,000 km². It continues into Sindh province under the name "Thar" and into India as "Rajhistan"[20].

4.3 Geology

Approximately 70 percent land area of the province comprises floodplains of Indus Basin. Geologically, lands in the floodplains are lightly mantled with alluvial deposits transported from the Himalaya foothills. The underlying bedrock is composed of Precambrian metamorphic and tertiary consolidated rocks. The overlying alluvium consists of Pleistocene to recent unconsolidated deposits of sand, clay and silt. The formation age of the alluvium also relates from Pleistocene to recent, the latter being predominant near the riverbanks and the former around the central part of the plains[21].

4.4 Soil Morphology

The texture, morphology, and moisture holding capacities of the soils in the province vary from region to region. The surface crust soils are composed of alluvial deposits consisting of silt, clay, sand, and loam. Clay and silt formations occur in discontinuous layers with limited lateral extent. Their thickness is generally less than five meters[22]. Due to rich surface irrigation in the central Punjab, the fertile soils of the floodplains give a good per unit yield[23].

4.5 Seismology

According to the seismic map of Pakistan, most parts of the province lie in zone "2A" of the Earthquake Zones Classification of the Uniform Building Code (UBC – 1997) of the United States. This zone is associated with unknown geologic conditions and the earthquake damage is "moderate". However, earthquakes of magnitude up to five on the Richter scale, which generate ground acceleration up to 0.1g, have been reported for this zone[24].

4.6 Surface Hydrology

[20]Geography of Punjab, Sang-e-Meel Publication, Lahore, 2007
[21] Geological Survey of Pakistan <www.gsp.com.pk>, accessed on 07.01.2009
[22] Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
[23]Ibid
[24]Ibid

The major surface water resources in the province are rivers, canals drawn from the rivers, and some wetlands[25]. The major rivers are Indus and its tributaries (Jehlum, Chenab, Ravi, Sutlej, and Bias). Under the Indus Water Treaty (IWT)[26], waters of the three eastern rivers (Ravi, Sutlej, and Bias) have been appropriated to India and of the western rivers (Indus, Jehlum, and Chenab) to Pakistan. However, to meet irrigation needs of the command areas of the eastern rivers, waters from the western rivers have been diverted into them through the link canals. Link Canals are only conduits for water transfer and are not used for irrigation. However, they help in groundwater recharge. There are 12 such link canals. Structurally, the surface irrigation system comprises major canals, minor canals, branch canals, distributaries, and watercourses up to farm gate[27].

4.7 Groundwater

Availability and quality of groundwater, the depth of water table, and the aquifer recharge rates considerably differ from area to area depending on a number of variables such as amount of precipitation, proximity to surface water channels, and other meteorological factors[28]. About 79 percent area of the province has fresh groundwater[29]. High fluoride content is found in groundwater of the Salt Range[30]. Water table varies from as low as 1 meter in the waterlogged areas to as deep as 90 meters in desert areas[31]. The groundwater is drawn through hand pumps, tube wells, springs, and public water supply schemes. Tables 3.7a, 3.7b, and 3.7c, present typical groundwater quality of a few selected districts of the province i.e., Rawalpindi (upper Punjab), Sheikhupura (central Punjab), and Bahawalpur (lower Punjab)[32].

4.8 Meteorology, Climate, and Air Quality

The general pattern of climate in the upper Punjab is characterized by a relatively higher rainfall (approx. 1000 mm compared to province's average of 351 mm/annum)[33], high humidity, low temperatures, and heavy monsoon precipitation. Southern Punjab has a hot and dry climate with low rainfall[34]. Summers are hot with moderate humidity, whilst winters also

[25]Ibid
[26]Full text available at official website of Government of Pakistan
[27] Office Papers, Irrigation Department, Government of Punjab, 2008
[28] Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
[29]Water Quality Status in Pakistan, Pakistan Council of Research in Water Resources, Islamabad, 2003
[30]Ibid
[31] Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
[32]Subsoil Water Quality Monitoring in 14 Districts of the Punjab, Environment Protection Department, Government of the Punjab, 2003
[33]Punjab Development Statistics, Bureau of Statistics, GoPb, 2007
[34] Meteorological Profile of Punjab, Pakistan Meteorology Department, Lahore, 2008 (soft copy)

exceeded the acceptable standards in some areas, but the average levels were below the Guideline Values[35]. Another similar study of Gujranwala and Faisalabad also exhibit extreme cold. Spring and autumn seasons are the most pleasant parts of the year. Mean winter temperature (December/January) in the plains and desert areas range between 8.5°C and 12.5°C. The mean summer temperature remains around 35°C to 39°C with spikes crossing 42°C. The mean of the maximum temperature ranges between 29-30°C and mean of the minimum from 15-16°C. Approximately 50 percent of the average annual rainfall occurs during monsoon in the months of July and August. The past climatic records indicate that rain rich years occurred at a cycle of 15-20 years with intervening dry period.

A joint air quality study of Lahore, Rawalpindi, and Islamabad by the Pak-EPA and the Japan International Cooperation Agency (JICA), showed that the average suspended particulate matter (SPM) in the study districts was 6.4 times higher than WHO Guideline Values. The levels of Sulphur dioxide, carbon monoxide, and oxides of nitrogen revealed higher concentrations of SPM in the ambient air[36]. However, barring congested urban centers, air quality in rest of the province generally conforms to WHO Guideline Values. A typical urban ambient air quality data is as depicted in table 3.8, below[37]:

4.9 Forests, Habitat, and Ecologically Sensitive Areas

The forests resources of the province include Coniferous Forests, Scrub Forests, Riverine Bela Forests, Irrigated Plantations, Linear Plantations, and Rangelands[38].

The existing natural habitat of the province is largely a modified habitat owing to human interventions. Construction of an extensive irrigation network during early 20th century paved the way for transformation of the Tropical Thorn Forests into agricultural lands. This has led to a changed landscape and loss of wildlife. Nine habitat types have been identified in the province, of which deserts, sub-tropical deciduous, and wetlands are of concern with regard to threat to wildlife[39]. The major habitats along with their geographical areas are as under:

- Tropical Deciduous Forests — Margalla Hills, Mountain Foothills (District Jhelum)
- Dry Subtropical Forests — Potohar Region, Salt Range (Districts Chakwal, Khushab, Mianwali, Jhelum, Rawalpindi, and DG Khan)
- Tropical Thorn Forests — Indus Floodplains

[35] 3-Cities Investigation of Air and Water Quality (Lahore, Rawalpindi, Islamabad), JICA/Pak-EPA, 2001
[36] 2-Cities Investigation of Air and Water Quality (Gujranwala and Faisalabad), JICA/Pak-EPA, 2003
[37] Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
[38] Brief on Punjab Forest Department, Punjab Forestry Research Institute, Faisalabad, 2006
[39] Punjab Sustainable Development Strategy, Environment protection Department, Government of the Punjab, Final Report, 2008

• Tropical Thorn Forests (Sandy)	Cholistan, Thal (Districts Bahawalpur, Rahimyar Khan, Layyah, and Rajanpur)
• Irrigated Forest Plantations	Modified habitat carved out of Tropical Thorn Forests
• Rivers, Wetlands, and Waterlogged Areas	throughout Punjab
• Farmlands / Agricultural Areas	Throughout Punjab
• Urban	Parks and open areas in urban centres

(*Source: Forest Department, Punjab*)

In order to preserve the natural habitat, Government has notified 63 ecologically protected areas comprising wildlife sanctuaries, national parks, and the game reserves[40].

4.10 Demographic Profile

Punjab is a thickly populated province and has average population density of 358 persons/km^2. The population of the province constitutes 55.6 percent of country's total population. The population of the province, which was 73.6 million in the 1998 Census, is now crossing 90 million[41]. The average population growth rate is 2.48 percent per annum[42]. With the existing growth rate, the population is expected to double by 2025. Urban population has increased from 31 percent in 1998 to about 36 percent in 2007. Overall sex ratio is 107 males per 100 females. Lahore is the most populated district of the province with population density of 3,566 persons/km^2. Children below fifteen years of age constitute approximately 40 percent of province's population[43].

4.11 Land Use / Agricultural Profile

Agriculture is still the predominant economic activity of 64 percent population of the rural Punjab. About 50 percent of total labour force is employed in agriculture. More than 70 percent of cropped area of Indus Basin is located in Punjab. The principal sources of irrigation are the surface channels supplemented by tubewells. Rainfall accounts only for a small proportion of the irrigation sources. Sericulture, horticulture, and aviculture are also gaining popularity. Investments in honeybee- sheep-, goat-, fish-, poultry, and dairy farming are also increasing. The major seasonal crops include wheat, rice, maize, and vegetables. Other agricultural products include fodder, fresh vegetables, and lattice[44]. The reported area of

[40]WWF Pakistan <www.wwfpak.org>
[41]Punjab Development Statistics, Bureau of Statistics, Government of the Punjab, 2007
[2]Ibid
[43]Ibid
[44]Punjab Sustainable Development Strategy, Environment protection Department, Go Pb, Final Report, 2008

Punjab is 17.62 million hectares, out of which 71 percent is cultivated and the remaining is uncultivated[45].

The land use in the province has been exhibiting change from agricultural to residential and built-up structures. Whereas, land use in the urban centres is predominantly of fixed and permanent structures, it is of mixed disposition in the suburbs and along outer rim of the **4.12**

Healthcare Facilities

Punjab has a reasonable network of healthcare services in the public sector ranging from primary to tertiary and even upto specialized healthcare facilities. There is good number of tertiary level healthcare hospitals (teaching) in the province. The Province has 308 hospitals and 1333 dispensaries. Table 3.12a presents status of healthcare facilities in the Punjab. There are more than 59 thousand registered doctors, 45 thousand nurses, 9 thousand lady health visitors, 7 thousand midwives, and 5 hundred dais[46]. The mortality rates in the province are generally higher than accepted international standards and health indicators present a dismal status as shown in Table 3.12b. On the lines of the PESRP, Government of the Punjab is implementing a reform program in the health sector, "Punjab Health Sector Reforms Program" for improving and upgrading healthcare facilities in the province[47].

Awareness about personal hygiene is very low. According to the MICS[48], only 41 percent households use soap to wash their hands before eating and only 55 percent wash their hands adequately after attending toilet. Only 52 percent households are aware of the need for iodized salt.

4.13 Educational Facilities

The educational facilities in the province range from primary level masjid-maktab[49] schools up to universities and specialized institutions. There is a separate stream of technical and vocational institutions as well as teachers' training colleges. Educational facilities for the disabled children are provided by a separate Department of Special Education[50]. The province has 32,138 primary schools of public sector, 7,000 middle schools, 5,000 high schools, and 672 intermediate and degree colleges. More than 25 universities, both in the public and the private

[45]Punjab Development Statistics, Bureau of Statistics, Government of the Punjab, 2007

[47]A Brief Introduction to Punjab Health Sector Reforms Program, PMIU, 2008
[48]Multiple Indicator Cluster Survey (MICS), Planning and Development Board, GoPb, 2003
[49] Mosque is called "Masjid" in Urdu Language. Maktab is Urdu equivalent of school
[50]Punjab Development Statistics, Bureau of Statistics, Government of the Punjab, 2007

sector, are catering for higher education and research[51]. Public sector enrolments at primary level are 5.85 million, at middle level 2.1 million, at high school level 0.85 million, and at college level 0.66 million. The percentage share of Punjab's enrolments to country's total enrolments is 27.4 percent for primary, 45.3 percent for middle, 44.9 percent for high, and 65.5 percent for college grades. Literacy rate in the province has recorded steady uphill trend from 27.4 in 1951 to 55.2 in 2005-06. The combined literacy rate in urban areas is 70.2 with male literacy rate at 78 and female literacy rate at 66. The literacy rate in rural areas is 59 for males and 35 for females[52].

4.14 Infrastructure Profile

There are wide variations in the availability of infrastructure facilities in the urban and rural areas as well as in different regions of the province. Whereas, availability and condition of roads in the cities is fair, it is deplorable in rural areas[53]. As a part of its developmental agenda, the Government is focusing attention on the construction of farm-to-market roads (FMR) in the province and building of infrastructure under the Annual Development Program (ADP) and the Public Sector Development Programs (PSDP). Construction of the roads under various programs has substantially improved agricultural marketing and timely transportation of the farm produce to markets[54].

4.15 Socioeconomic Profile

Punjab is the hub of economic activities in the country. Opportunities exist in business, economic, trade, social, educational, and general activities. A large section of the population is absorbed in services sector, in the army, and in the civil service[55]. Many are working abroad as expatriates. However, still the majority are absorbed in the agricultural sector. The mean income level of the city residents is higher than their rural counterparts[56]. There are more than 3.5 million registered vehicles in the province, which number is increasing with every passing day[57]. Communication system in the form of regular landlines and mobile telephony is one of the fast-growing areas of economy[58].

4.16. Labour and Employment

[51]Ibid
[52]Ibid
[53]Ibid
[54]Medium Term Budgetary Framework, Planning and Development Board, GoPb, 2008-09
[55]Punjab Sustainable Development Strategy, Environment protection Department, GoPb, Final Report, 2008
[56]Punjab Development Statistics, Bureau of Statistics, Government of the Punjab, 2007
[57] Office Papers, Excise and Taxation Department, Government of the Punjab, Lahore
[58]Punjab Development Statistics, Bureau of Statistics, Government of the Punjab, 2007

Country's labour force is estimated as 43 million, out of which nearly 55.9% is in Punjab. About 70 percent of Punjab's labour force is in rural areas and 30 percent in urban areas[59]. Migration of people from rural to urban areas for employment opportunities and better socioeconomic conditions is an unending phenomenon in the province. Growth of urban centers, development of Lahore as a metropolis, and establishment of industrial estates enterprises have all contributed towards increased employment opportunities in the province. The number of employed people has doubled between 1972-2002. However, the number of unemployed people has recorded eightfold increase during the same period, mainly because of high population growth rate[60]. Investments in social sectors such as education, health, housing, water and sanitation, agriculture, transport, infrastructure, and communications, etc. have not kept pace with rapidly growing population[61]. The province of Punjab has over 18,000 large and medium industrial units, 59,126 small factories, and 90, 995 cottages units absorbing a total labour force of 62,000 persons[62].

4.17 Culture, Religion, and Customs

The province of Punjab is rich with magnificent cultural heritage of ancient times and of early Islamic period, reflected through specimens of art and craft, literature, and architect. Bhangra and Luddi are two popular dances. The population predominantly consists of Muslims. Punjabi is the native language and spoken widely, particularly in rural areas. However, other languages like Hindkoh, Balochi, Potohari, and Saraiki are also spoken in certain areas.

People generally respect *chadar* and *chardewari*, i.e. they do not mingle up with women public ally and stay away from others houses and respectfully wait to be called in or the residents to come out from their houses. A reasonable proportion of womenfolk observe the *purdah* etiquette, i.e. they remain secluded from outsiders. However, womenfolk do participate in almost all sort of social, cultural, economic, educational, and service activities[63].

Joint family is generally prevalent, especially in rural area. However, nucleus or small family is fast emerging in metropolis and urban centers because of socio economic compulsions and attitudinal shifts in the youth.

[59]Pakistan Economic Survey, Government of Pakistan, Islamabad, 2007
[60]Medium Term Budgetary Framework (2005-10), Planning Commission, Government of Pakistan, Islamabad, 2005
[61]Ibid
[62]Punjab Industrial Directory, Directorate of Industries, GoPb, 2006
[63]Punjab Sustainable Development Strategy, Environment protection Department, GoPb, Final Report, 2008

4.18 Gender Issues

Women in Pakistan are among the poorest and the most vulnerable sections of society. Women's access and control over productive resources is limited, which ranks Pakistan amongst the highest in the world for maternal and infant mortality rates. Vulnerability of women to discriminatory treatment varies across classes, region, and the urban / rural populations. The 2007 Human Development Report ranks Pakistan at 135 out of 177 countries in terms of human development index and at 107 out of 140 in the gender related index[64]. The dependency and vulnerability rates estimated to be around 47 percent. However, the actual dependency is believed to be much higher than the official figures because approximately 69 percent population comprises women, children, and the aged who all can be classified as vulnerable. Another reason of dependency is low participation of women in economic activities. Presently, women comprise less than 5 percent of public sector employees in the province. Those who are employed have limited horizontal mobility and are limited to social sector departments like education and health. Representation of women at the decision-making level is only 3 percent.

The Government's major initiative of empowering the women is the Gender Reform Action Program (GRAP), which is designed to trigger actions that will result in gender mainstreaming. GRAP focuses primarily on institutional change to achieve gender equity.

4.19. Poverty

Incidence of poverty in the province is estimated at 32 percent (36 percent urban and 26 percent rural), which is quite high[65]. Despite government's interventions, poverty is increasing with passage of time. In case of urban areas, poverty is more evident in slums and katchiabadis. The southern Punjab has higher prevalence of poverty compared to central and upper Punjab. The main causes of poverty are traditional agricultural practices, fragmented landholdings, non-availability of safe drinking water and sanitation facilities, low literacy rate, inadequate institutional arrangements for addressing social sector problems, and lack of access to social justice system.

[64]Ibid
[65]Punjab Poverty Reduction Strategy Paper, Planning and Development Board, GoPb, 2003

5. HEALTHCARE WASTE MANAGEMENT & SITUATION ASSESSMENT IN PUNJAB

5.1 Types of healthcare waste

Healthcare waste (HCW): The total waste stream from healthcare facilities, research facilities, and laboratories is termed as HCW. HCW can be divided into municipal solid waste and special healthcare waste.

No risk healthcare waste includes all waste comparable to domestic waste, such as packaging materials, non-infectious bedding, building rubble/demolition waste, hotel function waste (household, kitchen, administration), and other such wastes generated from patient wards and other patient care not related to medical care.

Special healthcare waste always needs special attention and includes:

Sharps**:** All sharp objects that could cause a cut or puncture (whether infectious or not) including hypodermic needles, suture needles, injector tips, scalpels, lancets, knives, blades, razors, pipettes, and broken glass (non-exhaustive list).

Pathological waste: Body tissues, organs, body parts, human fetuses, animal carcasses, liquid waste blood, plasma, coagulated factors, and body fluids.

Redundant potential infectious waste**:** Disposable items contaminated with excreta, dressings, gowns, and gloves; containers with blood products, I.V. tubing emptied peripheral dialysis fluid bags, intravascular access devices introducers, culture dishes, microbiological slides and cover slips, test tubes, vials, and vacationers.

Hazardous chemical waste**:** Any substance, liquid or solid, with at least one of the following properties: explosive, flammable, toxic, corrosive, locally chafing, reactive or genotoxic (carcinogenic, mutagenic, teratogenic) including cytotoxic drugs. Also, all containers contaminated by these substances.

Pharmaceutical waste**:** All pharmaceutical products, drugs, drug residuals and therapeutic chemicals that have been returned from wards; have been spilled; are outdated, contaminated, or are to be discharged because they are no longer required. Particular attention will be given to these wastes in the segregation process, as they may otherwise be resold by waste pickers.

***Radioactive waste**:* Solids, liquids and gaseous waste contaminated with radio-nuclides. This type of waste is generated from in vitro analysis of body tissues and fluids, in vivo body organ imaging and tumor localization, and investigative and therapeutic procedures.

Pressurized containers: Containers holding gases used for anesthesia, oxygen delivery, or cleaning mechanisms. These can include gas cylinders, cartridges, and disposable aerosol cans. The most common types of gas are: ethylene oxide, oxygen, and compressed air.

Communal Waste is all solid waste **not** including infectious, chemical, or radioactive waste. This waste stream can include items such as packaging materials and office supplies. Generally, this stream can be disposed of in a communal landfill or other such arrangement. Segregation of materials which are able to be reused or recycled will greatly reduce the impact burden of this waste stream.

Special Waste consists of several different subcategories:

***Infectious*:** Discarded materials from health-care activities on humans or animals which have the potential of transmitting infectious agents to humans. These include discarded materials or equipment from the diagnosis, treatment and prevention of disease, assessment of health status or identification purposes, that have been in contact with blood and its derivatives, tissues, tissue fluids or excreta, or wastes from infection isolation wards. Such wastes shall include, but are not limited to, cultures and stocks; tissues; dressings, swabs or other items soaked with blood; syringe needles; scalpels; diapers; blood bags. Incontinence material from nursing homes, home treatment or from specialized health-care establishments which do not routinely treat infectious diseases (e.g. psychiatric clinics) is an exception to this definition and are is not considered as infectious health-care waste. Sharps, whether contaminated or not, will be considered as a subgroup of infectious health-care waste. These include syringe, needles, scalpels, infusion sets, knives, blades, and broken glass.

- *Anatomic:* consists of recognizable body parts.
- *Pharmaceutical:* Consisting of/or containing pharmaceuticals, including: expired, no longer needed; containers and/or packaging, items contaminated by or containing pharmaceuticals (bottles, boxes).

- *Genotoxic:* Consisting of, or containing substances with genotoxic properties, including cytotoxic and antineoplastic drugs; genotoxic chemicals.
- *Chemical:* Consisting of, or containing chemical substances, including: laboratory chemicals; film developer; disinfectants expired or no longer needed; solvents, cleaning agents and others.
- *Heavy Metals:* Consisting of both materials and equipment with heavy metals and derivatives, including: batteries, thermometers, manometers.
- *Pressurized containers:* Consisting of full or empty containers with pressurized liquids, gas, or powdered materials, including gas containers and aerosol cans.
- *Radioactive materials:* Includes: unused liquids from radiotherapy or laboratory research; contaminated glassware, packages or absorbent paper; urine and excreta from patients treated or tested with unsealed radio-nuclides; sealed sources.

5.2 HCW CURRENT SITUATION ANALYSIS

The current situation of the medical waste management has been assessed based upon the literature review, Experience learned in implementing hospital waste management Rules, 2014 through Punjab Health Sector Reform Program (PHSRP) as well as field observations during visits to healthcare facilities in the Province during the present study.

5.2.1 Literature review.

A comprehensive country-wide survey was conducted in May2007 covering a total of 78 health care facilities in four provinces, Azad Jammu and Kashmir, and Federal capital area. The study confirmed the dismal state of medical waste management in the country. The study results showed that only 30 percent of hospitals surveyed had Health Care Waste Management (HCWM) teams or Infection Control Teams in place; 41 percent had the guidelines or internal rules of the health care waste management; only 27 percent had the plan for healthcare waste management (HCWM) and of these, only 12 percent were applying the program for assessing the health care waste (HCW); 23 percent of the hospitals had regular training programs on the HCWM, and a similar percentage had received training on HCWM; about 67 percent of staff were aware about the hazards of HCW and its associated risk factors; and routine health surveillance for the staff was available in only 22 percent and reporting system existed in only 33 percent of the facilities. Another study from Lahore highlighted that majority (85.5 percent) of sweepers were

aware of the fact that job is harmful for their health however they have to continue it for economic reasons. About 71 percent sweepers did not use any protective covering and thought that only rich nations take such measures. Most of the employee did not understand the meaning of “training” and only 14.5 percent employee were trained by the hospital authorities. The most dreadful aspect of hospital waste management was that hospital management did not take precautions for waste disposal as told by the sweepers. Majority (76.4 percent) of the sweeper said that hospital waste is directly thrown into the waste bins and 23.6 percent said that the part of the waste gets incinerated and rest gets recycled. In 2007 survey it was observed that waste was not segregated properly, poor was supplies were used and workers were not using the proper personal protection equipment. The waste management committees were not notified in all hospital and no minutes were being shared. Improper collection of waste, waste handling, storage, transportation and final disposal had increased the probability of environmental health risks and emergence of communicable & non communicable diseases.

The poor waste management practices are shown below.

5.2.2 Experience of Punjab Health Sector Reform Program

Punjab Health Sector Reform Program and Implementation of Hospital waste Management Rules, 2014 in selected 17 districts of Punjab.

Since realizing the grave situation of healthcare waste management in country wise survey (2007) an "Environmental Health and Medical Waste Management Plan" (EH&MWMP) was developed in 2013 by Policy & Strategic Planning Unit and implementation was agreed with the World Bank for the achievement of agreed disbursement linked indicators (DLIs). The EMWMP was prepared in compliance with the national regulatory requirements and WB Operational Policies.

The Plan was prepared to effectively implement the Hospital Waste Management Rules, framed by the Government of Pakistan in 2005 and adapted by Gov of Punjab in 2014. The plan was divided in to two phases. Phase-1 was to implement the HWM Rules, 2014 in pilot health care facilities while the phase-2 was the scale up plan to replicate the same practices in the health care facilities (DHQs/THQs) of the selected 15 districts of the province. The DLIs were completed successfully and disbursement was made to

GoPb after the physical verification of implemented process by Bank and a good third-party validation report was submitted by PSPU (PHSRP).

The results of the TPV for DHQs and THQs are described below.

Table: 5.2.2 (a) TPV Results /Health Care Waste Management at DHQ

Sr. N	Indicators	(n=17) DHQs Hospitals	
		Number	%
1	Health-care waste management plan of health care facility present.	15	88.2
2	Hospital waste management committee notification made.	15	88.2
3	HWM committee minutes of the meeting available.	15	88.2
4	Daily waste generation record of non-infectious waste made (entry of waste collection of a day before inspection checked)	17	100
5	Daily waste generation record of infectious waste available (entry of waste collection of a day before inspection checked)	17	100
6	Daily waste generation record of glass waste made (entry of waste collection of a day before inspection checked)	17	100
7	Training of health care workers done	17	100
8	Personal protection equipment available at wards.	16	94.1
9	Personal protection equipment available at yellow room.	17	100
10	Personal protection equipment available at labs.	12	70.6
11	Primary collection of waste in small bed side color coded bins done.	15	88.2
12	For secondary collection large color coded HCW bins present.	17	100
13	Displays for proper health care waste segregation present at/near secondary collection large color coded HCW bins.	17	100
14	Handing over of infectious waste by nursing staff from color coded waste bins to infectious waste contractor done on daily basis.	17	100
15	HCW waste is stored for 24 Hours only (excluding days of law and order situations).	17	100
16	Infectious waste weight is recorded before transportation to yellow trolley.	17	100
17	Non-Infectious waste weight is recorded before transportation.	17	100
18	Infectious waste is transported through covered Yellow trolleys.	17	100
19	Non-Infectious waste is transported through covered White trolleys.	10	58.8
20	Yellow room for temporary infectious waste storage is present at health care facility.	17	100
21	TMA container for non-Infectious waste is present.	17	100

22	Infectious waste transportation to incinerator site done by dedicated vehicle with chiller installed.	17	**100**
23	Incident reporting mechanism is maintained.	16	**94.1**
24	Yellow room is present at incinerator site.	17	**100**
25	Infectious Waste is incinerated in environmentally friendly manner.	17	**100**
26	Ash is disposed at ash pit	13	**76.5**
27	Daily waste disposal record at incinerator site is maintained	17	**100**
28	Disinfection of yellow trolleys and vehicle is maintained	17	**100**
29	Containers for needles and syringe cutting available and used.	17	**100**
30	Blood, urine, sputum, lab infectious liquid waste disinfected before disposal	13	**76.5**
31	Protocol for radiological waste is maintained	14	**82.4**
32	Burial pit for anatomical & obstetrics/placental waste is present	15	**88.2**
33	Proper surface disinfection done with chlorine solution for Mopping	13	**76.5**
34	Proper management of spillage is present.	12	**70.6**
35	Cleanliness of toilets with soap and waste bins is maintained.	12	**70.6**
36	**Drinking water testing report available.**	**16**	**94.1**

Table: 5.2.2 (b) TPV Results/Healthcare waste management Results at THQs

Sr. No	Indicators	THQs Hospitals (n=40)	
		Number	%
1	Health-care waste management plan of health care facility present.	39	97.5
2	Hospital waste management committee notification made.	37	92.5
3	HWM committee minutes of the meeting available.	36	90.0
4	Daily waste generation record of non-infectious waste made (entry of waste collection of a day before inspection checked)	38	95.0

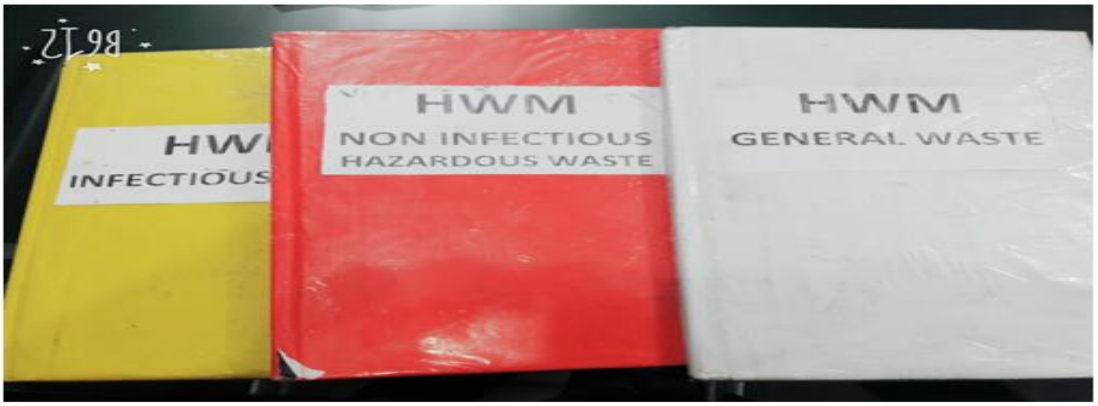
5	Daily waste generation record of infectious waste available (entry of waste collection of a day before inspection checked)	40	100
6	Daily waste generation record of glass waste made (entry of waste collection of a day before inspection checked)	37	92.5
7	Training of health care workers done	40	100
8	Personal protection equipment available at wards.	33	82.5
9	Personal protection equipment available at yellow room.	40	100
10	Personal protection equipment available at labs.	32	80.0
11	Primary collection of waste in small bed side color coded bins done.	36	90.0
12	For secondary collection large color coded HCW bins present.	40	100
13	Displays for proper health care waste segregation present at /near secondary collection large color coded HCW bins.	40	100
14	Handing over of infectious waste by nursing staff from color coded waste bins to infectious waste contractor done on daily basis.	40	100
15	HCW waste is stored for 24 Hours only	40	100
16	Infectious waste weight is recorded before transportation to yellow trolley.	40	100
17	Non-Infectious waste weight is recorded before transportation.	38	95.0
18	Infectious waste is transported through covered Yellow trolleys.	40	100
19	Non-Infectious waste is transported through covered White trolleys.	32	80.0
20	Yellow room for temporary infectious waste storage is present at health care facility.	40	100
21	TMA container for non-Infectious waste is present.	40	100
22	Infectious waste transportation to incinerator site done by dedicated vehicle with chiller installed.	40	100
23	Incident reporting mechanism is maintained.	31	77.5

24	Yellow room is present at incinerator site.	40	100
25	Infectious waste is incinerated in environmentally friendly manner.	40	100
26	Ash is disposed at ash pit	40	100
27	Daily waste disposal record at incinerator site is maintained	40	100
28	Disinfection of yellow trolleys and vehicle is maintained	40	100
29	Containers for needles and syringe cutting available and used.	40	100
30	Blood, urine, sputum, lab infectious liquid waste disinfected before disposal.	33	82.5
31	Protocol for radiological waste is maintained	35	87.5
32	Burial pit for anatomical & obstetrics/placental waste is present	35	87.5
33	Proper surface disinfection done with chlorine solution for mopping	33	82.5
34	Proper management of spillage is present.	33	82.5
35	Cleanliness of toilets with soap and waste bins is maintained.	28	70.0
36	**Drinking water testing report available.**	27	67.5

The Implementation of HWMR, 2014 through PHSRP (PSPU) & World Bank is a milestone to establish the waste management system in Punjab. Before implementation quality healthcare supplies were provided to healthcare facilities. Provincial guidelines in accordance with HWMR, 20114 and Punjab Healthcare Commission (PHC) were prepared and disseminated to all healthcare facilities. Waste management committee's notification and minutes meetings were ensured. Hospital based waste management plans were prepared. Color coded waste bins and registers were provided to ensure the segregation and dedicated waste trolleys were provided. For weighing waste scales were installed and IEC material at wards level was provided. Injection waste management protocols were implemented providing good quality needle cutters and sharp containers. For temporary storage of infectious waste, Yellow rooms were prepared both at facility and incinerator sits before its final transportation and disposal. Daily waste generation record has maintained at ward level, total waste stored at yellow room and total waste disposed at incinerator sites.

SMPs, CQI, color coded waste bins, weighing scales and quality display

Bed side waste bins, needle cutter and cleanliness at HCFs



Color coded register for record keeping of different waste & waste trolleys for collection of infectious & noninfectious waste

Yellow room for temporary collection of waste, fabricated vehicle installed with chillers and environment friendly incinerator for final disposal of waste.

Training of master trainers across the Punjab

Physical verification by World Bank

5.2.2 (c) Experience Learned from PHRSP

Hospital waste management system was established at secondary healthcare facilities by implementing the Health Care Waste Management Rules (HWMR)-2014 in selected 17 districts of Punjab. During the implementation of PHSRP, Segregation of the waste was main problem at all health care facilities due to lack of trainings, improper waste segregation (color coded quality healthcare supplies, waste collection and disposal records & environment friendly disposal technologies. In the beginning, it was a challenge to provide the supplies, trainings and disposal technologies for the infectious waste because no PC-I was prepared to support the program. However taking support from finance department and district health authority the HWMR implementation was started and after achieving the first DLI for pilot districts, the disbursement was made to government of Punjab and a dedicated PC-I (PRK, 2.69 billion) was also approved to establish robust waste management system in the Punjab which is a good precedence in implementing the HWMR, 2014.

The current EHCWM plan is incorporated in the PC-1 PHCIP so provision of quality healthcare supplies, equipment's, vehicle and trainings would not be a major problem to implement the HWM rules at primary healthcare facilities. More over during the PHSRP primary health care facilities were not focused to establish the hospital waste management, although master trainers from PHCFs were trained and quality color coded supplies were provided excluding implementation, monitoring and reporting. Similarly, a large quantity of infectious waste (EPI waste i.e.; vaccine vials & syringes) is being generated at PHCFs which would be now collected and disposed safely. The current EHCWM Plan would be helpful to implement the same set of HWM standards being implemented at SHCFs.

5.2.3 Field assessment Primary Healthcare Facilities/RHCs & BHUs during current study.

The data was collected from targeted 11 districts of Punjab. 1 RHC and 2 BHUs were selected from each district to assess the healthcare waste management practices and its environment friendly disposal methods. A total of 11 RHCs and 22 BHUs were visit visited.

Table: 5.2.3 Proposed Healthcare Facilities and waste management situation analysis

District	Total BHUs	Existing 24/7 BHUs	BHUs to be upgraded to 24/7	Total RHCs	Number of RHCs to be revamped
Khushab	43	16	20	5	1
Bahawalnagar	102	45	43	10	2
Bahawalpur	72	46	20	12	3
R. Y. Khan	104	55	37	19	5
Bhakkar	40	21	14	5	1
Muzaffargarh	72	36	27	13	3
Layyah	36	29	5	6	2
Lodhran*	0	0	0	0	0
Mianwali*	0	0	0	0	0
D. G. Khan*	0	0	0	0	0
Rajanpur*	0	0	0	0	0
Total	**469**	**248**	**166**	**70**	**17**

The observations are summarized below;

Waste Management Responsibility. Staff of all of the facilities visited were aware of the importance of proper healthcare waste management. However, lack of focus and low priority resulted in inadequate budgetary allocations for waste management.

Waste Management Committee/Team. Most of the facilities visited had a designated waste management officer (WMO) at RHCs and at some BHUs the focal person was nominated to perform the duties.

Waste Management Plan. Only some of the Rural Health Centers had prepared waste management plans most of the visited facilities did not have such plans as required under HWM Rules, 2014.

Waste Segregation. Some of the facilities (RHCs & BHUs) observed good practice in waste segregation, while others observed minimal segregation of waste. The facilities do not have good quality waste bins both small & large. The color coding was not observed specially at BHUs.

Waste collection and transportation. Waste collection was being done by sanitary workers and cleaners. However, the use of protective clothing was lacking in most facilities. Only some of the facilities had waste collection trolleys at RHCs only. Use of waste bins installed with color coded bags was observed at 12 BHUs and 6 RHCs out of 22 BHUs and 11 RHCs visited. The quality of these bags also seemed to be a problem and, in some instances, these bags were found to be punctured and/or leaking. Inadequate budgetary allocation was cited to be the key reason behind no/inadequate usage of plastic bags and other non-compliance of the standards.

Waste storage. At some RHCs yellow room was observed but not according to its specification. At BHUs no such storage facility was observed to store the infectious waste. Mostly waste is stored in the premises of the health facilities in open places.

Waste disposal. For waste disposal no proper mechanism is being followed. At RHCs waste is collected and disposed in the vicinity of the facility or it is just thrown outside the facility. At some RHCs the waste is burnt in the premises of the facility and somewhere the same waste is disposed in open dump sites. Dismal situation was observed at BHUs where waste

is disposed and dumped near the facilities. The used syringes are being sold by the scavengers.

In smaller facilities, methods of disposal were mainly open pit/land burning within the facility premises. In some facilities, waste was collected by municipality and disposed of in landfills/garbage dumps.

Documentation. Few healthcare facilities (RHCs & BHUs) were found to maintain waste generation and disposal record through their color-coded registers.

Capacity building. Almost all BHUs and RHCs had been given the training by PSPU. Awareness raising posters were present in most of the facilities.

Pictures taken during site visits at RHCs and BHUs

Improper waste management and poor segregation

RHCs

5.4 CONSULTATION WITH MAJOR STAKEHOLDERS

As a part of preparing this document and project preparation, consultation was carried out with a range of stakeholders, including relevant institution/department, field staff of HCFs, and beneficiary of such HCFs. An appropriate consultation was held with the following departments.

- Punjab social Protection Authority (PSPA)
- Environment protection department (EPD)
- Punjab Healthcare commission,
- Health Department (Policy & Strategic Planning Unit)
- Punjab Health Facility Management Company
- Hepatitis and Infection Control Program

PSPA was consulted regarding the overall supervision of the project implementation and monitoring. The draft EHCWM was also reviewed by PSPA to incorporate the waste management plan for primary healthcare facilities in selected districts of the Punjab including the cost for waste supplies, master trainers and IEC materials.

For the implementation of the hospital waste management rules the director Environment was consulted for the implementation of the standards protocols in accordance with HWM Rules, 2014. It was decided that a facility-based hospital waste management plan will be prepared according to the HWM Rules, 2014 and committees will be notified before the implementation of the projects. The check list for the waste management assessment will be prepared and protocols will be issued to all health facilities summarized in HWMR, 2014.

A meeting with Punjab Healthcare commission was also arranged to discuss the waste management at PHCFs. The commission ensured their support regarding the regulation of minimum service delivery standards in compliance with hospital waste management rulers, 2014. The commission also focused to notify the waste management committee especially at basic health units.

The gaps (uninterrupted Healthcare supplies and facility-based Monitoring & Reporting) identified during the PHRSP were also mitigated by consulting PSPU that implemented the HWM Rules in selected 17 districts of the Punjab and a robust waste management system was established. Following this system waste management Model-1 and 2 has been incorporated in chapter 7.

The execution of the waste management and its component will the core responsibility of the CEO PHFMC. The company has also completed the training of master trainers in district Lahore. In a meeting with CEO PHFMC it was decided that the hospital waste management rules will be implemented in selected healthcare facilities as implemented in secondary healthcare facilities of the Punjab through PHSRP and H&ICP Punjab.

To facilitate the program at PHCFs the program manager Hepatitis & Infection Control Program was also consulted, and their role and responsibilities were identified to implement the rules in facilities. The H&ICP is implementing the HWMR (DHQs/THQs) across the Punjab through an outsourced firm. The program has trained master trainers through PHRSP at PHCFs and has distributed healthcare supplies at all BHUs & RHCs. The program has revised the PC-1 to extend the services at primary healthcare facilities across the Punjab.

5.4.1 Consultation with the beneficiary representatives

Stakeholder Consultation in the, form of Focus Group Discussion (FGD) was carried out on 25-9 August 2019 at RHCs and BHUs. The participants of the consultative meeting include:

- All Senior Medical Officers (SMOs) of selected 1 RHC from 11 districts
- All Medical Officers (MOs) of selected 2 BHUs from 11 districts
- Other HCWs of the health facilities

5.4.1.1 Consultation at RHCs & BHUs

The SMOs /MOs were consulted by visiting the Rural as well as basic health units. The discussion points were to discuss the environmental and social impacts during the renovation of the healthcare facilities. The beneficiaries were informed about the environmental and health hazards. Mostly participants were well known about the hazards during the renovation work. At the onset of the meeting the stakeholders were thoroughly briefed about the project, its objective, planned activities and associated potential environmental and social impacts. The discussion encompassed the following topics, issues and concerns.

1. upgradation of RHCs/BHUs rooms and repair/maintenance of new rooms.
2. Monitoring of up gradation Healthcare Facilities.
3. Water and Sanitation Facilities at healthcare facilities
4. Operation of Transport Vehicles
5. Provision of Electricity in healthcare Facilities.
6. Operation and Management of RHCS/BHUs

The participants of the while actively taking part in the meeting gave their views, concerns and suggestions on the following aspects: -

- Provision of safe drinking water in Healthcare facilities is a major concern.
- Slow employment of health staff in RHCs/BHUs is an issue of concern.
- Health staff lacks capacity of facility operation.
- upgradation/ repair and maintenance during operation/patient check-up hours results in disturbance.
- Contractor usually do-not dispose-off upgradation/repair and maintenance waste.
- Limited funds are available for health facilities maintenance such as toilets and sewerage system.
- Electricity is not available in most of BHUs and RHCs also and load shedding is yet another issue.

Table 5.4.4.1 Summary of Issues /Concerns of Community and Action Taken

S.No	Name of participant	Issue raised	Action Taken / Suggested

1	Dr Habib Mr Ejaz Sial Mr. Hayat Mian	District authority is least bothered to monitor upgradation/ repair and maintenance.	District authority/CEO (W) will be taken on board during renovation work.
2	Dr Mushtaq Khan Nazia Jamshed	Provision of safe drinking water in healthcare facilities is a major concern.	Chief executive Health and DHO preventive will be taken onboard for the provision of safe drinking water in the health care facilities
3	DrSehrishNawaz	WASH services are very poor in RHCs and BHUs	The issue will be addressed by the health department. DHO preventive services would be responsible to mitigate the infection control related activities in the facilities.
4	Mr Arshad Ali	renovation during operation or patient checkup hours results in disturbance.	SMO/MO would prepare the contingency plan and share with contractor to start work after 2 pm.
5	DrFozia Noreen	Contractor usually do-not dispose-off waste after completion of works.	The guidelines will be provided to contractor by SMO/MO to comply with for safe disposal of waste.
6	Dr Adnan	Limited funds are available for RHCs and BHUs maintenance such as toilets and sewerage system.	Health Department shall make tangible efforts to address this concern.
7	DrFaryal	Electricity is not available in most Health Facilities and load shedding is yet another issue.	Alternate source of energy will be managed by the SMO/MO at RHCs and BHUs and also the availability of the electricity taking on board the area AXEN.
8	Mr Shahzad	Vehicles during upgradation/ repair and maintenance make fuel spillage in the vicinity of the health facilities.	The contractor would adopt the SOP while using standard leak proof vehicle
9	Mr Salim Masih	Workers during the upgradation/ repair and maintenance are not using the personal protection equipment (PPEs)	The contractor will ensure the workers safety by adopting occupational health and safety protocols according to the health safety act 2005.

6. IMPACT ASSESSMENT AND MITIGATIONS

This Chapter identifies the potentially significant environmental impacts of the proposed project activities and also recommends mitigation measures to address these impacts.

6.1. Overview

Environment management in the healthcare sector comprises waste management, continued access to safe water and sanitation facilities infection control, occupational health, and safety of healthcare workers, patients, and nearby communities. Mitigation and management of these issues has an overarching impact on health service delivery by reducing the risk of infection, safety and health hazards, and providing a safe and hygienic healthcare infrastructure.

Among the environment management issues associated with the healthcare facilities, HCWM and infection control practices constitute the highest potential risk of environmental pollution and infection. While it is a challenge to collect data on direct correlation between disease burden and poor waste management and inadequate infection control practices, there is sufficient understanding and literature on the linkages and associated potential risks and hazards to the environment and human health.

The HCW includes all the waste generated by the healthcare establishment, research facilities, and laboratories. Most of the waste generated in the healthcare facilities can be treated as ordinary municipal solid waste. However, generally a small portion of the HCW requires special attention; these wastes include sharps (needles, razors, and scalpels), pathological waste, other potentially infectious waste, pharmaceutical waste, biological waste, hazardous chemical waste, and waste from microbiological laboratories.

Mismanagement of HCW poses risks to people and environment. The healthcare workers, patients, waste handlers, waste pickers, and general public are exposed to health risks from infectious waste, chemicals, and other special healthcare waste. Improper disposal of special healthcare waste, including open dumping and uncontrolled burning, increases the risk of spreading infections and exposure to toxic emissions from uncontrolled combustion.

Proper management of HCW can minimize the risks both within and outside healthcare facility. The first priority in this respect is waste segregation, preferably at the point of waste generation. Other important steps are institution of the sharp management system, waste reduction, ensuring workers safety, providing secure method of waste collection and transportation, minimization of hazardous substances wherever possible (eg, PVC-containing products and mercury), and installing safe treatment and disposal mechanisms.

6.2. Impact Screening

Screening of the potential impacts associated with the proposed activities was carried out with the help of the matrix specifically tailored for the proposed project. With the help of this matrix, interaction of various project activities with various components/aspects of the environment was identified. This interaction was then categorized with respect to its severity of impacts, as follows:

Table: 6.2 (a) Impact screening Score

High negative impact	**-2**	**Low positive impact**	**+1**
Low negative impact	-1	High positive impact:	+2
Insignificant impact:	0	No impact at all:	N

With the help of the above ranking, less important/severe impacts were screened out from the ones which were more important, needing further discussion. The following impacts were categorized as highly negative in severity:

- Health hazard for staff, patients, and nearby communities caused by not following infection control protocols, as well as improper waste segregation, collection, transportation, storage, and disposal.
- Safety hazards caused by various stages of improper waste management and handling of sharps, gases, autoclaves, and other similar equipment.
- Soil contamination caused by waste burial
- Air quality deterioration caused by waste burning and incineration
- Water contamination caused by waste burial and (improper) sewage disposal.

Table: 6.2 (b) Screening Matrix

Project Activities	Physical					Biological			Social and Socioeconomic													
	Soil	Air Quality	Surface Water	Groundwater	Water Regime	Natural Vegetation	Terrestrial/Wildlife	Aquatic Biota	Access	Noise	Cultivation	Livestock Grazing	Resettlement	Safety Hazard	Employment	Infrastructure	Public Health	Cultural Issues	Gender Issues	Recreational Sites	Historical/	Archeological Sites
Waste segregation	-1	N	-1	-1	-1	-1	N	N	N	N	N	N	0	-1	+1	+1	-1	N	N	N	N	N
Waste collection	-1	-1	N	0	0	N	N	N	N	N	N	N	-1	-1	+1	N	-1	N	N	N	N	N
Waste storage	-1	N	-1	N	N	N	N	N	N	N	N	-1	N	+1	+2	N	+1	N	N	+1	N	N
Waste transportation	-1	-1	0	0	N	N	N	N	+2	+1	N	N	-1	+1	N	N	0	N	0	N	N	N
Waste disposal	-1	-1	-1	-1	-1	-1	N	-2	0	0	0	N	N	-2	+1	N	-1	0	0	0	N	0
Sewage disposal	-2	-2	-1	0	-1	-1	N	-1	N	N	-1	N	-1	-1	N	N	0	N	N	0		0
Reuse/reprocessing	-2	-2	-1	-1	-1	N	0	N	0	-1	0	N	N	N	-2	-1	N	N	N	-1	N	N

6.3. Impact Characterization and Assessment

Subsequent to the impact screening, various characteristics of the potential impacts including spatial extent (local, regional, global), nature (direct/indirect), temporal extent (temporary, permanent), reversibility, severity, and sensitivity of receptors were determined using the criteria defined in Table of Annex A.

The results of the impact characterization and assessment of the proposed project is given in **Table** below.

Table: 6.3 Impact Characterizations

Categories	Health hazards	Safety hazards	Soil contamination	Water contamination	Air quality
Nature	Direct	Direct	Direct	Indirect	Direct
Duration of impact	Long term	Long term	Short term	Short term	Short term
Geographical Impact	Local	Local	Local	local	local
Timing	On going	On going	On going	On going	On going
Reversibility of Impact	Reversible	Reversible	Reversible	Reversible	Reversible
Likelihood of the impact	Certain	Likely	Certain	Possible	Likely
Impact consequences	Severe	Moderate	Severe	Moderate	Moderate
Significance of impact	High	Medium	High	Medium	Medium

6.4. Health Hazards

6.4.1 Potential Impacts

The health hazards for staff, patients, and nearby communities are by far the most significant potential risk associated with the healthcare facility operation. These are mostly caused by not following the infection control protocols, not using proper PPEs, and not

employing proper procedures for HCW collection, transportation, storage, and final disposal.

In addition, recycling of medical waste also potentially poses very serious health risks for the workers involved in recycling and also consumers using the recycled products.

Furthermore, contaminated/unsafe supply of drinking water can also pose health hazards for the staff and patients.

6.4.2 Mitigation Measures

Infection Control. The infection control protocols will be strictly implemented to minimize health risks for the staff and patients.

HCWM. Proper management of HCW can minimize the risks both within and outside healthcare facilities. The first priority is to segregate wastes, preferably at the point of generation, into reusable and non-reusable, hazardous and non-hazardous components. Other important steps are the institution of a sharps management system, waste reduction, avoidance of hazardous substances whenever possible (e.g. PVC-containing products, mercury thermometers), ensuring worker safety, providing secure methods of waste collection and transportation, and installing safe treatment and disposal mechanisms.

Currently, each technology that ensures destruction or elimination of infectious and other types of special HCW potentially produces a secondary waste stream. When choosing an appropriate technology (e.g., incineration, autoclave, or microwave irradiation) for the type of HCW, the secondary waste stream and the affected population also needs to be taken into consideration. Weighing the balance of the technology (and its secondary waste stream) with the current problem (while assessing the cost benefit and available technologies) is a key point in decision-making.

Furthermore, if the waste will be sent to disposal facility of DHQ ensuring that the incinerator plant continually burns its materials at a temperature at or above 1200 °C will virtually eliminate dioxins from release. The following specific measures need to be implemented:

- Strict compliance of the procedures specified in the Hospital Waste Management Rules of 2014 (and other similar standards), in close coordination with the infection control protocols mentioned above.
- each healthcare facility needs to constitute a waste management team, and prepare and implement a waste management plan, and will follow prescribed guidelines/procedures for waste segregation, collection, transportation, storage, and disposal.
- Waste segregation will be carried out at the source
- Waste transportation according to the protocols defined in the Hospital Waste Management Rules.
- Waste disposal according to the various options presented.
- Using all safety measures particularly PPEs for the staff handing wastes.
- Maintaining complete record of all the steps involved in HCW management on a regular basis.
- Measures to avoid and forestall any pilferage of medical waste particularly for recycling. These measures could include weighing the infectious waste at each stage of its handling till the disposal point and maintaining „chain of custody" protocol whereby complete record is maintained for handing-over and taking-over of the medical waste with names, signatures, time and date, quantity, type, and possibly photographs. Such details will be included in the hospital waste management plan of each facility.
- Vaccination of the staff particularly for hepatitis A and B and tetanus.

Supply of safe drinking water. It will be ensured that a reliable and safe drinking water source is available at each healthcare facility. Water will be periodically tested against the national standards for drinking water.

6.5. Safety Hazards

6.5.1 Potential Impacts

Safety hazards in the healthcare facilities are generally associated with handling of sharps (needles, cutters), gases, autoclaves, and other similar equipment. Open burning of HCW

also poses safety risks for the staff carrying out this activity. These hazards include risk of cuts, pricks, gas poisoning, burning, and other bodily injuries. The healthcare facility staffs as well as the patients are susceptible to these safety hazards.

The activities for facility renovation/rehabilitation also pose safety risks for the workers, facility staff, as well as patients.

6.5.2 Mitigation Measures

Strictly following standard operating procedures to use sharps and proper use of personal protective equipment (PPE) particularly prick-proof gloves and masks is of foremost importance to avoid safety hazards associated with sharps, gases, and others. In addition, thick/puncture resistant plastic bags to collect HCW and rigid/puncture proof boxes to dispose needles/other sharps will be used.

For the facility renovation/rehabilitation/expansion activities, a site-specific Environmental Management Plan (EMP) will be prepared for each facility or a cluster of facilities. This EMP will include the site-specific mitigation measures to address safety hazards associated with the renovation/rehabilitation activities.

6.6. Soil Contamination

6.6.1 Potential Impacts

Soil contamination can be caused by the direct burial of infectious wastes within the facility premises, or at the municipal waste dumping site if the healthcare waste is disposed along with the municipal waste. Open burning of infectious waste can also potentially cause soil contamination.

Spillage of contaminated effluents such as oils and chemicals during the facility renovation/rehabilitation activities can also contaminate the soil.

6.6.2 Mitigation Measures

The infectious waste will be segregated from the other non-risk waste and will not be sent to the municipal waste dumping site/landfill, except where dedicated landfill for medical waste is available. If on-site burial of infectious waste is carried out, it will be done in lined pits.

The sewage from the healthcare facilities within the cities will be discharged in city sewerage, otherwise on-site treatment such as septic tank and soaking pit will be upgraded according to international standards.

The EMP described earlier will include the site-specific mitigation measures to address the soil contamination caused by the renovation/rehabilitation activities.

In addition, the IFC/WB EHS Guidelines given in **Annex E** will also be applicable to address the soil contamination discussed above.

6.7 Water Contamination

6.7.1 Potential Impacts

Activities that can cause soil contamination can also cause water contamination. These include direct burial of infectious wastes within the facility premises, or at the municipal waste dumping site if the healthcare waste is disposed along with the municipal waste. Open burning of infectious waste can also potentially cause water contamination.

Improper sewage disposal at the healthcare facility can also contaminate water resources.

Spillage of contaminated effluents such as oils and chemicals during the facility renovation/rehabilitation activities can also contaminate the water resources.

6.7.2 Mitigation Measures

Most of the mitigation measures to avoid soil contamination will also address the water contamination. These include lining the burial pit for infectious waste, waste segregation and not sending the infectious waste to municipal waste dumping sites, and using appropriate disposal/treatment arrangement such as septic tank for sewage disposal. To address the water contamination that may be caused by the renovation/rehabilitation activities during the proposed project, a site specific EMP will be prepared as mentioned earlier as well.

6.8. Air Quality Deterioration

6.8.1 Potential Impacts

Air quality deterioration can take place by open burning of the HCW. Similarly, incineration of infectious waste can also pollute the air.

Of particular concern are dioxins which are produced by burning of the plastic and polyethylene products. The dioxins are carcinogenic and can affect the healthcare facility staff carrying out the waste burning, other nearby staff, patients, and nearby communities.

upgradation/ repair and maintenance activities for facility renovation/rehabilitation can also cause air quality deterioration.

6.8.2 Mitigation Measures

Open burning of the HCW particularly if it contains plastics/polyethylene will be avoided since it produces dioxins in addition to other toxic gases.

If infectious waste is incinerated, then it will be ensured that i) incinerators specifically designed for HCW are used; ii) properly trained staff operate the incinerators according to standard operating procedures; iii) appropriately high (more than 1200°C) temperature is achieved in the incinerator to avoid dioxin discharge; iv) the flue gases are properly treated (e.g. with the help of water scrubbers) before their release to the atmosphere; and v) there is no leakage of gases from the first chamber of the incinerator to avoid any release of dioxins before they can be destroyed in the second chamber. Furthermore, it will be ensured that the incinerator complies with the NEQS for gaseous emissions and ambient air quality.

7. HEALTH CARE WASTE AT PRIMARY HEALTHCARE FACILITIES

7.1 Basic Health Unit (BHU)

The BHU is located at a Union Council level and serves a catchment population of up to 25,000. Services provided at BHU are promotive, preventive, curative and referral. Outreach/community-based services are part of package provided by the BHU. BHU provides all PHC services along with integral services that include basic medical and surgical care, malaria and TB control. MCH services are also part of the services package being provided at BHU. BHU provides first level referral to patients referred by LHWs. BHU refers patients to higher level facilities as and when necessary. There are 2516 basic health units in Punjab.

7.2 Rural Health Centre (RHC)

The RHCs have 10-20 inpatients beds and each serves a catchment population of up to 100,000 people. The RHC provides promotive, preventive, curative, diagnostics and referral services along with inpatient services. The RHC also provides clinical, logistical and managerial support to the BHUs, LHWs, MCH Centers, and Dispensaries that fall within its geographical limits. RHC also provides medico-legal, basic surgical, dental and ambulance services. There are 318 rural health centers in Punjab having more than 6600 beds. The average infectious waste generation rate is 1500-1700kg/day in all RHCs because of low bed occupancy rate.

7.3 Waste Generation rate at Primary Healthcare Centers

7.3.1 TABLE: HOSPITAL WASTE GENERATION RATES IN PAKISTAN[66]

Type of facility	Total HCW Generation	Risk Waste
Hospitals	2.07 kg/bed-day (range: 1.28-3.47)	----
Clinics and dispensaries	0.075 kg/patient-day	0.06 kg/patient-day
Basic health units	0.04 kg/patient-day	0.03 kg/patient-day
Consulting clinics	0.025 kg/patient-day	0.002 kg/patient-day
Nursing homes	0.3 kg/patient-day	---
Maternity homes	4.1 kg/patient-day	2.9 kg/patient-day

7.3.2 Total Waste Generation in selected BHUs of Punjab

[66]UNEP, Compendium of Technologies for Treatment/Destruction of Healthcare Waste, 2012

District	Total BHUs	Total No of beds	Total infectious waste generation/day Kg	Total non-infectious waste/day Kg
Khushab	43	86	34.4	172
Bahawalnagar	102	204	81.6	408
Bahawalpur	72	144	57.6	288
R. Y. Khan	104	208	83.2	416
Bhakkar	40	80	32	160
Muzaffargarh	72	144	57.6	288
Layyah	36	72	28.8	144
Lodhran	48	96	28.8	192
Mianwali	42	84	25.2	168
D. G. Khan	54	108	32.4	216
Rajanpur	33	66	19.8	132
Total	**646**	**1292**	**481.4**	**2584**

7.4 EXISTING MANAGEMENT OF HCW AT SECONDARY HEALTHCARE FACILITIES

The Health Department has outsourced the waste management system from its collection to final disposal under the supervision of H&ICP. The waste from SHCFs is being collected and disposed at incinerator sites by ARAR consulting firm. The incinerators are being operated by the Mediland personnel to dispose the collected waste.

7.4.1 ARAR CONSULTANT

The Consultancy firm has hired human resource to collect, store and transport the waste to disposal site. The firm collects the infectious waste on daily basis from wards. At wards level the waste collectors collect the waste and weigh it on spot, generate bar code and seal the bag with thermal sealers. After sealing waste, it is being transported to interim temporary storage in yellow room. The waste from wards to yellow room is transported through yellow dedicated covered trolley. From yellow room (facility based) the waste is being transported to incinerator sites by fabricated vehicles installed with chiller for its final disposal. The waste is further stored at yellow room (at incinerator site) before it is being incinerated. The waste is weight again at incinerator for cross check to prevent pilferage during transportation. Daily waste collection & disposal reports are generated and data is maintained through Electronic Medical Record (EMR).

7.5 WASTE COLLECTION, SEGREGATION, TRANAPORTATION AT BASIC HEALTH UNIT

A total of 481.4 kg waste is being generated daily from the selected BHUs of different districts of Punjab (Hospital waste generation rates in Pakistan[67]). The Hospital waste management rules, 2014 defines the waste management system in all healthcare facilities. Each healthcare facility is responsible to adopt the standard protocols for the disposal of different category of waste. By adopting these rules, a waste management committee must be notified supervised by the waste focal person at basic health units. The focal person will supervise for the safe collection of the waste and weekly minutes meeting will be maintained. All solid infectious waste will be collected in three colour coded waste bins (Red, white and Yellow). (cost for supplies & burial pit is attached at **annexure-E that may be helpful to SMO/MO to arrange this cost through Health Council or hospital's regular budget**). Three colour coded registers will be maintained to record the infectious, non-infectious and glass waste. Injection waste management protocols will be implemented and suitable good quality needle cutters and sharp containers will be arranged to reduce stick injuries. The injection waste protocols for collection of data will be maintained. The used syringes data will be monitored by monitoring and evaluation Assistants. These used syringes will be collected quarterly from BHUs by outsourced agency and separate data will be recorded on EMR. These quarterly reports will be submitted to CEO Health/DHO (Preventive) and EHS on regular basis. To reduce the pilferage same data will also be maintained at facility level including other solid infectious waste.

7.5.1 Burial Pit and disposal of Gynea waste. At BHU a small deep burial pit (bioreactor) will be formed usually works under controlled anaerobic condition which converts organic waste to inorganic form. A good example is the upgradation/ repair and maintenance of burial pits at selected DHQs/THQs of Punjab. The waste will be collected through gynae waste management protocols and will be disposed in burial pit. The rest of the waste, blood bandages, gauzes, blood stuff, linen and vomits will be disposed through this pit. The glass waste will be collected separately in RED bins and disposed according to HWM Rules, 2014.

7.5.2 Municipal Solid Waste Management

The MSW will be collected in white bin and all waste will be burned in a close small brick incinerator or by burning in a small pit 1.5-meter-deep at least 200 meters away from the

[67]UNEP, Compendium of Technologies for Treatment/Destruction of Healthcare Waste, 2012

health facility. The Glass waste after disinfection at facility will be transported to THQS where the waste will be recorded and handover to municipalities.

7.6 WASTE MANAGEMENT AT RHCs

Table 7.6.1 : Daily Waste Generation at RHCs

District	Total RHCs	Total no, of beds	Total infectious waste/day Kg	Total non-infectious waste/day Kg
Khushab	5	75	22.5	150
Bahawalnagar	10	150	45	300
Bahawalpur	12	180	54	360
R. Y. Khan	19	285	85.5	570
Bhakkar	5	75	22.5	150
Muzaffargarh	13	195	58.5	390
Layyah	6	90	27	180
Lodhran	4	60	24	120
Mianwali	10	150	60	300
D. G. Khan	10	150	60	300
Rajanpur	6	90	27	180
Total	**100**	**1500**	**486**	**3000**

An estimated 486 kg infectious waste will be generated in RHCs/day. All infectious waste will be collected in color coded waste bins being provided by H& ICP across the Punjab. As for as outsourced firm is not yet collecting waste (scope limited to SHCFs) from BHUs and RHCs however the plan of collection of waste from primary healthcare facilities has been included in revised PC-I of H&ICP Punjab. This plan elaborates the waste collection on the same set of standards being implemented at DHQS/THQs of Punjab. In this regard the project will coordinate with H&ICP for final disposal of the waste at primary healthcare facilities.

7.6.2 OUTSOURCING OF WASTE AT RHC MODEL-1

The existing outsourced firm or newly hired firm will collect the waste according to the hospital waste management protocols by ensuring quality healthcare supplies (waste bins, syringe cutter, sharp containers, disinfectants and suitable four wheeled dedicated trolleys. (cost for supplies & burial pit may be “arranged through hospital’s regular budget or health council” is attached at **annexure-D**) The yellow room will be designated within the facility for temporary infectious waste storage and TMA containers for collection of the MSW. The waste will be collected from the wards by the firm, it will be tagged, and weight and bar code generation

will be prepared to generate EMR based reports. On the other hand, a set of three (3) color coded registers will be maintained for manual recording of the waste for cross check and to reduce pilferage of the infectious waste. Injection waste will be managed by following IWMP. The disinfection of waste trolleys and yellow room would be the responsibility of outsourced agency. The firm will maintain the hand over-take over protocols while transporting waste from facility's yellow room to the incinerator sites. The Municipal Waste will be collected by Tehsil Municipal Administration (TMA) and disposed accordingly.

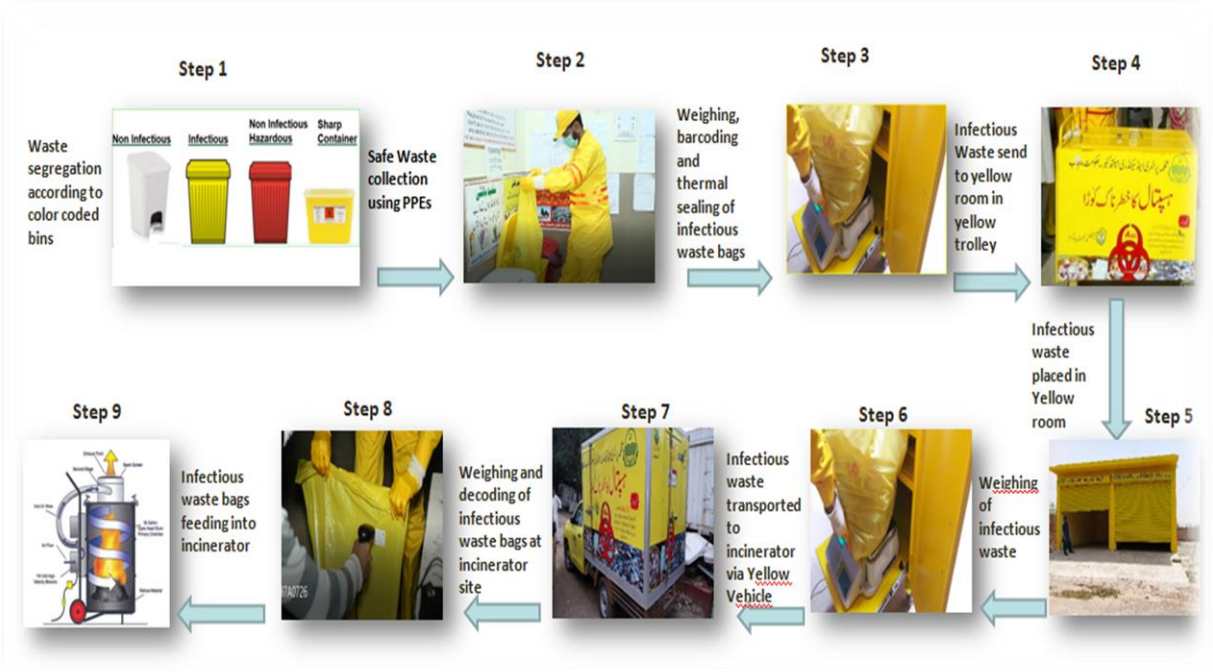
7.6.2.1 Transportation of Infectious waste to Disposal site

For transporting the infectious waste, fabricated yellow vehicle will be arranged by GoP. The number of the vehicles will be arranged according to the total waste generation and the distance covered for collecting daily waste from RHCs of a district. The waste will be collected daily and transported to nearby THQs where waste will be stored in yellow room and on the same day or from the very next waste will be transported through DHQs's vehicle to incinerator site for its final disposal.

A separate register will be maintained at each incinerator site for the disposal of waste coming from Rural Health Centers. Security of vehicles, yellow room and waste trolleys will be the core responsibility of the firm collecting and disposing the waste. The firm will submit contingency plan to health department for smooth running of waste disposal.

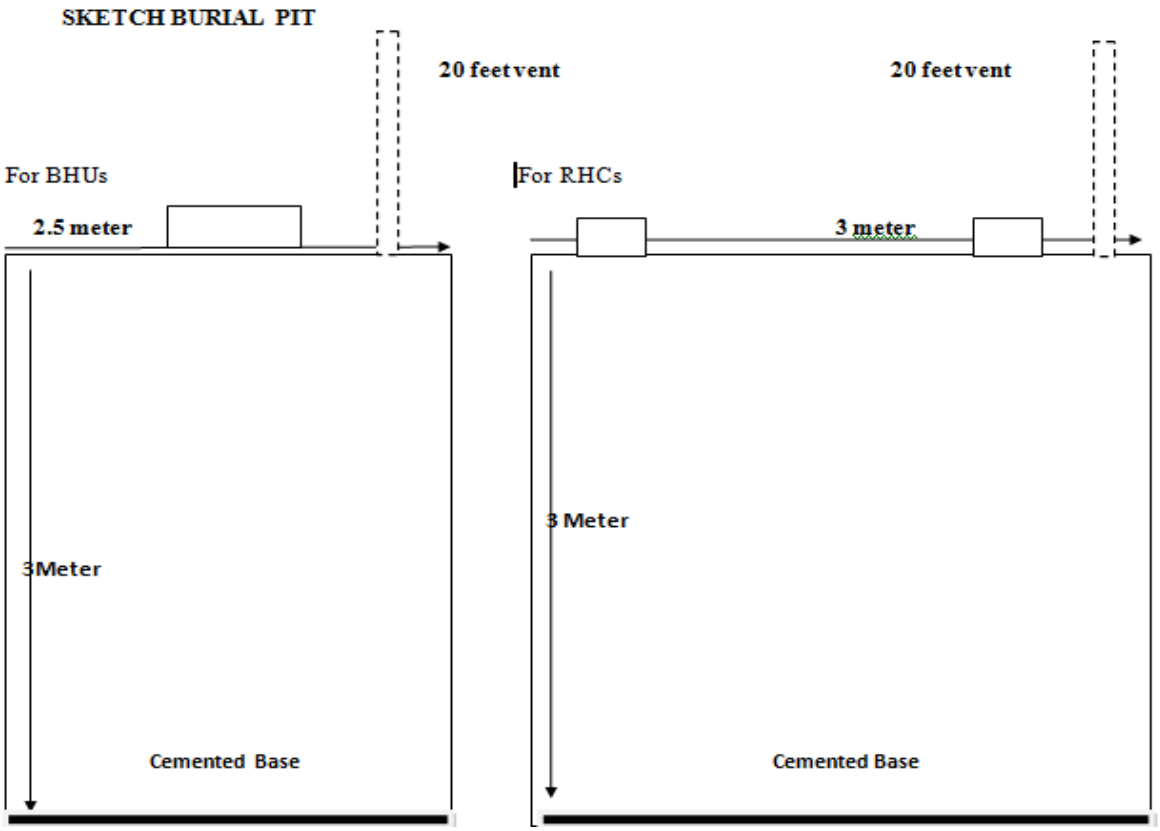
Hierarchy of waste management at RHCs will be managed shown in figure below.

7.6.2.2 (a) Waste Management Hierarchy



7.6.2.2 Burial Pit and disposal of Gynecological waste.

At RHC level a deep burial pit/bioreactor (3meter wide and 3-meter-deep) will be upgradation/ repair and maintenance usually work under controlled anaerobic condition which converts organic waste to inorganic form. A good example is the upgradation/ repair and maintenance of burial pits at selected DHQs/THQs of Punjab. The waste will be collected through gynaecological waste management protocols and will be disposed in burial pit. Only OT &gynaecological waste or pathological waste will be disposed in pit. The waste disposal will be the responsibility of the outsourced agency.



7.7 WASTE MANAGEMENT AT RHCs MODEL-2

- The Model- 2 is the collection, segregation, transportation and final disposal of the waste to be implemented by the health facility.
- The hospital administrator will comply with the HWMR, 2014. Hospital waste management committee will be notified and weekly minutes meetings will be shared with SMO. The HWMC will be supervised by MS and a dedicated full-time hospital

waste management officer (WMO) will be notified that will be responsible for overall implementation of HWMR, 2014.

- The health department will ensure quality Healthcare supplies to facilities including four-wheel trolleys, weighing scales; colour coded waste bins, registers, syringe cutters and sharp containers.
- Waste will be collected by our sanitary staff on daily basis. The ward nurse will record the waste before its transportation to yellow room.
- Dedicated four wheeled yellow and white trolleys will be used to transport yellow and white waste to storage areas. The white waste will be transported to TMA containers and yellow waste to yellow room.
- The waste will be recorded again at yellow room by yellow room operator to reduce the pilferage.
- Waste from yellow room will be transported to incinerator site through fabricated vehicles installed with chillers and CCTV cameras. A designated yellow room or a part of yellow room will be identified to store the waste from RHCs. Before the final disposal the same waste will be recorded again at incinerators site to maintain the manual record of waste. The monthly reports (both waste generation and disposal) will be submitted by waste management officer to CEO Health/DHO (P), EHS & program director PHFMC.
- OT and Gynae waste will be collected by hospital sanitary staff and disposed in standard burial pit.
- The glass waste after proper disinfection will be handover to Municipalities.

8. ENVIRONMENTAL & WASTE MANAGEMENT PLAN

This Chapter provides the management and implementation mechanism for the mitigation measures discussed in the previous Chapter.

8.1 Institutional Arrangements

The overall responsibility of implementing the environmental and healthcare waste management issues particularly the present EHCWMP will rest with the Chief Executive Officer Punjab Health facility Management Company (PHFMC). Within PHFMC, a dedicated, fulltime Environmental Health Specialist will be appointed as the Medical Waste Management Focal Point (MWMFP). The MWMFP will maintain vertical and horizontal coordination to ensure effective implementation of the present Plan, and will be responsible for province-level monitoring, documentation, and reporting. S/he will also liaise with outside agencies, donors, and other stakeholders.

At the district level, the Chief Executive Officer – Health (CEO-Health) of each district will be the focal point for performing/supervising the environment and healthcare waste management functions particularly implementing the present EHCWMP in the respective district. The CEO-Health will maintain coordination with the MWMFP for the implementation of the present Plan.

At the facility level, the Senior Medical Officer (SMO) at RHC and Medical Officer at BHU will be designated as the focal point for EMMP implementation. The SMO/ MO will maintain coordination with the CEO-Health for the implementation of the present Plan. The compliance will be monitored not only internally but also through Punjab Health Care Commission –being a regulatory agency for ensuring health care waste management - and by provincial EPA.

Waste Management Team. In each healthcare facility, a Waste Management Team (WMT) will be constituted, and an appropriate officer designated as Waste Management Officer (WMO) in accordance with the Hospital Waste Management Rules of 2014. At BHU level the Medical Officer will be the responsible person to manage the waste. The WMT will be

responsible for preparing and implementing Waste Management Plan (WMP) in the facility (the WMP is discussed later in the Chapter).

The roles and responsibilities of various personnel for the hospital waste management and implementation of the present Plan are summarized in **Table 8.1**.

Table 8.1: Roles and Responsibilities for EHCWMP Implementation

Designation	Responsibilities
CEO (PHFMC)	Overall responsible for the implementation of EHCWMP;
	Monitor and supervise EHCWMP
	Effective implementation of EHCWMP;
	Coordination within DoH, with CEOs-Health;
Environmental Health Specialist	Coordination with EPD/EPA; Coordination with other agencies (WB, others);
	Visits to healthcare facilities to monitoring Plan implementation;
	Organizing trainings on provincial level;
	Producing quarterly progress reports and sharing with DoH, WB, and others.
CEO-Health of each district	Coordinate with EH Specialist
	Coordinate with MOs and MSs/AMSs for the implementation of EMWMP
	Organizing trainings on district level
	Monthly reports to MWMFP on Plan implementation
SMO/MO of each facility at RHCs	Coordinate with CEO-Health
	Prepare WMP in accordance with the HWM Rules
	Provide monthly reports on EHCWMP implementation to CO-Health

8.2 Mitigation Plans

Two separate mitigation plans are presented in **Tables 8.2** and **8.3** below, for HCW management and facility renovation/rehabilitation/expansion, respectively. The mitigation plans describe the potential impacts and associated mitigation measures, and also assigns implementation and monitoring responsibilities.

Table 8.2: Potential Impacts and Mitigation Measures

Task	Potential Impacts	Mitigation Measures	Mitigation	Monitoring
Waste segregation	Health & safety Risks for staff and patient	Use of infection control protocol; Comply with Waste Management. Rules, 2005; Use of PPEs; Use of color coded buckets with thick, puncture resistant plastic bags; Ensuring that bags are not punctured (disinfection of the bucket/area to be carried out in case of leakage from bags); Capacity building and training of staff including waste handlers; Awareness raising of patients and their attendants		
			SMO/MO	MO/AMS; CEO(H); DMO/MEAs; ES
Infectious waste collection and transportation	Health and safety risks for waste handlers	Use of infection control protocol; Comply with Waste Management Rules, 2005; Use of PPEs; Ensuring that waste bags are not opened or punctured during transportation; Ensuring that bags are not punctured (disinfection of the trolleys/area to be carried out in case of leakage from bags); Proper documentation and handover-takeover protocol along with „chain of custody" protocol; Capacity building of staff including waste handlers; Implement measures to forestall any pilferage of medical waste for recycling		
			SMO/MO	MO/AMS; EDO(H)

				DMO/MEAs, MWMFP
Infectious waste storage	Health and safety risks for waste handlers	Use of infection control protocol; Comply with Waste Management Rules, 2005; Proper controlled-access storage; Ensuring that waste bags are not opened or punctured in the storage; Ensuring that bags are not punctured (disinfection of the trolleys /area to be carried out in case of leakage from bags); Use of PPEs; Weighing of waste; Proper documentation and handover-takeover protocol; Capacity building of staff including waste handlers; Security arrangements to avoid pilferage.		
			SMO/MO	MO/AMS CEO (H)
Infectious waste disposal (burial)	Health and safety risks for waste handlers, waste pickers; Soil and water contamination	Use of infection control protocol; Comply with Waste Management Rules, 2014; Use of PPEs; Proper documentation and handover-takeover protocol; Capacity building of staff including waste handlers; Using impervious lining in the pits to avoid soil and water contamination; Locating the pit at least 50 m from any water source; Using proper signage for pit location; Maintain complete record of waste disposal and pit location in each facilities,		
			SMO/MO	MO/AMS CEO (H) DMO/MEAs ES
Infectious waste disposal (burning)	Health and safety risks for	se of infection control protocol; Comply with Waste Management Rules, 2014; Uncontrolled,		

	waste handlers; Air contamination	open burning of infectious waste particularly containing plastics and PVC objects will be avoided to the extent possible; Proper documentation and handover-takeover protocol; Use of PPEs; Capacity building; Maintain complete record of waste disposal.		
			WMO Or Incinerator operators if CTF is used.	MO/AMS CEO(H) DMO/MEAs EHS
Infectious waste disposal (incineration)	Health and safety risks for incinerator operators and nearby communities. Air contamination	Use of infection control protocol; Comply with Waste Management Rules, 2014; Proper documentation and handover-takeover protocol; Use properly designed for medical waste treatment, double chamber incinerators with wet scrubbers; Ensure that incineration is carried out at 1200 °C; Properly operate and maintain incinerators particularly to avoid leakage of gases from the first chamber; Ensure that dioxins are not released, and exhaust gases comply with NEQS; Maintain complete record of the key incinerator operation parameters (waste quantity incinerated, temperature in first chamber, temperature in second chamber, resident time, and others); Capacity building of operators; Use of PPEs		
			Sanitary staff Municipality	MO/AMS; CEO(H) MEAs
Non-risk waste	soil and water, odour, proliferation of vectors	Non risk waste will be disposed with the municipal waste; Proper storage arrangements (such as dumpsters) avoiding any spill over/over		

	(rodents, flies, others)			
			MO/AMS	MS; CEO (H) MEAs
Water supply	Health hazards for staff & patient	Ensure that drinking water complies with NEQS; Carry out water analysis periodically.		
			MO/CMO	MS, CEO (H) MEAs
Sewage disposal	Health hazards for staff & patient	Ensure that the treatment system (eg septic tank) is properly working) and sewerage effluents is not dispersed in the facility		

Table 8.3: Mitigation Plan for Facility Renovation/Rehabilitation

	Impacts	Mitigation Measures	Monitoring	
			Mitigation	Monitoring
			Contractor	EDO (W&S)
Excavation	Soil erosion; Safety hazards; Noise generation	Prepare and implement site-specific EMP; Employing appropriate techniques such as stone pitching to avoid soil erosion; Using PPEs to minimize safety risks Protective fencing Use equipment with proper noise suppression (mufflers, silencers) Noise barriers if necessary		
				EDO (W&S)/AXEN
Material transport	Safety hazards; Noise generation; Traffic congestion	As per site-specific EMP; Use PPEs to minimize safety risks; Enforce vehicle speed limit within the facilities; Use equipment and vehicles with proper noise suppression (mufflers, silencers); Prepare traffic management plan where necessary; Use		

		alternate routes to minimize traffic congestion and road blockage		
			Contractor	EDO (W&S)/AXEN
Material storage/ handling	Blockage of access routes	As per site-specific EMP; Ensure that the upgradation/ repair and maintenance material is stock-piled properly without causing any hindrance or blockage of roads/routes.		
			Contractor	EDO (W&S)/AXEN
Oil/chemical storage / handling	Safety hazards Soil and water contamination	Use standard practices to transport, store and handle fuels, oils, and other chemicals.		
			Contractor	EDO (W&S)/AXEN
Site restoration	Left over upgradation/ repair and maintenance material and scrap; Ditches or surplus soil (spoil)	Prepare and implement site-specific EMP; Remove all debris, excess upgradation/ repair and maintenance material, scraps, and other wastes; Restore site.		

8.3 Waste Management Plan

In accordance with the Hospital Waste Management Rules of 2014, each healthcare facility is required to prepare its facility-specific hospital waste management plan. The Plan will include:

- a plan/layout of the healthcare facility showing waste disposal points for every ward and department, indicating whether each point is for risk waste or non-risk waste, and showing the sites for central storage facility for risk waste and central storage facility/arrangements for non-risk waste

- details of the types, numbers, and estimated cost of containers, waste bags, and trolleys required annually.
- Timetable including frequency of waste collection from each ward and department
- Duties and responsibilities of each category of healthcare facility staff involved in waste generation and management.
- An estimate of number of staff required for waste management
- Procedures for the management of waste requiring treatment such as autoclaving before final disposal
- Planned waste disposal sites/methods
- Contingency plans for storage or disposal of risk waste in the event of breakdown of incinerators
- Training courses and program on waste management
- Emergency procedures.

Comprehensive documentation will be maintained for the implementation of each element of the WMP. The waste management plan will be regularly monitored, reviewed, revised, and updated by the WMT as and when necessary. The WMP will be prepared and implemented in close coordination with the infection control activities, in order to avoid duplication of efforts as well as gaps.

8.4 Implementation Cost of Waste Management Plan

Cost estimates will be an integral part of the WMP of each facility, and these estimates will be included in the overall budget of the facility. The most important element of these estimates would be the cost of supplies and consumable items. The availability of healthcare supplies remained a challenge during the implementation of HWMP in DHQs/THQS. Therefore, it is vitally important to ensure uninterrupted availability of these items, for the effective implementation on the EHCWMP. Availability of these items will be included in the monitoring parameters as well.

8.5 Monitoring Plan

The purpose of environmental and waste management monitoring is to ensure that all the mitigation measures particularly WMPs are effectively implemented. To the extent possible and practical, this monitoring will be carried out in close coordination with the similar

monitoring to be carried out for the infection control protocols. Monitoring will be carried out at different tiers as discussed below.

8.5.1. Facility Level Monitoring

The facility level monitoring will be carried out according to the HWM Rules 2014. The facility level HWM plan will be prepared and task will be assigned to all healthcare workers which are described in Rules, 2014. The TORs will be shared by the CEO/MS among the waste management team. The weekly minutes of meeting and monthly reports will be submitted to CEO/MS by waste management officer. Further details of this monitoring will be included in the WMP of each facility. Monitoring checklists will be prepared on the basis of these Plans, to be filled and results will be collected when required.

8.5.2. District/Provincial Level Monitoring

The district level monitoring will be carried out with the help of Monitoring and Evaluation Assistants (MEAs) who already conduct monitoring of the DoH's healthcare facilities in their respective districts. The monitoring Performa currently used by these MEAs has included the check list for hospital waste management.

In addition to the above, the CEO (Health) and his/her staff will also conduct random monitoring of the EMP in healthcare facilities. The EHS will also carry out random visits of the healthcare facilities in the Province to monitor the Plan implementation.

8.5.3. Review of Plan and Third-Party Validation

The PMU/PHFMC/PSHD will conduct an internal review of the EHCWMP implementation on an annual basis. The purpose of this review will be to determine the effectiveness and practicality of the mechanisms proposed in the present Plan to address the environmental and waste management issues associated with the healthcare facilities, and to determine improvement needs if any. In parallel to the above, the PMU/PHFMC/PSHD will also commission a third party validation (TPV) of the WMP, on an annual basis, with a similar objective to determine the effectiveness and practicality of the mechanisms proposed in the present Plan to address the environmental and waste management issues associated with the healthcare facilities, and also to determine any improvement needs. The TPV would be done by the same third-party consultants hired for the ESMF.

8.6 Capacity Building Plan

8.6.1. District/Provincial Level Capacity Building

The PMU/PHFMC/PSHD through the HCWMS and in coordination of the CEOs (Health) will plan and conduct training of trainers (ToT) for the selected relevant staff particularly WMT members from each district on the WMP implementation. The purpose of these trainings will be to prepare master trainers in each district, who after receiving these ToTs, will impart trainings to the remaining WMT members and other relevant staff in their respective districts. The training plan will also address the frequent staff turn-over at the district and provincial levels. PMU/PHFMC/PSHD will make all possible efforts to coordinate and coincide these trainings with the ones to be carried out for the Infection Control Protocols.

8.6.2. Facility Level Capacity Building

The facility-level capacity building will be an integral part of the WMP. The capacity building plan will include details on training schedule, types of trainings, training contents, and training participants. The master trainers trained through the province/district level trainings discussed above will impart these trainings. These trainings will be coincided/combined with the ones for the infection control protocols. The training plan will also address the frequent staff turn-over at the facility level. These trainings can be patched to a certification program so that each facility can then be legally mandated to have a certified waste management person on-site. The staff/service providers at the facility level in turn conduct informal sessions and impart awareness trainings of the beneficiaries related to health and hygiene practices and safe disposal of health care waste at household level, if any.

8.7. Documentation and Reporting

8.7.1. Facility Level Documentation

The WMP of each facility will define the facility-level documentation requirements for WMP implementation. The key aspects to be documented will include quantities of different categories of wastes generated/collected, treated, and disposed, disposal method, disposal location, complete record of monitoring discussed above including any non-compliances observed, complete record of capacity building discussed and record of WMT meeting.

Each healthcare facility will provide WMP reports to the respective CEOs (Health) on a monthly basis. The WMP aspects will be included in the reporting Performa currently being used by the healthcare facilities for this purpose.

8.7.2. District Level Documentation and Reporting

Each district through CEO (Health) will compile the District WMP report on a monthly basis and send it to the ES &PMU/PHFMC/PSHD. The MEAs through DMOs will also send their filled checklists/data to the PMU.

8.7.3. Province Level Documentation and Reporting

The HCWMS will compile the reports received from the CEOs (Health) and prepare overall project reports on WMP implementation on quarterly basis. These reports can be combined with the reports on infection control plan implementation. The HCWMS will also process the data received from DMOs and produce regular reports. These reports will also include WMP aspects. The poorly performing facilities will be identified in the province level monitoring documentation.

8.8. Options for Waste Disposal

8.8.1 Disposal through incineration

Primary &Secondary Healthcare Department after deliberations has procured & installed 26 environment friendly incinerators across the Punjab indifferent districts. The incinerators were procured according to the total infectious waste generation in each district. Waste from all DHQs/THQs is being collected, transported by dedicated & fabricated vehicles and disposed through the incinerator. The incinerators are being operated by the contractors for three years. The waste management from collection to final disposal at primary healthcare facilities will be catered by adopting the model-1 or Model-2 described in **chapter-7.**

Waste from the RHCs will be collected and transported to the incinerator site installed within the district. The outsourced agency which is already working for THQs and DHQs will collect record and transport the waste to disposal site. Before transportation the waste will be stored in yellow room at temperature 3-8 degree Celsius. Similarly, the waste produced at Basic Health Unit will be managed at the facility level. The infectious waste will be disposed by installing small scale brick incinerator or disposed through burial pit except the used syringes which will be collected, recorded and then transported to incinerate within the district. The municipal waste produced at RHCs will be disposed by Municipal authorities.

8.9. EHCWMP Implementation Approach

Implementation of the EHCWMP will be carried out in close coordination with the implementation of Infection Control Program, Environment Protection Department and Punjab Healthcare Commission. Waste will be managed according to Punjab Hospital waste Management Rules, 2014 and by implementing the standard protocols and minimum service delivery standard of Punjab Healthcare Commission.

8.10. EHCWMP Disclosure

Once finalized, the EHCWMP, along with the Urdu translation of Executive Summary, will be disclosed on the official web sites of PSHD (GoPb), PSPA and of PHFMC, the copies of Plan will be available in the office of the CEO (Health) in each district. The Plan will also be disclosed on WB Image-bank.

8.11. EHCWMP Implementation Cost

The estimates for EHCWMP implementation cost are given in **Table 8.11**below. The detailed district-wise budgets need to be prepared after the preparation of the WMPs of each facility.

Table: 8.11 EHCWMP implementation cost for 5-years

Description	Cost (PKR)	Notes
Manpower +TPV	**25,000,000**	
HCWMS	21,000,000	350,000 ×12×5
TPV	4,000,000	800000×5
Capacity building of Healthcare Workers (1,127,000)		
Capacity building at Provincial Level	20,000	1-Trainings (sensitization)
Capacity building at District level	22,000	1-Trainings (sensitization for CEO (H) and DHOs (P)
Capacity building at facility level		
Capacity building (TOTs) at RHCs	255,000	5 Trainings (1-training/ year)
Capacity building (TOTs) at BHUs	830,000	5 Trainings (1-training /year)
	591,500	
IEC Material	91,500	Waste management protocols for 166 BHUs & 17 RHCs (PKR, 500/book)
Miscellaneous costs	500,000	

Total	26,718,500

The Training cost break up is attached at annexure-F

ANNEXTURE

ANNEX A. STUDY METHODOLOGY

The assignment methodology was essentially based upon the WB Operation Policies and national environmental guidelines - with necessary adaptation to cater the special needs of the project. The methodology is described below.

1. Review the Project details Necessary project details and related reports/documents were obtained from DoH and WB, in order to understand the project and its geographic, environmental, social, and temporal context. Meetings were held with the relevant personnel from the above-mentioned organizations.

2. Scoping. Scoping is essentially the process of identifying the significant issues relating to the proposed project and of determining the scope of the issues to be addressed in the Plan. The key tasks included:

i) Carrying out initial meetings;

ii) Holding stakeholder consultations; and

iii) Identifying the key aspects to be studied during the assignment.

3. Review of the Legislative and Regulatory Framework The policy, legal, and administrative frameworks relevant to the environmental and medical waste management were identified and reviewed for their relevance to the project. The national environmental and medical waste management requirements and those of the co-financiers including WB were also reviewed. The relevant international environmental agreements to which the country is a party were also identified and reviewed.

4. Situation Assessment The rapid situation assessment was conducted based on secondary document review and meetings described under the Task 2 above. The situation assessment was comprised of the following aspects:

Situation of healthcare waste in Punjab (province wise assessment, 2007)

Implementation of Punjab Hospital waste management Rules, 2014 through Punjab health sector reform program (PHSRP), 2013-2018

Current situation of healthcare waste management at primary healthcare facilities (RHCs & BHUs) (2019)

5. Impact Assessment The project's likely positive and negative impacts associated with its sites, design, technology, and operation were predicted and assessed, in quantitative terms to the extent possible – particularly addressing medical waste and its hazards. The matrix given in **Table6.2 (a)**was used for this purpose. To calculate screening results the screening matrix was used in table **6.2(b).** Various characteristics of the potential impacts including spatial extent (local, regional, global), nature (direct/indirect), temporal extent (temporary, permanent), reversibility, severity, and sensitivity of receptors were determined using the **Table 6.3**. Based on this, the significance of each impact was characterized, with the help of criteria defined in Table 6.3. Mitigation measures and any residual negative impacts that cannot be mitigated, and also the significance of the residual impacts was identified. The Project was also assessed with reference to the national regulatory requirements (eg, National Environmental Quality Standards - NEQS), and WB OPs. Opportunities for environmental enhancement were also explored. The extent and quality of available data, key data gaps, and uncertainties associated with predictions was identified.

6. Preparation of Environmental and Medical Waste Management Plan On the basis of impact assessment discussed in Task 8 above, the HCWMP was prepared, mitigation plan, compliance monitoring plan, effects monitoring plan, institutional arrangements, training needs, documentation and communication protocol, cost of implementing EHCWMP, and mechanism to integrate EHCWMP with the Project (e.g., through contractual clauses). The Plan identifies responsibilities and reporting relationships at the service delivery facility, CEO -Health and DG level during the project implementation. The Plan also includes guidelines for adoption of Hospital Waste Rules of 2014 for management of risk and non-risk waste at the healthcare facilities.

Annex B: National Environmental Quality Standards

Table B.1 Selected NEQS for Waste Effluents

Parameter	Unit	Standards (maximum allowable limit)
Temperature increase	°C	< 3
pH value (acidity/basicity)	pH	6-9
5-day biochemical oxygen demand (BOD) at 20 °C	mg/l	80
Chemical oxygen demand (COD)	mg/l	150
Total suspended solids	mg/l	200
Total dissolved solids	mg/l	3,500
Grease and oil	mg/l	10
Phenolic compounds (as phenol)	mg/l	0.1
Chloride (as Cl)	mg/l	1,000
Fluoride (as F)	mg/l	10
Sulfate (SO_4)	mg/l	600
Sulfide (S)	mg/l	1.0
Ammonia (NH_3)	mg/l	40
Cadmium	mg/l	0.1
Chromium (trivalent and hexavalent)	mg/l	1.0
Copper	mg/l	1.0
Lead	mg/l	0.5
Mercury	mg/l	0.01
Selenium	mg/l	0.5
Nickel	mg/l	1.0
Silver	mg/l	1.0
Total toxic metals	mg/l	2.0
Zinc	mg/l	5
Arsenic	mg/l	1.0
Barium	mg/l	1.5
Iron	mg/l	8.0
Manganese	mg/l	1.5
Boron	mg/l	6.0

Chlorine	mg/l	1.0

Notes:

1. The standard assumes that dilution of 1:10 on discharge is available. That is, for each cubic meter of treated effluent, the recipient water body should have 10 m^3 of water for dilution of this effluent.
2. Toxicmetalsincludecadmium,chromium,copper, lead, mercury, selenium,nickelandsilver.Theeffluentshould meet the individual standards for these metals as well as the standard for total toxic metal concentration.

Source: Government of Pakistan (2000) (SRO 549 (I)/2000).

Table B.2: NEQS for Industrial Gaseous Emissions

mg/Nm³ unless otherwise stated

Parameter	Source of Emission	Standards (maximum allowable limit)
Smoke	Smoke opacity not to exceed	40% or 2 Ringlemann Scale or equivalent smoke number
Particulate matter [1]	(a) Boilers andfurnaces: i. Oil fired ii. Coal fired iii. Cement Kilns	 300 500 300
	(b)Grinding, crushing, clinker coolers and related processes, metallurgical processes, converters, blast furnaces and cupolas	500
Hydrogen Chloride	Any	400
Chlorine	Any	150
Hydrogen fluoride	Any	150
Hydrogen sulphide	Any	10
Sulphur Oxides [2,3]	Sulfuric acid/Sulphonic acid plants	5,000
	Other Plants except power Plants operating on oil and coal	1,700
Carbon Monoxide	Any	800
Lead	Any	50
Mercury	Any	10
Cadmium	Any	20
Arsenic	Any	20
Copper	Any	50
Antimony	Any	20
Zinc	Any	200
Oxides of Nitrogen [3]	Nitric acid manufacturing unit	3,000
	Other plants except power plants operating on oil or coal: i. Gasfired ii. Oil fired iii. Coal fired	 400 600 1,200

Explanations:

1. Based on the assumption that the size of the particulate is 10-micron ormore.
2. Based on 1% sulphur content in fuel oil. Higher content of sulphur will cause standards to bepro-rated.
3. In respect of emissions of sulphur dioxide and nitrogen oxides, the power plants operating on oil and coal as fuel shall in addition to NEQS specified above, comply with the standards provided separately.

Source: Government of Pakistan (2000) (SRO 549 (I)/2000).

Table B.3: National Environmental Quality Standards for Ambient Air

Pollutants	Time-weighted Average	Concentration in Ambient Air		Method of Measurement
		Effective from 1st July 2010	Effective from 1st January 2013	
Sulfur Dioxide (SO_2)	Annual Average*	80 µg/m^3	80 µg/m^3	Ultraviolet Fluorescence
	24 hours**	120 µg/m^3	120 µg/m^3	
Oxides of Nitrogen as (NO)	Annual Average*	40 µg/m^3	40 µg/m^3	Gas Phase Chemiluminescence
	24 hours**	40 µg/m^3	40 µg/m^3	
Oxides of Nitrogen as (NO_2)	Annual Average*	40 µg/m^3	40 µg/m^3	Gas Phase Chemiluminescence
	24 hours**	80 µg/m^3	80 µg/m^3	
Ozone (O_3)	1 hour	180 µg/m^3	130 µg/m^3	Non dispersive UV absorption
Suspended Particulate Matter (SPM)	Annual Average*	400 µg/m^3	360 µg/m^3	High Volume Sampling, (Average flow rate not less than1.1 m^3/minute).
	24 hours**	550 µg/m^3	500 µg/m^3	
Respirable Particulate Matter. PM_{10}	Annual Average*	200 µg/m^3	120 µg/m^3	β Ray absorption
	24 hours**	250 µg/m^3	150 µg/m^3	
Respirable Particulate Matter. $PM_{2.5}$	Annual Average*	25 µg/m^3	15 µg/m^3	β Ray absorption
	24 hours**	40 µg/m^3	35 µg/m^3	
	1 hour	25 µg/m^3	15 µg/m^3	
Lead (Pb)	Annual Average*	1.5 µg/m^3	1.0 µg/m^3	ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	2.0 µg/m^3	1.5 µg/m^3	
Carbon Monoxide (CO)	8 hours**	5 mg/m^3	5 mg/m^3	Non-Dispersive Infra Red (NDIR)
	1 hour	10 mg/m^3	10 mg/m^3	

*Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.
** 24 hourly /8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive days.

Source: Government of Pakistan (2010) (SRO 1062 (I)/2010).

Table B.5: National Standards for Drinking Water Quality

Properties/Parameters	Standard Values for Pakistan
Bacterial	
All water intended for drinking (e.ColiorThermotolerant Coliform bacteria)	Must not be detectable in any 100 ml samples
Treated water entering the distribution system (E.Coliorthermo-tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml samples
Treated water in the distribution system (E.Coliorthermo-tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml samples In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12- month period.
Physical	
Color	≤15 TCU
Taste	Non objectionable/Accept able
Odor	Non objectionable/Accept able
Turbidity	< 5 NTU
Total hardness as $CaCO_3$	< 500 mg/l
TDS	< 1000
pH	6.5 – 8.5
Chemical	
Essential Inorganic	***mg/Litre***
Aluminum (Al)	≤0.2
Antimony (Sb)	≤0.005 (P)
Arsenic (As)	≤ 0.05 (P)
Barium (Ba)	0.7
Boron (B)	0.3
Cadmium (Cd)	0.01
Chloride (Cl)	<250
Chromium (Cr)	≤0.05
Copper (Cu)	2
Toxic Inorganic	***mg/Litre***
Cyanide (Cn)	≤0.05
Fluoride (F)*	≤1.5
Lead (Pb)	≤0.05
Manganese (Mn)	≤ 0.5
Mercury (Hg)	≤0.001
Nickel (Ni)	≤0.02

Properties/Parameters	Standard Values for Pakistan
Nitrate (NO_3) *	≤50
Nitrite (NO_2) *	≤3 (P)
Selenium (Se)	0.01 (P)
Residual chlorine	0.2-0.5 at consumer end; 0.5-1.5 at source
Zinc (Zn)	5.0
Organic	
Pesticides mg/l	PSQCA No. 4639-2004, Page No. 4 Table No. 3 Serial No. 20- 58 may be consulted. **
Phenolic compound (as phenols) mg/l	WHO standards: ≤ 0.002
Polynuclear Aromatic hydrocarbon (as PAH) g/L	WHO standards: ≤ 0.01v(by GC/MS method)
Radioactive	
Alpha Emitters by/L or pCi	0.1
Beta Emitters	1

* Indicatesprioritythealthrelatedinorganicconstituentswhichneedregularmonitoring.

** PSQCA: Pakistan Standards Quality Control Authority. Source:

Government of Pakistan (2010) (SRO 1063(I)/2010).

Table B.6: National Environmental Quality Standards for Noise 27

Limit in dB(A) Leq *

Category of Area/Zone	Effective from 1st July 2010		Effective from 1st July 2012	
	Day time	Night time	Day time	Night time
Residential area	65	50	55	45
Commercial area	70	60	65	55
Industrial area	80	75	75	65
Silence zone	55	45	50	45

Notes:

1. Day time hours: 6:00 a.m. to 10:00p.m.
2. Night time hours: 10:00 p.m. to 6:00a.m.
3. Silence zone: Zones that aredeclared as such by the competent authority. An area comprising not less than 100 m around the hospitals, educational institutions, and courts.
4. Mixed categories of areas may be declared as one of the four above-listed categories by the competent authority.

* dB(A) Leq: Time weighted average of the level of sound in decibels on Scale A which is relatable to human hearing.

Source: Government of Pakistan (2010) (SRO 1064(I)/2010

Annex C: IFC Guidelines

S. No	IFC Guidelines	Best Practice
1	Structures, surfaces and installations should be easy to clean and maintain, and not allow for accumulation of hazardous compounds	Surfaces (including flooring and work surfaces) in camps, kitchens, dining areas and workshops should be solid and easy to clean. Flooring for work camps must be float finished concrete or better.
2	Buildings should be structurally safe, provide appropriate protection against the climate, and have acceptable light and noise conditions.	Contractor's staff accommodation must be structurally sound and provided with lighting and ventilation. Accommodation must be situated at least 25m from the nearest generator.
3	Floors should be level, even, and non-skid	As for #1
4	Work place structures should be designed And Upgraded to withstand the expected elements for the region and have an area designated for safe refuge, if appropriate	Contractor's staff accommodation must be located such that it is not at risk from flooding
5	The work space provided for each worker, and in total, should be adequate for safe execution of all activities, including transport and interim storage of materials and products	The Contractor shall submit to the Engineer for approval a site layout plan, identifying work areas, accommodation, kitchen, dining area, sanitary facilities, location of generators, plant and vehicle parking, transport routes through the camp, pedestrian routes through the camp, evacuation routes, emergency exits, batching plants, storage areas, waste facilities etc.
6	Passages to emergency exits should be unobstructed at all times. There should be a minimum of two exits from any work area	Evacuation routes to be unobstructed at all times. At least two emergency exits to be provided from each building and the camp itself.
7	Equipping facilities with fire detectors, alarm systems and fire-fighting equipment. The equipment should be maintained in good working order and be readily accessible.	Fire extinguishers should be provided throughout camps and work sites. Fire extinguishers should be inspected monthly and maintained as necessary

8	Adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work. Allowances should be made for segregated facilities, or indicating whether the toilet facility is “In Use” or “Vacant”	Separate latrines and washing facilities for males and females with total isolation by wall or by location shall be provided. Female toilets should be clearly marked in language understood by those using them to avoid miscommunication Suitable and sufficient washing facilities, including showers, shall be provided or made available at readily accessible places within the immediate vicinity of every sanitary facility. Washing facilities shall include a supply of clean running water, soap or other suitable means of cleaning and towels or other suitable means of drying. Rooms containing washing facilities shall be sufficiently ventilated and lit and kept in a clean and orderly Condition
9	Where workers may be exposed to substances poisonous by ingestion and skin contamination may occur, facilities for showering and changing	As for #8

Annex D: HCW supplies cost for RHCs[68]

HCW SUPPLIES AND COST /RHC/YEAR	20 Beds		
	Unit Cost	**Qty**	**Total**
Total Cost			**630,200**
Capital Cost			445,000
Weighing scale	8000	1	8,000
Waste trolley/four wheeled	10000	1	10,000
Burial Pit	40,000	1	400000
Small bed side bins 10 sets (1 set contains 2 color coded bins)	400/set	10	4000
Large color-coded bins 2 sets (1 set contains 3 large bins)	4500/set	2	9000
Liquid Waste Bucket	800	5	4000
Water filter	5000	2	10000
Recurrent cost			**185200**
Linners/ waste bags for small bins	5	14,400 (daily utilization is 40 bags)	720,00
Liners for large bins	8	2160 (daily utilization is 6 bags)	17,280
Hand Sanitizer	500	40	20000
Mop set	3500	6	21000
PPE Sets	7000	5	35000
Syringe cutters	500	10	5000
Sharp containers	1500	10	15000
Capital cost	**439,000**		
Recurrent cost	**185,200**		
Total cost/year/RHC			630,200
Total capital cost /RHC/year			445,000
Total capital cost for 17RHCs /year			7565000
Total capital cost for 17 RHCs/5 year	----------	----------	----------
Recurrent Cost			
RC/RHC/year			185200
RC/17RHCs/year			3,148,400
RC/17 RHCs/5 years			15,742,000
Total cost (CC+RC) for five year for 17 RHCs			**23,307,000**

[68] Indicative costs for reference/guidance

Annexure E: HCW Supplies cost for BHUs[69]

HCW SUPPLIES AND COST /BHU/YEAR	3 Beds		
	Unit Cost	**Qty**	**Total**
Total Cost			**441,960**
Capital Cost			**418,700**
Weighing scale	8000	1	8,000
Burial Pit	40,000	1	400,000
1 set (3 Large color-coded waste bins)	4500	1	4500
3 sets (1 set have 2 small color-coded bins)	400	3	1200
Water filter	5000	1	5000
Recurrent cost			**23,260**
Syringe cutters	500	4	2000
Sharp containers	1500	3	4500
PPE	4000	1	4000
Hand Sanitizer	500	10	5000
Mop set	3500	2	7000
Chlorine solution/powder	380	2	760
Total cost for one year/BHU			**441,960**
Capital Cost /BHU/year			418700
CC/166 BHUS/year			69,504,200
CC/166BHUs/5 years	---------	-----	-------
Recurrent Cost			
RC/BHU/year			23,260
RC/166 BHUS/year			3,861,160
RC/166 BHUS/5 years			19,305,800
Total Cost (CC+RC) for five years			**88,810,000**

[69] Indicative cost for reference/guidance

Annexure: F Cost for Trainings of Master Trainers

F (I) Capacity Building at Provincial Level

One –day orientation session		
S/N	Department	No of person
1	PMO	2
2	EPD	2
3	H &ICP	2
4	PHC	2
5	PHFMC	2
6	PSPA	2
7	WHO	2
8	WB	2
9	DMA	2
10	EPI	2
Total	10	20

F. (II) cost for training

S.NO	District	(two Participant from each Department)	Lunch (@ Rs. 1000/- each)	Participatory Allowance (@ Rs. 2000/-each)	Total cost (PKR)
1	PMO	2	**2000**	-	**20000**
2	EPD	2	**2000**		
3	H &ICP	2	**2000**		
4	PHC	2	**2000**		
5	PHFMC	2	**2000**		
6	PSPA	2	**2000**		
7	WHO	2	**2000**		
8	WB	2	**2000**		
9	DMA	2	**2000**		
10	EPI	2	**2000**		
Total cost			**20000**		**20000**

F(III) Capacity building at District level

One day Training of Master Trainers (CEOs & DHOs)					
S/N	**District**	**(02 Pax/district)**	**No of person**	**Date**	**Batch No**
Orientation of DOH/District Focal person for HCP & Infection control Program			**22**		
1	Khushab	2	2		**1**
2	Bahawalnagar	2	2		
3	Bahawalpur	2	2		
4	R. Y. Khan	2	2		
5	Bhakkar	2	2		
6	Muzaffargarh	2	2		
7	Layyah	2	2		
8	Lodhran	2	2		
9	Mianwali	2	2		
10	D. G. Khan	2	2		
11	Rajanpur	2	2		

F(IV) Cost for training

S.NO	**District**	**(two Participant from each District)**	**Lunch (@ Rs. 1000/- each)**	**Participatory Allowance (@ Rs. 2000/- each)**	**Total cost (PKR**
1	Khushab	2	2000		
2	Bahawalnagar	2	2000		
3	Bahawalpur	2	2000		
4	R. Y. Khan	2	2000		
5	Bhakkar	2	2000		
6	Muzaffargarh	2	2000		
7	Layyah	2	2000		
8	Lodhran	2	2000		
9	Mianwali	2	2000		
10	D. G. Khan	2	2000		

11	Rajanpur	2	2000		
			22,000		
Training cost for 1 training					**22,000**

F(V) Capacity Building at RHC level

One day Training of Master Trainers (RHCs)

S/N	District	No of RHCs	(03 Pax/RHC	No of person	Date	Batch No
				51		**3**
1	Khushab	17	51			**1**
2	Bahawalnagar					
3	Bahawalpur					
4	R. Y. Khan					
5	Bhakkar					
6	Muzaffargarh					
7	Layyah					**2**
8	Lodhran					
9	Mianwali					**3**
10	D. G. Khan					
11	Rajanpur					
		17	51	51		

F (VI) Cost for trainings

S.NO	District	(three Participant from each RHCs)	Total trainers	Lunch (@ Rs. 1000/- each)	Participatory Allowance (@ Rs. 2000/- each)	Total cost (PKR)
1	Khushab	51	51	51000		
2	Bahawalnagar					
3	Bahawalpur					
4	R. Y. Khan					
5	Bhakkar					
6	Muzaffargarh					
7	Layyah					
8	Lodhran					
9	Mianwali					
10	D. G. Khan					
11	Rajanpur					
		51	**51**	**51000**		**51000**
Cost for 5- years						**255,000**

F(VIII) Capacity building at BHU level

One day Training of Master Trainers BHUs for 5-days						
S/N	**District**	**No of BHUs**	**(1Pax/BHUs)**	**No of person**	**Date**	**Batch No**
				166		**5-Batches** **Per batch 30 participants**
1	Khushab	166				
2	Bahawalnagar					
3	Bahawalpur					
4	R. Y. Khan					
5	Bhakkar					
6	Muzaffargarh					
7	Layyah					
8	Lodhran					
9	Mianwali					
10	D. G. Khan					
11	Rajanpur					
		166	166			**5 Batches**

F(IX) Cost for training

S.NO	**District**	**(1 Participant from each BHU)**	**Total trainers**	**Lunch (@ Rs. 1000/- each)**	**Participatory Allowance (@ Rs. 2000/- each)**	**Total cost (PKR)**
1	Khushab					
2	Bahawalnagar					
3	Bahawalpur					
4	R. Y. Khan					
5	Bhakkar					
6	Muzaffargarh					
7	Layyah					
8	Lodhran					
9	Mianwali					
10	D. G. Khan					
11	Rajanpur					
		166	166	**116,000**		**116,000**
Total cost for five year						**830,000**

F(X) IEC Material

IEC Material	**Infection control Manual**	**Cos PKR/Manual**	**Total PKR**
RHCs	**17**	**500**	**8,500**
BHUs	**166**	**500**	**83,000**
Total			**91,500**

Annexure G

ToRs for Health Care Waste Management Specialist (HCWMS)

1. Dealing with the environmental aspects of the ESMF and implementation of its procedures and processes during the course of project accordance with hospital waste management rules, 2014.
2. Support in compliance of the credit conditions and covenants pertaining to Environmental Safeguards.
3. Update in Implementation of Environmental aspects of the project.
4. Implementation of all environment aspects including environmental screening and filling the screening checklists for each subproject to be undertaken under the project.
5. Supervising and supporting IPs in achieving their responsibilities as outlined in the ESMF and subsequent Checklists;
6. Carrying out frequent field visits and conduct monitoring for effective ESMF implementation
7. Identifying and assist in preparing environmental induction and training materials;
8. Conduct/manage ESMF trainings for the IP(s),
9. Responding to environmental incidents as required;
10. Preparing quarterly progress reports for submission to World Bank and other stakeholders.
11. Provide technical support to implementing NGO's consultants in the development of site specific ESMPs
12. Coordinate with implementing agencies and NGO(s) for onsite implementation.
13. Organize and conduct the trainings on ESMF compliances as proposed in mitigation plan.
14. Prepare monthly, quarterly progress reports of Environment and Social Management Framework (ESMF).
15. Prepare final progress report of the ESMF and submit to the World Bank.
16. Ensure the Health Safety and Environment (HSE) compliance onsite at project sites.
17. Coordinate and conduct Environmental Field Monitoring visits of Project Areas.

18. Review and revision of documents and ensuring timely delivery of outputs as agreed with The World Bank.
19. As and when required contribute to the ongoing activities of the safeguard unit.
20. Assist the Project Director in routine office matter when require.
21. Work as the focal point for World Bank to provide necessary requirements of environmental compliances within the project.

REQUIRED QUALIFICATION AND EXPERIENCE:

MPhil/MS in Environmental Sciences/Environmental Engineering from a HEC recognized university; More than 8 years of relevant experience in dealing with environment management and implementation in environmental health related projects preferably in WB funded projects; have sound knowledge of local laws/policies on environmental management ,Environmental OPs of WB and their compliance in field including ESMF procedures and processes; monitoring and compliance of environmental mitigation measures and OHS practices during projects execution and implementation.

Annexure H
HWM CHECK LIST FOR RHCs & BHUs ACCORDING TO HWM RULES, 2014

DISTRICT----------HOSPITAL ----------No of beds ----------Date:

S/N	Activities /linked	yes	NO	Responsibility
1 -PLAN AND ACTION FRAMWORK				
1.1	Hospital waste management plan has prepared			Waste Management Officer/focal person
1.2	A dedicated Hospital waste management committee and its notification (RHC) & Focal person at BHU			SMS/MO
1.3	Hospital waste management review meeting once in a month. (minutes meetings available)			SMO/MO
1.4	Daily waste generation record is maintained.			All staff nurses
1.5	Training of healthcare workers & evidence training			SMO/MO
2	**PERSONAL PROTECTION**			
2.1	Health care workers are wearing proper PPE.			SMO to ensure PPE
2.2	Mask			
2.3	Gloves			
2.4	Hard sole long boots			
3 -WASTE COLLECTION/SEGREGATION& STORAGE AT WARDS				
3.1	Set of two small waste bins are placed along each bed side (white for municipal waste and yellow for infectious waste) for primary collection.			SMO to ensure provision of waste bins
3.2	I set (3 in number) of large color-coded waste bins are present near nursing station in all wards.			
	Yellow for infectious waste			
	Red bin for glass waste			
	White bin for municipal waste			
3.3	Waste bins are lined with same color waste bags.			Waste Management officer/FP
3.4	Large Waste bins are properly marked and remained closed			
3.5	Waste is collected daily from the wards/units			
3.6	Waste bag is sealed, indicating time for collection, ward, total weight, responsible person and biohazards symbol is mentioned.			
4-TRANSPORTATION OF THE WASTE TO YELLOW ROOM				
4.1	Waste is transported through four wheeled dedicated trolleys which are covered, safe and leak proof at RHC only			Sanitary Inspector
4.2	Infectious waste is transported through YELLOW color trolleys at RHC only			
4.3	Noninfectious waste (Municipal waste) is transported through white color trolleys at RHC only			
5-STORAGE AT YELLOW ROOM				
5.1	Yellow room with lock and key (security ensured)			Sanitary Inspector
5.5	Waste is disposed of within 24 hours			

5.6	Cleanliness of YELLOW room. Disinfections with 0.5% chlorine solution once in a week.			
6-WASTE TRANSPORTATION FROM YELLOW ROOM TO DISPOSAL SITE				
6.1	Waste is transported through fabricated yellow vehicles to disposal site			Sanitary Inspector
6.2	Waste is transported in covered trolley within the facility			
6.3	Waste is transported to open dump sites			
7- DISPOSAL OF WASTE AT INCINERATOR SITE				
7.1	For proper disposal of the waste incinerator is installed (RHC only)			Incinerator operator/S
7.3	All waste is burnt in the brick kiln small scale incinerator			
7.5	Waste is disposed in open dump sites			
7.6	Waste is burnt in the vicinity of the health facility			
	Landfill for infectious waste is present			
8-DISPOSAL OF PLACENT & OTHER ORGANS				
8.1	A well-structured, covered burial pit is present to dispose the placenta and other body parts			Sanitary inspector
8.2	Burial pit is 500 meters away from the drinking water sources.			
8.3	Burial pit is properly locked			
8.4	Waste is thrown in to burial pits after removing plastic bags			
8.5	Only anatomic & placenta are disposed in burial pit.			
9-DISPOSAL OF SYRINGES				
9.1	Injection safety protocol is present			Infection control nurse
9.2	Good quality needle cutters are used to cut needle and nozzle of the used syringes			
9.3	Hard material sharp containers are used and present in all wards			
10	**Laboratory Waste Management**			
10.1	Laboratory waste (blood, syringes, vials, tubes) are disinfected before final disposal.			Laboratory assistants
10.2	Laboratory works are wearing personal protection equipment			
11	**Drinking water & Environmental sanitation**			
11.1	Drinking water testing reports (quarterly testing)			WMO
11.2	Safe water for visitors, patients and staff			
11.3	Proper surface disinfection with chlorine solution/mopping			
11.4	Proper management of spillage (spill kits with trolleys)			
11.5	Toilets with soaps and waste bins (small white)			
12	**RECORD KEEPING OF THE WASTE**			
12.1	Daily infectious waste generation record is maintained			WMO
12.2	Three color coded registers are present in each ward where three large bins are present.			
12.3	Digital Weighting scale to record waste is present (RHC only)			
12.4	Daily infectious waste is being recorded at yellow room also by digital weighting scale			
12.5	Color coded yellow register is present to maintain the daily generated infectious waste streams.			
12.6	Hand over-take over protocols is maintained in yellow room (RHC only)			
12.7	Daily waste disposal report is maintained.			
12.8	Incident reporting mechanism is maintained.			

Annex I: filled check list

HOSPITAL WASTE MANAGEMENT
CHECK LIST FOR RHCs & BHUs ACCORDING TO HWM RULES, 2014

DISTRICT Vehari HOSPITAL BHU kot sadat No of beds 2 Date 16-7-19

S/N	Activities /linked	yes	NO	Responsibility
1 -PLAN AND ACTION FRAMWORK				
1.1	Hospital waste management plan has prepared		✓	Waste Management Officer/focal person
1.2	A dedicated Hospital waste management committee and its notification (RHC) & Focal person at BHU		✓	SMS/MO
1.3	Hospital waste management review meeting once in a month. (minutes meetings available)		✓	SMO/MO
1.4	Daily waste generation record is maintained.		✓	All staff nurses
1.5	Training of healthcare workers & evidence training	✓		SMO/MO
2	**PERSONAL PROTECTION**			
2.1	Health care workers are wearing proper PPE.		✓	SMO to ensure PPE
2.2	Mask		✓	
2.3	Gloves		✓	
2.4	Hard sole long boots		✓	
3 -WASTE COLLECTION/SEGREGATION& STORAGE AT WARDS				
3.1	Set of two small waste bins are placed along each bed side (white for municipal waste and yellow for infectious waste) for primary collection.		✓	SMO to ensure provision of waste bins
3.2	I set (3 in number) of large color coded waste bins are present near nursing station in all wards.	✓		
	Yellow for infectious waste	✓		
	Red bin for glass waste	✓		
	White bin for municipal waste	✓		
3.3	Waste bins are lined with same color waste bags.		✓	Waste Management officer/FP
3.4	Large Waste bins are properly marked and remained closed		✓	
3.5	Waste is collected daily from the wards/units		✓	
3.6	Waste bag is sealed, indicating time for collection, ward, total weight, responsible person and biohazards symbol is mentioned.		✓	
4-TRANSPORTATION OF THE WASTE TO YELLOW ROOM				
4.1	Waste is transported through four wheeled dedicated trolleys which are covered, safe and leak proof at RHC only	N	A	Sanitary Inspector
4.2	Infectious waste is transported through YELLOW color trolleys at RHC only	N	A	
4.3	Noninfectious waste (Municipal waste) is transported through white color trolleys at RHC only	N	A	
5-STORAGE AT YELLOW ROOM				

5.1	Yellow room with lock and key (security ensured)	NA		Sanitary Inspector
5.5	Waste is disposed of within 24 hours			
5.6	Cleanliness of YELLOW room. Disinfections with 0.5% chlorine solution once in a week.			
6-WASTE TRANSPORTATION FROM YELLOW ROOM TO DISPOSAL SITE				
6.1	Waste is transported through fabricated yellow vehicles to disposal site	NA		SI
6.2	Waste is transported in covered trolley within the facility			
6.3	Waste is transported to open dump sites			
7- DISPOSAL OF WASTE AT INCINERATOR SITE				
7.1	For proper disposal of the waste incinerator is installed (RHC only)			Incinerator operator/S
7.3	All waste is burnt in the brick kiln small scale incinerator	NA		
7.5	Waste is disposed in open dump sites			
7.6	Waste is burnt in the vicinity of the health facility			
	Landfill for infectious waste is present			
8-DISPOSAL OF PLACENT & OTHER ORGANS				
8.1	A well-structured, covered burial pit is present to dispose the placenta and other body parts		✓	Sanitary inspector
8.2	Burial pit is 500 meter away from the drinking water sources.		—	
8.3	Burial pit is properly locked		✓	
8.4	Waste is thrown in to burial pits after removing plastic bags		✓	
8.5	Only anatomic & placenta are disposed in burial pit.		✓	
9-DISPOSAL OF SYRINGES				
9.1	Injection safety protocol is present	✓		Infection control nurse
9.2	Good quality needle cutters are used to cut needle and nozzle of the used syringes	✓		
9.3	Hard material sharp containers are used and present in all wards	✓		
10	**Laboratory Waste Management**			
10.1	Laboratory waste (blood, syringes, vials, tubes) are disinfected before final disposal.	NA		Laboratory assistants
10.2	Laboratory works are wearing personal protection equipment			
11	**Drinking water & Environmental sanitation**			
11.1	Drinking water testing reports (quarterly testing)		✓	WMO
11.2	Safe water for visitors, patients and staff		✓	
11.3	Proper surface disinfection with chlorine solution/mopping		✓	
11.4	Proper management of spillage (spill kits with trolleys)		✓	
11.5	Toilets with soaps and waste bins (small white)		✓	
12	**RECORD KEEPING OF THE WASTE**			
12.1	Daily infectious waste generation record is maintained		✓	WMO
12.2	Three color coded registers are present in each ward where three large bins are present.		✓	
12.3	Digital Weighting scale to record waste is present (RHC only)		✓	
12.4	Daily infectious waste is being recorded at yellow room also by		✓	

	digital weighting scale			
12.5	Color coded yellow register is present to maintain the daily generated infectious waste streams.		✓	
12.6	Hand over-take over protocols is maintained in yellow room (RHC only)		NA	
12.7	Daily waste disposal report is maintained.		✓	
12.8	Incident reporting mechanism is maintained.			

Observer's Remarks

1	The waste is not mantained properly. no records of the waste / Syringes used
2	WASte is not well segregated and waste bins are not linned
3	Waste was found to be mixed even three color coded waste bins were present
4	at BHU level HWMR, 2014 proposed a focal person to deal with healthcare waste but no focal person was notified
5	Personal protection is compromised as a single worker found to wear the PPE. No immunization to workers was observed.