



ENVIRONMENTAL & HEALTHCARE WASTE MANAGEMENT PLAN (EHCWMP)

Balochistan Human Capital Investment Project



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Health Department
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List of Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
BEPA	Balochistan Environmental Protection Act
BESP	Balochistan Education Sector Plan
BHCIP	Balochistan Human Capital Investment Project
BHU	Basic Health Unit
CAR	Commissioner for Afghan Refugees
CBD	Convention on Biological Diversity
CD	Civil Dispensary
CITES	Convention on International Trade in Endangered Species
CMS	Conservation of Migratory Species
CWSF	Central Waste Storage Facility
DMC	District Management Committee
DHIS	District Health Information System
DHMT	District Health Management Team
DHO	District Health Officer
DHQ	District Headquarter
EA	Environmental Assessment
EHCWMF	Environmental Healthcare Waste Management Framework
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EQS	Environmental Quality Standards
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Safeguard Specialist
FP	Family Planning
FY	Fiscal Year
GBV	Gender Based Violence
GDP	Gross Domestic Product
GRM	Grievance Redress Mechanism
HCF	Healthcare Facility
HCI	Human Capital Index
HCP	Health Care Professional
HCW	Health Care Waste
HCWM	Health Care Waste Management
HCWMP	Health Care Waste Management Plan
HCWMS	Health Care Waste Management System
HF	Health Facility
HMIS	Health Management Information System
HR	Human Resource

HRH	Human Resource - Health
HWM	Health Waste Management
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IMF	International Monetary Fund
MCH	Mother and Child Health Centers
MS	Medical Superintendent
MT	Medical Technician
MWMFP	Medical Waste Management Focal Point
NEQS	National Environmental Quality Standards
PAD	Project Appraisal Document
PDO	Project Development Objective
PEC	Pakistan Engineering Council
PEPA	Pakistan Environmental Protection Act
PMU	Project Management Unit
PPE	Personal Protective Equipment
RHC	Rural Health Care Centre
RMNCHN	Reproductive, Maternal, New-born and Child Health (and Nutrition)
RV	Refugee Village
SAR	South Asia Region
SCM	Supply Chain Management
SED	Secondary Education Department
SMO	Senior Medical Officer
TFR	Total Fertility Rate
THQ	Tehsil Head Quarter
TPV	Third Party Validation
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nation Population Fund
VLD	Voluntary Land Donation
WASH	Water Sanitation and Hygiene
WB	World Bank
WHO	World Health Organization
WMO	Waste Management Officer
WMP	Waste Management Plan
WMT	Waste Management Team

Executive Summary

This document presents the Environmental and Health Care Waste Management Plan (EHCWMP) of the proposed Balochistan Human Capital Investment Project (BHCIP). The BHCIP is being initiated in four districts of the province by the Planning and Development Department (P&D), Government of Balochistan (GoB), and is being supported by the World Bank (WB).

Policy & Regulatory Framework: The present EHCWMP has been prepared in compliance with the national regulatory requirements and the World Bank Operational Policy 4.01, which requires an environmental assessment of projects proposed for Bank financing. The Plan essentially seeks to effectively implement the Hospital Waste Management Rules 2005 framed by the Government of Pakistan (GoP). The Plan also broadly complies with the Pakistan Environmental Protection Act, 1997.

Project Development Objective (PDO): The PDO is to improve utilization of quality health and education services in selected refugee hosting districts of Balochistan. The project aims to achieve the PDO by directly investing to fill supply- and demand- side gaps and strengthening service delivery systems through improved management and governance. The project has two major components covering health and education sectors (see the project appraisal document – PAD) for details. For the purpose of EHCWMP, the health component has been considered.

Study Objectives: The main objective of this assignment is to institutionalize the EHCWMP in primary and secondary healthcare facilities supported by the WB. The study includes carrying out a situation assessment of the prevailing medical waste management practices in the selected government healthcare facilities in the Province and preparing an EHCWMP for these facilities.

Situation Assessment: The current situation of the medical waste management has been assessed based on: (a) a literature review; and (b) field observations during visits to healthcare facilities in 4 districts, as part of this study. The key findings are described below:

a) Literature review: The Health Department of the GoB is the main service provider in the province. The private sector (both for profit and non-profit) also plays an important role in partnership with the public sector. The Balochistan Health Department is responsible for the delivery of key health services to the people through hospitals, Basic Health Units (BHU), Rural Health Centers (RHC), Mother and Child Health Centers (MCH) and Civil Dispensaries (CD). The department operates more than 710 BHUs, 107 RHCs, 91 MCHs, 540 CDs and 48 hospitals, which include 5 Tertiary Care Hospitals in Quetta, 5 Divisional HQ hospitals, 5 fifty-bedded Hospitals and 26 District Headquarter (DHQ) Hospitals¹

b) Field Assessment of Healthcare Waste Management at selected Healthcare facilities: The data was collected through a standardized check list. For the purpose of this assessment, 11 health care facilities were visited which included 4 BHUs to be upgraded to RHCs, 4 RHCs and 3 DHQs in the target districts. The field assessment results showed a dismal situation of waste management consistent across DHQs, RHCs and BHUs. Weaker implementation arrangements exist in terms of waste management where our analysis reveals that waste management committees do not exist for all RHCs and BHUs. For DHQs, committees exist but are not functional. Similarly, no hospital has prepared waste management plans. In terms of recording of waste

¹ PC-I Balochistan Human Capital Investment Project

generation, there is no practice of record keeping across all DHQs, BHUs and RHCs. Waste segregation of municipal and infectious waste is currently not being done at source indicating the non-availability of white bins and yellow bins for primary collection. This trend is similar in all health care facilities. Waste was also found not properly stored at wards levels and no record was maintained in properly color-coding registers. In terms of frequency of waste collection, for DHQs, waste is being collected on a daily basis however, for BHUs and RHCs, waste collection is done on a weekly or bi-weekly basis. This applies to all facilities, there are no fabricated yellow vehicles available for transportation of waste to disposal sites. Mostly, waste (potentially including infectious waste) is being collected by hand in plastic bags and dumped in open spaces from where municipal tractors pick it up. A large quantity of waste is being burnt in the vicinity of the BHUs, RHCs and DHQs as a final disposal. No proper burial pits are constructed for the environment friendly disposal of the placenta and organ waste. Personal protection was also found to be inadequate with mostly healthcare workers not wearing proper personal protective equipment (PPEs), especially in BHUs and RHCs.

Impacts & Mitigation Measures

Health Hazards

Impacts: Health hazards for staff, patients, and nearby communities are by far the most significant potential risks associated with the operation of healthcare facilities. These are mostly caused by not following the infection control protocols, not using proper PPE, and not employing proper procedures for health care waste (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: These risks can be mitigated through proper management of HCW and effective implementation of the Hospital Waste Management Rules of 2005, 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 structured 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 sharp objects (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.

Mitigation: Strictly following standard operating procedures to handle sharp objects 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 a soaking pit will be upgraded to comply with 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 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.

Mitigation. If infectious waste is incinerated, the following mitigation measures will be implemented: (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 including the present EHCWMP will rest with the Project Management Unit (PMU)-Health Department. Within the PMU-Health, the Health Specialist will be appointed as the Medical Waste Management Focal Point (MWMFP) who in coordination with the Environmental and Social Safeguard Officer will implement the Waste Management Plan. At the district level, District Health Officer (DHO) in 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 Senior Medical Officer (SMO) at DHQ and RHC and Medical Technician (MT) at BHU or Medical Officer (MO) at BHU+ or higher level (depending upon the population density) will be designated as the focal point for EHCWMP implementation. In addition, a Waste Management Team (WMT) will be constituted in each district, and an appropriate officer designated as a Waste Management Officer (WMO) in accordance with the Hospital Waste Management Rules of 2005.

Hospital Waste Management Plan (WMP). WMT will prepare District Waste Management Plan (DWMP) following the guidelines accordance with the Hospital Waste Management Rules of 2005. The DWMP which will be then circulated to all health facilities in district for implementation. The DWMP will include: (i) a plan/layout of the healthcare facility showing waste disposal points for every ward; (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) number of staff required for waste management; (vi) procedures for the management of waste requiring treatment; (vii) contingency plans for storage or disposal of risk waste; (viii) training courses and

related programs on how to design and implement waste management; and ix) emergency procedures.

Environmental Management Plan (EMP). A site-specific EMP will be prepared and implemented for each facility to be renovated or rehabilitated as suggested in the BHCIP ESMF.

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 by the District Health Management Team (DHMT). In addition to the above, the Health Department will also conduct random monitoring of the Environmental Monitoring Plan in healthcare facilities. The Environmental and Social Safeguard Specialist (ESS) the PMU-Health will also carry out random visits of the healthcare facilities in the project areas to monitor the implementation of the Plan.

EHCWMP Review and Third-Party Validation (TPV). The external review of the EHCWMP implementation of the health facility will be carried out on an annual basis by a TPV firm. The PMU-Health for BHCIP will conduct an internal review and commission a TPV of the EHCWMP implementation on an annual basis. On the basis of these reviews, the EHCWMP may need to be revised and updated, and shared with the WB team.

Capacity Building: The facility level capacity building will be an integral part of the WMP discussed above. At the provincial level, the PMU-Health BHCIP will plan and conduct training of trainers of relevant staff comprised of waste management officials and handlers from each selected district under the project on the EHCWMP implementation. The master trainers trained through the province/district level trainings discussed above will impart the trainings at district level.

Documentation: The WMP of each facility will define the facility-level documentation requirements for EHCWMP implementation. At the district level, each district through District Health Officer(s) will compile the District Environmental and Waste Management Report on a monthly basis and send it to the Health Specialist in the PMU- Health. The Health Specialist (Medical Waste Management Focal Point) will compile the reports received from the designated focal person of District Health Officer of each district and prepare overall project reports on EHCWMP implementation on quarterly basis and share with Department of Health, World Bank, etc.

EHCWMP Implementation Cost: The cost for EHCWMP implementation has been estimated to cost approximately be PKR 8 million. This includes the cost of EHCWMP, operations related mitigation cost, TPV, and capacity building at provincial and district level. The detailed district-budgets need to be prepared following the preparation of the WMPs for each facility.

ایگزیکٹو خلاصہ

اس دستاویز میں مجوزہ بلوچستان ہیومن کیپیٹل انویسٹمنٹ پروجیکٹ (بی ایچ سی آئی پی) کا ماحولیاتی اور صحت کی دیکھ بھال کے فضلے کے انتظام کی منصوبہ بندی (ای ایچ سی ڈبلیو ایم پی) پیش کی گئی ہے۔ محکمہ منصوبہ بندی و ترقیات (پی اینڈ ڈی)، حکومت بلوچستان (جی او پی) کے ذریعہ بی ایچ سی آئی پی صوبے کے چار اضلاع میں شروع کی جارہی ہے، اور اسکو عالمی بینک (ڈبلیو بی) کی مدد حاصل ہے۔

پالیسی اور ریگولیشن فریم ورک: موجودہ ای ایچ سی ڈبلیو ایم پی قومی ضابطہ کار کی ضروریات اور ورلڈ بینک آپریشنل پالیسی 4.01 کی تعمیل میں تیار کیا گیا ہے، جس کے لئے بینک کی مالی اعانت کے لئے تجویز کردہ منصوبوں کے ماحولیاتی جائزہ کی ضرورت ہے۔ اس منصوبے کے تحت بنیادی طور پر حکومت پاکستان (جی او پی) کے ذریعہ تیار کردہ ہسپتال کے ویسٹ مینجمنٹ رولز 2005 کو مؤثر طریقے سے نافذ کرنے کی کوشش کی گئی ہے۔ یہ منصوبہ پاکستان انوائرنمنٹل پروٹیکشن ایکٹ، 1997 کی بھی وسیع پیمانے پر تعمیل کرتا ہے۔

پروجیکٹ ڈویلپمنٹ کا مقصد (پی ڈی او): پی-ڈی-او کا مقصد بلوچستان کے منتخب مہاجرین کی میزبانی کرنے والے اضلاع میں معیاری صحت اور تعلیم کی خدمات کے استعمال کو بہتر بنانا ہے۔ اس منصوبے کا مقصد براہ راست سرمایہ کاری کے ذریعہ سپلائی اور طلب میں فرق کو پر کرنے اور بہتر انتظام اور حکمرانی کے ذریعہ خدمت کی فراہمی کے نظام کو مضبوط بنا کر پی ڈی او کا حصول ہے۔ اس منصوبے کے دو بڑے حصے ہیں جو کہ صحت اور تعلیم کے شعبوں کا احاطہ کرتے ہیں (تفصیل کی لئے پروجیکٹ کی جانچ پڑتال کی دستاویز (پیڈ) کو رجوع کریں)۔ ای ایچ سی ڈبلیو ایم پی کے مقصد کے لئے صحت کے جز پر غور کیا گیا ہے۔

مطالعے کے مقاصد: اس ذمہ داری کا بنیادی مقصد ورلڈ بینک کے تعاون سے پرائمری اور ثانوی صحت کی دیکھ بھال کی مراکز میں ای ایچ سی ڈبلیو ایم پی کی منصوبہ بندی کو ادارتی شکل میں ترتیب دینا ہے۔ اس مطالعے میں صوبے میں منتخب سرکاری صحت کی سہولیات میں موجودہ طبی فضلے کے انتظام کے طریق کار کی صورتحال کا جائزہ لینا اور ان سہولیات کے لئے ماحولیات اور صحت کے مراکز کے لئے ای ایچ سی ڈبلیو ایم پی کا تیار کرنا شامل ہے۔

صورتحال کا اندازہ: طبی فضلے کے انتظام کی موجودہ صورتحال کا اندازہ اس بنیاد پر کیا گیا ہے: (ا) تحریری مواد کا جائزہ؛ (ب) اس مطالعے کے حصے کے طور پر چار اضلاع میں صحت کی سہولیات کے دوروں کے دوران مشاہدات۔ اہم حاصل کردہ نتائج ذیل میں بیان کئے گئے ہیں:

(ا) تحریری مواد کا جائزہ: حکومت بلوچستان کا محکمہ صحت صوبے میں خدمات فراہم کرنے والا بنیادی ادارہ ہے۔ نجی شعبہ (منافع اور غیر منافع بخش دونوں) عوامی شعبے کے ساتھ شراکت میں بھی اہم کردار ادا کرتا ہے۔ محکمہ صحت بلوچستان اسپتالوں، بنیادی صحت یونٹوں (بی ایچ یو)، رورل ہیلتھ کے مراکز (آر ایچ سی)، زچہ اور بچہ صحت کے مراکز (ایم سی ایچ) اور سول ڈسپنسریوں (سی ڈی) کے ذریعے لوگوں کو صحت کی اہم خدمات کی فراہمی کا ذمہ دار ہے۔ یہ محکمہ 710 سے زیادہ بی ایچ یوز، 107 آر ایچ سیز، 91 ایم سی ایچز، 540 سی ڈیز اور 48 اسپتالوں میں چلاتا ہے، جس میں کوئٹہ میں 5 نچلے درجے کے نگہداشت کے ہسپتال، 5 ڈویژنل ہیڈ کوارٹر ہسپتال، 5 پچاس بستر والے اسپتال اور 26 ڈسٹرکٹ ہیڈ کوارٹر (ڈی ایچ کیو) اسپتال شامل ہیں۔

ب) صحت سے متعلق فضلہ کے انتظامات کا منتخب صحت کے مراکز میں جائزہ: اعداد و شمار ایک معیاری چیک لسٹ کے ذریعے جمع کئے گئے۔ اس جائزہ کے مقصد کے لئے صحت کی دیکھ بھال کے 11 مراکز کا دورہ کیا گیا تھا جن میں منتخب اضلاع میں سے 4 بی ایچ یوز جنکی آر ایچ سیز کے درجہ پر ترقی ہوئی ہے، 4 آر ایچ سیز اور 3 ڈی ایچ کیوز شامل ہیں۔ موقع پر کئے گئے تجزیہ کے نتیجے میں ڈی ایچ کیوز، آر ایچ سیز اور بی ایچ یوز میں مستقل کچرے کے انتظام کی ایک ناگوار صورتحال ظاہر ہوئی ہے۔ ویسٹ مینجمنٹ کے ضمن میں عملدرآمد کا نظام سست روی کا شکار ہے، جہاں پر ہمارے تجزیے سے پتہ چلا ہے کہ ہر آر ایچ سیز اور بی ایچ یوز میں ویسٹ مینجمنٹ کی کمیٹیاں نہیں ہیں۔ ڈی ایچ کیوز میں کمیٹیاں موجود ہیں، لیکن فعال نہیں ہیں۔ اسی طرح کسی بھی ہسپتال کے پاس ویسٹ مینجمنٹ کا منصوبہ نہیں ہے۔ فضلہ کے پیدا ہونے کے ریکارڈ کے معاملے میں تمام ڈی ایچ کیوز، بی ایچ یوز اور آر ایچ سیز میں ریکارڈ رکھنے کا کوئی رواج نہیں ہے۔ میونسپلٹی اور متعدی فضلہ کو کچرے سے الگ کرنے کا کام فی الحال جائے وقوعہ پر نہیں کیا جا رہا ہے، جس سے کچرہ کو ابتدائی طور پر اکٹھا کرنے کے لئے سفید اور پیلے رنگ کے ڈبوں کی عدم دستیابی کی نشاندہی ہوئی ہے۔ یہ رجحان صحت کی دیکھ بھال کے تمام مراکز پر یکساں ہے۔ وارڈوں کی سطح پر کچرہ مناسب طریقے سے ذخیرہ کیا ہوا نہیں پایا گیا، اور رنگین رجسٹروں میں ریکارڈ صحیح طریقے سے نہیں رکھا ہوا تھا۔ کچرہ اٹھانے کے اوقات کے لحاظ سے، ڈی ایچ کیوز میں روزانہ کی بنیاد پر کچرہ اکٹھا کیا جا رہا ہے۔ تاہم، بی ایچ یوز اور آر ایچ یوز میں کچرہ اٹھانے کا کام ہفتہ وار یا بعض صورتوں دو ہفتوں بعد کی بنیاد پر ہوتا ہے۔ یہی صورتحال باقی مراکز پر بھی ہے جہاں پر کچرہ ضائع کرنے والے مقامات پر کچرہ کی منتقلی کے لئے پیلے رنگ کی گاڑیاں دستیاب نہیں ہیں۔ زیادہ تر، فضلہ (ممکنہ طور پر متعدی فضلہ سمیت) پلاسٹک کے تھیلے میں ہاتھ سے جمع کیا جاتا ہے اور کھلی جگہوں پر پھینک دیا جاتا ہے جہاں سے میونسپل ٹریکٹر اسے اٹھا لیتے ہیں۔ حتمی تصرف کے طور پر بی ایچ یوز، آر ایچ سیز اور ڈی ایچ کیوز کے آس پاس میں کثیر مقدار کچرے کو جلایا جا رہا ہے۔ نال اور اعضاء کے فضلہ کو ماحول دوست تصرف کے لئے دباؤ کے واسطے مناسب گڑھ نہیں بنائے جاتے۔ زیادہ تر صحت کی دیکھ بھال کرنے والے کارکنان میں ذاتی تحفظ ناکافی پایا گیا خاص طور پر بی ایچ یوز اور آر ایچ سی میں مناسب ذاتی حفاظتی سامان (پی پی ای) نہیں پہنے ہوئے تھے۔

اثرات اور تخفیف کے اقدامات

مضر صحت

اثرات: صحت کی دیکھ بھال کے مراکز کو چلانے سے منسلک عمل، مریضوں اور قریبی کمیونٹی کے لئے صحت کے خطرات اب تک کا سب سے اہم امکانی خطرہ ہے۔ یہ زیادہ تر انفیکشن کنٹرول پروٹوکول کی پیروی نہ کرنے، مناسب پی پی ای کا استعمال نہ کرنے اور صحت کی دیکھ بھال کے ضائع ہونے والے (ایچ سی ڈبلیو) اکٹھا کرنے، نقل و حمل، اسٹوریج، اور حتمی ضائع کرنے کے لئے مناسب طریقہ کار پر کام نہ کرنے کی وجہ سے ہوتے 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 کے مناسب انتظام اور 2005 کے ہسپتال ویسٹ مینجمنٹ رولز کے موثر نفاذ سے صحت کے مراکز کے اندر اور باہر دونوں جگہوں پر خطرات کو کم کیا جاسکتا ہے۔ پہلی ترجیح یہ ہے کہ ضائع ہونے والے سامان کو (ترجیحی طور پر جہاں سے یہ پیدا ہوتا ہے) دوبارہ استعمال کے قابل اور غیر قابل استعمال، مضر اور غیر مضر حصوں میں الگ کیا جائے۔ دیگر اہم اقدامات میں تیز اشیاء کو سنبھالنے کے لئے منظم انتظامی نظام کا ادارہ، فضلہ کی کمی، مؤثر مادوں سے جب بھی ممکن ہو بچنا، کارکنوں کی حفاظت کو یقینی بنانا، فضلہ جمع کرنے اور نقل و حمل کے محفوظ طریقوں کی فراہمی، اور محفوظ عمل اور ضائع کرنے کے طریقہ کار کی تنصیب کے لئے نظام شامل ہیں۔

حفاظتی خطرات:

اثرات: صحت کی دیکھ بھال کرنے والے مراکز میں حفاظتی خطرہ عام طور پر تیز دھار اشیاء (سوئیاں، کٹر)، گیسوں، آٹوکلیمز اور اسی طرح کے دیگر سامان کے سمبھالنے سے وابستہ ہیں۔ ایچ سی ڈبلیو کو کھلی جلائے کا کام انجام دینے والے عملے کے لئے بھی حفاظتی خطرات لاحق ہیں۔ ان خطرات میں زخم، چھید، زہریلی گیس آلودہ ہونا، جلنا اور جسمانی چوٹ کے دیگر خطرہ ہیں۔

تخفیف: تیز دھار اشیاء کو سمبھالنے کے لئے کام کرنے کے معیاری طریقہ کار کی سختی سے پیروی کرنا اور پی پی ای ای صحیح استعمال کرنا خاص طور پر چھید سے بچاؤ کے دستاں اور ماسک تیز آلات، گیسوں اور دیگر سے منسلک خطرات سے بچنے کے لئے سب سے زیادہ اہمیت کے حامل ہیں۔

اس کے علاوہ، "سی ایچ ڈبلیو" کو جمع کرنے کے لئے موٹے / پنکچر ہونے سے محفوظ پلاسٹک کے تھیلے، اور سوئیوں/دیگر تیز آلات کو ضائع کرنے کے لئے سخت/پنکچر پروف بکس استعمال کئے جائیں گے۔

مٹی اور پانی کی آلودگی

اثرات: صحت کے مراکز کے احاطے میں متعدی کچرے کے براہ راست تدفین یا صحت کی دیکھ بھال کے فضلہ کو بلدیہ کے فضلہ کے ساتھ ہی میونسپل کچرہ جمع کرنے کی جگہ پر ضائع کیا جانا، مٹی اور پانی کی آلودگی کی وجہ بن سکتی ہے۔ متعدی کچرے کا کھلی جگہ پر جلاؤ بھی مٹی کی آلودگی کا باعث بن سکتا ہے۔ صحت کی دیکھ بھال کرنے والے مرکز میں گندے پانی کے غلط تصرف سے بھی مٹی آلودہ ہوسکتی ہے۔

تخفیف: متعدی کچرے کو دوسرے غیر متعدی کچرے سے الگ کر دیا جائے گا اور میونسپل کورے کے ڈمپنگ سائٹ / لینڈ فل پر نہیں بھیجا جائے گا، سوائے اس جگہ کے جہاں طبی فضلے کے لئے مخصوص لینڈ فل دستیاب ہو۔ اگر متعدی کچرے کی جگہ پر تدفین عمل میں لائی جاتی ہے تو یہ ایک ہی قطار کے گڑھے میں ہوگی۔ شہروں میں طبی مراکز سے نکلنے والے گندے پانی کو شہر کے نکاسی آب میں خارج کیا جائے گا، بصورت دیگر سائٹ سے متعلق علاج جیسے سیپٹک ٹینک اور سوکنگ (گیلے) گڑھوں کو بین الاقوامی معیار کی تعمیل کی خاطر بہتر کیا جائے گا۔

ہوا کے معیار کا خرابی

اثرات: ایچ سی ڈبلیو کو کھلا جلائے سے ہوا کے معیار میں کمی آسکتی ہے۔ اسی طرح، متعدی فضلہ جلائے سے بھی ہوا آلودہ ہوسکتی ہے۔ خاص تشویش کی بات ڈائی آکسین ہیں جو پلاسٹک اور پولی تھیلین مصنوعات کو جلا کر پیدا ہوتے ہیں۔ ڈائی آکسین کارسنجینک (سرطان پیدا کرتے) ہیں اور طبی مرکز کے کچرا ضائع کرنے والے عملے، دیگر قریبی عملے، مریضوں اور آس پاس کی کمیونٹیز کو متاثر کرسکتے ہیں۔

تخفیف۔ اگر متعدی کچرے کو نذر آتش کیا جاتا ہے، تو درج ذیل تخفیفی اقدامات پر عمل درآمد جائے گا:

1) خاص طور پر ایچ سی ڈبلیو کے لئے ڈیزائن کردہ حرارت خانہ (انسٹیٹرز) کا استعمال کیا گیا ہے؛ (2) باقائده طریقے سے تربیت یافتہ عملہ معیاری کام کرنے کے طریقہ کار کے مطابق حرارت خانہ کو چلاتا ہے؛ (3) ڈائی آکسین

خارج ہونے سے بچنے کے لئے حرارت خانے میں مناسب طور پر اونچا (1200 سنٹی گریڈ سے زیادہ) درجہ حرارت حاصل کیا جاتا ہے؛ 4) فلو گیسوں کو ہوا میں خارج ہونے سے پہلے مناسب طریقے سے ٹریٹ کیا جاتا ہے (جیسے پانی کی سکریبروں - صاف کرنے کے آلے - کی مدد سے)؛ اور 5) حرارت خانے کے پہلے چیمبر سے گیسوں کا کوئی اخراج نہیں ہے تاکہ دوسرے چیمبر میں تباہ ہونے سے پہلے ڈائی آکسجن کے کسی بھی اخراج سے بچا جا سکے۔

ہیلتھ کیئر مینجمنٹ پلان ادارتی انتظامات: موجودہ ای-ایچ-سی-ڈبلیو-ایم-پی سمیت ماحولیاتی اور صحت کی دیکھ بھال کے فضلہ کے انتظام کے امور کو نافذ کرنے کی مجموعی ذمہ داری پروجیکٹ مینجمنٹ یونٹ (پی ایم یو) محکمہ صحت کے پاس ہوگی۔ پی ایم یو ہیلتھ کے اندر، ہیلتھ اسپیشلسٹ کو میڈیکل ویسٹ مینجمنٹ فوکل پوائنٹ (ایم ڈبلیو ایم ایف پی) کے طور پر مقرر کیا جائے گا جو ماحولیاتی اور سماجی سیف گارڈ آفیسر کے ساتھ مل کر ویسٹ مینجمنٹ پلان پر عمل درآمد کریں گے۔ ضلعی سطح پر، ہر ضلع میں ڈسٹرکٹ ہیلتھ آفیسر (ڈی ایچ او) 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 / نگرانی کے لئے فوکل پوائنٹ ہوگا۔ آخر میں، مراکز کی سطح پر، ڈی ایچ کیو اور آر ایچ سی میں سینئر میڈیکل آفیسر (ایس ایم او) اور پی ایم یو میں میڈیکل ٹیکنیشن (ایم ٹی) یا پی ایم یو + یا اس سے اوپر کی سطح پر (آبادی کی کثرت کے حساب سے) میڈیکل آفیسر (ایم او) کو ای ایچ سی ڈبلیو ایم پی کے نفاذ کے فوکل پوائنٹ کے طور پر نامزد کیا جائے گا۔ اسکے علاوہ، ہر صحت کی دیکھ بھال کرنے والی سہولت میں ویسٹ مینجمنٹ ٹیم (ڈبلیو ایم ٹی) تشکیل دی جائے گی، اور 2005 کے ہسپتال ویسٹ مینجمنٹ رولز کے مطابق ایک مناسب افسر کو ویسٹ مینجمنٹ آفیسر (ڈبلیو-ایم-او) نامزد کیا جائے گا۔

ہاسپٹل ویسٹ مینجمنٹ پلان (ڈبلیو-ایم-پی): ڈبلیو ایم ٹی 2005 کے ہاسپٹل ویسٹ مینجمنٹ رولز کے مطابق ہدایات پر عمل کرتے ہوئے ڈسٹرکٹ ویسٹ مینجمنٹ پلان (ڈی ڈبلیو ایم پی) تیار کرے گا۔ ڈی ڈبلیو ایم پی جیسے اس کے بعد ضلع میں تمام صحت کے مراکز کو نفاذ کے لئے جاری کیا جائے گا۔ ڈی ڈبلیو ایم پی میں جو شامل ہونگے وہ ہیں: 1) صحت کی دیکھ بھال کے مرکز کا ایک منصوبہ / نقشہ جس میں ہر وارڈ کے لئے فضلہ پھینکنے کے پوائنٹس دکھائے گئے ہوں؛ 2) کنٹینرز کی اقسام، تعداد، اور تخمینہ لاگت، کچرے کے تھیلے اور ٹرالیوں کی سالانہ ضرورت کی تفصیلات؛ 3) ٹائم ٹیبل جس میں ہر وارڈ اور محکمہ سے کچرا جمع کرنے کے اوقات شامل ہوں۔ 4) فضلہ کی پیداوار اور انتظام میں شامل صحت کے مرکز کے عملے کی ہر کیٹیگری کے فرائض اور ذمہ داریاں؛ 5) فضلہ کے انتظام کے لئے درکار عملے کی تعداد؛ 6) کچرے کو درکار ٹریٹمنٹ کے انتظام کے طریقہ کار؛ 7) مضر کوڑے کو ذخیرہ کرنے یا ضائع کرنے کے لئے ہنگامی منصوبے؛ 8) ویسٹ مینجمنٹ کے ڈیزائن اور نفاذ کے لئے تربیتی کورس اور متعلقہ پروگرامز۔ اور 9) ایمرجنسی طریقہ کار۔

ماحولیاتی مینجمنٹ پلان (ای ایم پی): پی-ایچ سی آئی پی، ای ایس ایف کی تجاویز کے مطابق ہر مرکزی تزیین و آرائش کے لئے سائٹ سے متعلق مخصوص ماحولیاتی انتظام کا منصوبہ (ای ایم پی) تیار اور نافذ کیا جائے گا۔

مانیٹرنگ: ہر مرکز کے ڈبلیو ایم پی اور ای ایم پی کی بنیاد پر مرکز کی سطح پر نگرانی کی جائے گی۔ ان منصوبوں کی بنیاد پر مانیٹرنگ چیک لسٹ تیار کی جائیں گی، جس میں وقتاً فوقتاً اندراج کیا جائے گا۔ ضلعی سطح کی نگرانی مانیٹرنگ ڈسٹرکٹ ہیلتھ مینجمنٹ ٹیم کے ذریعے کی جائیگی۔ مذکورہ بالا کے علاوہ، صحت کا محکمہ صحتی مراکز میں ماحولیاتی نگرانی کے منصوبہ کی وقتاً فوقتاً نگرانی بھی کرے گا۔ پی ایم یو موجود

ماحولیاتی اور سماجی حفاظت کا ماہر (ای ایس ایس) منصوبے پر عمل درآمد کی نگرانی کے لئے پراجیکٹ ایریا میں صحت کی دیکھ بھال کے مراکز کا وقتاً فوقتاً دورہ بھی کرے گا۔

ای ایچ سی ڈبلیو ایم پی کا جائزہ اور تھرڈ پارٹی کی توثیق: صحت کے مرکز کا سالانہ بنیادوں پر ای ایچ سی ڈبلیو ایم پی کے نفاذ کا داخلی جائزہ لیا جائے گا۔ پی ایم یو ہیلتھ پی ایچ سی آئی پی کے لئے داخلی جائزہ لے گی اور سالانہ بنیادوں پر ای ایچ سی ڈبلیو ایم پی کے نفاذ کی ٹی پی وی (تھرڈ پارٹی کی توثیق) کروائے گی۔ ان جائزوں کی بنیاد پر ای ایچ سی ڈبلیو ایم پی میں ترمیم اور اپ ڈیٹ کرنے کی ضرورت ہو سکتی ہے، اور ورلڈ بینک ٹیم کے ساتھ شیئر کی سکتی ہیں۔

صلاحیت میں بہتری: مرکز کی سطح پر صلاحیت میں بہتری لانا مذکورہ بالا ڈبلیو ایم پی کا ایک لازمی حصہ ہوگی۔ صوبائی سطح پر، پی ایم یو ہیلتھ پی ایچ سی آئی پی ای ایچ سی ڈبلیو ایم پی کے نفاذ پر پروجیکٹ کے ہر منتخب ضلع کے کچرے کے انتظام کے عہدیداروں اور کام کرنے والوں پر مشتمل متعلقہ عملے کے لئے ٹرینرز کی تربیت کا منصوبہ بنائے گی اور تربیت کا انعقاد کرے گی۔ مذکورہ بالا صوبائی / ضلعی سطح پر تربیت حاصل کرنے والے ماسٹر ٹرینرز ضلعی سطح پر تربیت فراہم کریں گے۔

دستاویزات: ہر سہولت کا ڈبلیو ایم پی ای ایچ سی ڈبلیو ایم پی کے نفاذ کے لئے سہولت کی سطح کی دستاویزات کی ضروریات کی وضاحت کرے گا۔ ضلعی سطح پر، ہر ضلع ڈسٹرکٹ ہیلتھ آفیسر کے ذریعہ ڈسٹرکٹ انوائرنمنٹل اینڈ ویسٹ مینجمنٹ رپورٹ ماہانہ بنیاد پر مرتب کرے گا اور اسے پی ایم یو ہیلتھ میں ہیلتھ اسپیشلسٹ کو بھیجے گا۔ ہیلتھ اسپیشلسٹ (میڈیکل ویسٹ مینجمنٹ فوکل بوآئنٹ) ہر ضلع کے ضلعی ہیلتھ آفیسر کے نامزد فوکل پرسن سے موصولہ اطلاعات مرتب کرے گا اور ای ایچ سی ڈبلیو ایم پی پر عملدرآمد کے بارے میں سہ ماہی بنیادوں پر پروجیکٹ رپورٹ تیار کرے گا، اور محکمہ صحت اور ورلڈ بینک، وغیرہ کے ساتھ شیئر کرے گا۔

ای ایچ سی ڈبلیو ایم پی کے نفاذ پر لاگت: ای ایچ سی ڈبلیو ایم پی پر عمل درآمد کے لئے لاگت کا تخمینہ تقریباً "4.8 ملین روپے لگایا گیا ہے۔ اس میں ای ایچ سی ڈبلیو ایم پی کی لاگت، آپریشن سے متعلق تخفیف لاگت، ٹی پی وی اور صوبائی اور ضلعی سطح پر استعداد کار کی تعمیر شامل ہے۔ ہر سہولت کے لئے ڈبلیو ایم پی کی تیاری کے بعد تفصیلی ضلعی بجٹ تیار کرنے کی ضرورت ہے۔

1 Introduction

1.1 Introduction

The Government of Balochistan (GoB) intends to implement the Balochistan Human Capital Investment Project (BHCIP) in four districts of the province with the proposed assistance of the World Bank (WB). The project will be implemented by the Provincial Planning and Development Department through the Health Department and the Secondary Education Department. In line with the national/provincial laws as well as WB safeguard requirements, and to address potentially negative environmental and social impacts of the Project, the GoB has conducted an environmental and social assessment of the proposed project activities.

1.2 Background

Pakistan is facing economic challenges amid long-standing policy and structural weaknesses, leading to the implementation of a macroeconomic adjustment program. Over the last five years, the economy had accelerated with a gross domestic product (GDP) growth of almost five percent, but unbalanced policies and limited progress in structural reforms led to a fiscal deficit of 6.5 percent of GDP in fiscal year (FY) 2018. As fiscal and external imbalances emerged, the growth slowed down to 3.3 percent in FY2019 and is expected to further decline to 2.4 percent in the FY2020. In order to address these macroeconomic vulnerabilities, the Government of Pakistan (GoP) signed a program with the International Monetary Fund (IMF) under the US\$6 billion, 39-month Extended Fund Facility in July 2019² aiming at restoring the macroeconomic stability.

Balochistan has a low population density organized in small settlements that are usually far-flung and isolated, implying high cost of service delivery. The rapid transition to devolved public services has brought opportunities but also challenges. The institutional capacity of the GoB in undertaking devolved functions remains weak, including planning and budgeting, monitoring and supervision, regulation, contract management, human resource (HR) management and supply chain management (SCM).

Balochistan stands at the lowest amongst many dimensions of human capital, including health and education outcomes. Balochistan has a Human Capital Index (HCI) of 34 percent, the lowest in Pakistan along with Sindh (35 percent), and presents gender disparities with a HCI that is lower for females (32 percent) compared to males (35 percent).³ The low score in HCI is partially linked to Balochistan's alarming 42 percent poverty rate⁴ and socio-cultural norms that make it difficult to utilize health and education services in the province.

Balochistan performs worse than the national average across all health outcomes and health service utilization indicators (Table 2).⁵ Infant mortality and under-5 mortality

² International Monetary Fund. 2019. "Pakistan: Request for an Extended Arrangement Under the Extended Fund Facility-Press Release; Staff Report; and Statement by the Executive Director for Pakistan." IMF country Report No. 19/212. Retrieved from: <https://www.imf.org/en/Publications/CR/Issues/2019/07/08/Pakistan-Request-for-an-Extended-Arrangement-Under-the-Extended-Fund-Facility-Press-Release-47092>. Accessed on August 26, 2019

³ Geven, K. Forthcoming. A Proposal for a Provincial Level Human Capital Index for Pakistan. WB: Washington DC.

⁴ Pakistan Bureau of Statistics. 2017. Household Integrated Economic Survey (HIES) 2015/16 [Data from 2014/15]; WB. Data4Pakistan-District Development Portal. <https://geosdndev.worldbank.org/Data4Pakistan/>. Accessed on August 28, 2019.

⁵ National Institute of Population Studies (NIPS) [Pakistan] and ICF. 2019. [Pakistan Demographic and Health Survey \(PDHS\) 2017-18. Islamabad, Pakistan, and Rockville, Maryland, USA: NIPS and ICF.](#)

rates are 66 and 78 per 1,000 live births in Balochistan compared to 62 and 74 per 1,000 live births at the national level. The total fertility rate (TFR) is 4.0 in Balochistan and 3.6 nationally, and almost half of the children under five are stunted in the province compared to about one in three at the national level. Differences in service utilization between the province and the national level are even more striking: only 38 percent of deliveries are attended by a skilled birth attendant (versus 69 percent nationally), 56 percent of women receive at least one antenatal care (ANC) from a skilled provider (versus 86 percent nationally), and about 58 percent of the children receive vitamin A supplementation (versus 75 percent nationally). The use of modern contraceptives is very low both at the provincial level (14 percent) and at the national level (25 percent), while the proportion of children immunized against measles is alarming at 33 percent in the province versus 73 percent nationally. While the data shows that Balochistan's performance is below the national average, they also point to the fact that Pakistan performs worse than its peers in the South Asia region (SAR).

Adding to these issues is the protracted Afghan refugee situation that further exacerbates the problems faced by the public. Balochistan hosts around 325,000 registered Afghan refugees in total: 46 percent of them are female and more than half of them (53 percent) are less than 18 years of age. Districts with the highest presence of refugees include Quetta, Pishin, Chagai, Loralai, Killa Saifullah, and Killa Abdullah districts⁶. More than half of the refugees in Balochistan live in urban Quetta (56 percent), whereas the remaining live in rural settlements (29 percent) and refugee villages (RVs, 15 percent). Another half million undocumented Afghan citizens and some 879,000 Afghan Citizen Card (ACC) holders, whom the GoP registered during 2017-2018 in cooperation with the Government of Afghanistan, also reside in Pakistan. The presence of large numbers of refugees without commensurate increase in resources has put extra pressure on the already stretched social sectors, severely affecting access to and utilization of quality health and education services for both host communities and refugees.⁷

Against the above described backdrop, the BHCIP aims to improve utilization of quality health and education services in selected refugee hosting districts of Balochistan. The project aims to achieve this by directly investing to fill supply- and demand- side gaps and strengthening service delivery systems through improved management and governance.

1.3 Need for EHCWMP

Since BHCIP plans to finance rehabilitation and upgradation of selected health facilities with potential negative environmental and social impacts, the World Bank Policy on Environmental Assessment OP/BP 4.01 has been triggered along with national and provincial policies and Acts. For BHCIP, specific sites and level of civil works have been broadly identified but not finalized yet. Therefore, a framework approach has been adapted. For the civil works related construction works, an Environmental and Social Framework (ESMF) has been prepared. The EHCWMP is prepared to specifically address the health care waste management during construction and operations phase of the Project.

⁶ Population data from Census 2017; Registered refugee data from UNHCR as of August 31, 2019.

⁷ UNHCR, GoP, and United Nations Development Programme (UNDP). 2018. Needs Assessment for Refugee Affected Areas – Phase II. April 2008.

2 Legal and Administrative Framework

This chapter presents an overview of national and provincial regulatory frameworks and the World Bank's safeguard policies are relevant to the EHCWMP and need to be triggered.

2.1 Constitutional Provision on Environmental Protection

Prior to 18th Amendment in the constitution of Pakistan, the legislative powers were with federal parliament and legislative assemblies of four provinces of Pakistan. If a particular legislation passed by any provincial assembly came into conflict with a law enacted by the national assembly, then according to constitution, the federal legislation was supposed to prevail. The subject of environmental pollution and ecology were in Concurrent Legislative List, thus allowing both the federal and the provincial government to legislate on this subject. However, only the federal government enacted laws on environment and the provincial governments derived their power from the federal law.

After the 18th amendment in 2010, the concurrent list has been abolished and a limited number of subjects on the list have been included in the federal legislative list, whereas, the provincial governments have been given powers to legislate on the subjects transferred to provinces. As a result, the power to legislate and decide on the subject of "environmental pollution and ecology" now lies with the provincial government; however, climate change remains under federal jurisdiction. Since BHCIP will be implemented in Balochistan, the environmental regulations of Balochistan will be followed.

2.2 Environmental Assessment Regulations

2.2.1 Applicable Rules for Environmental Assessment

The *Pakistan Environmental Protection Act (PEPA) 1997* is the apex environmental law in the country, and provides for the protection, conservation, rehabilitation and improvement of environment, for the prevention and control of pollution, and for promotion of sustainable development. After the 18th amendment, GoB adopted PEPA 1997 with some amendments and named it **Balochistan Environmental Protection Act (BEPA) 2012**. BEPA provides the framework for implementation of environmental reforms, protection and conservation of species, conservation of renewable resources, and establishment of Environmental Tribunals, appointment of Environmental Magistrates, and submission of Environmental Assessment in case of new development. It also provides details on prevention and control of pollution, and promotion of sustainable development in the province.

Balochistan Environmental Protection Agency (BEPA) is the entity responsible for the implementation of the law. BEPA was created in 1992 and currently works under the administrative control of the Environment, Wildlife Livestock and tourism Department. The Agency has the power to conduct inquiries into possible breaches of environmental laws either of its own accord, or upon the registration of a complaint.

There are 42 sections of BEPA. Section 15 of the Act, states that no development program involving construction activities or any change to the physical environment, can proceed

without an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA), both requiring approval from federal and provincial Environmental Protection Agencies. The act states that the provision is applicable only to prescribed categories of projects, which are defined in the Pakistan Environmental Protection Agency Review of IEE and EIA Regulations (2000). Under these regulations, projects are classified according to the expected degree of environmental impact. Project types listed in Schedule-I are potentially less damaging and only require IEE; those types listed in Schedule-II are potentially more damaging and requires an EIA.

2.2.2 Applicable Hospital Waste Management Rules

The Hospital Waste Management Rules 2005 will be applicable to the proposed project (**Annex 3**). Under these Rules, every hospital is responsible for proper management of waste generated by the facility till its final disposal in accordance with provisions given in these Rules. The Rules require each healthcare facility to constitute a waste management team, and to prepare and implement a waste management plan. The Rules also include guidelines for waste segregation, collection, transportation, storage, and disposal.

The Balochistan Environmental Protection Act 2012 titled “General Prohibition in relation to Solid and Hospital Waste management and Waste Management License” further stipulates rules under Section 19 as follows:

1. No person may collect, transport, sort, recover, store, dispose of or otherwise manage waste in a manner that results in a significant adverse effect.
2. Every person who imports, produces, collects, recovers, transports, keeps, treats or disposes of waste shall take all reasonable measures to prevent a significant adverse effect on the environment from occurring.
3. The owner or proponent of every premises upon which solid and hazardous hospital waste is produced shall ensure that all hazardous waste whether solid or hospital waste is separated from other waste, and is stored in separate containers pending disposal, in accordance with the requirements of the Balochistan Environmental Protection Agency as set out in regulations, published guidelines or license conditions.
4. A person shall not dispose of solid and hazardous hospital waste in such a manner that it becomes litter or is likely to become litter.
5. Unless in possession of a valid waste management license issued by the Balochistan Environmental Protection Agency, no person may construct, own or operate a landfill site, incinerator or other facility at which waste is permanently disposed of or is stored indefinitely.
6. The Balochistan Environmental Protection Agency shall evaluate each application for a license and shall do the following: a) grant a license if the Balochistan Environmental Protection Agency is satisfied that the applicant has sufficient expertise to undertake the activity in question in accordance with the law and in a manner that will not have significant adverse effects; or b) refuse to grant a license giving reasons for the refusal in writing to the applicant.
7. The Balochistan Environmental Protection Agency shall reach a decision in regard to subsection 2 within thirty (30) days of the date of lodging of the application for a license with the Balochistan Environmental Protection Agency.

8. If there are reasonable grounds to grant license, and those grounds are communicated to the license holder in writing, the Balochistan Environmental Protection Agency may amend, revoke or impose new conditions in an existing waste management license.
9. The license granted under subsection (6) shall be subject to review if conditions of license granted are not fulfilled.

2.2.3 Environmental Protection Agency IEE & EIA Regulations, 2000

The projects falling under any of the categories listed in Schedule-I of the regulation require preparation of Initial Environmental Examination (IEE) report, whereas those falling under categories listed in Schedule-II require preparation of detailed study, the Environmental Impact Assessment (EIA). The sub-components under component 1 and 2 of BHCIP require construction and rehabilitation of health care and educational facilities at existing locations in urban and rural areas of the select districts. According to Schedule I and II of IEE/EIA Regulation 2000, small scale construction projects do not require an IEE or EIA study. However, Schedule I requires an IEE for construction of hospitals and Schedule II requires EIA for installation of incinerators at hospitals. Refer to **Annex 1**.

Table 2.1: Potential Project Activities Requiring Environmental Assessment

IEE/EIA regulation 2000	Section/ article of the regulation	Project Activity
Schedule I, List of projects requiring an IEE	I. Urban development and tourism 2. Public facilities with significant off-site impacts (e.g. hospital)	For Hospital construction
Schedule II, List of project requiring an EIA	F. Waste Disposal 1. Waste disposal and/or storage of hazardous or toxic wastes (including landfill sites, incineration of hospital toxic waste)	For incineration

The above provisions of the Act will be used for the screening of facilities for IEE and EIA. If an IEE or EIA is conducted, it will be submitted to the Balochistan Environmental Protection Agency for approval and shared with public. As a result, the disclosure requirements of both the WB and BEPA 2012 will be fulfilled.

2.2.4 Environmental Quality Standards, 2000

The National Environmental Quality Standards (NEQS) first promulgated in 1993 have been revised and the latest NEQS were issued in 2010. Section 14 of the BEPA act, on prohibition of certain discharges or emissions and potential harmful items or materials is based on NEQS and states that: (1) No person shall discharge or emit or allow the discharge or emission of any effluent or waste or air pollutant or noise in an amount, concentration or level or is likely to cause, a significant adverse effect on the environment or human health which is in excess of the Environmental Quality Standards or, where applicable, the standards established under sub -clause; (ii) of clause (f) of section 6. According to the World Bank policy, compliance with all local statutory requirements is compulsory during project execution. NEQS have been adopted by Environmental

Protection Agency Balochistan as Environmental Quality Standards (EQS); therefore, it will be applied under component 2 of the project.

- EQS for Ambient Air Quality– states maximum allowable concentration of pollutants (9 parameters) in gaseous emissions from vehicle exhaust.
- EQS for Drinking Water Quality – describes drinking water properties by outlining the defined physical and chemical parameters.
- EQS for Noise – states maximum allowable limit of noise arising from vehicles in decibels (dB) - day and night time distinctions will be delineated.
- EQS for Municipal and Liquid Industrial Effluents states maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea.

The above standards will be complied with during the execution of project activities. The detailed EQS are included as **Annex 2**.

2.2.5 Environmental and Social Guidelines

In addition to the above, the BEPA has additional guidelines which are presented below;

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

The BHCIP will follow the above guidelines as well as ensure compliance with the WB safeguard requirements.

2.3 Labour Laws

The Constitution of Pakistan contains a range of provisions with regards to labour rights found in Part II: Fundamental Rights and Principles of Policy.

1. Article 11 of the Constitution prohibits all forms of slavery, forced labour and child labour;
2. Article 17 provides for a fundamental right to exercise the freedom of association and the right to form unions;
3. Article 18 describes the right of its citizens to enter upon any lawful profession or occupation and to conduct any lawful trade or business;
4. Article 25 lays down the right to equality before the law and prohibition of discrimination on the grounds of sex alone;
5. Article 37(e) makes provision for securing just and humane conditions of work, ensuring that children and women are not employed in vocations unsuited to their age or sex, and for maternity benefits for women in employment.

The acts related to labour laws including Factories Act 1934 and Employment of Child Act, 1991 are the most relevant to the project that prohibit the employment of children

in certain occupations and to regulate the conditions of work of children. are the most relevant to the project.

2.4 Motor Vehicles Ordinance, 1965, and Rules, 1969

The Motor Vehicles Ordinance deals with the powers of motor vehicle licensing authorities and empowers police officers to check and penalize traffic offenders. The ordinance also empowers the Regional Transport Authority to monitor road transport, licensing requirements, and compensations for death or injury to passengers on public carriers. During the use of transportation services for the project, these regulatory provisions will be taken into account.

2.5 Pakistan Penal Code, 1860

The Pakistan Penal Code deals with offences where public or private property and/or human lives are affected due to the intentional or accidental misconduct of an individual or body of people. The Penal Code provides the basis to coordinate project activities with the local authorities to ensure that construction activities do not become a cause of public nuisance or inconvenience.

2.6 Building Code of Pakistan (Seismic Provisions-2007)

The Pakistan Engineering Council (PEC) governs the application of Building Code of Pakistan (Seismic Provisions-2007). Prior to the start of construction, the proposed sub projects will take design approval from PEC to ensure compliance with seismic provision according to zones.

2.7 Provincial Local Government Ordinances, 2001

These ordinances establish regulations for land use, conservation of natural vegetation, air, water, and land pollution, disposal of solid waste and wastewater effluents, as well as matters related to public health and safety. These, where applicable, will be complied with during rehabilitation and subsequent operation of hospital facilities.

2.8 Factories Act, 1934

The clauses relevant to the project are those that concern the health, safety and welfare of workers, disposal of solid waste and effluent, and damage to private and public property. The Factories Act also provides regulations for handling and disposing of toxic and hazardous materials. Given that construction activity is classified as 'industry', these regulations will be applicable to the project construction contractors.

2.9 Balochistan Water and Sanitation Authority Act, 1989

The Groundwater Administration Ordinance (1978, amended 2000) regulates groundwater use and administers the rights of various persons at the provincial and district levels. The Ordinance provides a legal and institutional framework for resource management by the local administration, allowing flexibility in determining rules for groundwater use as a common property. The proposed Project will take into account the Groundwater Administration Ordinance (1978, amended 2000) in case additional ground water extraction is needed for construction and operations.

2.10 Groundwater Rights Administration Ordinance, 1978

The Groundwater Administration Ordinance (1978, amended 2000) regulates groundwater use and administers the rights of various persons at the provincial and district levels. The Ordinance provides a legal and institutional framework for resource management by the local administration, allowing flexibility in determining rules for groundwater use as a common property. The proposed Project will take account of the Groundwater Administration Ordinance (1978, amended 2000) in case additional ground water extraction is needed for construction and operations.

2.11 International Finance Cooperation (IFC)/World Bank Safeguard Policies

BHCIP will follow the applicable IFC performance/ code of practice standards as per requirement under EHCWMP. In addition to EHS guidelines, IFC/World Bank sector specific EHS guidelines will also be used. These are discussed below.

2.11.1 Environmental Health and Safety Guidelines

Available IFC/World Bank General and Industry Sector specific guidelines are included in **Table 2.2 & Table 2.3** respectively. The General EHS Guidelines will be used jointly with the relevant Industry specific guidelines in case the sector specific national guidelines/legislations are not available.

Table 2.2: IFC/ World Bank General EHS Guidelines

1. Environmental	3
1.1 Air Emissions and Ambient Air Quality	3
1.2 Energy Conservation	17
1.3 Wastewater and Ambient Water Quality	24
1.4 Water Conservation	32
1.5 Hazardous Materials Management	35
1.6 Waste Management	45
1.7 Noise	51
1.8 Contaminated Land	53
2. Occupational Health and Safety	59
2.1 General Facility Design and Operation	60
2.2 Communication and Training	62
2.3 Physical Hazards	64
2.4 Chemical Hazards	68
2.5 Biological Hazards	70
2.6 Radiological Hazards	72
2.7 Personal Protective Equipment (PPE)	72
2.8 Special Hazard Environments	73
2.9 Monitoring	74
3. Community Health and Safety	77
3.1 Water Quality and Availability	77
3.2 Structural Safety of Project Infrastructure	78
3.3 Life and Fire Safety (L&FS)	79
3.4 Traffic Safety	82
3.5 Transport of Hazardous Materials	82
3.6 Disease Prevention	85
3.7 Emergency Preparedness and Response	86
4. Construction and Decommissioning	89
4.1 Environment	89
4.2 Occupational Health & Safety	92

4.3 Community Health & Safety	94
References and Additional Sources*	96

Table 2.3: IFC/ World Bank Applicable EHS Guidelines

#	Project component	IFC/ World Bank Applicable EHS Guidelines ⁸	Weblink
1	Health	General EHS Guidelines	https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p
		Environmental, Health, and Safety Guidelines for Health Care Facilities	https://www.ifc.org/wps/wcm/connect/960ef524-1fa5-4696-8db3-82c60edf5367/Final%2B-%2BHealth%2BCare%2BFacilities.pdf?MOD=AJPERES&CVID=jqeCW2Q&id=1323161961169
		Environmental, Health, and Safety Guidelines for Waste Management Facilities(incinerator)	https://www.ifc.org/wps/wcm/connect/5b05bf0e-1726-42b1-b7c9-33c7b46ddda8/Final%2B-%2BWaste%2BManagement%2BFacilities.pdf?MOD=AJPERES&CVID=jqeDbH3&id=1323162538174

Note: Sector specific guidelines will be used in combination with the general EHS Guidelines. Any additional EHS guidelines required by the project will be identified at the stage of business enterprise development

2.12 International Conventions/Agreements

There are more than 30 international conventions to which Pakistan is a signatory. The international interventions relevant to the project are presented in **Table 2.4**.

Below, are relevant to project interventions.

Table 2.4: International Conventions

Category	Signatory Convention	Came into force
Chemicals and hazardous wastes conventions	Stockholm Convention on Persistent Organic Pollutants	April 2008
	Rotterdam Convention on the Prior Informed Consent procedures for Certain Hazardous Chemicals and Pesticides in International Trade.	July 2005
	Basel Convention on the control of Trans-boundary Movement of Hazardous Wastes and their Disposal.	July 1994
Atmosphere conventions/protocols	United Nations Framework Convention on Climate Change (UNFCCC)	June 1994
	Kyoto Protocol to UNFCCC	Jan 2005

⁸ https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

Category	Signatory Convention	Came into force
	Vienna Convention for the protection of the Ozone Layer.	Dec1992
	Montreal Protocol on Substances that Deplete the Ozone Layer.	Dec 1992
Land / environmental cooperation conventions	United Nations Convention to Combat Desertification (UNCCD) in those Countries Experiencing Serious Drought and / or Desertification, Particularly in Africa.	Feb 1997
Cultural and natural heritage	Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention)	July 1976
Biodiversity related conventions/protocols	Convention on Biological Diversity (CBD).	July 1994
	Cartagena Protocol on Bio-safety to the Convention on Biological Diversity.	March 2009
	Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)	Nov 1976
	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).	April 1976
	Convention on the Conservation of Migratory Species of Wild Animals (CMS)	Dec 1987

3 Project Description

3.1 Project Location

The GoB has identified improvement of service delivery in target areas and systems strengthening as the two guiding principles of this project. The interventions for improving systems will be first rolled out in target areas and later scaled up at the provincial level. To ensure that the project adequately reaches refugees and host communities in affected areas, the GoB selected four districts using the criteria of the highest presence of registered refugees (both in terms of percentage of total population in the district and number); or the main border crossing between Balochistan and Afghanistan which constitute a major entry/exit point for refugees. Based on this, the following districts have been selected for project interventions with numbers and percentage of refugees in each district given in **Table 3.1** below.

Table 3.1: Project Districts, Refugee and Host Population and Area

District	Area Km ²	Population	Refugees	Refugee %
Quetta	2,653	2,275,699	187,031	8.2%
Chagai	45,444	226,008	28,901	12.8%
Killa Abdullah	3,293	757,578	10,775	1.4%
Pishin	7,819	736,481	54,691	7.4%
Total	59,209	3,995,766	281,398	7.0%

3.2 Project Development Objective

The project development objective (PDO) is to improve utilization of quality health and education services in selected refugee hosting districts of Balochistan. The project aims to achieve the PDO by directly investing to fill supply- and demand- side gaps and strengthening service delivery systems through improved management and governance. This will help not only improve utilization and quality of critical public services that support the creation of human capital, but also increase sustainability of the results achieved under the project. Given the critical shortage of functional facilities in Balochistan, the project will take a phased approach of filling the supply side gaps first and then create demand as the supply gaps are being addressed. The project will also pay special attention to: (a) gender equity; (b) quality of services; and (c) synergies between health and education interventions to maximize accumulation of human capital.

The project targets four districts with: (a) the highest presence of registered refugees (both in terms of percentage of total population in the district and number) or (b) the main border crossing between Balochistan and Afghanistan constituting a major entry/exit point for refugees. Chagai (12.8 percent; 28,948), Quetta (8.2 percent; 185,994), Pishin (7.5 percent; 55,092) and Killa Abdllah (1.4 percent; 10,765). Given the high variation in the number of refugees within districts, priority is given to tehsils (i.e., sub-district) with the highest presence of refugees. The selection of intervention sites within a tehsil is made by each department using a cluster approach, that is, by selecting

facilities that form a cluster of public services available to the project beneficiaries in RAAs.

3.3 Project Components and Activities

The project has two major components covering health and education sectors (see the project appraisal document – PAD) for details. For the purpose of EHCWMP, the health component has been further elaborated below.

Component 1: Improving utilization of quality health services (US\$18.25 million equivalent). This component aims at increasing utilization of quality preventive and curative essential services delivered at primary and secondary level facilities in selected RAAs of Balochistan, with a focus on RMNCHN. The project's ultimate goal is to improve children's health among host communities and refugees, especially of those coming from poor and vulnerable households.

Subcomponent 1.1: Improving delivery of quality health services by upgrading and improving functionality of existing primary and secondary HFs, increasing providers' skills and competencies, and redesigning service delivery including strengthening referral systems.

Improving availability of critical inputs such as HRH, medical equipment and medicines, and infrastructure in selected HFs The project will support the target HFs to meet a set of agreed minimum delivery standards for RMNCHN services. In each target district, HFs are selected based on: proximity to a RV, ongoing or planned investments by other DPs, and distance from the district/teshil headquarter hospitals (DHQ/THQ) for Pishin, Chagai, and Killa Abdullah, and the city center for Quetta⁹ to enable the creation of a cluster-based service delivery model. Each cluster will have a comprehensive EmONC ready HF (e.g., DHQ, THQ or RHC, if DHQ/THQ is too far from the RV) to serve as a "hub" and this will be linked to a network of basic EmONC ready HFs. Moreover, selected BHUs will be upgraded to 24/7 RHCs to provide services around the clock, every day of the week. The project will finance rehabilitation/upgradation of target HFs such as health care waste management systems, selected essential medical equipment including ambulances, and essential medicines including nutrition and FP commodities. To address key challenges affecting HRH performance, the project will finance contracting of health care providers (especially females) to deliver essential RMNCHN services.

Improving provider knowledge and competencies The project will support, *inter alia*: a review and update of training curricula (including FP and nutrition services) with a shift towards competency-based approaches, training for key health providers with priority given to staff newly contracted under the project, strengthening of on-the-job training at HFs to ensure staff has sufficient hands-on experience with deliveries, and piloting of an innovative intervention through the use of technologies for the assessment of providers' clinical knowledge and refresher training for selected providers. This technology-based intervention will first be fine-tuned in selected facilities to ensure its functionality, and if successful, scaled up at the provincial level.

Increasing awareness of the benefits of the supported health and education activities The project will support community-based advocacy and awareness-raising activities

⁹ There is no THQ/DHQ in Quetta, but there are several tertiary level facilities in the city centers.

about the project benefits, especially among refugees and women, and generate demand for health services, with a focus on key RMNCHN services, and education services at schools, with a focus on girls' education. To improve utilization of health and education services among women and girls, demand-generation activities will target young and pregnant women, their husbands and other decision-makers in the households. The project will explore the possibility of using LHWs, community groups, community/religious leaders and existing networks managed by CAR to mobilize communities. It will also leverage schools (teachers, PTSMC, children) for health promotion such as appropriate hand washing and personal hygiene. Finally, it will strengthen HF-level governance to increase service provider accountability by actively engaging citizens and seeking their feedback.

Subcomponent 1b: Improving health sector stewardship, i.e. improve health service delivery effectiveness and efficiency by (i) making quality health data routinely available and fostering a culture of evidence-based decision-making; and (ii) strengthening the institutional capacity to manage the health sector, in particular critical inputs necessary for effective and quality health care.

Improving availability, quality, and use of routine health data. To strengthen the routine HMIS and generate high-quality, timely and reliable data that are used to improve service delivery, the project will, *inter alia*: support the development and implementation of a digital HRH database, including collection of baseline data with a real time system monitoring of staff presence at HFs; revision of the checklist and collection of baseline data on the status of HFs; digitization of DHIS; integration of various reporting systems into DHIS/DHIS2, including HMIS for vertical programs and PPHI; creation of a user-friendly dashboard for decision-making; data review meetings; and data quality checks with feedback mechanisms for improvement. The health care providers at target districts will be trained and provided tablets/phones for data entry into DHIS.

Strengthening institutional capacity to manage the health sector. The project will support the training of managerial and technical staff at provincial and district levels in various health systems strengthening areas that are directly linked to improving effectiveness and efficiency of service delivery as well as sustainability, including contract management of private-public partnerships, public financial management, monitoring and supervision, HRH management and supply chain management. Based on the lessons learned from the education sector, special attention will be paid to building capacity of key staff in utilizing data to better inform planning, budgeting, and monitoring and supervision. The project will also support a project management unit (PMU) to provide day-to-day project management, including the fiduciary and safeguards management, and monitoring and evaluation (M&E).

3.4 Health Facilities under BHCIP

Project Component 1 plans to improve utilization of quality health services with subcomponent 1a focused on improving delivery of quality health services. The proposed facilities for upgrading are given as Table 3.2. A cluster approach will be adopted during construction and operation phase whereby the CDs, BHUs and RHCs around the main cluster head (district/tehsil headquarter hospital in each district) will receive technical support and will serve as key referral centres for the cluster. Four BHUs will be upgraded to RHCs. The DHQ hospital Dalbandin will be strengthened to provide for provision

of Comprehensive EmONC services. A blood bank will be established, and accommodation will be constructed to accommodate for female health care providers (hostel for 20). RHCs and BHUs will also be strengthened to provide Basic EmONC services. The upgrading of health care facilities will include financing selected essential medical equipment, essential medicines including nutrition and family planning commodities, and health care waste management systems.

Table 3.2: Tentative List of Health Facilities Selected

#	District	Health Facilities
1.	Killa Abdullah	<ol style="list-style-type: none"> 1. DHQ Chaman 2. RHC Killa Abdullah 3. BHU Jungle Pir Alizai 4. RHC Maizai Adda 5. RHC Habib Zai 6. BHU Pir Alizai (upgrade to RHC)
2.	Chagai	<ol style="list-style-type: none"> 1. DHQ Hospital Dalbandin 2. RHC Chagai 3. ¹⁰BHU Posti (supported by UNFPA) 4. BHU Sargesha (supported by UNFPA) 5. BHU Amin Abad to (upgrade to RHC) 6. CD Lashkar Abb
3.	Quetta	<ol style="list-style-type: none"> 1. RHC Panjpai 2. BHU New Pashtoonabad 3. BHU Mohammad Khail 4. THQ Mufti Mehmood 5. BHU Kotwal A 6. BHU Village Aid (upgrade to RHC)
4.	Pishin	<ol style="list-style-type: none"> 1. DHQ Pishin 2. RHC Saranan 3. RHC Shadezai 4. BHU Tora Shah 5. RHC Bostan

¹⁰ S. No 3,4 will be included in year three

4 Baseline Description

4.1 Health Situation Analysis

The Health Department of the GoB is the main service provider in the province, though the private sector (both for profit and non-profit) also plays an important role. The Balochistan Health Department is responsible for the delivery of key health services to the people through hospitals, BHUs, RHCs, MCHs and CDs. The department operates more than 710 BHUs, 107 RHCs, 91 MCHs, 540 CDs and 48 hospitals, which include 5 Tertiary Care Hospitals in Quetta, 5 Divisional HQ hospitals, 5 fifty Bedded Hospitals and 26 District Headquarter (DHQ) Hospitals.¹¹

BHCIP will work on upgrading and rehabilitation of 24 health facilities. For the purpose of this assessment health care facilities were visited which included 4 BHUs to be upgraded to RHCs, 4 RHCs and 3 DHQs in the target districts. This situation analysis provides the existing status of health waste management system in the facilities visited as summarized in **Table 4.1**.

Results by type of facilities visited and their status of health waste management are summarized below.

District Health Quarter (DHQs)

The analysis reveals that in the majority of DHQs, Hospital Waste management committees exist but are mostly non-functional. There is some evidence of Health Committee meetings in the form of minutes and participation record, however the meetings are not regularly being conducted. Waste management plans are also not prepared for the majority of the DHQs with no record or evidence of any trainings being done for healthcare/ sanitary workers on HCWM. Similarly, in terms of institutional review, hospital's management do not conduct any review meetings on hospital waste management and handling. Waste generation record is also currently not being maintained at most of the DHQs.

Sanitary and Health care workers were found using partial personal protective equipment (PPE) however practice of using PPEs is not consistent across all DHQs. This is because of either non-availability of PPEs with the hospital staff or also due to lack of training awareness and stricter regulations by the hospital management.

In terms of waste management system, waste segregation of municipal and infectious waste is currently not being done at source indicating this are the non-availability of white bins and yellow bins for primary collection. In majority of DHQs, only a single bin is placed along the hospital beds. Similarly, color-coded bins are also not placed in the nursing station for ease of segregation at source. In terms of waste collection, for most of the DHQs it was observed that waste is being collected daily by the sanitary worker however, currently, there is no system of sealing and marking waste bags. The current practice also does not ensure proper record keeping for time of collection, type of ward, total weight, responsible person and if any biohazardous waste has been collected.

¹¹ PC-I Balochistan Human Capital Investment Project

The assessment revealed that currently there is no concept of waste collection and storage at Yellow Room in all DHQs as this facility is not available in any DHQ. In terms of waste handling and transportation, there is no proper mechanism of transporting waste disposal from hospitals. For proper disposal of waste, the incinerator is only installed at one DHQ (Bolan Medical Complex Quetta) which is not functioning. Waste in majority of the cases is being disposed of in open sites or is being burnt in open areas in close vicinity of the hospital. In terms of disposal of infectious waste, proper landfills are not present leaving hospitals with no option but to dump their waste in open spaces. Similarly, placenta and organ waste is currently not being disposed off or burnt properly which is a big threat to communities living nearby and also to the health of patients. For hospital laboratories, it was observed that the laboratory staff in most cases are disinfecting Laboratory waste (blood, syringes, vials, tubes) before final disposal.

WASH facilities are also found inadequate or non-existent in some cases. Safe drinking water facilities were not found present in the majority of the DHQs. Similarly, health and hygiene conditions of DHQs were found to be poor with no system of cleaning (surface disinfection) and spillage management (spill kits). Apart from this, separate toilets exist for men and women however, the sanitary conditions were inadequate with non-availability of soap, towels, toilet paper and waste bins in all cases.

Rural Health Centers (RHCs)

For RHCs, weaker implementation arrangements exist in terms of waste management. Our analysis reveals that waste management committees do not exist in any of the RHCs. Similarly, Hospital waste management review meetings are not being conducted in most RHCs; waste management plans are also not being prepared for all RHCs; and there is no record or evidence of trainings being done for healthcare/ sanitary workers on HCWM. In the majority of RHCs, Sanitary and Health care workers were not found using any PPE. This is because of non-availability of PPEs with the RHC staff.

In terms of record keeping, there is no system for recording of waste type, waste weight and composition. Color coded registers and weight scales are also not available at waste collection points. Apart from this, waste disposal reporting and incident reporting mechanisms were also non-existent. In terms of waste segregation, municipal and infectious waste are currently not being separated at source. This is because there is a single waste bin alongside the patient beds in all RHCs. Similarly, color-coded bins are not placed with the nursing station for ease of segregation at source. In terms of waste collection, for most of the RHCs it is observed that the waste is being collected weekly or in some cases twice a week by the sanitary worker however, currently, there is no system of sealing and marking waste bags.

Similar to collection, there is no proper transportation mechanism for waste as there are no fabricated yellow vehicles available for transportation of waste to disposal sites. Mostly, waste is being collected by hand trolleys and dumped in open spaces for collection by the municipal tractors. Apart from this, infectious and hazardous waste are not being contained properly due to non-availability of yellow rooms in the RHC. For waste disposal, incinerators are not installed at any RHC facility. Waste in majority of the cases is being disposed of in open sites or is being burnt in open area in close vicinity of the RHC. Infectious waste and placenta/organ waste are also not being disposed of properly due to non-availability of proper burial pits and/or landfills. Similarly, injection safety

protocols including safe disposal of injection syringes were not found to be observed in all RHCs.

Basic Health Units (BHUs)

The survey data reveal that waste management plan has not been prepared in any BHU as well. In the majority of BHUs, a focal person has not been appointed to perform the duties and waste management review meeting has not been conducted. Waste generation record has not been maintained in any BHU. In some BHUs, training has been provided to health care/ sanitary workers on health care waste management (HCWM). In most of the BHUs, workers are using PPE whereas in few BHUs, workers do not use any kind of PPE. Mask, gloves and head covers are being used by BHUs at critical junctures as a mitigation measure.

In the majority of BHUs, only one waste bin has been placed between two beds without colour allocation. However, in a few BHUs, a set of two small waste bins have been placed along each bed side for primary collection of waste; (i) white for municipal waste and; and (ii) yellow for infectious waste. All basic health units have not placed large colour coded waste bins near nursing stations in all the wards. There are no separate yellow, red and white bins for collections of infectious waste, glass waste and municipal waste respectively. Mostly empty boxes of medicines are being used for collection of all types of waste with no segregation or labelling. In the majority of BHUs, waste has been collected weekly. There is no proper marking on containers indicating type of waste, time of collection, ward, total weight, responsible person and biohazard symbol. There is no record of the amount of daily waste generated and there is no weighing scale available in any BHU. There are no registers and reports for maintaining the record of daily waste generation and disposal.

In BHUs, there are no fabricated yellow vehicles available for transportation of waste to disposal sites. Waste is being collected by hand primarily and dumped in open spaces from where municipal tractors pick up the waste which may include infectious waste. Hence, no proper transportation mechanism exists for waste disposal. In all BHUs, infectious waste is not collected separately. There is no provision of a yellow room for storage of infectious waste. In all BHUs, collected waste is either dumped or burned in open space in the vicinity of the health facility. In the majority of BHUs, burial pit is not present, placenta and other organs are being disposed of with other waste. Majority of the BHUs follow injection safety protocols. In most of the BHUs, needle cutters are being used to cut needle and nozzle of the used syringes, however, no separate containers are present for disposal of sharp materials. In the majority of BHUs, laboratories dispose of waste without following the disinfecting protocols. In a few BHUs, laboratory workers wear basic personal protective equipment such as masks.

In most of the BHUs, there is no provision of safe drinking water for patients, attendants and staff. The quarterly drinking water test is not being conducted in any BHU. In the majority of BHUs, WASH facilities are not available whereas, WASH facilities that are present in a few BHUs are not adequate and functionality is a challenge. There is no drainage system in the majority of BHUs. For those few exceptions, the drainage system is either damaged or broken. Moreover, there is no proper sanitation/cleaning mechanism.

Table 4.1: Facilities Wise Health Care Waste Management System in Target Districts

Sr. No.	Indicators	BHUs (To be Upgrade to RHC)				RHCs				DHQs		
		BHU Pir Alizai - District Killa Abdullah	BHU Amin Abad - District Chagai	BHU Village Aid HUB - District Quetta	BHU Saranan Camp - District Pishin	RHC Habib Zai - District Killa Abdullah	RHC Chagai - District Chagai	RHC Punjpa i (Hub) - District Quetta	RHC Saranan - District Pishin	DHQ Chaman - District Killa Abdullah	DHQ Dalbandin (Hub) - District Chagai	DHQ Pishin (HUB) - District Pishin
	Number of Beds	0	0	4	0	4	4	20	2	50	50	100
STATUS OF PLANNING, INSTITUTIONAL ARRANGEMENT AND TRAINING IN HEALTH CARE WASTE MANAGEMENT												
	Hospital waste management plan has been prepared	No	No	No	No	No	No	No	No	No	No	No
	A dedicated Hospital waste management committee and its notification (DHQ and RHC) & Focal person at BHU	Yes	No	No	No	No	No	No	No	No	No	No
	Hospital waste management review meeting is conducted once a month (minutes of meetings available)	Yes	No	No	No	No	Yes	No	No	No	No	No
	Daily waste generation record is maintained.	No	No	No	No	No	No	No	No	No	No	Yes
	Training of healthcare/ Sanitary workers & evidence training on HCWM	Yes	No	No	Yes	No	No	No	No	No	No	No
	Refresher trainings of Health Care Professional (HCP) and Sanitary workers HCWM	No	No	No	No	No	No	No	No	No	Yes, Occasionally	No
	Has health Committee notified for health care units	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
	Evidence of Health Committee meetings (minutes are	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	No

Sr. No.	Indicators	BHUs (To be Upgrade to RHC)				RHCs				DHQs		
	available; participation record is maintained)											
	PERSONAL PROTECTION											
	Health care workers are wearing proper PPE.	Yes	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes
	Mask	Yes	Yes	No	No.	Yes	Yes	No	Yes	Yes	No	Yes
	Gloves	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	No	Yes
	Head Covers at critical times	Yes	Yes	No	No.	No	No	No	No	Yes	No	Yes
	Gowns & shoe covers	No	Yes	No	No	No	No	No	No	No	No	Yes
	Hard sole long boots	No	No	No	No	No	No	No	No	No	No	Yes
	WASTE COLLECTION/SEGREGATION & STORAGE AT WARDS											
	Set of two small waste bins are placed along each bed side (white for municipal waste and yellow for infectious waste) for primary collection.	Only one waste bin without colors (btw two beds)	Yes	No	No	No	No	No	No	No.	No	No
	I set (3 in number) of large color coded waste bins are present near nursing station in all wards.	No	No	No	No	No	No	No	No	No	No	No
	Yellow for infectious waste	No	No	No	No	No	No	No	No	No	No	No
	Red bin for glass waste	No	No	No	No	No	No	No	No	No	No	No
	White bin for municipal waste	No	No	No	No	No	No	No	No	No	No	Yes
	Waste bins are lined with same colour waste bags.	Yes	No	No	No	No	No	No	No	No	No	Yes
	Large Waste bins are properly marked and remained closed	No	No	No	No	No	No	No	No	No	No	Yes
	Waste is collected daily from the wards/units	Daily	Weekly	Weekly	Weekly	After two-three days	Daily	Weekly	Weekly	Daily	Daily	Daily
	Waste bag is sealed, indicating time for collection, ward, total weight,	No	No	No	Yes	No	No	No	No	No	No	No

Sr. No.	Indicators	BHUs (To be Upgrade to RHC)				RHCs				DHQs		
	responsible person and biohazards symbol is mentioned.											
	TRANSPORTATION OF THE WASTE TO YELLOW ROOM											
	Waste is transported through four wheeled dedicated trolleys which are covered, safe and leak proof at DHQ & RHCs level only	No	No	No	No	No	No	No	No	No	No	No
	Infectious waste is transported through YELLOW color trolleys at DHQ and RHC only	No	No	No	No	No	No	No	No	No	No	No
	Non-infectious waste (Municipal waste) is transported through white color trolleys at RHC only	No	No	No	No	No	No	No	No	No	No	No
	STORAGE AT YELLOW ROOM											
	Yellow room exist with lock and key (security ensured)	No	No	No	No	No	No	No	No	No	No	No
	Waste is disposed of within 24 hours	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cleanliness of YELLOW room. Disinfections with 0.5% chlorine solution once in a week.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	WASTE TRANSPORTATION FROM YELLOW ROOM TO DISPOSAL SITE											
	Waste is transported through fabricated yellow vehicles to disposal site	No transport available	No transport available	No transport available	No transport available	No transport available	No transport available	No transport available	No transport available	No transport available	No transport available	No transport available
	Waste is transported in covered trolley within the facility	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Sr. No.	Indicators	BHUs (To be Upgrade to RHC)				RHCs				DHQs		
	Waste is transported to open dump sites	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
	DISPOSAL OF WASTE AT INCINERATOR SITE											
	For proper disposal of the waste, incinerator is installed (DHQ and RHC only)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	N/A	N/A
	All waste is burnt in the brick kiln small scale incinerator	Burnt in open space	No	Burnt in well of 4*4	No	No	No	No	No	Yes	No	No
	Waste is disposed in open dump sites	Yes	Yes	Yes	Yes	Yes	No	burnt in well	Yes	Yes	Yes	Yes
	Waste is burnt in the vicinity of the health facility	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
	Landfill for infectious waste is present	Yes	No	Yes	Yes	No	No	No	No	No	No	No
	DISPOSAL OF PLACENTA & OTHER ORGANS											
	A well-structured, covered burial pit is present to dispose the placenta and other body parts	No	No	Yes	No	No	No	No	No	No	No	No
	Burial pit is 500 meters away from the drinking water sources.	No	No	Yes	No	No	No	No	No	No	No	No
	Burial pit is properly locked	N/A	N/A	Yes	N/A	No	No	No	No	No	No	No
	Waste is thrown in to burial pits after removing plastic bags	N/A	N/A	Yes	N/A	No	No	No	No	No	No	No
	Only anatomic & placenta are disposed in burial pit.	N/A	N/A	Yes	N/A	No	No	No	No	No	No	No
	DISPOSAL OF SYRINGES											
	Injection safety protocol is present	Yes	Yes	Yes	No	No	No	No	No	No	No	No
	Good quality needle cutters are used to cut needle and nozzle of the used syringes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes

Sr. No.	Indicators	BHUs (To be Upgrade to RHC)				RHCs				DHQs		
		Yes	No	No	No	No	No	No	No	No	No	Yes
	Hard material sharp containers are used and present in all wards	Yes	No	No	No	No	No	No	No	No	No	Yes
LABORATORY WASTE MANAGEMENT												
	Laboratory waste (blood, syringes, vials, tubes) are disinfected before final disposal.	Not done	Not done	No Lab	No Lab	Yes	Yes	Yes	Yes	Yes	No	Yes
	Laboratory works are wearing personal protection equipment	Yes	Yes	N/A	N/A	Yes	only mask	only mask	Yes	Yes	No	Yes
DRINKING WATER & ENVIRONMENTAL SANITATION												
	Safe drinking water is available round the clock for patients, attendant and staff?	No	occasionally available	No	No	No	No	No	Yes	No	No	Yes
	Drinking water testing reports (quarterly testing)	No	No	No	No	No	No	No	No	No	No	No
	Safe water for visitors, patients and staff	No	No	No	No	No	No	No	Yes	No	No	Yes
	Proper surface disinfection with chlorine solution/mopping	No	No	No	No	No	No	No	No	No	No	No
	Proper management of spillage (spill kits with trolleys)	No	Yes	No	No	No	No	No	No	No	No	No
	Toilets (common, patients & staff) with soaps and waste bins (small white)	No	Yes	No	No	Yes but no soaps and waste bins	Yes but common, with no soap and waste bins	Yes but not functional	Yes but no soap and waste bins	Yes but no soap and waste bins	Yes but no soap and waste bins	Yes but no soaps and waste bins
	Separate toilets for women with soaps and waste bins (small white)	Yes	Yes	No	No	Yes but no soaps and	No	Yes but not functional	No	Yes but no soap and	Yes but no soap and	Yes but no soaps and

Sr. No.	Indicators	BHUs (To be Upgrade to RHC)				RHCs				DHQs		
						waste bins				waste bins	waste bins	waste bins
	Proper and safe drainage is existing in the hospital	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes
	RECORD KEEPING OF THE WASTE											
	Daily infectious waste generation record is maintained	No record	No	No	No	No	No	No	No	No	No	No
	Three color coded registers are present in each ward where three large bins are present.	No	No	No	No	No	No	No	No	No	No	No
	Digital Weighting scale to record waste is present (DHQ & RHC only)	No	No	No	No	No	No	No	No	No	No	No
	Daily infectious waste is being recorded at yellow room also by digital weighting scale	No	No	No	No	No	No	No	No	No	No	No
	Color coded yellow register is present to maintain the daily generated infectious waste streams.	No	No	No	No	No	No	No	No	No	No	No
	Hand over-take over protocols is maintained in yellow room (RHC only)	No	No	No	No	No	No	No	No	No	No	No
	Daily waste disposal report is maintained.	No	No	No	No	No	No	No	No	No	No	No
	Incident reporting mechanism is maintained.	No	No	No	No	No	No (Only in case of causality)	No	No	No	No	No

5 Stakeholder Consultations

5.1 Overview

As part of the Environmental Assessment (EA) process in line with the World Bank Guidelines, public consultation was undertaken with stakeholders to understand their concerns about the likely impacts of the project and to obtain their consent regarding the various aspects of the Project, including the existing situation, Project area/area of influence, construction works and the potential impacts of the construction-related activities and operation of the Project.

5.2 Consultation Process

Focus Group Discussions (FGDs) were held with the primary stakeholders (communities and health staff) and their concerns were recorded, based on which appropriate mitigation measures were aligned for environmental and social safeguards in construction and operation stages as reflected in the ESMF. Specific question in relation to health care waste management in the operation phase could not be covered during consultation.

The team visited 11 healthcare facilities to observe health care waste management system at the facility level; these included DHQ, BHU and RHC. Results of consultation are presented in Table 4.1 in chapter 4.

A joint session was held with the institutions (government, non-profit and private institutions working in the health, environment, and social welfare) in which specific health care waste management related discussions were held. A brief description of the project, potential environmental and social impacts, baseline of sensitive indicators and mitigation framework were presented to the stakeholders. This was followed by a group discussion to record their concerns and suggestions.

5.3 Joint Session Consultation Feedback

Concerns and suggestions that emerged specific to health care waste management are discussed below. Some of these will be addressed in the EHCWMP through a mitigation plan taking into account the budget constraints. An important finding of this consultation was that all participants agreed that incinerators, one at each district headquarter level, should be installed for safe disposal of health care waste management. However, the participants mentioned that an incinerator in Chagai will function only if electricity and gas are ensured. Vehicles should be provided to health facilities to transport the health care waste to the installed incinerators. Training and awareness raising of staff, politicians and patients were highlighted as important activities for to foster improved waste management.

Regarding the institutional arrangement for environment and social safeguard including health care waste management, the participants proposed that there should be two PMUs at the provincial level, one for health and one for the education component. The PMUs should also be responsible to implement Environmental Plan. An Environmental and Social Safeguard (ESS) Specialist/Officer at the PMU level together with District Officers/ District Focal Persons will implement the environmental plan (ESMF and EHCWMP). One

officer from the health department will coordinate and supervise the Plan. At the district level, there should be four permanent officers for this task.

Regarding monitoring, one of the recommendation that emerged from the discussion included forming committees at the district level for this purpose. Regarding the GRM, the participants suggested that the DHMT should be revamped to ensure it takes complaints. There is a Grievance Redress Mechanism and committees at the district level which allows for lodging complaints, however, the local community members are not aware of the GRM. An emerging recommendation was the need to improve sensitization and awareness raising among community members regarding the GRM process and to ensure the GRM addresses queries or clarifications about the project or program, and responds/resolves the problems. A suggestion was made to develop an online system for the GRM.

6 Impact Assessment and Mitigation

This section of the report identifies the anticipated potential environmental impacts of the proposed project activities and also recommends mitigation measures to address these impacts.

6.1 Overview

Environmental Management is not limited to the formation and implementation of only healthcare waste management plans but it also includes the access of safe water and sanitation facilities infection control, occupational health, and safety of healthcare workers, patients, and nearby communities. **Environmental, Health, and Safety (EHS) Guidelines of World Bank, Hospital Waste Management Rules 2005 and National Environmental Quality Standards (Annex-2)** is used as a reference document for the development of Healthcare Waste Management Plan.

Generic impacts and mitigation measures have been described because no detailed impact assessment specific to the facilities was conducted. Data collection on impacts remained a challenge due to poor record keeping of Health Care Waste (HCW) at individual healthcare Unit/Facility (Government/Private) as well as at the district level. Reliance is therefore made on available primary and secondary data to establish the relationship between disease burden and poor waste management and inadequate infection control practices. These will help to assess associated potential risks and hazards to the environment and to human health.

6.2 Impact Screening

The screening process helps to identify the potential impacts associated with proposed project activities. The impacts that adversely affect environment and socioeconomic receptors are the point of focus and will be explored to identify and evaluate suitable alternatives to be adapted under the EHCWMP.

A generalized impact screening matrix for HCM is given in **Table 6.1**. The matrix helps to understand adverse impacts on the physical, biological and socio-economic environment that may be caused as a result of the various stages involved in health care waste management. For rating the significance of the impact, the following criteria was used:¹²(i) the severity of risk on the environment and human health, (ii) probability of occurrence, (iii) legal requirements; and (iv) views of the affected parties.

➤ -	Negative Impact
➤ +	Positive Impact
➤ 0	Negligible/Insignificant
➤ 1	Low
➤ 2	Medium
➤ 3	High

¹² Adapted from EHCWMP of Punjab Human Capital Investment Project 2019.

Table 6.1: Impact 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	0	-1	-1	-1	-1	0	0	0	0	0	0	0	-1	+1	+1	-1	0	0	0	0	0
Waste collection	-1	-1	0	0	0	0	0	0	0	0	0	0	-1	-1	+1	0	-1	0	0	0	0	0
Waste storage	-1	0	-1	0	0	0	0	0	0	0	-1	0	+1	+2	0	+1	0	0	0	+1	0	0
Waste transportation	-1	-1	0	0	0	0	0	0	+2	+1	0	0	-1	+1	0	0	0	0	0	0	0	0
Waste disposal	-2	-1	-1	-1	-1	-1	0	-2	0	0	0	0	0	-2	+1	0	-1	0	0	0	0	0
Sewage disposal	-2	-2	-1	0	-1	-1	0	-1	0	0	-1	0	-1	-1	0	0	0	0	0	0	0	0
Reuse/reprocessing	-2	-2	-1	-1	-1	0	0	0	0	-1	0	0	0	0	-2	-1	0	0	0	-1	0	0

6.3 Potential Impact of Health Hazards and Mitigation measures

6.3.1 Health Hazards Potential Impacts

Potential impacts of healthcare waste to human health is significantly associated with improper management and handling of Hazardous waste. The non-risk waste may also cause potential impacts but it is of less concern. Mitigations measures of these non-hazardous wastes are needed to minimize environmental impacts.

The following are the potential impacts of healthcare waste mismanagement and handling on human health:

- Exposure to HIV along with Hepatitis B Virus (HBV) associated with health care waste;
- Exposure of health care workers to risks/injuries by not using the PPEs and not following material safety procedure and infection control protocols, not employing proper procedures for HCW collection, transportation, storage, and final disposal;
- Nurses, Lady Health Visitors (LHVs), and Community Midwives (CMWs) are exposed to risks associated with infectious waste and sharp objects during healthcare delivery;
- Unsegregated waste storage in wards/hospitals if not properly managed leads towards naissance of foul smell which can cause infections to staff, visitors and other people in the hospital vicinity;
- Recycling of medical waste potentially pose 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.

Mitigation Measures

To minimize the impacts of HCW, following mitigation measures are suggested:

- Strict compliance of the procedures specified in the Hospital Waste Management Rules of 2005 will be implemented by the hospital management as proposed.
- Each district needs to constitute a waste management team/committee and prepare and implement a waste management plan, and follow the prescribed guidelines/procedures for waste segregation, collection, transportation, storage, and disposal in accordance with article 15 of Hospital Waste Management Rules 2005.
- Segregation at source is recommended as a part of the HCW management system. At source waste should be segregated into risk and non-risk waste using colour coded bins and then further segregated as per the Hospital Waste Management Rules 2005.

- Healthcare waste must be stored in a secured area, accompanied with a proper sign board to minimize access by staff and patients.
- To avoid the spread of infections within and outside the vicinity, infection control protocols will be strictly implemented to minimize health risks for staff and patients.
- Proper transportation plans of Risky/Hazardous Waste within/outside the health facilities including transportation vehicles specifications shall be prepared and implemented according to the Hospital Waste Management Rules 2005 and World Bank Guidelines.
- It is the responsibility of the management team to ensure the use of PPEs during the handling of waste and the provision of health services.
- Waste disposal mechanisms (autoclave, incineration etc.) shall be devised for disposal of HCW (In-house and outside healthcare facility with a designated place along with the standardized distance and lay out plan be incorporated) to keep the environment clean and avoid adverse effects on human health.
- Vaccination (hepatitis A and B and tetanus) of medical, administrative, janitorial and other working staff should be made compulsory.
- Inventory of all health-related issues shall be properly maintained for record keeping purpose.
- Ensure proper sharps management system to safeguard workers safety.
- Measures shall be taken to avoid and prevent any theft and 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.
- Measures will be taken to ensure that adequate records of all the steps involved in HCW management (Collection: Waste Collection time, type of waste, waste weight, ward from which waste is collected, frequency, storage, transport and disposal) is conducted on a regular basis.
- Measures will be taken to ensure that safe drinking water source is available at each healthcare facility. The drinking water quality will be tested periodically (quarterly or six-monthly) to ensure compliance with the National Standards specified by Environmental Protection Agency.

6.3.2 Potential Impacts of Safety Hazards

Safety hazards in a healthcare facility are generally associated with people who are responsible to collect, transport, dispose the healthcare waste like sharps, needles, chemicals, operating waste disposal equipment, chemical storage area etc. In case of an accident or open burning of HCW in the healthcare facility; patients, visitors and hospital staff can become susceptible to these safety hazards. These hazards include risk of cuts, pricks, gas poisoning, burning, and other bodily injuries. Furthermore, the construction activities for facility renovation/rehabilitation also pose safety risks for the construction workers, facility staff, as well as patients.

Mitigation Measures

The following mitigation measures are suggested to avoid the safety hazards.

- Strictly following standard operating procedures to use sharps and proper use of PPE. Prick-proof gloves and masks will be provided to avoid safety hazards associated with sharp objects, gases, and others.
- Risk waste collection, handling and transportation procedures should be strictly followed to avoid safety hazards such as thick/puncture resistant plastic bags to collect HCW and rigid/puncture proof boxes to dispose needles/other sharp objects will be used.
- Waste containers should not be overfilled and must be closed securely. Healthcare waste containers must be labelled, tagged and securely sealed to prevent spillages.
- The Sanitary Health care workers will be trained on principles of safe manual handling for handling waste containers and sharp objects. For instance, waste bags are to be picked up by the neck and must not be thrown or dropped to avoid damaging the bag. Similarly, waste bins must be carried by the handle and not held close to the body.
- Personal protective clothing must be worn when handling healthcare waste containers, in line with the related risk.
- Site specific Environmental Management Plan (EMP) will be prepared in case of construction/renovation/maintenance/rehabilitation activities within/outside of healthcare facility. This EMP will include the site-specific mitigation measures to address safety hazards associated with the renovation/rehabilitation activities.
- Healthcare facility should be equipped with smoke detectors and firefighting alarms to avoid safety hazards in case of fire due to mishandling of hazardous chemicals and equipment.

6.3.3 Potential Impacts of Soil Contamination

Direct burial of infectious waste within a health facility or at a dumping site along with municipal waste can cause soil contamination mostly due to unsegregated waste collection and improper disposal practices. Furthermore, spillage or open dumping of

liquid hazardous chemicals, medicines and other effluents during the facility renovation/rehabilitation activities have a potential to cause soil contamination.

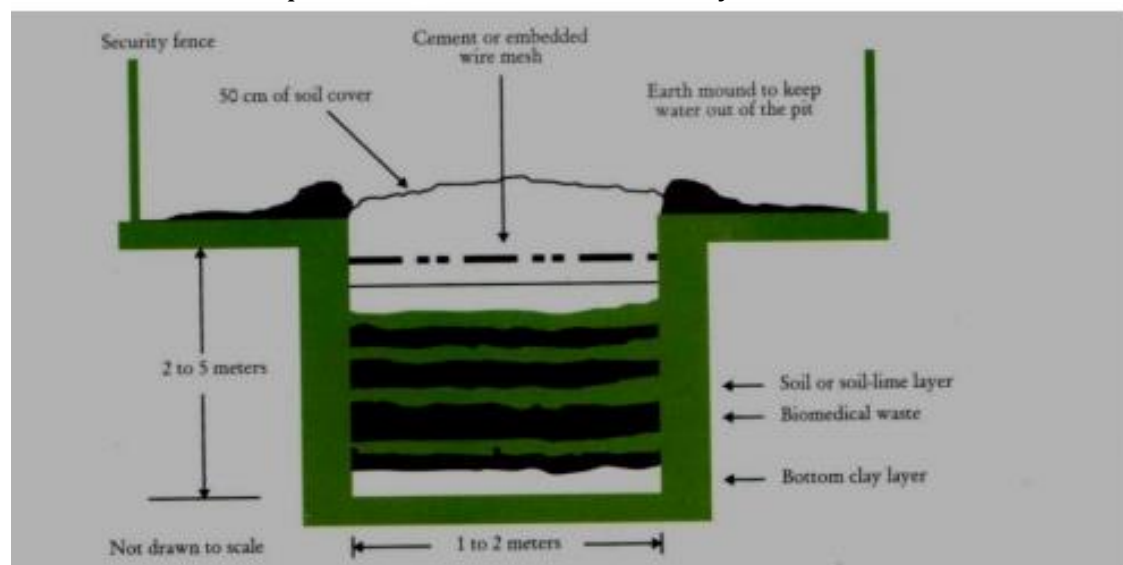
Mitigation Measures

The following mitigations should be followed strictly to avoid the hazards related to soil contamination.

- Source segregation will be done to separate Risk/Hazardous waste stream from non-risk waste stream. Risk waste will be transported to a dedicated landfill site for medical waste disposal (if available nearby). In conditions where infectious waste transfer mechanism is not available with the facility, waste disposal will be ensured through pit-burial.
- Pit burial guidelines given in Box 1 below will be followed to ensure compliance. Non-risk waste will be sent to municipal waste dumping site or a landfill site for final disposal.
- 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 constructed according to international standards.
- An Environmental Management and Monitoring plan will be prepared for the construction/civil works to overcome the issue of soil contamination due to construction/ renovation/ rehabilitation activities of healthcare facility.
- In addition, strict compliance of the IFC/WB EHS Guidelines should be followed to deal with the soil contamination issue discussed above.

Box 1: Pit Burial Design Specifications:

- A pit or trench should be dug about 2 meters deep and 2 m wide. The pit is covered with a heavy concrete slab that is with an internal diameter of about 200mm.
- It should be half-filled with waste, and then covered with lime up to 50 cm of the surface, before filling the rest of the pit with soil.
- Animals should not have any access to the waste burial sites. Covers of galvanized iron/wire meshes may be used to protect the area from trespassing.
- On each occasion, when wastes are added to the pit, a layer of 10 cm of soil shall be added to cover the wastes.
- Waste disposal into the pits should be performed under close and dedicated supervision.
- The deep burial site should be relatively impermeable, and no shallow well should be close to the site.
- The pits should be distant from habitation and sited so as to ensure that no contamination occurs of any surface water or ground water. The area should not be prone to flooding or erosion.
- The healthcare facility should maintain a record of the kind of waste sent for deep burial.
- A permanent Record of the size and location of all burial pits needs to be strictly maintained and displayed at strategic place with due precautions to prevent construction workers, builders and other from digging in those areas in the future.
- The pit burial place should be fenced and locked to avoid any unauthorized access to the place and also to avoid any health and safety risk for the workers and patients in the healthcare facility.

**Schematic diagram of proposed Burial Pit**

6.3.4 Potential impacts of Water Contamination

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

During heavy rains, leaked pesticides can seep into the ground and contaminate the groundwater. Poisoning can occur through direct contact with the product, inhalation of vapors, drinking of contaminated water, or eating of contaminated food.

Mitigation Measures

The following mitigation measures will be adopted to overcome the adverse impact of healthcare waste on water sources. Guidelines for mitigation to soil contamination will also apply to water contamination as outlined below

- Source segregation will be done to separate Risk/Hazardous waste stream from non-risk waste stream. Risk waste will be sent to a dedicated landfill site for medical waste disposal. If on-site burial of infectious waste is carried out, it will be done in lined pits. In exceptional conditions where waste transfer mechanism is not available with the facility, waste disposal will be ensured through pit burning. Pit burning guidelines given in Box 1 above will be followed to ensure compliance. Non-risk waste will be sent to the municipal waste dumping site or a landfill site for final disposal.
- The sewage from the healthcare facilities within the cities will be discharged into the city sewerage system, otherwise on-site treatment such as septic tank and soaking pit will be constructed according to international standards.
- Lining the burial pit for infectious waste, waste segregation and not directing the infectious waste to municipal waste dumping sites, as well as using appropriate disposal/treatment arrangement such as septic tank for sewage disposal will be implemented.
- To address 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.

6.3.5 Potential Impacts of Air Quality Deterioration

Emissions may include exhaust from medical waste during incineration as this waste management option has been proposed under the project. Air quality deterioration can take place by open burning of the HCW, of particular concern are dioxins which are produced by burning of the plastic and polyethylene products. The dioxins are carcinogenic and have an adverse impact on air quality 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.

Mitigation Measures

The following mitigation measures should be followed to minimize the impacts of improper healthcare waste management practices.

- At source waste segregation will be ensured including removal of the following items from waste destined for incineration: halogenated plastics (e.g. PVC), pressurized gas containers, large amounts of active chemical waste, silver salts and photographic / radiographic waste, waste with high heavy metal content (e.g. broken thermometers, batteries), and sealed ampoules or ampoules containing heavy metals;
- At DHQs, where incinerators are planned, separate Environment Management and Monitoring Plan will be prepared for Incinerators to propose adequate measures to avoid the release of hazardous gases and fumes in the air.
- Where 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.
- Open burning and disposal of hospital waste particularly if it contains plastics/polyethylene will be strictly prohibited under section 19 of environmental protection act since it produces dioxins in addition to other toxic gases. The plastic containing hospital waste will be taken to the disposal site using specified vehicles for transportation of healthcare waste.
- Awareness raising and sensitization activities such as seminars, training sessions, conferences, walks etc. of the healthcare facility staff and general public will be carried out regarding the hazards of dioxins and other toxic gases which are produced as a result of open burning and improper incineration.

7 Environmental and Healthcare Waste Management Plan

7.1 Environmental and Healthcare Waste Management Plan

This chapter discusses the Health Care Waste Management Plan. It focuses on systems and practices for (i) collection and segregation, (ii) transportation and storage and (iii) safe disposal of health care waste. For each step mitigation measures by facility type e.g., BHUs, RHCs and DHQs.

7.1.1 Collection and Segregation

The first and most significant element of the healthcare waste management is collection and segregation. Segregation means separating different waste streams keeping in view the type of treatment and disposal practices. A proper system of segregation would thus identify waste according to the source and type of disposal or disinfections. It would also require containers specifically for each category of waste.

In all type of health care facilities, waste generated has to be classified and segregated into various standard categories such as non-risk waste and risky/ hazardous waste as shown in **Table 7.1**. Compliance of segregation process will be applied to all type of health care facilities, simple enough to be implemented by medical, paramedical and house-keeping staff, and finally to be easily monitored using a standard checklist. Colored containers according to the standard classification have to be provided along with training of health care staff.

Table 7.1: Classification and Color Coding of Healthcare Waste to be Adopted for Waste Segregation

Classification	Description/examples	Color of Container	Type of Container
Class 1 (NON-RISK WASTE)	All domestic waste: paper, vegetable peelings, food packing, cold drink bottles, cans etc.	White	Plastic Bags
Class 2 (SHARPS)	Syringes, blades, glass pieces and scalpels etc.	Yellow, marked "Sharps"	Puncture Proof container (corrugate board thick, plastic)
Class 3 (INFECTIOUS)	Infectious and highly infectious, anthological and anatomical waste	Yellow	Plastic Bags / Containers
Class 4 (RADIOACTIVE)	Liquid, solid and gaseous waste contaminated with radio nuclides generated from in-vitro analysis of body tissue and fluid, in-vivo body organ imaging and tumor localization, and investigation and therapeutic procedures	-	Lead Box, labelled with radioactive symbol

Class 5 (HAZARDOUS)	Large quantities of Pharmaceutical waste or heavy metals etc.	Brown	Plastic Bags or container
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Figure 7.1 provides guidelines for segregation. The Healthcare Waste segregation will be carried out at the source of generation i.e. at the ward bedside, operation theatre, medical laboratory or any other place in the facility where waste originates. Segregation will be done by type of hazardous/risky wastes and collected in the assigned bags. The filled bags will be transported to designated storage/ disposal points.

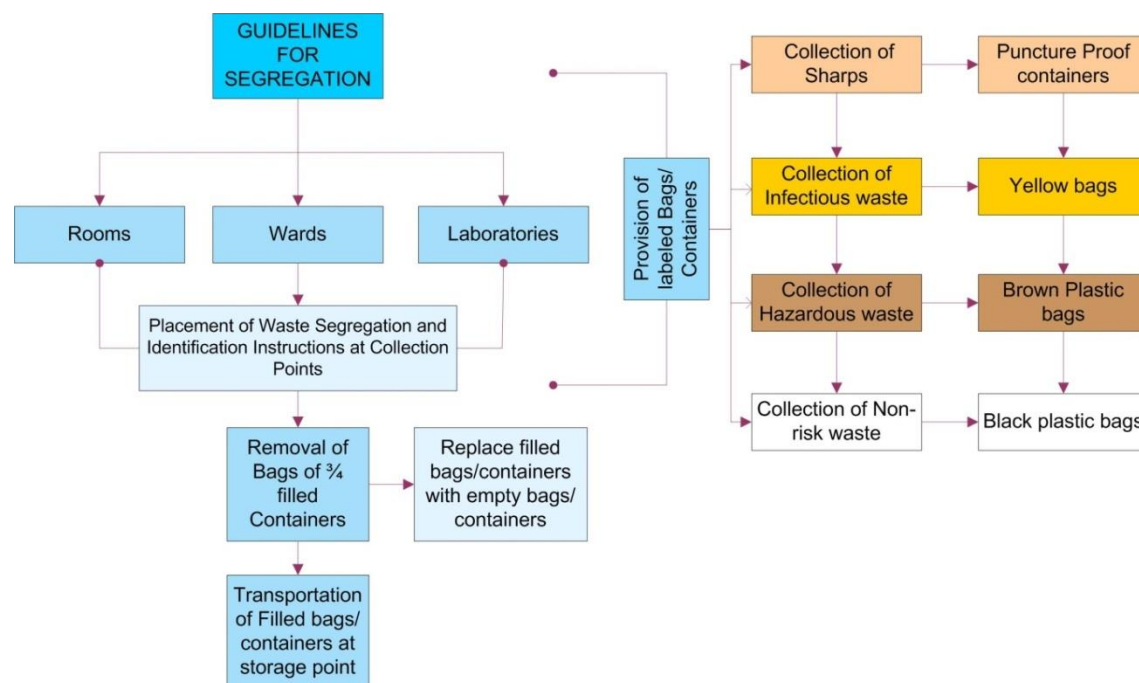


Figure 7.1: Healthcare Waste Segregation Guidelines

7.1.2 Transportation

Within hospitals, waste routes must ensure they avoid the passage of waste through patient care areas. A time-table should be developed to sequence and space out the time for transporting bio-medical waste to reduce the risk of mixing it with general waste. Desiccated wheeled containers, trolleys or carts should be used to transport the waste/plastic bags to the site of storage/ treatment.

Waste would have to be collected daily and transported to a central storage facility, within the hospital. A route for the collection and transport of waste from the point of generation to the point of central storage must be established in the waste management plan (on-site transport).

i. On-site Transport

- The Healthcare Waste on-site transport must be carried out through specially designed trolleys and the current practice of shoulder-carrying must be avoided

- The waste carrying trolley must be easy to load, unload and clean
- The trolley should not be used for any other purpose
- The trolley should be cleaned regularly, including prior to sending it for maintenance.
- Yellow bags and white bags must be transported on separate trolleys, preferably of respective separate colours.
- The collection route should be the most direct one from the collection point to the central storage facility; starting from the most distant point and moving towards the storage facility.
- The collected waste should not be left, even temporarily, at any place other than the designated central storage facility

ii. On-site storage and disposal

- In all health care facilities, no designated storage and disposal facility could be identified. Waste including hazardous and non-hazardous waste was found in open spaces. It is important that the hazardous waste dumped in open spaces should be disposed of immediately through pit-burial with proper design and specification (see Guidelines section 6.1.3) or transported to designated incinerator. Non-hazardous waste should also be disposed of through municipal corporation according to its regular schedule or treated at the on-site facility if available.

7.2 Mitigation Plan

Table 7.2 provides specific mitigation measures for safe collection and handling of health care wastes. Since no waste management system exists in the target districts for any type of health facility (see situation analysis), the mitigation measures as proposed in the below table follow standard parameters according to Hospital Waste Management Rules 2005 (Annexure 3). These are required to be included while designing a waste management system. A district waste management plan (DWMP) will be prepared in supervision of District Health Management Team (DHMT). The notified DWMP by Health Department will be then circulated to all facilities in the district for implementation. Guidelines for the waste management plan are given in the Hospital Waste Management Rules (2005). More elaborated guidelines as proposed by the World Health Organization (WHO) are provided in Annexure 4.¹³

¹³ https://www.who.int/water_sanitation_health/medicalwaste/034to057.pdf?ua=1

Table 7.2: Mitigation Plan for Waste Management at Health Care Facilities

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
1	<p>Waste Generation</p> <p>There is lack of data for quantity of waste generated in health care facilities.</p>	<p>Waste Management System of Healthcare Facility (HCF) not appropriately designed and planned which leads towards:</p> <ul style="list-style-type: none"> ■ Increase in financial cost of onsite and off-site waste management system ■ Health and safety risks ■ Environmental resources degradation soil, water and air 	<ul style="list-style-type: none"> ■ Proper record of Risk and Non-Risk waste generation in a healthcare facility should be maintained in manual (registers) and electronic data sheets. ■ Weighing scales will be maintained by the sanitary worker.in collection trolley or at the collection points. ■ Training of healthcare/ Sanitary workers in waste collection and maintaining its record. ■ Health officer to monitor the daily collection registers. 	<p>Daily</p> <p>Method: Waste segregation Checklist</p>	<p>MS-HCF/MO-HCF/Waste Handling Supervisor</p>
2	<p>Waste Segregation</p> <p>Procedures are not followed in the health care facilities.</p>	<p>On-Site improper Waste Segregation Causes following Hazards:</p> <ul style="list-style-type: none"> ■ Health and Safety risks to Medical staff/ visitors/ Doctors/ Patients/ waste handlers/Communities etc. ■ Deteriorate the quality of environment 	<ul style="list-style-type: none"> ■ Segregation of waste will comply with Hospital Waste Management Rules 2005 and World Bank Guidelines. ■ Segregation of Healthcare Waste at source will be introduced i.e. at the ward, operation theatre, medical laboratory or any other place in the facility where waste originates. ■ Set of two small waste bins be placed along each bed side (white for municipal waste and yellow for infectious waste) for primary collection. ■ Set of color coded waste bins (3 in number) will be present near nursing station in all wards following color coding for bins: Yellow for infectious waste, Red bin for glass waste, White bin for municipal waste. These waste bins will be lined with waste bags of same color. ■ Large Waste bins will be properly marked and remained closed ■ It will be ensured to use Personal Protective Equipment for handling of infectious waste 	<p>Daily</p> <p>Method: Waste segregation Checklist</p>	<p>MS-HCF/MO-HCF/Waste Handling Supervisor</p>

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
			<ul style="list-style-type: none"> ■ Puncture Proof container (corrugate board thick, plastic) will be ensured for sharp objects. Lead Box, labelled with radioactive symbol will be ensured for radioactive material. ■ Capacity building and training of HCF staff including waste handlers / visitors / Patients on waste segregation will be provided. ■ Will ensure awareness raising of patients and their attendants 		
3	<p>Waste Collection and Transportation (Risk and Non-Risk Waste)</p> <p>There is no transportation system for health care waste. All waste is transported through municipal corporation.</p>	<ul style="list-style-type: none"> ■ Directly affect the health & Safety of the waste handlers and Janitorial Staff ■ Creates various environmental issue like nuisance, odor, nourish generation of mosquitoes, flies, insects and spoil waste and air quality 	<ul style="list-style-type: none"> ■ It will be ensured that: <ul style="list-style-type: none"> ○ Waste is collected daily from the wards/ units to avoid over spillage and hygiene issues. Waste will be transported to a central storage facility, within the hospital. ○ Waste bag is sealed and marked (indicating time for collection, type of ward waste is collected from, total weight, responsible person and biohazards symbol is mentioned). ○ Collection of risk waste and non-risk waste is done separately. Such as different time should be allocated for collection & transportation of risk waste to reduce chances of its mixing with general waste. ○ Waste is transported through four wheeled dedicated trolleys which are covered, safe and leak proof at DHQ & RHCs level only. ○ Infectious waste is transported through YELLOW color trolleys at DHQ and RHC only. ○ Non-infectious waste (Municipal waste) is transported through white color trolleys at RHC only ○ Ensuring that waste bags are not opened or punctured during transportation; (disinfection of the trolleys/area to be carried out in case of leakage from bags); 	Daily Method: Waste Collection & transportation Checklist Note: Checklist will be formed by following HWM Rules 2005	

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
			<ul style="list-style-type: none"> ○ Implement measures to forestall any pilferage of medical waste for recycling ○ A route for the collection and transport of waste (from the point of generation to the point of central storage) must be established in the waste management plan (on-site transport). ○ Off-site transport should be through specialized transport vehicles This transport is usually the responsibility of municipal authority. ○ The transport vehicles should be designated only for waste collection and enclosed having shelves and easily washable plain sides ○ Waste is transported through fabricated yellow vehicles to disposal site. At the end of the day, the vehicles should be cleaned and disinfected properly. They must carry adequate supply of plastic bags, protective clothing, clearing tools and disinfectants to clean and disinfect in case of any spillage. 		
4	<p>Waste Storage</p> <p>Waste is stored in open space in all health care facilities without segregation</p>	<ul style="list-style-type: none"> ■ Health and Safety Impacts ■ Environmental Degradation 	<ul style="list-style-type: none"> ■ In every health care facility (DHQ & RHC), separate Central Waste Storage Facility (CWSF) should be available for both Risk and Non-risk Healthcare Waste. ■ For Infectious waste, yellow room is maintained inside the facility. ■ Yellow room is enclosed with lock and key and access should only be authorized to designated staff. ■ Cleanliness of YELLOW room will be ensured. Disinfections will be done with 0.5% chlorine solution once in a week. ■ The storage place/yellow room for infectious waste should be designated and marked as such; CAUTION-HAZARDOUS WASTE STORAGE AREA. UNAUTHORIZED PERSONS KEEP OUT. No materials other than yellow bags are stored here. 	<p>Daily</p> <p>Method: Waste Collection & transportation Checklist</p> <p>Note: Checklist will be formed by following HWM Rules 2005, WB and WHO Guidelines</p>	

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
			<ul style="list-style-type: none"> ■ Storage time of Risk-Waste should not be greater than 24 hours as per WHO guidelines. 		
			<ul style="list-style-type: none"> ■ Storage place should be located on the hospital premises, close to the treatment or secondary collection facilities ■ It should be easy to clean and disinfect, with an impermeable hard standing base, good water supply, drainage and ventilation. ■ The Storage facility should be away from visitors, children, animal and birds' access ■ Use of PPEs should be mandatory to avoid health and safety hazards associated with storage area ■ Capacity building and training of the sanitary workers will be ensured for proper waste handling and storage 	Daily Method: Waste Storage Checklist Note: Checklist will be formed by following HWM Rules 2005, WB and WHO Guidelines	
5	<p>Waste Disposal (Risk and Non-Risk Waste)</p> <p>All type of hospital waste dumped is disposed of through municipal corporation or burnt</p>	<ul style="list-style-type: none"> ■ Health and safety risks for waste handlers, waste pickers; ■ Soil, Air and Water contamination 	<ul style="list-style-type: none"> ■ Non-Risk waste can be disposed off at designated municipal waste landfill site or municipal sanitary landfill site following general waste management guidelines <ul style="list-style-type: none"> ○ Use of infection control protocols ○ Comply with Waste Management Rules, 2005 ○ Use of PPEs; Proper documentation and handover-takeover protocols ○ Capacity building and training of staff including waste handlers ○ Use impervious lining in the pits to avoid soil and water contamination; Locating the pit at least 50 m from any water source ○ Using proper signs for pit location. Maintain complete record of waste disposal and pit location in each facility. Risk waste <ul style="list-style-type: none"> ○ Use of infection control protocols ○ Comply with Waste Management Rules, 2005 ○ Use of PPEs; Proper documentation and handover-takeover protocols 	Daily Method: Waste Disposal Checklist Note: Checklist will be formed by following HWM Rules 2005, WB and WHO Guidelines	

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
			<ul style="list-style-type: none"> ○ Capacity building and training of staff including waste handlers. ○ 		
6	Infectious waste disposal (burning)	<ul style="list-style-type: none"> ■ Health and safety risks for waste handlers; ■ Air contamination 	<ul style="list-style-type: none"> ■ Uncontrolled, open burning of infectious waste particularly containing plastics and PVC objects will not be done. ■ Proper documentation and handover-takeover protocols are ensured. ■ Use of PPEs by the waste handlers and sanitary workers ■ Capacity building and training of HCWM staff; ■ Waste is not disposed in open dump site. ■ Waste is only buried in pit using pit burial guidelines (section 6) 		
7	Infectious waste disposal (incineration)	<ul style="list-style-type: none"> ■ Health and safety risks for incinerator operators and nearby communities. ■ Air contamination 	<ul style="list-style-type: none"> ■ Use of infection control protocol; Comply with Waste Management Rules, 2005 ■ Proper documentation and handover-takeover protocol ■ For proper disposal of the waste, incinerator is installed (in each district) ■ All waste is burnt in the brick kiln small scale incinerator ■ 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, 		

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
			temperature in first chamber, temperature in second chamber, resident time, and others) <ul style="list-style-type: none"> ■ Capacity building and refresher trainings of operators ■ Use of PPEs 		
8	Water supply	<ul style="list-style-type: none"> ■ Health hazards for staff & patients 	<ul style="list-style-type: none"> ■ Ensure provision of safe drinking water for patients, attendants and hospital staff ■ Ensure that drinking water quality complies with NEQS; ■ Carry out water quality testing periodically (quarterly during Construction phase of the project and undertake the testing every six-months during operations of the Project) 	Bi-annually Check of Water Quality parameters defined by Environment Protection Agency Method: On Site Laboratory Testing of Water Quality Parameters through EPA Certified Laboratory	
9	Sewage disposal	<ul style="list-style-type: none"> ■ Health hazards for staff & patients ■ Environmental Risk to Water and Soil quality 	<ul style="list-style-type: none"> ■ Ensure that the Sewerage treatment system availability (septic tank) and proper working to control the sewerage effluents are not dispersed in the facility 	Bi-annually Check of Water Quality parameters defined by Environment Protection Agency Method: On Site Laboratory Testing of Water Quality	

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
				Parameters through EPA Certified Laboratory	
10	Excavation and construction	<ul style="list-style-type: none"> ■ Soil erosion ■ Safety hazards ■ Noise generation 	<ul style="list-style-type: none"> ■ Prepare and implement site-specific Environmental Management and Monitoring Plan (EMMP) ■ Employing appropriate techniques such as stone pitching to avoid soil erosion; ■ Construction site are clearly marked with a boundary to avoid danger of falling/risk of injury to public. ■ Using PPEs to minimize safety risks Protective fencing ■ Use equipment with proper noise suppression (mufflers, silencers) for noise barriers if necessary. 	Daily (Visual Monitoring) and Weekly Reporting Method: Waste Disposal Checklist	
11	Material transport	<ul style="list-style-type: none"> ■ Safety hazards ■ Noise generation ■ Traffic congestion 	<ul style="list-style-type: none"> ■ Site-specific EMMP will be prepared. ■ 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 during construction hours ■ Monitoring of waste transportation vehicle conditions as per NEQS. 	Daily (Visual Monitoring) and Weekly Reporting Vehicular emission monitoring Bi-annually if construction period is more than 6 months Method: Waste Disposal Checklist and On Site Laboratory Testing of vehicular emissions according to Parameters	

Sr. No	Activities	Potential Impacts	Mitigation Measures	Monitoring Frequency	Roles and Responsibility
				specified by EPA through EPA Certified Laboratory	
12	Oil/chemical storage / handling	<ul style="list-style-type: none"> ■ Safety hazards Soil and water contamination 	<ul style="list-style-type: none"> ■ Use standard practices to transport, store and handle fuels, oils, and other chemicals. 	Daily (Visual Monitoring) and Weekly Reporting Method: Waste Disposal Checklist	
13	Site restoration	<ul style="list-style-type: none"> ■ Left over construction material and scrap; Ditches or surplus soil (spoil) 	<ul style="list-style-type: none"> ■ Prepare and implement site-specific EMMP ■ Remove all debris, excess construction material, scraps, and other wastes ■ Restore site. 	On-Site monitoring (weekly) only during construction activities	

8 Institutional Implementation Arrangements

The overall responsibility of implementing the environmental and healthcare waste management issues including the present EHCWMP will rest with the Project Management Unit (PMU)-Health department. Within PMU-Health, the Health Specialist in coordination with Environmental and Social Safeguard (ESS) Officer will be appointed as the Medical Waste Management Focal Point (MWMFP). The MWMFP will maintain vertical and horizontal coordination to ensure effective implementation of EHCWMP, and will be responsible for its province-level monitoring, documentation, and reporting. S/he will also liaise with outside agencies, donors, and other stakeholders.

At the district level, District Health Officer (DHO) will designate the focal point for performing/supervising the environment and healthcare waste management functions particularly implementing the present EHCWMP in the respective district. The DHO will maintain coordination with the MWMFP at the provincial level for the implementation of the present Plan.

At the facility level, the Senior Medical Officer (SMO) at DHQ and RHC and Medical Officer (MO) at BHU will be designated as the focal point for EHCWMP implementation. The SMO/ MO will maintain coordination with the DHO for the implementation of the present Plan. The compliance will be monitored not only internally but also by the Health Department and by provincial EPA.

In addition, at each health care facility, WMT will be constituted, and an appropriate officer designated as WMO in accordance with the Hospital Waste Management Rules of 2005. At the BHU level the Medical Officer/ staff will be the responsible person to manage the waste. The WMT will be responsible for preparing and implementing WMP in the facility.

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
Health Specialist (Medical Waste Management Focal Point) (Province).	Overall implementation of EHCWMP with close coordination of Environment and Safeguard Specialist/ Officers/ DHO and Line departments
	Coordination with EPA
	Coordination with other agencies (WB, others)
Environmental and Social Safeguard Specialist (Province)	Support Waste Management focal point in the implementation of EHCWMP
	Monitor and supervise EHCWMP
	Effective implementation of EHCWMP
	Coordination within department of Health, Health Specialist and Health Officers.
	Visits to healthcare facilities to monitor plan and implementation
	Organizing training at provincial level
	Producing quarterly progress reports and sharing with Department of Health, World Bank and others.
Coordinate with Medical Waste Management Focal Point.	

District Health Officer of each district	Coordinate with Senior Medical Officers and Medical Officers for the implementation of EHCWMP
	Organizing trainings at district level
	Monthly reports to MWMFP on Plan implementation
Designated Medical Officer at DHQ and RHC Medical Officer at BHU of each facility	Coordinate with Health officer.
	Prepare Waste Management Plan in accordance with the HWM Rules.
	Provide monthly reports on EHCWMP implementation to Health officer.

8.1 Monitoring Plan

The purpose of environmental and waste management monitoring is to ensure that all the mitigation measures particularly WMPs are effectively implemented. Monitoring of Healthcare Facility and Waste Management activities should not be viewed as an isolated activity but as one of the several interacting components of an overall management framework, which includes, but is not limited to:

- Site designation,
- Project evaluation,
- Regulatory permitting,
- Compliance, and
- Enforcement/Third Party Validation.

The goal of site designation, project evaluation, regulatory permitting, compliance, and enforcement is to minimize the potential of adverse environmental effects, thus minimizing monitoring requirements. Monitoring will be carried out at different tiers as discussed below (also see **Figure 8.1**).

8.1.1 Facility Level Monitoring

The facility level monitoring will be carried out by DHO according to the HWM Rules 2005. The District Waste Management Plan as notified by health department, each facility will implement the WMP and tasks will be assigned to all healthcare workers which are described under Rules, 2005. The TORs will be shared by the DHO with the WMT. The weekly minutes of meeting and monthly reports will be submitted to DHO by MO/MT of each facility. Monitoring checklists will be prepared on the basis of district WMP, to be filled by MO/MT of respective health facility and results will be collected per time-lines stipulated in the guidelines.

8.1.2 District and Provincial Level Monitoring

The district level monitoring will be carried out by the ESS and Health Officer who will perform random visits of the healthcare facilities in each district to monitor the District Waste Management Plan implementation.

The provincial level monitoring will be carried out with the help of Monitoring and Evaluation team of the district, health department and Balochistan EPA who already conduct monitoring of the healthcare facilities in their respective districts. The monitoring performa will include the check list for hospital waste management.



Figure 8.1: Monitoring Plan

8.1.3 Review of Plan and Third Party Validation

The external review of the EHCWMP implementation done on an annual basis will be carried out on the health facility by a Third Party Validation Firm. 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. The results of the TPV report will be shared with the health department and also with World Bank for review of the EHCWMP Compliance status and to assess the gaps and necessary gap filling measures to improve the compliance results.

8.2 Capacity Building Plan

8.2.1 District/Provincial Level Capacity Building

The provincial health department in coordination with the DHOs is responsible to plan and conduct training of trainers (ToT) for the selected relevant staff comprised of waste management officials and handlers from each district working on the implementation of WMP. The objective of these trainings will be to prepare master trainers in each district, who after receiving these ToTs, will impart trainings to the remaining Waste Management Team 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.

8.2.2 Facility Level Capacity Building

The facility-level capacity building will comprise an essential part of the district environmental and district waste management plan. 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 combined with training on protocols for the infection control. The training plan will also address the frequent staff turn-over at the facility level. These trainings can be linked to a certification program so that each facility can 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.

Table 8.2: Capacity Building and Training Framework Health

	Training Module	Contents	Total	Frequ ency	Respon sibility	Participants
1.	Provincial Level Health Care Waste management training	EHCWMP and ESMF implementation; GRM Community engagement; Mitigation approach ; Collection, Segregation, Storage, Transportation and disposal practices, including disposal through pit burning	5	Annual along with bi annual refreshers	HCWMS PMU Health	PMU and DHQ,DHMT, MCH,RHC, BHU
2.	District Level E&S (Health) hospital waste manegment and solid waste management training	EHCWMP and HCWMP implementation; Development and implementation of District Waste Management Plan Collection, Segregation, Storage, Transportation and disposal practices including disposal through pit burning	10	Quarterly	HCWMS PMU Health	DHQ,BHU,RHC, DHMT, Community stakeholders, Notables etc
3.	Facility based training for reconrd keeping of waste management	Waste collectors to be trained in collection, seggregations, weiging and record keeping	10	annual	District health officers (focal persons)	Waste collectors
4.	Capacity building on HCWM inclduing infectious waste at RHCs	HCWMP mitigation approach	10	Biannual	HCWMS PMU Health	RHC staff

5.	Capacity building hospital waste management at BHUs	District Waste Management Plan implementation	10	Biannual	HCWMS PMU Health	BHU staff
6.	Material on waste management protocols	Booklets, penaflix, Stickers, brochures, p caps T Shirts with messages gender segregations etc				DHQ,BHU,RH C,MNCH, MCH
7.	Communication and awarness material for healthcare penaflix	Booklets, penaflix, Stickers, brochures, p caps T Shirts with messages gender segregations etc				

8.3 Documentation and Reporting

8.3.1 Facility Level Documentation

The environmental and waste management plan includes information on the roles and responsibility of the management team in ensuring proper documentation and record keeping at the facility-level. The key aspects to be documented will include the following:

- Record keeping of amount of waste generated and its types
- Record of waste collection and transportation
- Record of Waste treatment and disposal

Monitoring reports should be prepared on waste at all management stages with gaps identified to show: (i) any non-compliances observed, (ii) complete record of capacity building discussed and (iii) and a record of meetings related to discussing the environmental and waste management plan.

Each healthcare facility will provide WMP reports to the respective Health Department and environment protection agency on a monthly basis. The WMP aspects will be included in the reporting performa to be used by the healthcare facilities for this purpose.

8.3.2 District Level Documentation and Reporting

Each district through the DHO will compile the District Environmental and Waste Management Report on a monthly basis and send it to the Health Specialist in the PMU-Health. The monitoring agencies through DHO will also send their filled checklists/data to the health department.

8.3.3 Province Level Documentation and Reporting

The Health Specialist (Medical Waste Management Focal Point) will compile the reports received from the District Health Officer of each district and prepare overall project reports on environmental and waste management plan implementation on quarterly basis and share with Department of Health, World Bank, etc. The Health Specialist will also process the data received from District Health officer of each district and produce regular/monthly reports. These reports will also include WMP aspects. The poorly

performing facilities will be identified in the province level monitoring documentation and the PMU will be informed for necessary action.

Implementation of the EHCWMP will be carried out in close coordination with the implementation of World Bank team, the Balochistan EPA and the Provincial Healthcare Departments. Waste will be managed according to Hospital Waste Management Rules, 2005 and World Bank Guidelines and by implementing the standard protocols and minimum service delivery standard of Provincial Healthcare Commission.

8.4 EHCWMP Disclosure

Once finalized, the EHCWMP, along with the translation of the Executive Summary in Urdu will be publically disclosed on the official web site of the provincial health department and the World Bank website. Copies of plan will be available in the office of the Health Officer in each district.

8.5 Implementation Cost of Waste Management Plan

The estimates for EHCWMP implementation cost are given in **Table 8.3**. It includes the cost of operation related mitigation measures, TPV and capacity building. However, it does not include the cost of construction and related mitigation measures. The detailed district-wise budgets need to be prepared after the preparation of the WMPs for each facility.

Table 8.3: EHCWMP Implementation Cost for 5 years

#	Description	Unit	Quantity	Unit Rate PKR	Total PKR	Source
Operations related Mitigation Budget						
1.	Hospital PPEs (Is covered under the “Medicines, commodities and supplies for all HF’s in the cluster” line item)	Number	100 sets /hospital	Covered in Hospital supplies budget	0	Aligned with the budget given in PC-1
2.	Hospital waste management- miscellaneous items(extra bags for non- sharp medical waste, safety boxes for sharps, extra staff needed for managing the waste and transport, short-term training, etc)	Number	18	100000	1,800,000	Aligned with the budget given in PC-1. (Is covered under the “Medicines, commodities and supplies for all HF’s in the cluster” line item)
3.	Waste Bins (Is covered under the “Medicines, commodities and supplies for all HF’s in the cluster” line item)	Number	360	Covered in Hospital supplies budget	0	Aligned with the budget given in PC-1
4.	Hospital waste disposal equipment (trolleys) (Is covered under the “Medicines, commodities and supplies for all HF’s in the cluster” line item)	Number	18	Covered in Hospital supplies budget	0	Aligned with the budget given in PC-1
5.	Drinking water WHO testing (Will be part of the construction budget)	Number	5	Covered in infrastructure budget	0	Aligned with the budget given in PC-1

6.	Tree Plantation	Number	TBD	100	TBD	For each tree cut due to construction a replacement tree will be planted. The cost of tree plantation will be covered from the construction related budget line items.
7.	Emergency fire extinguishers /alarms (Is covered under the "Medicines, commodities and supplies for all HFs in the cluster" line item)	Number		36	90,000	Covered in PC-1
Trainings (Health)						
8.	Provincial Level Health Care Waste management training	Tainting sessions	5	80,000	400,000	Covered in PC-1
9.	District Level E&S (Health) trainings for department staff, Field staff and technical resource persons on hospital waste management	Training Sessions	20	50,000	1,000,000	Covered in PC-1
10.	Capacity building waste management at RHCs	Training Sessions	10	20,000	200,000	Covered in PC-1
11.	Capacity building hospital waste management at BHUs	Training Sessions	10	20,000	200,000	Covered in PC-1
Awareness Raising Material						
12.	Material on waste management protocols	Booklets and panaflex	(500/book k)	Will be covered in the communications & awareness firm contract	0	Covered in PC-1, under the line item "Communication "
13.	Communication and awareness material for healthcare	booklets /panaflex	10 /100	Will be covered in the communications & awareness firm contract	0	Covered in PC-1, under the line item "Communication "

Third Party Validation TPV/ Monitoring						
14.	External Monitors (Is covered under the Third Party Monitoring Contracts)	Reports		Covered under the Third Party Monitoring Contracts	0	Aligned with the budget given in PC-1
15.	Air, Noise & Water Testing (Bi-annual in four districts)	Tests	18	50,000	900,000	There is enough room available in line item "ESMP Training and Implementation" in PC-1. Hence, this cost will be covered under "ESMP Training and Implementation".
Expected total amount for the implementation of EHCWMP					Rs. 8,000,000	

Annex 1: IEE/EIA Regulations

IEE/EIA Regulation 2000

SCHEDULE I

(See Regulation 3)

List of projects requiring an IEE

A. Agriculture, Livestock and Fisheries

1. Poultry, livestock, stud and fish farms with a total cost more than Rs.10 million
2. Projects involving repacking, formulation or warehousing of agricultural products

B. Energy

3. Hydroelectric power generation less than 50 MW
4. Thermal power generation less than 200 KW
5. Transmission lines less than 11 KV, and large distribution projects
6. Oil and gas transmission systems
7. Oil and gas extraction projects including exploration, production, gathering systems, separation and storage
8. Waste-to-energy generation projects

C. Manufacturing and processing

1. Ceramics and glass units with a total cost more than Rs.50 million
2. Food processing industries including sugar mills, beverages, milk and dairy products, with a total cost less than Rs.100 million
3. Man-made fibres and resin projects with a total cost less than Rs.100 million
4. Manufacturing of apparel, including dyeing and printing, with a total cost more than Rs.25 million
5. Wood products with a total cost more than Rs.25 million

D. Mining and mineral processing

Commercial extraction of sand, gravel, limestone, clay, Sulphur and other minerals not included in Schedule II with a total cost less than Rs.100 million

6. Crushing, grinding and separation processes
7. Smelting plants with a total cost less than Rs.50 million

E. Transport

Federal or Provincial highways (except maintenance, rebuilding or reconstruction of existing metaled roads) with a total cost less than Rs.50 million

8. Ports and harbour development for ships less than 500 gross tons

F. Water management, dams, irrigation and flood protection

Dams and reservoirs with storage volume less than 50 million cubic meters of surface area less than 8 square kilometers

Irrigation and drainage projects serving less than 15,000 hectares

Small-scale irrigation systems with a total cost of less than Rs.50 million

G. Water supply and treatment

Water supply schemes and treatment plants with a total cost of less than Rs.25 million

H. Waste disposal

Waste disposal facility for domestic or industrial wastes, with an annual capacity less than 10,000 cubic meters

I. Urban development and tourism

Housing schemes

Public facilities with significant off-site impacts (e.g. hospital wastes)

Urban development projects

J. Other projects

Any other project for which filing of an IEE is required by the Federal Agency under sub-regulation (2) of Regulation 5

SCHEDULE II**(See Regulation 4) List of projects requiring an EIA****A. Energy**

Hydroelectric power generation over 50 MW

9. Thermal power generation over 200 MW
10. Transmission lines (11 KV and above) and grid stations
11. Nuclear power plans
12. Petroleum refineries

B. Manufacturing and processing

13. 12. Cement and Chemical plants Fertilizer plants
14. Food processing industries including sugar mills, beverages, milk and dairy products, with a total cost of Rs.100 million and above
15. Industrial estates (including export processing zones)
16. Man-made fibers and resin projects with a total cost of Rs.100 M and above
17. Pesticides (manufacture or formulation)
18. Petrochemicals complex
19. Synthetic resins, plastics and man-made fibers, paper and paperboard, paper pulping, plastic products, textiles (except apparel), printing and publishing, paints and dyes, oils and fats and vegetable ghee projects, with total cost more than Rs.10 million
20. Tanning and leather finishing projects

C. Mining and mineral processing

Mining and processing of coal, gold, copper, sulphur and precious stones

Mining and processing of major non-ferrous metals, iron and steel rolling

Smelting plants with a total cost of Rs.50 million and above

D. Transport

Airports

Federal or Provincial highways or major roads (except maintenance, rebuilding or reconstruction of existing roads) with a total cost of Rs.50 million and above

Ports and harbor development for ships of 500 gross tons and above

Railway works

E. Water management, dams, irrigation and flood protection

Dams and reservoirs with storage volume of 50 million cubic meters and above or surface area of 8 square kilometers and above

Irrigation and drainage projects serving 15,000 hectares and above

Water supply and treatment Water supply schemes and treatment plants with a total cost of Rs.25 million and above

F. Waste Disposal

Waste disposal and/or storage of hazardous or toxic wastes (including landfill sites, and incineration of hospital toxic waste)

Waste disposal facilities for domestic or industrial wastes, with an annual capacity more than 10,000 cubic meters

G. Urban development and tourism

Land use studies and urban plans (large cities)

Large-scale tourism development projects with a total cost more than Rs.50 million

H.Environmentally Sensitive Areas

All projects situated in environmentally sensitive areas

I. Other projects

Any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5.

Any other project likely to cause an adverse environmental effect

Annex 2: EQS Balochistan

Table 1: Environmental Quality Standards (EQS) 2000 for Effluent Discharge

#.	PARAMETERS	EQS
1	Temperature	40 °C =≤3 deg.
2	pH	6 – 9
3	BOD5	80 mg/l
4	Chemical Oxygen Demand (COD)	150 mg/l
5	Total Suspended Solid (TSS)	200 mg/l
6	Total Dissolved Solids	3500 mg/l
7	Grease and Oil	10 mg/l
8	Phenolic compounds (as phenol)	0.1 mg/l
9	Ammonia	40 mg/l
10	Chlorine	1.0 mg/l
11	Chloride	1000.0 mg/l
12	Sulphate	600 mg/l
13	Manganese	1.5 mg/l
14	Fluoride	10 mg/l
15	Cyanide (as CN ⁻) total	1.0 mg/l
16	An-ionic detergents (as MB As)	20 mg/l
17	Sulphide (S-2)	1.0 mg/l
18	Pesticides	0.15 mg/l
19	Cadmium	0.1 mg/l
20	Chromium trivalent and hexavalent	1.0 mg/l
21	Copper	1.0 mg/l
22	Lead	0.5 mg/l
23	Mercury	0.01 mg/l
24	Selenium	0.5 mg/l
25	Nickel	1.0 mg/l
26	Silver	1.0 mg/l
27	Total Toxic metals	2.0 mg/l
28	Zinc	5.0 mg/l
29	Arsenic	1.0 mg/l
30	Barium	1.5 mg/l
31	Iron	8.0 mg/l
32	Boron	6.0 mg/l

Table 2: EQS for Gaseous Emission (mg/Nm³, Unless Otherwise Defined)

#	Parameter	Source of Emission	Existing Standards		Revised Standards	
			40% Ringlemann Scale	or 240% Ringlemann Scale or equivalent number	or 2	
1.	Smoke	Smoke Opacity not to exceed				
2.	Particulate Matter (I)	(a) Boilers and Furnaces Oilfired				
		Coalfired	300		300	
		CementKilns	500		500	
			200		200	
		(b) Grinding, crushing, clinker coolers and Related processes, Metallurgical Processes, converter, blast furnaces and cupolas.	500		500	
3.	Hydrogen Chloride	Any	400		400	
4.	Chlorine	Any	150		150	
5.	Hydrogen Fluoride	Any	150		150	
6.	Hydrogen Sulphide	Any	10		10	
7.	Sulphur Oxide (2) (3)	Sulfuric acid/ Sulphonic acid plants	400		1700	
		Other plants except power plants operating on oil and coal				
8.	Carbon Monoxide	Any	800		800	
9.	Lead	Any	50		50	
10.	Mercury	Any	10		10	
11.	Cadmium	Any	20		20	
12.	Arsenic	Any	20		20	
13.	Copper	Any	50		50	
14.	Antimony	Any	20		20	
15.	Zinc	Any	200		200	
16.	Oxides of Nitrogen (3)	Nitric acid manufacturing unit. Other plants except power plants operating on oil or coal:				
		Gas fired				
		Oil fired	400		400	
		Coal fired	-		600	
			-		1200	

Explanations:-

1. Based on the assumption that the size of the particulate is 10 micron or more.
2. Based on 1 percent Sulphur content in fuel. Higher content of Sulphur will case standards to bepro-rated.
3. In respect of emissions of Sulphur dioxide Nitrogen oxides, the power plants operating on oil and coal as fuel shall in addition to Environmental Quality Standards (EQS) specified above, comply with the following standards.

Table 3: EQS, 2009 for Vehicular Emission

#	Parameter	Standard (Maximum permissible Limit)	Measuring Method	Applicability
1	Smoke	40% or 2 on the Ringlemann Scale during engine acceleration mode.	To be compared with Ringlemann Chart at a distance of 6 meters or more	Immediate effect
2	Carbon Monoxide (CO)	6%	Under idling condition: Non-dispersive infrared detection through gas analyzer.	
3	Noise	85 dB(A)	Sound Meter at 7.5 meters from the source	

Table 4: EQS, 2010 for Noise

#	Category of Area / Zone	Effective from 1 st July, 2010		Effective from 1 st July, 2013	
		Limit in dB (A) Leq*			
		Daytime	Night-time	Daytime	Night-time
1	Residential Area (A)	65	50	55	45
2	Commercial Area (B)	70	60	65	55
3	Industrial Area (C)	80	75	75	65
4	Silence Zone (D)	55	45	50	45

Note:

1. Daytime 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 which are declared as such by the competent authority. An area comprising not less than 100 meters round hospitals, educational institutions and courts.
4. Mixedcategoriesofareasmaybedecidedasoneofthefourabovementionedcategoriesbythecompetentauthority.

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

Table 5: EQS 2010 for Drinking Water

#	Properties/Parameters	Standard Values for Pakistan	WHO Standards	Remarks
BACTERIAL				
1	All water is intended for drinking (E.Coli or Thermotolerant Coliform bacteria)	Must not be detectable in 100ml sample	Must not be detectable in 100ml sample	Most Asian Countries also follow WHO Standards
2	Treated water entering the distribution system (E.Coli or Thermotolerant Coliform and total Coliform bacteria)	Must not be detectable in 100ml sample	Must not be detectable in 100ml sample	Most Asian Countries also follow WHO Standards
3	Treated water entering the distribution system (E.Coli or Thermo tolerant Coliform and total Coliform bacteria)	Must not be detectable in 100ml sample. 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.	Must not be detectable in 100ml sample. 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.	Most Asian Countries also follow WHO Standards
PHYSICAL				
4	Colour	≤15 TCU	≤15 TCU	
5	Taste	Non Objectionable/Acceptable	Non Objectionable/Acceptable	
6	Dour	Non Objectionable/Acceptable	Non Objectionable/Acceptable	
7	Turbidity	<5 NTU	<5 NTU	
8	Total hardness as CaCO ₃	<500mg/l	---	
9	TDS	<1000	<1000	
10	pH	6.5-8.5	6.5-8.5	
RADIOACTIVE				
11	Alpha Emitters bq/L or pCi	0.1	0.1	
12	Beta Emitters	01	01	
CHEMICAL				
Essential Inorganics		mg/litre	mg/litre	
13	Aluminum (Al) mg/l	≤0.2	0.02	
14	Antimony (Sb)	≤0.005	0.02	
15	Arsenic (As)	≤0.05	0.01	Standard for Pakistan similar to most Asian developing Countries

#	Properties/Parameters	Standard Values for Pakistan	WHO Standards	Remarks
16	Barium (Ba)	0.7	0.7	
17	Boron (B)	0.3	0.3	
18	Cadmium (Cd)	0.01	0.003	Standard for Pakistan similar to most Asian developing Countries
19	Chloride (Cl)	<250	250	
20	Chromium (Cr)	≤0.05	0.05	
21	Copper (Cu)	2	2	
Toxic Inorganics		mg/litre	mg/litre	
22	Cyanide (CN)	≤0.05	0.07	Standard for Pakistan similar to most Asian developing Countries
23	Fluoride (F)	≤1.5	1.5	
24	Lead (Pb)	≤0.05	0.01	Standard for Pakistan similar to most Asian developing Countries
25	Manganese (Mn)	≤0.5	0.5	
26	Mercury (Hg)	≤0.001	0.001	
27	Nickel (Ni)	≤0.02	0.02	
28	Nitrate (NO ₃)	≤50	50	
29	Nitrite (NO ₂)	≤3	3	
30	Selenium (Se)	0.01	0.01	
31	Residual Chlorine	0.2-0.5 at consumer end 0.5-1.5 at source	---	
32	Zinc (Zn)	5.0	3	Standard for Pakistan similar to most Asian developing Countries
Organics				
33	Pesticides mg/L	---	PSQCA No. 4629-2004, Page No.4, Table No. 3, Serial No. 20-58 may be Consulted	
34	Phenolic Compounds (as Phenols) mg/L	---	≤0.002	
35	Poly nuclear aromatic hydrocarbons (as PAH) g/L	---	0.01 (By GC/MS method)	
***PSQCA: Pakistan Standards Quality Control Authority				

Table 6: EQS 2010 for Ambient Air

Pollutants	Time-weighted average	Concentration in Ambient Air		Method of Measurement
		Effective from 1 st July 2010	Effective from 1 st January 2013	
Sulphur Dioxide (SO ₂)	Annual Average*	80µg/m ³	80µg/ m ³	Ultraviolet Fluorescence Method
	24 hours**	120µg/m ³	120µg/m ³	
Oxides of Nitrogen as (NO)	Annual Average*	40µg/m ³	40µg/m ³	Gas Phase Chemiluminescence
	24 hours**	40µg/m ³	40µg/m ³	
Oxides of Nitrogen as (NO ₂)	Annual Average*	40µg/m ³	40µg/m ³	Gas Phase Chemiluminescence
	24 hours**	80µg/m ³	80µg/m ³	
Ozone (O ₃)	1 hour	180µg/m ³	130µg/m ³	Non disperse UV absorption method
Suspended Particulate Matter (SPM)	Annual Average*	400µg/m ³	360µg/m ³	High Volume Sampling, (Average flow rate not less than 1.1m ³ /minute)

Annex 3: Hospital Waste Management Rules, 2005

GOVERNMENT OF PAKISTAN MINISTRY OF ENVIRONMENT

Islamabad, the 3rd August, 2005.

NOTIFICATION

S.R.O.1013 (1)/2005.- In exercise of the powers conferred by section 31 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Federal Government is pleased to make the following rules, namely: -

Short title and commencement.- (1) These rules may be called the Hospital Waste Management Rules, 2005.

(2) They shall come into force at once.

2. Definitions: (1) In these rules, unless there is anything repugnant in the subject or context,

(a) "Act" means the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997);

(b) "chemical waste" includes chemicals from diagnostic and experimental work, cleaning processes, housekeeping and disinfecting procedures, mercury waste such as from broken clinical equipment and spillage, and cadmium waste such as from discarded batteries;

(c) "genotoxic waste" includes cytotoxic drugs and outdated materials, vomitus, feces or urine from patients treated with cytotoxic drugs or chemicals, and materials such as syringes and vials contaminated from the preparation and administration of such drugs;

(d) "Government" means the Federal Government or a Provincial Government in which the hospital is located;

(e) "Health Officer" means the District Health Officer, Assistant District Health Officer and Medical Officer, by whatever designation called, of the local council in which the hospital is located and includes any person designated as such by the Federal Government or a Provincial Government for the purposes of the Act;

(f) "hospital" includes a clinic, laboratory, dispensary, pharmacy, nursing home, health unit, maternity center, blood bank, autopsy centre, mortuary, research institute and veterinary institutions, including any other facility involved in health care and biomedical activities;

(g) "hospital waste" includes both risk waste and non-risk waste;

(h) "infectious waste" means waste contaminated by any type of pathogens such as bacteria, viruses, parasite or fungi and includes cultures from laboratory work, waste from surgeries and autopsies, waste from infected patients, discarded or disposable materials and equipment which have been in contact with such patients and infected animals from laboratories;

(i) "local council" means a local council in the geographical limits of which the hospital is located;

(j) "Medical Superintendent" means the Head of the hospital by whatever designation called;

(k) "non-risk waste" includes paper and cardboard, packaging, food waste and aerosols and the like;

(l) "pathological waste" includes tissues, organs, body parts, fetuses, blood and body fluids;

- (m) "Pharmaceutical waste" includes expired or unused pharmaceutical products, spilled contaminated pharmaceutical products, surplus drugs, vaccines or sera, and discarded items used in handling pharmaceutical such as bottles, boxes, gloves, masks, tubes, or vials;
- (n) "radioactive waste" includes liquid, solid and gaseous waste contaminated with radionuclides generated from in-vitro analysis of body tissue and fluid, in-vivo body organ imaging and tumour localization, and investigation and therapeutic procedures;
- (o) "risk waste" means infectious waste, pathological waste, sharps, pharmaceutical waste, genotoxic waste, chemical waste, and radioactive waste;
- (p) "section:" means a section of the Act;
- (q) "sharp" includes whether infected or not, needles, syringes, scalpels, infusion sets, saws and knives, blades, broken glass and any other item that could cut or puncture; and
- (r) "waste management" includes waste segregation, waste collection, waste transportation, waste storage, waste disposal and waste minimization and reuse.

(2) The words and expressions used but not defined in these rules shall have the same meaning as are assigned to them in the Act.

3. Responsibility for waste management: Every hospital shall be 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 16 to 22.

4. Waste Management Team:

The Medical Superintendent shall constitute a Waste Management Team comprising the following by whatever designation called namely:

- (a) Medical Superintendent.
Chairman.
- (b) Heads of all hospital departments.
Member.
- (c) Infection Control Officer.
Member.
- (d) Chief Pharmacist.
Member.
- (e) Radiology Officer.
Member.
- (f) Senior Matron.
Member.
- (g) Head of Administration.
Member.
- (h) Hospital Engineer.
Member.
- (i) Head of the sanitation staff.
Member.
- (j) Other hospital staff members as the Medical Superintendent may designate. Member.
- (k) A public representative of the District Administration nominated by the District Coordination Officer.
Member.
- (l) A representative of a Provincial Agency concerned, or, in the case of a hospital located in the Islamabad capital territory, the Federal Agency. Member.

(2) In a hospital where the posts under sub-rule (1) do not exist, the Medical

Superintendent shall designate another staff member to perform the duties and responsibilities of the holder of such posts under rules 8 to 14.

(3) The members of the Waste Management Team shall be informed in writing of their duties and responsibilities as provided under rules 8 to 14.

(4) One of the members of the Waste Management Team shall be designated by the Medical Superintendent as the Waste Management Officer, who shall act as the Secretary of the Waste Management Team.

5. Duties and responsibilities of Waste Management Team: A Waste Management Team shall be responsible for the preparation, monitoring, periodic review, revision or updating, if necessary, and implementation of the Waste Management Plan, and for supervision of all actions taken in compliance with the provisions of these rules.

6. Meetings of Waste Management Team:(1). The meeting of a Waste Management Team shall be held at least twice a month.

(2) One-third of the members of the Waste Management Team shall constitute the quorum for a meeting.

7. Duties and responsibilities of Medical Superintendent:

A Medical Superintendent shall-

- (a) constitute the Waste Management Team;
- (b) designate the Waste Management Officer;
- (c) facilitate meetings of the Waste Management Team and ensure implementation of its decisions;
- (d) supervise implementation, monitoring and review of the Waste Management Plan and ensure that it is kept update;
- (e) arrange for a waste audit of the hospital by an external agency as may be designated for the purposes by the Government, involving analysis for the existing waste stream and assessment of existing waste management practices;
- (f) allocate sufficient financial and manpower resources to ensure efficient and effective implementation of the Waste Management Plan; and
- (g) ensure adequate training and refresher courses for the concerned hospital staff.

8. Duties and responsibilities of the Heads of Departments: The Heads of Departments shall be responsible for the proper management of waste generated in their respective departments, and in particular shall,-

- (a) ensure that all doctors, nurses, clinical and staff in their respective departments, is aware of, and where required properly trained, in waste management procedures;
- (b) arrange proper supervision of the sanitary staff and sweepers to ensure that they comply with waste management procedures at all times; and
- (c) liaise with the Waste Management Officer for effective monitoring and reporting of mistakes and errors in implementation of the Waste Management Plan.

9. Duties and responsibilities of Infection Control Officer: An Infection Control Officer shall be responsible for,

- (a) giving advice regarding the control of infection and the standards of the waste disposal system;
- (b) identifying training requirements for each category of staff; and

- (c) organization of training and refresher courses on safe waste management procedures.

10. Duties and responsibilities of Chief Pharmacist: A Chief Pharmacist shall be responsible for the sound management of pharmaceutical stores and in particular shall,-

- (a) give advice regarding formulation of appropriate procedures for management of pharmaceutical waste, and coordinate implementation of these procedures; and
- (b) ensure that the concerned hospital staff members receive adequate training in pharmaceutical waste management procedures.

11. Duties and responsibilities of Radiology Officer: A Radiology Officer shall be responsible for the sound management of radioactive waste and in particular shall,-

- (a) give advice regarding formulation of appropriate procedure for management of radioactive waste and coordinate implementation of these procedures; and
- (b) ensure that the concerned hospital staff members receive adequate training in radioactive waste management procedures.

12. Duties and responsibilities of Senior Matron and Head of Administration:

A Senior Matron and Head of Administration shall be responsible for ensuring training of nursing staff, laboratory staff, medical assistants and sanitary staff and sweepers in waste management procedures and basic personal hygiene.

13. Duties and responsibilities of Hospital Engineer: An Hospital Engineer shall be responsible for installation, maintenance and safe operation of waste storage facilities and waste handling equipment and where installed the hospital incinerator, and shall ensure that the concerned hospital staff members are properly trained for these purposes.

14. Duties and responsibilities of Waste Management Officer: A Waste Management Officer shall, in addition to his duties and responsibilities, be responsible for the day to day implementation and monitoring of the Waste Management Plan and in particular, shall,-

- (a) for waste collection,
- (i) ensure internal collection of waste bags and waste containers and their transport to central storage facility of the hospital on daily basis;
- (ii) liaise with the Supplies Department to ensure that an adequate supply of waste bags, containers, protective clothing and collection trolleys are available at all time;
- (iii) ensure that sanitary staff and sweepers immediately replace used bags and containers with the new bags and containers of the same type and where a waste bag is removed from containers, is properly cleaned before a new bag is fitted therein; and
- (iv) directly supervise the hospital sweepers assigned to collect and transport the waste;
- (b) for waste storage,
- (i) ensure correct use of the central storage facility and that it is kept secured from unauthorized access; and
- (ii) prevent unsupervised dumping of waste bags and waste containers on the hospital premises, even for a short period of time;

- (c) for waste disposal,
 - (i) co-ordinate and monitor all waste disposal operations, and for this purpose meet regularly with the concerned representative of the local council;
 - (ii) ensure that the correct methods of transportation of waste are used on-site to the central storage facility or incinerator, if installed, and off-site by the local council; and
 - (iii) ensure that the waste is not stored on the hospital premises for longer than twenty-four hours, by coordinating with the incinerator operations and with the local council;
- (d) for staff training and information,
 - (i) liaise with the Heads of Departments, Head of Administration and Senior Matron to ensure that all doctors, clinical, staff, nursing staff, laboratory staff and medical assistants are fully aware of their duties and responsibilities under the Waste Management Plan; and
 - (ii) ensure that sanitary staff and sweepers are not involved in waste segregation and that they only handle waste bags and containers in the correct manner; and
- (e) for incident management and control,
 - (i) ensure that emergency procedures are available at all times and that all staff members are aware of the action to be taken by them;
 - (ii) investigate, record and review all incidents reports regarding hospital waste management; and
 - (iii) record the quantities of waste generated by each department on a weekly basis.

15. Waste Management Plan: (1). A Waste Management Plan shall be prepared by a Waste Management Officer for approval by the Waste Management Team, and shall be based on internationally recognized environment management standards such as the International Organization for Standardization 14000 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-risks 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 costs of containers, waste bags and trolley required annually;
- (c) timetables including frequency of waste collection from each wards and department;
- (d) duties and responsibilities for each of the different categories of hospital staff members who shall generate hospital waste and be involved in the management of the 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 programmes 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, reviewed, and revised and updated by the Waste Management Team as and when necessary.

16. Waste segregation:(1) Risk waste shall be separated from non-risk waste at the ward bedside, operation theatre, laboratory, or any other room in the hospital where the waste is generated by a doctor, nurse, or other person generating the waste.

(2) All disposal medical equipment and supplies including syringes, needles, plastic bottles, drips and infusion bags shall be cut or broken and rendered non-reusable at the point of use by the person using the same, or in case any such used by such person.

(3) All risk waste other than sharps, large quantities of pharmaceuticals, or chemicals, waste with a high content of mercury or cadmium such as broken thermometers or used batteries, or radioactive waste shall be placed in a suitable container made of metal or tough plastic, with a pedal type or swing lid, lined with a strong yellow waste bag. The bags shall be removed when it is not more than three quarters full and sealed, preferably with self locking plastic sealing tags and not by stapling. Each bag shall be labeled, indicating date, point of production, ward and hospital, quantity and description of waste and prominently displaying the biohazard symbol. The bags removed should be immediately replaced with a new one of the same type.

(4) Sharps including the cut or broken syringes and needle shall be placed in metal or high density plastic containers resistant to penetration and leakage designed so that items can be dropped in using one hand and no item can be removed. The containers shall be coloured yellow and marked "DANGER! CONTAMINATED SHARPS". The sharp container shall be closed when three-quarters full. If the sharp container is to be incinerated, it shall be placed in the yellow waste bag with the other risk waste.

(5) Large quantities of pharmaceutical waste shall be returned to the suppliers. Small quantities shall be placed in yellow waste bag preferably after being crushed, where this can be done safely.

(6) Large quantities of chemical waste, and waste with a high content of mercury or cadmium shall not be incinerated, but shall be placed in chemical resistant containers and sent to specialized treatment facilities.

(7) Radioactive waste which has to be stored to allow decay to background level, shall be placed in a waste bag, in a large yellow container or drum. The container or drum shall be labeled, showing the radionuclide's activity on a given date, and the period of storage required, and marked "RADIOACTIVE WASTE", with the radiation symbol. Non-infectious radioactive waste which has decayed to background level, shall be placed in white waste bags. Infectious radioactive waste which has decayed to background level, shall be placed in yellow waste bags. High level and relatively long half-life radionuclides shall be packaged and stored in accordance with instructions of the original supplier under supervision of the Radiology Officer and sent back to the supplier for disposal.

(8) Non-risk waste shall be placed in a suitable container lined with a white waste bag. Adequate numbers of non-risk waste containers shall be placed in all areas of the hospital and notices affixed to encourage visitors to use them.

17. Waste collection: Waste shall be collected in accordance with the schedules specified in the Waste Management Plan.

(2) Sanitary staff and sweepers shall, when handling waste, wear protective clothing at all times including face masks, industrial aprons, leg protectors, industrial boots and disposable or heavy duty gloves, as required.

(3) Sanitary staff and sweepers shall ensure that,

- (a) waste is collected at least once daily;
- (b) all waste bags are labeled before removal, indicating the point of production, ward, hospital and contents;
- (c) the removed waste bags and containers are immediately replaced with new ones of the same type; and
- (d) where a waste bag is removed from a container, the container is properly cleaned before a new bag is fitted therein.

18. Waste transportation: (1) For on-site transportation, a waste collection trolley shall be free of sharp edges, easy to load, unload and to clean, and preferably a stable three or four-wheeled design with high sides. The trolley shall be cleaned regularly.

(2) The sealed waste bags shall be carefully loaded by hand onto the trolley to minimize the risks of punctures or tears.

(3) Yellow-bagged risk waste and white-bagged non-risk waste shall be collected on separate trolleys which shall be painted or marked in the corresponding colours.

(4) The collection route shall be the most direct one from the final collection point to the central storage facility designated in the Waste Management Plan. The collected waste shall not be left even temporarily anywhere other than at the designated central storage facility.

(5) Transportation off-site shall, unless otherwise agreed, be the responsibility of the local council which shall ensure that,-

- (a) all yellow-bagged waste is collected at least once daily;
- (b) all staff members handling yellow-bagged waste wear protective clothing;
- (c) yellow-bagged waste is transported separately from all other waste;
- (d) vehicles or skips are only used for the carriage of yellow-bagged waste and are free of sharp edges, easy to load and unload by hand, easy to clean and disinfect, and fully enclosed, preferably with hinged and lockable shutters or lids, to prevent any spillage in the hospital premises or on the highway during transportation;
- (e) all concerned staff members are properly trained in the handling, loading, unloading, transportation and disposal of yellow-bagged waste, and are fully aware of emergency procedures for dealing with accidents and spillages;
- (f) all vehicles carry adequate supply of empty waste bags, protective clothing, cleaning tools and disinfectants to clean and disinfect any spillage;
- (g) the transportation of waste is properly documented and all vehicles carry a consignment note from the point of collection to the incinerator or land-fill or other final disposal facility; and
- (h) all vehicles are cleaned and disinfected after use.

19. Waste storage:(1) A separate central storage facility shall be provided for yellow-bagged waste with a sign prominently displaying the biohazard symbol and clearly mentioning the

facility stores risk waste.

(2) The designated central storage facility shall,

- be located within the hospital premises close to the incinerator, if installed, but away from food storage or food preparation areas;
- be large enough to contain all the risk waste produced by the hospital with spare capacity to cater for collection or incinerator breakdowns;
- be easy to clean and disinfect with an impermeable hardstanding base, plentiful water supply and good drainage, lighting and ventilation;
- have adequate cleaning equipment, protective clothing, waste bags and containers located nearby; and
- be easily accessible to collection vehicles and authorized staff, but totally enclosed and secure from unauthorized access including inaccessible to animals, insects and birds.

(3) No materials other than yellow-bagged waste shall be stored in the central storage facility.

(4) No waste shall be stored at the central storage facility for more than twenty-four hours:

Provided that in case of emergency where infectious waste is required to be stored for more than twenty-four hours, it shall be refrigerated at a temperature of 3^o C to 8^o C.

(5) Containers with radioactive waste shall be stored in a specifically marked area in a lead-shielded storage room.

(6) Containers with chemical waste which are to be specialized treatment facilities shall also be stored in a separate room.

(7) The central storage facility shall be thoroughly cleaned in accordance with procedures stipulated in the Waste Management Plan.

20. Waste disposal: (1) Depending upon the type and nature of the waste material and the organisms in the waste, risk waste shall be inactivated or rendered safe before final disposal by a suitable thermal, chemical, irradiation incineration, filtration or other treatment method, or by a combination of such methods involving proper validation and monitoring procedures. Effluent from the waste treatment methods shall also be periodically tested to verify that it conforms to the National Environmental Quality Standards before it is discharged into the sewerage system.

(2) Yellow-bagged waste shall be disposed of by burning in an incinerator, by burial in a landfill or by any other method of disposal approved by the Federal Agency or a Provincial Agency concerned.

(3) Sharps containers which have not been placed in yellow waste bags for incinerator, shall be disposed of by encapsulation or other method of disposal approved by the Federal Agency or a Provincial Agency concerned.

(4) The method of disposal, whether by burning in an incinerator or by burial in a landfill or otherwise, shall be operated by a hospital only after approval of its Environmental Impact Assessment in accordance with the provisions of section 12:

Provided that hospitals, local councils or other persons already using an incinerator or landfill on the date of commencement of these rules shall submit an Initial Environmental Examination in respect thereof to the Federal Agency or a Provincial Agency concerned within two months from the said date, and may continue to use the incinerator or landfill pending decision on the EIA.

(5) All risk waste delivered to an incinerator shall be burned within twenty-four hours.

(6) Ash and residues from incineration and other methods shall be placed in robust, non-combustible containers and sent to the local council's designated risk waste landfill site.

(7) Landfills shall be located at sites with minimal risk of pollution of groundwater and rivers. Access to the site shall be restricted to authorized personnel only. Risk waste shall be buried in a separate area of the landfill under a layer of earth or non-risk waste of at least one meter depth which shall then be compacted. The landfill shall be regularly monitored by the local council to check groundwater contamination and air pollution. The local council shall also ensure that the landfill operators are properly trained, especially in safe disposal procedures, use of protective equipment and hygiene and emergency response procedures.

(8) Daily collection of risk waste from hospitals shall be taken by the vehicles of the local council immediately to the designated landfill site or incinerator by the most direct route in accordance with prior scheduling of collection times and journey times.

(9) Radioactive waste which has decayed to background level shall either be buried in the landfill site or incinerated.

Explanation: An incineration facility for radioactive waste shall require, in addition to approval of its EIA by the Federal agency or a Provincial agency concerned, registration with and issue of license by PNRA, and reconciled with the requirements of the Pakistan Nuclear Regulatory Authority Ordinance 2001 (III of 2001) and the guidelines made thereunder in connection with management and disposal of radioactive waste.

(10) All liquid infectious waste shall be discharged into the sewerage system only after being properly treated and disinfected.

Explanation I: Liquid radioactive waste shall be discharged into the sewerage system only after it has decayed to background level and after it has been ensured that the radioactive materials are soluble and dispersible in water, failing which it shall be filtered.

Explanation II: Radioactive waste containing Tritium and Carbon-14 isotopes shall be stored separately and shipped to the disposal site of the Pakistan Atomic Energy Commission, Karachi Nuclear Power Plant (KANUPP), Karachi or Pakistan Institute of Science & Technology (PINSTECH), Islamabad.

(11) In the case of gaseous radioactive waste, portable filter assemblies shall be used to extract iodine and xenon. The used filters shall be treated as solid radioactive waste.

21. Accidents and spillages: (1) In case of accidents or spillages, the following action shall be taken, namely:

- (a) the emergency procedures mentioned in the Waste Management Plan shall be implemented immediately;
- (b) the contaminated area shall be immediately evacuated, if required;
- (c) the contaminated area shall be cleared and, if necessary, disinfected;

(d) exposure of staff members shall be limited to the extent possible during the clean-up operation, and appropriate immunization may be carried out, as required; and

(2) any emergency equipment used shall be immediately replaced in the same location from which it was taken. All hospital staff members shall be properly trained and prepared for emergency response including procedures for treatment of injuries, clean-up of the contaminated area and prompt reporting of all incidents of accidents, spillages and near-misses.

(3) A Waste Management Officer shall immediately investigate, record and review all such incidents to establish causes and shall submit his report to a Waste Management Team.

(4) The Waste Management Team shall review the report, and where necessary shall amend the Waste Management Plan to prevent recurrence of such incidents, and take such further action as may be required.

22. Waste minimization and reuse:(1) To minimize hospital waste, each hospital shall introduce:

(a) purchasing and stock control, involving careful management of the ordering process to avoid overstocking, particularly with regard to date-limited pharmaceutical and other products, and to accord preference to products involving low amounts of packaging;

(b) waste recycling programmes, involving return of unused or waste chemicals in quantity to the supplier for reprocessing, return of pressurized gas cylinders to suppliers for refilling and reuse, sale of materials such as mercury, cadmium, nickel and lead-acid to specialized recyclers, and transportation of high level radioactive waste to the original supplier; and

(c) waste reduction practices in all hospital departments.

(2) To encourage reuse, each hospital shall separately collect and sterilize, either thermally or chemically in accordance with approved procedures, surgical equipment and other items which are designed for reuse and are resistant to the sterilization process.

23. Inspection:(1) An Health Officer may inspect any hospital, incinerator or landfill located within the area of his jurisdiction to check that the provisions of these rules are being complied with.

(2) The Government shall constitute a Hospital Complaint Scrutiny Committee for each district and for the Islamabad Capital Territory, comprising two Medical Superintendents of hospitals owned by the Government, one of which shall be the Chairman of the Committee, and one Chief Executive of a private sector hospital:

Provided that the Hospital Complaint Scrutiny Committee for a district or for the Islamabad Capital Territory shall comprise of Medical Superintendents of hospitals located outside the said district or the Islamabad Capital Territory, as the case may be.

(3) If a Health Officer discovers any contravention of any provision of these rules, he shall report the same to the concerned Hospital Complaint Scrutiny Committee.

(4) The Hospital Complaint Scrutiny Committee shall review details of the contravention reported by the Health Officer and after giving an opportunity of being heard to the duly authorized representative of the hospital or incinerator or landfill, recommend the following,-

- (a) that no further action be taken in the circumstances of the case;
- (b) that another inspection be carried out within a specified period not exceeding one month, if the hospital or incinerator or landfill has taken steps to comply with the rules contravened;
- (c) that action be initiated against the person responsible through the District Health Officer or a local council or the Federal agency or the Provincial agency concerned as the case may be.

24. Hospital Waste Management Advisory Committee: (1). The Federal Government shall by notification in the official Gazette, constitute a Hospital Waste Management Advisory Committee for the Islamabad Capital Territory comprising,-

- | | | |
|-----|--|----------------------|
| (a) | Secretary, Ministry of Health. | Chairman |
| (b) | Joint Secretary, Ministry of Local Govt. & Rural Dev. | Member |
| (c) | Director General, Environment Cell, CDA. | Member |
| (d) | President, Pakistan Medical Association or his representative. | Member |
| (e) | Director, Health Services Academy. | Member |
| (f) | Executive Director, Pakistan Institute of Medial Sciences. | Member |
| (g) | Medical Superintendent, Federal Government Services Hospital. | Member |
| (h) | Chief Executive of two hospitals in the private sector. | Members |
| (i) | Representative of two non-government organizations. | Members |
| (j) | Director-General, Pakistan Environmental Protection Agency. | Member |
| (k) | Director (Lab/NEQS), Pak-EPA.
Secretary | Member/
Secretary |

(2) Each Provincial Government shall, by notification in the official Gazette, constitute a Hospital Waste Management Advisory Committee for the Province comprising,-

- | | | |
|-----|--|------------------|
| (a) | Secretary, Provincial Health Department. | Chairman |
| (b) | Representative of Ministry of Health. | Member |
| (c) | Representative, Provincial Environment Department. | Member |
| (d) | Representative, Provincial Local Government Department. | Member |
| (e) | President, Pakistan Medical Association or his representative. | Member |
| (f) | Vice Chancellor of a Medical University in the Province. | Member |
| (g) | Medical Superintendent of hospitals in the public sector
and Chief Executives of two hospitals in the private sector. | Member |
| (h) | Representative of two non-governmental organizations. | Member |
| (i) | DG, Provincial Environmental Protection Agency. | Member/Secretary |

(3) The Hospital Waste Management Advisory Committee shall,-

- (a) periodically review the implementation of the rules and recommend amendment there to; and
- (b) recommend adoption of such policy measures, plans and projects as it may consider

necessary for the effective management of hospital waste in the Islamabad Capital Territory and Provinces, as the case may be.

25. Phased implementation: The Federal Government may, by notification in the official Gazette, exempt any class of hospitals from all or any of the provisions of these rules.

26. Applicability of section 14: Each hospital generating risk waste shall apply to the Federal Agency for issuance of license for handling hazardous substances and the provision of section 14 shall apply for the purpose of granting such license.

Annex 4: Standard WHO Guidelines for Waste Management Plan for Health Care Facility

Details for inclusion in the waste management plan

Location and organization of collection and storage facilities

1. Drawings of the establishment showing designated bag-holder sites for every ward and department in the hospital; each bag site shall be appropriately designated for health-care waste or other waste.
2. Drawings showing the central storage site for health-care waste and the separate site for other waste. Details of the type of containers, security equipment, and arrangements for washing and disinfecting waste-collection trolleys (or other transport devices) should be specified. The document should also address eventual needs for refrigerated storage facilities.
3. Drawings showing the paths of waste-collection trolleys through the hospital, with clearly marked individual collection routes.
4. A collection timetable for each trolley route, the type of waste to be collected, the number of wards and departments to be visited on one round. The central storage point in the establishment for that particular waste should be identified.

Design specifications.

5. Drawings showing the type of bag holder to be used in the wards and departments.
6. Drawings showing the type of trolley or wheeled container to be used for bag collection.
7. Drawings of sharps containers, with their specification.

Required material and human resources

8. An estimate of the number and cost of bag holders and collection trolleys.
9. An estimate of the number of sharps containers and health-care waste drum containers required annually, categorized into different sizes if appropriate.
10. An estimate of the number and cost of yellow and black plastic bags to be used annually.
11. An estimate of the number of personnel required for waste collection.

Responsibilities

12. Definitions of responsibilities, duties, and codes of practice for each of the different categories of personnel of the hospital who, through their daily work, will generate waste and be involved in the segregation, storage, and handling of the waste.
13. A definition of the responsibilities of hospital attendants and ancillary staff in collecting and handling wastes, for each ward and department; where special practices are required, e.g. for radioactive waste or hazardous chemical waste, the stage at which attendants or ancillary staff become involved in waste handling shall be clearly defined.

Procedures and practices

14. Simple diagram (flow chart) showing procedure for waste segregation.
15. The procedures for segregation, storage, and handling of wastes requiring special arrangements, such as autoclaving.
16. Outline of monitoring procedures for waste categories and their destination.
17. Contingency plans, containing instructions on storage or evacuation of healthcare waste in case of breakdown of the treatment unit or during closure down for planned maintenance.
18. Emergency procedures.

Training

19. Training courses and programmes.
-



Annex 5: Public Consultation Questionnaire

Name: _____ Age: _____ Gender: _____
Date: _____ Time: _____ Village: _____
District: _____ Tehsil: _____
Latitude: _____ Longitude: _____
Interviewer Name: _____ Language: _____

Section 1: Environment & Social Safeguard

- 1) How do you think the Project would help improve utilization of quality health and education services to local communities?

- 2) The Project will involve construction and rehabilitation work, what are your concerns regarding environmental and social impacts?

- 3) The Project is likely to upgrade the existing facilities; what are your suggestions regarding Project interventions?

- 4) What are your suggestions about the proposed Project so as to maximize benefits?

Section 2: Gender Based Violence

1) Do you feel that there is risk of Gender-based violence (GBV) or harassment during construction?

2) Will there be restriction on mobility of students and teachers during construction?
If yes, how?

If no, why?

3) What are the disturbances caused to teachers and students during construction?

4) Will the continuous noise caused by construction an issue to teachers/students?

If yes, how? _____

If no, why?

5) What sort of Risk Mitigating Measures do they want in order to maintain safety and security during construction?

Annex 6: Record of Institutional Stakeholder

Group 1: Health and Education

Stakeholder(s):	1. PMU 2. BESP PMU 3. Health Department 4. NCHD
Date:	November 21, 2019
Time:	2:00 PM
Meeting Venue:	Metro Hotel, Gurdatt Singh Road, Quetta, Balochistan
Attended by:	1. Engineer Abdul Latif, SDE PMU 2. Mr. Fazal Kakar, Senior EO, PMU 3. Mr. Muhammad Ashraf, SDE, PMU 4. Engineer Abdul Jalil, Development Specialist, BESP PMU 5. Ms. Kiran Mushtaq, ESO, PMU-BESP 6. Mr. Shoukat Ali Baloch, Public Health Specialist, Department of Health 7. Mr. Sikandar Jillani, Director Operations, NCHD
Conducted by:	Ms Nazia Zakir Ahmed, Environmental Practitioner Ms. Urooj Fatima, Business Development Officer – Associates in Development Pvt. Ltd.
Recorded by:	Urooj Fatima
Language:	English, Urdu
Information Provided:	The discussion started with the introduction of the Stakeholder Consultation Meeting team. Ms. Nazia Zakir Ahmed briefed the participants about the purpose of the meeting and gave a comprehensive description of the project with the help of presentation. The participants raised queries during presentation. At the end of the informative session, Ms. Nazia invited the participants to express or share their concerns. The issues/concerns raised are discussed below with responses given by Ms. Nazia.

No.	Issues Raised	By	Response Provided
1.	In health department, there is a complaint cell of every department on provincial level. There is no proper complaint system. Complaints can be lodged writing a letter to DHO.	Shoukat Ali	Project has developed/ESMF has proposed a GRM that will ensure such complaints are registered, monitored and resolved.
2.	There is a PM portal as well where complaints can directly be sent to the Prime Minister. But the issue here is that people can bring out their personal grudges by using this portal.	Shoukat Ali	PM Portal can be used to take the complaints. However, the issue of bringing personal grudges can be addressed if the staff can justify the reasons and provide proofs of not being at fault.
3.	DHMT (District Health Management Team) should be revamped for taking complaints. There should be monthly meeting for this cause.	Shoukat Ali	Noted.

4.	There should be departmental coordination between Education and Health.	Shoukat Ali	Noted. Quarterly meetings can be suggested for better coordination.
5.	There should be a joint venture of both health and education departments.	Sikandar Jillani	Noted.
6.	A referral system for serious cases should be formed.	Sikandar Jilani	Noted.
7.	There should be three tiers of health and education for lodging a complaint. i.e. VHC, DHC and Court of law in health and PTSMC, DCR and DEC in education.	Sikandar Jillani	Noted.
8.	PM portal in Balochistan is copied from the KP government. It has proved to be effective.	Sikandar Jillani	PM portal is an effective mode of lodging the complaints.
9.	VLD will cause trouble in Balochistan. It is advised that once the land is donated, start construction as soon as possible because there is a mafia of claimers who would claim that the land belong to them even if it does not.	Sikandar Jillani	The advice is noted, however, it has already been decided by the health and education department that they will provide those lands which are easily available in the vicinity of project areas. If the land is acquired through VLD then only those lands will be acquired which have lesser conflicts to resolve.
10.	People must be told before that they would not be getting anything as a reward of donating lands. People in past have got jobs in exchange of donating their lands.	Sikandar Jillani	People will be told before that this is a voluntary land donation which will not reward in anything.
11.	There should be a forum where DHEMT (District Health Education Management Team) will come in order to have an effective coordination. A strict action should be taken against the members who don't attend it.	Shoukat Ali	Noted.
12.	There should be 2 PMUs at the provincial level to implement Environmental Plan. There should also be an Environmental Specialist, and then a Safeguard Specialist and finally District officers / District focal persons to implement environmental plan.	Shoukat Ali, Sikandar Jillani	The team hierarchy is noted and will be advised.
13.	There should be a single person in both health and education department to coordinate and supervise. On district level, there would be 4 people for this task. These people should be from the permanent staff. They should be given role to perform. In education department, staff from administration department can play this role.	Shoukat Ali	Noted and will be communicated. Here possible existing staff will be used for project implementation.

Group 2: Health

Stakeholder(s):	<ol style="list-style-type: none"> 1. EPI Balochistan 2. Lady Health Worker 3. EPI PHQ 4. PPHI Balochistan 5. SCAP Balochistan 6. PHS Health 7. DGHS 8. Health Department 9. MNCH – DOH
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Date: November 22, 2019

Time: 01:00 PM

Meeting Venue: Secretariat

Attended by:	<ol style="list-style-type: none"> 1. Mr. Sanjay Kumar, Financial Management Specialist, EPI Balochistan 2. Dr. Imdad Achakzai, Deputy Program Coordinator, Lady Health Worker 3. Dr. Ishaq Panezai, DPC, EPI Balochistan 4. Mr. Muhammad Akbar Khan, Director Monitoring, Evaluation & Reporting 5. Mr. Shoaib Menegal, Admin Officer, SCAP Balochistan 6. Ms. Zarish Sharaf, Program Officer, SCAP Balochistan 7. Mr. Shoukat Ali, PHS Health 8. Mr. Shokat Ali, Director Public Health, DGHS 9. Mr. Amin Khan, Director Health Department 10. Dr. Sarmad Khan, DPC, MNCH DOH 11. Dr. Saeed, DHO Quetta, Health Department 12. Dr. Shakar Baloch, DG Health Department 13. Mr. Abdul Rasool Zehri, Chief Planning Officer, Health Department
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Conducted by: Ms Nazia Zakir Ahmed, Environmental Practitioner
Ms. Urooj Fatima, Business Development Officer – Associates in Development Pvt. Ltd.

Recorded by: Urooj Fatima

Language: English, Urdu

Information Provided: The discussion started with the introduction of the Stakeholder Consultation Meeting team. Ms. Nazia Zakir Ahmed briefed the participants about the purpose of the meeting and gave a comprehensive description of the project with the help of presentation. The participants raised queries during presentation. At the end of the informative session, Ms. Nazia invited the participants to express or share their concerns. The issues/concerns raised are discussed below with responses given by Ms. Nazia.

No.	Issues Raised	By	Response Provided
1.	There are incinerators in hospitals already but they are non-functional. The incinerator was also installed in Fatima Jinnah Women University and it is non-functional as well.	Amin Khan	People will be trained about how to use the incinerators properly. They will be told the importance of using it.

No.	Issues Raised	By	Response Provided
			A proper check would be kept on whether the incinerators are in use or not.
2.	If new staff is hired and trained, they are used throughout the project but as the project ends, the staff is gone. It leaves a big impact on project's sustainability.	Amin Khan	The existing staff will be used in the project. Those who are permanent and non-transferable.
3.	Highlight Political Impacts with Environmental Impacts in this project.	Amin Khan	Will be proposed.
4.	There is no ambulance in Balochistan that has ventilation in it.	Amin Khan	Ambulances with the ventilation will be proposed.
5.	PMU of Education & Health should be one.	Amin Khan	The education and health are complete separate entities. However, the suggestion can be put forward.
6.	Install incinerators in DHQs.	Abdul Rasool Zehri	Noted.
7.	Incinerators cannot work in Chagai since the district doesn't have electricity and gas facilities.	Abdul Zehri	Rasool Solar incinerators will be proposed.
8.	There are no lady doctors in the far flung areas of Chagai that is why ladies have to move to other districts for major or critical operations and surgeries.	Abdul Zehri	Rasool Local lady doctors will be proposed for hospital in far flung areas like Chagi .
9.	THQs (Tertiary Head Quarters) are very less in Chagai. Vehicles can be used to rotate in Chagai and collect wastage from there. This can be done through outsourcing or using a contractor.	Abdul Zehri	Rasool HCWMP is being prepared
10.	There should be one incinerator in one DHQ at least.	Abdul Zehri	Rasool Noted.
11.	Sheikh Zahid Hospital in Quetta can be used as a spot where all the waste will reach. It is a huge hospital and can cover 3 to 4 hospitals. The hospital needs updation though.	Abdul Zehri	Rasool During project executing on existing incineration in the district will also be evaluated for waste disposal
12.	VLD would be difficult in Quetta.	Abdul Zehri	Rasool Acknowledged.
13.	If incinerator is not installed in DHQ, install it in RHC. An RHC named Panjpai is suggested.	Abdul Zehri	Rasool Noted.
14.	Use DC(Direct Current) in solar panels.	Shoukat Ali	Noted.
15.	Provide electricity all day to three critical units of hospitals i.e. EPI room, gyni and emergency rooms	Shoukat Ali	Generators would be given to these units.
16.	There should be separate PMUs of Education & Health.	Abdul Zehri	Rasool Already proposing it.

No.	Issues Raised	By	Response Provided
17.	Provide bore water facility to DHQs and provide connectivity through it to other connected areas.	Abdul Rasool Zehri	Proposing solar bores.

Annex 7: Health Care Waste Management Plan Checklist for BHUs/ RHCs/ THQ/ DHQs

DISTRICT----- Tehsil ----- Date-----

HOSPITAL/BHU/RHC/DHQ -----No of beds -----

Name of In -charge-----Cell Number-----

Catchment Population-----Interviewers Name: -----

S/N	Activities /linked	Yes	No	Remarks
1 -PLAN AND ACTION FRAMEWORK				
1.1	Hospital waste management plan has been prepared			
1.2	A dedicated Hospital waste management committee and its notification (DHQ and RHC) & Focal person at BHU			
1.3	Hospital waste management review meeting is conducted once a month (minutes of meetings available)			
1.4	Daily waste generation record is maintained.			
1.5	Training of healthcare/ Sanitary workers & evidence training on HCWM			
1.6	Refresher trainings of Health Care Professional (HCP) and Sanitary workers HCWM			
1.7	Has health Committee notified for health care units			
1.8	Evidence of Health Committee meetings (minutes are available; participation record is maintained)			
2 -PERSONAL PROTECTION				
2.1	Health care workers are wearing proper PPE.			
2.2	Mask			
2.3	Gloves			
2.4	Head Covers at critical times			
2.5	Gowns & shoe covers			
2.6	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.			
3.2	I set (3 in number) of large color coded waste bins are present near nursing station in all wards.			
3.3	Yellow for infectious waste			
	Red bin for glass waste			
	White bin for municipal waste			
3.4	Waste bins are lined with same colour waste bags.			
3.5	Large Waste bins are properly marked and remained closed			
3.6	Waste is collected daily from the wards/units			
3.7	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 DHQ & RHCs level only			
4.2	Infectious waste is transported through YELLOW color trolleys at DHQ and RHC only			
4.3	Non-infectious 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)			
5.2	Waste is disposed of within 24 hours			
5.3	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			
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 (DHQ and RHC only)			
7.2	All waste is burnt in the brick kiln small scale incinerator			
7.3	Waste is disposed in open dump sites			
7.4	Waste is burnt in the vicinity of the health facility			
7.5	Landfill for infectious waste is present			
8-DISPOSAL OF PLACENTA & OTHER ORGANS				
8.1	A well-structured, covered burial pit is present to dispose the placenta and other body parts			
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			
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.			
10.2	Laboratory works are wearing personal protection equipment			
11	Drinking Water & Environmental Sanitation			
11.1	Safe drinking water is available round the clock for patients, attendant and staff?			
11.2	Drinking water testing reports (quarterly testing)			
11.3	Safe water for visitors, patients and staff			
11.4	Proper surface disinfection with chlorine solution/mopping			
11.5	Proper management of spillage (spill kits with trolleys)			
11.6	Toilets (common, patients & staff) with soaps and waste bins (small white)			

11.7	Separate toilets for women with soaps and waste bins (small white)			
11.8	Proper and safe drainage is existing in the hospital?			
12	RECORD KEEPING OF THE WASTE			
12.1	Daily infectious waste generation record is maintained			
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 (DHQ & 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.			
13	GRIEVANCE REDRESS MECHANISM			
13.1	Do the hospitals invite complaints and feedback? Yes__ No__ If No, why?			
13.2	If yes, how are the complaints documented/recorded?			
13.3	Is community aware of the GRM System?			
13.4	Do communities know where to lodge complaint?			
13.5	Information regarding complaints or grievance redressal is clearly marked and available at the facility (complaint box, register, helpline, any other mode. Please record detail in remarks)			
13.6	How are these complaints recorded/documentated?			
13.7	How long does it take to respond back to the registered complaint?			
13.8	Has grievance redress committee is notified			
13.9	Do communities complain to other systems i.e. Ombudsman, Pakistan Citizens Portal?			

13.10	Does the hospital respond to the complaints by community/students /parents?			
13.11	Is there a grievance manual for staff?			
13.12	Have there been any complaints in past handled by the police and court?			
13.13	Are inquiries and responses to all grievances recorded?			
13.14	Can the grievance mechanism be accessed free of charge?			
13.15	What ways are used by the organization to resolve grievances?			
13.16	Does the organization provide training on grievance management to staff?			
14	Voluntary Land Donation Baseline			
14.1	Will land be donated voluntarily? Yes/No			
14.2	If No, explain how land will be obtained (e.g. state-owned land, required land already available with the facility, any other)			
14.3	If yes, does the owner been made aware of VLD nature and procedure?			
14.4	Has the landowner agreed to sign the VLD documents?			
14.5	Can the owner produce land title deeds/documents of ownership?			
14.6	Are there any tenants on the land?			
14.7	If yes, describe the number of tenants, gender and type of tenancy and length of residence.			
14.8	If yes, are tenants willing to move?			
14.9	Will there be adverse impacts on tenants? Describe in remarks column.			
14.10	Are there people using the land for livelihoods, cultural activities? Yes/No			
14.11	If yes, how many people? Gender? Type of activity?			
14.12	How will voluntary land donation affect people using the land?			
15	GENDER BASED VIOLENCE			
15.1	Do you feel that that there is risk of Gender-based violence (GBV) or harassment during construction?			

15.2	Will there be restriction on mobility of doctors and patients during construction? If yes, how?			
15.3	Will the continuous noise caused by construction an issue to doctors/patients? If yes,			
15.4	What sort of measures do you want in order to maintain safety and security during construction?			
15.5	What mitigation measures is contractor meant to set in place?			

Observer's Remarks

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Annex 8: Pictures of the Visited Healthcare Facilities



Main entrance of BHU Amin Abad, District Chagai



Treatment room in BHU Amin Abad, District Chagai



Medicine store in BHU Amin Abad, District Chagai



Main entrance of DHQ Hospital Dalbandin, District Chagai



Dialysis center DHQ Hospital Dalbandin, District Chagai



Stabilization center DHQ Hospital Dalbandin, District Chagai



Surgical ward female DHQ Hospital Dalbandin, District Chagai



Surgical ward male DHQ Hospital Dalbandin, District Chagai



BHU Pir Alizai, District Killa Abdullah



Treatment room in BHU Pir Alizai, District Killa Abdullah



Waste disposed of in open space at BHU Pir Alizai, District Killa Abdullah



District Headquarter Hospital, District Pishin



Male ward in District Headquarter Hospital, District Pishin



Waste disposed of in open space at District Headquarter Hospital, District Pishin



DHQ Chaman, District Killa Abdullah



Ambulances are available at DHQ Chaman, District Killa Abdullah



BHU Village Aid HUB, District Quetta



Laboratory at BHU Village Aid HUB, District Quetta



RHC Chagai, District Chagai



General ward at RHC Chagai, District Chagai



Emergency ward at RHC Chagai, District Chagai



Waste bin provided by Union Councilor RHC Chagai, District Chagai