

**Environmental and Social Screening Report**

**Pakistan Goes Global: An Initiative for a Global & Technology-Driven Pakistan**

**June 15, 2020**

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**Acronyms**

|  |  |  |  |
| --- | --- | --- | --- |
| EPA | Environmental Protection Act | EIA | Environmental Impact assessment |
| ESMP | Environmental and Social Management Plan  | ESS | Environmental and Social Standards |
| EWMP | Electronic Waste Management Plan | EMP | Environmental Management Plan |
| E&SS | Environmental and Social screening | EPR | Extended Producer’s Responsibility |
| ESIA | Environmental and Social Impact assessment | ESMF | Environmental and Social Management Framework |
| MOC | Ministry of Commerce | LDs | Lung Diseases |
| OHS | Occupational Health and Safety | MOCTC | Ministry of Climate Change |
| POPs | Persistent Organic pollutants | OHSM | Occupational Health and safety Management |
| SEP | Stakeholder Engagement Plan | PCB | Polychlorinated Biphenyl |
| WEEE | waste electrical and electronic equipment | SEM | Strategic Environmental Management |
|  |  | WMP | Waste Management Practices |

**Executive Summary**

The Government of Pakistan is preparing the Pakistan Goes Global (PGG) Project to improve the enabling environment for exports and strengthen export promotion. Specifically, the project will focus on investments around three aspects of the enabling environment for exports: export promotion infrastructure, automation of government to business interactions to reduce costs and increase transparency, and implementation support to reduce the country’s anti-export bias.

This environmental and social (E&S) screening report has been prepared to anticipate and mitigate any possible negative environmental and social effects of the Project. The objective of the E&S screening report is to identify and assess all impacts and to propose mitigation measures to avoid, minimize, reduce or mitigate the potential adverse impacts that may arise during Project activity. Information on environmental policies, national and international laws as well as guidelines relevant to the project were reviewed, and a synopsis of all relevant laws has been given in this report.

Environmental and social risks of the Project are low. As the project will result in the disposal of electronic equipment, there is a possibility of generation of electronic or e-waste. Electronic waste is one of the largest and fastest growing waste streams globally. This rapidly growing segment of waste is one of substantial concern because of its hazardous and toxic materials content. Rapid technological advances and lower product prices for more powerful machines are contributing to shorter product life spans and frequent replacement.

The E-waste Management plan will be executed by the project implementation units because the project will procure IT equipment, and IT systems will be upgraded in three organizations i.e. Ministry of Commerce (MOC), Board of Investment (BoI), and Trade Development Authority (TDAP). The report has been prepared in compliance with social and environmental standards of the Government of Pakistan as well as the World Bank’s Environmental and Social Framework (ESF).

In the course of plan preparation, consultations were held with the heads of the relevant ministries and departments. These stakeholder consultations were conducted at Ministry of Commerce, Industries and Production, Board of Investment, and TDAP. During these meetings, the screening checklist (provided in Annexure A) was discussed in detail to analyze impacts and possible solutions. Similarly, consultations were held at some disposal points in different cities, and practices were observed regarding the waste reprocessing and its use. The issues discussed with stakeholders at ministerial level and at disposal points are summarized in the report. The available published and unpublished information pertaining to the background environment was obtained and reviewed.

The impacts were analyzed by filling up the screening checklist and were evaluated against each environmental and social standard. The risk rating for screening results is insignificant to minor impacts. The probability of e-waste generation is ***likely very low***, and it is proportionately based on the exact numbers of equipment to be disposed of An E-waste Management Plan will be prepared to mitigate the small or minor hazards during the life of the project.

# Introduction

This document constitutes the environmental and social screening report) for the Pakistan Goes Global (PGG) Project, being prepared by the Government of Pakistan in collaboration with the World Bank. The checklist has been developed in accordance with the Environmental and Social Standards of the World Bank’s Environmental and Social Framework (ESF) and corresponding national and provincial legislation.

This document is structured as follows. Section 2 consists of Project description and discussion of the policy and legislative framework governing environment in Pakistan. Section 3 discusses e-waste management in Pakistan, while the remaining sections are concerned with stakeholder consultations, impact assessment, mitigation, conclusion & recommendations.

# Project Description

The Project is an Investment Project Financing operation of US$125 million, of which US$44.5 million is based on the achievement of performance-based conditions (PBCs). It responds to the COVID-19 crisis, and is aligned with the response framework outlined in the World Bank Group COVID-19 Crisis Response Approach Paper, in particular those in Pillar 3 and 4. The overall objective of the PGG is to improve the enabling environment for exports and strengthen export promotion. The Project will finance both direct expenditures procured under specific activities, as well as expenditure programs associated with performance-based conditions (PBCs) aimed at achieving results under the different components.

*Component 1: Investing in the Enabling Environment for Exporting*

This component will invest in upgrading capacity in public export-related institutions. The investments are expected to enable institutions to deliver on their mandate in an efficient and effective manner, through enhanced coordination and integration both at the federal and provincial level, as well as through increased transparency and accountability. The component will invest in institutional strengthening around the following related areas: 1) the establishment of a Pakistan Goes Global (PGG) Board to increase federal and provincial coordination and build a feedback loop with the private sector; 2) establishment of a monitoring and evaluation (M&E) platform for trade public support interventions; 3) creating a one-stop shop for business licensing and registration in Pakistan; and 4) strengthening the Trade Policy Wing (TPW) in the MOC as well as the National Tariff Commission (NTC).

*Component 2: Investing in export promotion infrastructure*

The objective of the component is i) carrying out of a country branding campaign, including provision of Trade Fair Grants to firms for participation in virtual or presential trade fairs/exhibitions; (ii) re-vamping of the role of the trade attaches’ network in export promotion to modernize Pakistan’s trade diplomacy; and (iii) design and roll-out of an export intelligence platform, as a one-stop shop for exporters, to connect global buyers with local sellers. These activities will be implemented by MoC and TDAP.

*Component 3: Contingent Emergency Response Component (CERC)*

This component invests in the provision of immediate response to an Eligible Crisis or Emergency, as needed. In the event of a future eligible crisis or emergency, the Project will contribute to providing immediate and effective response to that crisis or emergency. This component is included to allow the flexibility to respond to the dynamics of the pandemic and its economic impact on the export sector, as it evolves during the life of the Project. E&S screening process will be updated if CERC is activated to reflect the type of screening required for activities proposed under CERC, including a negative list.

In addition to a series of policy actions, PGG will also upgrade electronic equipment in implementing agencies, in addition to procuring new equipment. As such, while the probability of e-waste generation is low, some degree of waste will be generated, which will have to be disposed according to acceptable environmental standards.

## IT Procurement

The project, under institutional strengthening, will finance procurement of IT equipment for Government to Business, interactions to reduce the firms' costs of doing business for investors and exporters in MOC. Out of the IT equipment to be purchased, a portion will be installed in MOC, a portion in BoI and a portion in TDAP. Most of the old IT equipment will be redeployed within the parent organizations.

The probability of e-waste generation ***is likely very low***, and it is proportionately based on the exact numbers of equipment to be disposed. The proposed project location is Islamabad Capital Territory including four provinces. Consultations with stakeholders will be undertaken in Islamabad and in provincial capitals. No civil works will be financed under the Project.

## Project Administrative Jurisdiction

The proposed project is located in the capital territory and the four provinces under the jurisdiction of administration of the federal government. The Ministry of Commerce (MOC) is the proponent of the project. MOC has prepared this Environmental and Social Screening Report which will lead to the preparation of Electronic Waste Management Plan (EWMP) for the safe collection, storage and final disposal of the waste.

# Policy and Legislative Framework for Environment

Generally, Pakistan being a signatory of multilateral international treaties has a comprehensive set of environmental legislation covering multiple environmental issues like pollution of freshwater bodies and coastal water, air pollution, deforestation, loss of biodiversity, lack of proper waste management and climate changes. Currently, Pakistan does not have any policies and regulations in place for e-waste related issues. The basic policy and legislative framework along with detailed rules, regulations and guidelines required for the implementation of the policies and enforcement of legislation for the protection of the environment and overall biodiversity are in place.

1.

## National Environmental Policy, 2005

The NEP provides an overreaching framework for addressing the environmental issues facing Pakistan, particularly pollution of freshwater bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of biodiversity, desertification, natural disasters and climate change. It also provides directions for addressing the cross-sectoral issues as well the underlying causes of environmental degradation.

## Relevant Laws and Regulations

Pakistan has a number of laws and regulations regarding the conservation and protection of the environment, and for social protection. The laws relevant to the project are briefly reviewed below.

### Pakistan Environmental Protection Act, 1997

The Act is applicable to a broad range of issues and extends to air, water, soil, marine and noise pollution, as well as the handling of hazardous waste. The discharge or emission of any effluent, waste, air pollutant or noise in an amount, concentration or level in excess of the Environmental Quality Standards (NEQS) specified by the Federal Environmental Protection Agency (FEPA) has been prohibited under the Act, and penalties have been prescribed for those contravening the provisions of the Act.

After 18th Constitutional Amendment in the Constitution of Pakistan, the Federal Ministry of Environment has been dissolved, and the subject of the environment has been handed over to provinces. Provincial EPAs have formulated their own acts. The major content of the act is same as of Pakistan Environmental Protection Act (PEPA), 1997.The Act is applicable to a broad range of issues and extends to air, water, soil, marine and noise pollution, as well as the handling of hazardous waste. Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000

The Pakistan Environmental Protection Agency (Review of IEE and EIA Regulations), 2000 (the Regulations) under the powers conferred upon it by the Act, provides the necessary details on preparation, submission and review of the IEE and the EIA. Categorization of projects for IEE and EIA is one of the main components of the regulations.

Projects have been classified on the basis of the expected degree of adverse environmental impacts. Project types listed in Schedule-I are designated as potentially less damaging to the environment and those listed in Schedule-II as having potentially serious adverse effects. Schedule-I projects require an IEE to be conducted, provided they are not located in environmentally sensitive areas. For the schedule-II projects, conducting an EIA is necessary.

### Hazardous Substances Rules 2003

Section 4: A license will be required to import or transport a hazardous substance.

Section 5: EIA of the industrial activity involving generation, collection, transport, treatment, disposal, storage, handling or import of hazardous substance will be required along with safety and waste management plan.

The rules provide information on validity, renewal and cancellation of license; packing; and labeling; safety precautions; entry, inspection and monitoring: safety plan: waste management plan: import; and transport of hazardous substances.

### National Environmental Quality Standards (PEQS)

The Punjab Environmental Quality Standards (PEQS) specify the following standards:

* The maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged into inland waters, sewage treatment facilities, and the sea (three separate sets of numbers).
* Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources.
* Maximum allowable concentration of pollutants (02 parameters) in gaseous emissions from vehicle exhaust and noise emission from vehicles.
* Maximum allowable noise levels from vehicles.
* Ambient Noise and Air Quality Standards.

### Employment of Child Act, 1991[[1]](#footnote-2)

Section 3, Prohibition of Employment, of this Act states that “No child shall be employed or permitted to work in any of the occupations set forth in Part I of the Schedule or in any workshop wherein any of the processes set forth in Part II of that Schedule is carried on: Provided that nothing in this section shall apply to any establishment wherein such process is carried on by the occupier with the help of his family or to any school established, assisted or recognized by Government.”

### Factories Act, 1934

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

### Pakistan Penal Code, 1860

This outlines the penalties for violations concerning pollution of air, water bodies and land. Sections 272 and 273 of this Act deal with the adulteration of food or drink. Noise pollution has been covered in Section 268, which defines and recognizes noise as a public nuisance. “A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right.”

### International Laws and Agreements for E-waste Management and Disposal

Pakistan is the signatory of several international laws, conventions and agreements, which prohibit or limit the shipment of hazardous waste, including e-waste, from industrialized to developing counties (Table 3.1 below). These include the Stockholm Convention on Persistent Organic Pollutants (POPs), the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the Bonn Amendment of the UN Basel Convention.[[2]](#footnote-3)

Table 3.1: International Laws on E-Waste

|  |  |  |
| --- | --- | --- |
| S/N | Multilateral Environmental Agreements | Functions |
| 1 | Aarhus Convention | Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters |
| 2 | Basel Convention | Basel Convention on the Control of Tran boundary Movements of Hazardous Wastes and their Disposal |
| 10 | Montreal Protocol | Montreal Protocol on Substances that Deplete the Ozone Layer |
| 11 | Rotterdam Convention | Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade |
| 12 | Stockholm Convention | Stockholm Convention on Persistent Organic Pollutants |

## World Bank’s Environmental and Social Standards

The WB Environmental and Social Standards relevant to the proposed project are discussed in the following sections.

ESS1 Assessment and Management of Environmental and Social Risks and Impactssets out the Borrower’s responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing (IPF), in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs). This ESS is relevant to the project.

As per the Project’s ESRS, an Environmental and Social Screening was required, leading to the development of an EWMP prior to the implementation of project activities. The final and exact number and types of IT equipment and mitigation measures for E-waste management will be determined during the Screening exercise. In addition, an EWMP will follow the Good International Practices (GIIP). The EWMP will be implemented by the MOC through a certified E-Waste disposal contractor. The MOC will undertake an independent third-party assessment of EWMP implementation during the project life. ESS2 Labor and Working Conditionsrecognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.

Since the proposed activity shall involve direct workers in its Project Implementation Unit (PIU) and Shared Service Unit (SSU) as well as with contracted workers and some primary supply workers (including labor associated with implementation of EWMP- primary suppliers used to procure IT equipment and contracted workers for E-waste management), ESS2 is relevant. Measures related to Occupational Health and Safety (OHS) of the project workers are also assessed.

ESS3 Resource Efficiency and Pollution Prevention and Management recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life-cycle.

In this Project, negligible amount of E-Waste generation is anticipated due to IT equipment which will be replaced under the project. However, to apply the mitigation hierarchy to minimize, reduce and mitigate the potential risk associated with the E-Waste, the MOC, as a precautionary step has undertaken Environmental and Social Screening to assess the extent of the impacts and mitigation measures leading to development of an E- Waste Management Plan prior to implementation of activities. The E-Waste management plan will take into account national laws, regulations and Good International Industrial Practices (GIIP) consistent with the EHSGs to dispose and destroy the E-waste from IT equipment replacement. The client will adopt the EWMP at the project implementation stage and throughout the project life cycle. In case of lack of capacity, the project implementation agency can recruit reputable and legitimate licensed contractor(s) in environmentally sound and safe practices as per national and provincial environmental laws and regulations to implement the EWMP. Hence, this ESS is relevant to the project. Additionally, energy efficient ICT equipment will be procured to promote energy efficiency and reduce energy carbon footprint.

ESS4: Community Health and Safety addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

Environmental and Social Screening under ESS1 and ESS3 will evaluate and establish the potential risks and impacts on communities, which may get affected due to implementation of E-waste management plan, and hence will propose mitigation measures relevant to ESS4 and EHSGs.

ESS10: Stakeholder Engagement and Information Disclosure is relevant to every Project financed by the World Bank under its Environmental and Social Framework (ESF). ESS10 recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

## Relevant Institutions

The apex environmental body in the country is the Pakistan Environmental Protection Council (PEPC), presided by the Chief Executive of the Country. Other bodies include the National and Provincial Environmental Protection Agencies (EPAs), and environmental tribunals.

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

## Environmental and Social Guidelines

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

*Environmental Protection Agency’s Environmental Guidelines*

The Pak EPA has prepared a set of guidelines for conducting environmental assessments. The package of regulations, of which the guidelines form a part, includes PEPA 1997 and the NEQS. The guidelines themselves are listed below:

* Guidelines for the Preparation and Review of Environmental Reports,
* Guidelines for public consultation,
* Guidelines for Sensitive and Critical Areas, Sectorial Guidelines.

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

*World Bank Environmental and Social Guidelines*

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

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

The implication of the above-mentioned legislation to the management of the e-waste as follows:

* Ministry of Commerce (as a lead role) being the proponent of the project will ensure that the project will be implemented in accordance with the national and provincial Environmental Quality Standards, National and provincial Environmental Protection Acts and the WB’s Environmental and Social Standards.
* The project will be subject to four basic provisions relating to pollution control under the Environmental Protection Act, 1997 (Amended 2012), as contained in section 11, 14 and 15 as follows:

Section 11, prohibits discharge or emission of any effluent or waste or air pollutant or noise in excess of the NEQS, or the established ambient standards for air, water or land.

Section 14, prohibits the handling of hazardous substance except under license or in accordance with the provision of any local law or international agreement.

# Stakeholder Consultations

This section describes consultations carried with key stakeholders for the preparation of the Electronic Waste Management Plan. During preparation of this report, consultations with key stakeholders were carried out. The main objective of the consultation was, among others, to take stock of any additional suggestions/concerns that might emerge during project implementation. Other objectives were to:

* Apprise stakeholders about the additional support being provided under this project to Pakistan Goes Global and to inform them about its potential impacts,
* To obtain views, concerns and suggestions of the stakeholders about the project and its design; and address these concerns/suggestions while designing mitigation measures.

## Consultation with Beneficiary Representatives

Stakeholder consultations were carried out with the Ministry of Commerce, BOI and TDAP. The participants included were Deputy Directors, Directors and Deputy Secretaries.

Table 4.1: Summary of Issues /Concerns of Beneficiaries

| Sr. No. | Name of Participant | Issue Raised | Action Taken / Suggested Measures |
| --- | --- | --- | --- |
| 1 | Samnoon BasraDeputy Director Trade Policy Wing10th July, 2019 | The IT Equipment is a regular practice to install within the department. Although the electronic waste produced within the departments is small in quantity, but the officers and workers are not aware of the hazards of the electronic waste | The SSU will monitor and supervise and build the capacity of the workers through managing trainings about the potential impacts of the waste, |
|  |  | There is no proper mechanism, protocols and guidelines to collect, store and dispose the waste. | SSU will provide proper guidelines, protocols for the collection, storage and disposal of the waste |
|  |  | Occupational health and safety of the workers is not properly mitigated. | SSU will ensure to implement the occupational health and safety Rules, 2005 to protect workers health with a special focus on provision of personal Protective Equipment (PPEs). |
| 2 | Mr. Zuhfran QasimDirector (Policy and Planning) Board of Investment10th July, 2019 | Waste collection and storage is a concern. To some extent the department manages waste, however the proper collection and storage is needed, and workers need to be trained on the impacts of the waste, its collection and final disposal. | SSU will monitor how to collect, store and dispose the waste. The workers will be trained on occupational health and safety rules and protocols to collect the waste properly will be prepared and shared by the PIU. |
|  |  | There is no waste management plan for collection and disposal. The waste is stored and auctioned after a specific time (mostly once in a year). There should be a departmental waste management plan supervised by an environment specialist. | SSU in coordination with Environmental Specialist will prepare the institution- based waste management plan to collect, store and transport the waste accordingly. |
| 3 | Mr. Azhar A Chaudhry10th July, 2019(Deputy Secretary) Ministries of Industries and Production Islamabad | Waste is collected and stored in the storage room. The storage rooms are not properly ventilated. Waste is not collected through protocols and no proper guidelines are prepared. The waste is neglected regarding its potential impacts and workers are not trained for the proper handling and transportation. | SSU will monitor and prepare the institutional based checklist, prepare guidelines and displays for the proper handling and collection of the waste. SSU will train the workers through a dedicated training program. |
|  |  | Occupational health is not maintained well. Workers mostly do not use PPEs during collection and transporting the waste.  | The workers will be trained in collection and transporting waste and SSU will implement the occupational health and safety rules, 2005 |
| 4 | Abdul Razzaq Mughal(Deputy Secretary Administration), MOIP | Electronic waste is a major concern of the ministry however due to lack of resource and trained HR, waste management has not been a focus. The waste is not properly handled and transported, even waste is not stored in properly ventilated rooms. The workers are not trained on how to collect, handle and transport the waste. Workers are not aware of the potential harmful impacts of the waste.  | SSU will ensure to train the workers and implementation of the electronic waste management plan. |

## Consultations with Project Implementation Staff

Consultation sessions were conducted with staff of MOC, BOI, and TDAP. The staff was informed about the installation of the IT equipment in the relevant departments and they were also informed about the hazards of installation of the equipment and the potential impacts of the electronic waste. The staff positively responded to the installation of the equipment. The workers shared their former experience while installing the IT equipment and the disposal methods.

Most of the workers said that they are not aware of the risks related to electronic waste and said that there is no proper management of the waste. Waste is not properly handled and stored in the storage room. No training has been conducted. The workers also informed that during the installation of the equipment preventive measures regarding the worker’s safety are not followed, and the workers who come to install the equipment are not wearing the PPE. They said that drilling, dust and painting are common features that occur during installation of equipment.

## Consultation on Electronic Waste/ Reprocessing Units

A detailed consultative meeting was held with the concerned vendors/purchasers of electronic waste at the following cities.

* Rawalpindi (Raja Bazar, Sixth Road Dubai Plaza)
* Lahore (Bandh Road, Barkat Market)
* Sialkot (Defence Road)
* Gujranwala (Near Railway station)

These informal settings are situated in main cities, in the vicinity of the electronics sale centers and some are working in small rooms taken on rent near the sale centers.

Table 4.2: Summary of Issues /Concerns

| Sr.No. | Name of Participant | Issue Raised | Action Taken / Suggested |
| --- | --- | --- | --- |
| 1 | Participant 1 6th Road Rawalpindi7th Oct, 2019 | I am working for more than 10 years. I do not know about the risks of the waste and I have never been trained on impacts of the waste reprocessing, reuse or recycling. Most of the time, I do not use PPEs. I am extracting copper from the cathode ray tubes and aluminum from chip boards. I am also working for refurbished electronic appliances. | SSU will propose the waste handling, collection, safe transportation and final disposal methods to the Contractor when waste will be auctioned. SSU in collaboration with EPD will sensitize the District Authority to monitor the safe reprocessing and recycling. |
| 2 | Participant 2Raja Bazar Rawalpindi7th Oct, 2019 | I am working for more than 5 years within this shop to extract the ferrous. I have never been told to wear the PPE and I am unaware of the risks of the waste.  | SSU will propose the waste handling, collection, safe transportation and final disposal methods to the Contractor when waste will be auctioned. SSU in collaboration with EPD will sensitize the District Authority to monitor the safe reprocessing and recycling through certified contractors. |
| 3 | Participant 3Band Road Lahore14th Oct, 2019 | I am working here for more than 7 years. I do not know about the risks of the material and I am not wearing the gloves. I can work without gloves and I am separating the copper from burning wires and selling them to the recycler. | SSU will propose the waste handling, collection, safe transportation and final disposal methods to the Contractor when waste will be auctioned. SSU in collaboration with EPD will sensitize the District Authority to monitor the safe reprocessing and recycling through certified contractors. |
| 4 | Participant 4Barkat Market Lahore15th Oct, 2019 | I am working here for the last 3 years. I collect cathode rays tubes and extract copper from it. I do not know about the hazards of the work and I do not know why I should wear gloves and mask. Because of small space I could not maintain cleanliness. | SSU will propose the waste handling, collection, safe transportation and final disposal methods to the Contractor when waste will be auctioned. SSU in collaboration with EPD will sensitize the District Authority to monitor the safe reprocessing and recycling through certified contractors. |
| 5 | Participant 5Gujranwala16th Oct, 2019 | I am working here for the last 12 years. I separate the plastic casing and glass from the waste and sell it to the market. I know the hazards but its my job to earn for my family. I can work without PPE. However, we need proper place to work from our owner. | SSU will propose the waste handling, collection, safe transportation and final disposal methods to the Contractor when waste will be auctioned. SSU in collaboration with EPD will sensitize the District Authority to monitor the safe reprocessing and recycling through certified contractors. |
| 6 | Participant 6Sialkot28th Oct, 2019 | I am working with this shop for the last 4 years. I am extracting gold, aluminum and copper from the scrape and sell it to the market in Gujranwala. I am never trained on the hazards and I don’t know about the hazards, some time I wear gloves only however workers should wear the PPEs. | SSU will propose the waste handling, collection, safe transportation and final disposal methods to the Contractor when waste will be auctioned. SSU in collaboration with EPD will sensitize the District Authority to monitor the safe reprocessing and recycling through certified contractors. |

## Consultations at Informal Settings

The consultations were carried out at six units in Rawalpindi, Gujranwala, Sialkot and Lahore. The informal settings/reprocessing units were visited, and information was collected, and practices were physically verified. The owners of the units are collecting the waste scrap from street vendors and some are directly collecting waste from the departments and shops. The units observed were mostly extracting the plastic material, copper by burning the copper wires and from cathode ray tubes (CRT). Glass and aluminum were also found to be collected from scrap e-waste. Similarly, ferrous and gold was also being extracted at Sialkot. After extracting the metals, some casing, packing materials and some parts are reused as refurbished material and being sold to market.

# Environmental and Social Screening

## Objective of Screening

The main objective of the screening process is to identify and highlight the environmental and social issues that need to be taken into account in all phases of the project implementation. This process will set the ground for further reports that may be required, especially to ensure compliance with World Bank safeguards. The aim is to support the sustainable implementation of the planned project and the screening is carried out at an early stage of the project (i.e., pre-feasibility), in accordance with the requirement for World Bank financed projects.

The screening results may indicate that the investment either requires a full Environmental and Social Assessment with implementation of mitigation measures or that no additional environmental and social work is needed because no adverse environmental and social impacts were identified.

## Project Screening Results

The screening results have been summarized in terms of impact analyzed after detailed screening of the project through the screening checklist. The probability of the impacts against each environmental and social standard is explained in the screening checklist attached in the annexure. The summary of impacts is described in the following section.

The detailed results of the E and S Screening Checklist is provided in table 5.1 below:

Table 5.1: Detailed Results of E & S Screening

|  |  |
| --- | --- |
| **TECHNICAL AREAS** | **ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST IMPACTS**  |
| **ESS-1: ASSESSMENT and MANAGEMENT OF ENVIRONMENTAL and SOCIAL RISKS and IMPACTS** |
| **Physical Parameters** | None  | Minor/small | Moderate/medium | Significant/large |
| **Surface water and sediments** |  |  |  |  |
| **1.1** Would the project pose the risk of clearance of vegetation that may result an increase in level of suspended solids washing into the rivers? |  | Small  |  |  |
| Yes, surface water contamination and sedimentation are non point source pollution that may be contaminated by pollutants. The same water travels to fields and agriculture and also causes ground water contamination when stored in ponds and wells. The transverse movement of sediments increases pollution when travelling with surface water. The high amount of sediments is a major cause of the chemical pollution in the environment. The project does not pose the risk of clearance of vegetation that may result in an increase in level of suspended solids washing up in the river. |
| **1.2** Would the project contaminate the surface water, catchment boundaries and overland flow paths? | None  |  |  |  |
| No. The project will not contaminate the surface water because the waste is not disposed in rivers or ponds. The e–waste is collected, stored and auctioned by the relevant ministries. |
| **1.3** Would the project contaminate the surface water by storing obsolete waste in the premises of the facility? | None  |  |  |  |
| No. The project will not contaminate surface water. During the site visits it was observed that all obsolete waste is stored in specified areas/separate storage space away from the water sources and waste is not stored in open places.  |  |
| **1.4** Would the project potentially result in the release of pollutants to the environment due to routine or non‐routine circumstances (collection, storage and transportation)? |  | Minor /small |  |  |
| Yes. The project may potentially result in release of pollutants to the environment if it is not collected properly, stored and transported by specialized vehicles. Usually the pollutants are released when storage is at high temperature, or during mixing of waste that releases liquids, and especially when waste is transported to dumpsites, scavenged or transported by uncovered vehicles or disposed in water bodies (ponds, rivers and streams). Neither the Ministry nor the third party have specialized (closed and fabricated) vehicles to transport waste. |
| **1.5** Will the proposed project involve the application of chemicals that may have a negative effect on the environment or human health? | None |  |  |  |
| No. The project will not involve the use of hazardous chemicals that may have negative effects on the environment and human health.  |
| **1.6** Will the project have potential negative impacts on ground water while storing and transporting the electronic waste at facility or outside the facility? |  | Minor /small |  |  |
| No. The waste would be stored at designated places. During storage and collection there is no chance of contaminating the ground waste or any drinking water sources in the facility. However, when the waste is being recycled and processed by a third party there is a probability that a significant quantity of waste is mixed with municipal waste streams, which may cause ground water contamination. |
| **1.7** Will the project make large scale spillage by the movements of vehicles that may results in fuel and oil leaking in to underlying soil resulting contamination of water table? | None |  |  |  |
| No. The project will not make large scale spillage because the quantity of the waste generation even after a year is very small, the movements of vehicle would be less and waste is not stored in open place to contaminate the water table. |
| **1.8** Will the project contaminate the ground water during the recycling/reprocessing of the waste? |  | Minor /small |  |  |
| Yes. The practices in place may contaminate the ground water if the waste is recycled in inappropriate methods and reprocessing is not regulated. |
| **1.9** Would the project pose a risk of contaminating drinking water sources | None  |  |  |  |
| No. The project will not contaminate drinking water sources. |
| **1.10** Would the project deplete the ground water if it is not properly disposed? |  | Minor /small |  |  |
| Yes. The project may deplete the ground water if it is not properly disposed**.** |
| **Air emissions and ambient air quality**  |  |  |  |  |
| **1.11** Would the project result in an increase in the level of dust and particulate matter in the air surrounding the site? | None  |  |  |  |
| No. The project will not cause increase in the level of dust and particulate matter in the air surrounding the site. |
| **1.12** Would the project result in indoor air pollution while transporting or sorting the waste? |  | Minor /small |  |  |
| Yes. Broken tungsten tubes, CRT tubes and sorting the waste may cause indoor air pollution. |
| **1.13** Will there be any impact upon air quality during the decommissioning phase? | None  |  |  |  |
| No, no impact would occur in the decommissioning phase. The withdrawal of IT equipment is not likely to contaminate the air quality due to non-existence of large quantity of gaseous materials.  |  |  |  |  |
| **1.14** Would the project release the green house gases, oxides of sulfur and nitrogen? |  | Minor /small |  |  |
| Yes. A small quantity of greenhouse gases would be released by operating printers, photocopiers, toners etc. |
| **1.15** Would the project activity release toxic chemicals that cause indoor air pollution? |  | Minor/small |  |  |
| Yes. A small quantity of toxic chemicals are expected to be released and can cause indoor air pollution**.** |
| **Noise and Vibration**  |  |  |  |  |
| **1.16** Would the project increase the ambient noise level | None |  |  |  |
| **1.17** Would the project involve the storage, handling of hazardous substances? |  | Minor /small |  |  |
| Yes. The project would involve storage and handling of hazardous substances (obsolete printers, boards, wires, CRT tubes etc.) |
| **1.18** Would the project need processing of the waste that may cause the noise pollution and increase vibration? | None |  |  |  |
| No. The project would not need the processing of the waste that may cause noise pollution and increase vibration |
| **Landscape and visual amenity**  |  |  |  |  |
| **1.19** Would the project include above ground installation that may alter the views to, from or beyond the site? | None |  |  |  |
| No. The project would not include above ground installation that may alter the views to, from or beyond the site. |
| **Soil and land use** |  |  |  |  |
| **1.20** Would the project result in the clearance of the vegetation that may increase soil erosion and may alter the surface temperature of the surface soil layers? | None |  |  |  |
| No. The project will not include the clearance of vegetation. |
| **1.21** Would the project lead to the compaction and water logging of soil that may expose soil to erosion and may alter the composition of the soil structure? | None |  |  |  |
| No. The project would not lead to the compaction and water logging of soil. |
| **1.22** Would the project affect agricultural land? | None |  |  |  |
| No.  |
| **Climate Change Mitigation and Adaptation** |  |  |  |  |
| **1.23** Will the proposed project result in significant greenhouse gas emissions or exacerbate climate change? | None |  |  |  |
| No. No significant greenhouse gas emissions are expected due to project implementation. |
| **1.24** Would the potential outcomes of the project be sensitive or vulnerable to potential impacts of climate change? | None |  |  |  |
| No, the project is not sensitive or vulnerable to potential impacts of climate change. |  |  |  |  |
| **1.28** Is the proposed project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future? | None |  |  |  |
| No, the proposed project directly or indirectly will not increase social and environment vulnerability to climate change now or in future. |
| **ESS-2: LABOUR and WORKING CONDITIONS** |
| **2.1** Would elements of project construction, operation, or decommissioning pose potential safety risks to local communities? | None |  |  |  |
| No, there will be no impact on communities.  |
| **2.2** Does the project involve large‐scale infrastructure development (e.g. dams, roads, buildings)? | None |  |  |  |
| No. The project will not involve large‐scale infrastructure development. |
| 2.3 Does the project pose high risk to the workers/laborers? | None |  |  |  |
| The project will not pose high risk to the workers. |
| **2.4** Will the project pollute the workplace environment? | None |  |  |  |
| There will beno pollution of the workplace environment. |
| **ESS-3: RESOURCE EFFICIENCY, POLLUTION PREVENTION and MANAGEMENT** |
| **3.1** Would the project potentially result in the release of pollutants to the environment due to routine or non‐routine circumstances with the potential for adverse local, regional, and/or trans boundary impacts? | No  |  |  |  |
| No, the project would only release pollutants at a small scale during local level transporting or while dealing with waste at facilities or at reprocessing units. |
| **3.2** Would the proposed project potentially result in the generation of waste (both hazardous and non‐hazardous)? |  | Minor /small |  |  |
| No. The proposed project will not potentially result in the generation of waste. |
| **3.3** Will the proposed project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials?  |  | Minor /small |  |  |
| No. The project would involve minor releases of chemicals. |
| **3.4** Does the project include activities that require significant consumption of raw materials, energy, and/or water? | None  |  |  |  |
| No. The project will not include activities that require significant consumption of raw materials, energy, and/or water. |
| **ESS-4: COMMUNITY HEALTH and SAFETY** |
| **4.1** Would the project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)? |  | Minor /small |  |  |
| Yes, the project would pose some potential risks while storing, transporting and disposing the e-waste |
| **4.2** Would the project result in potential increased health risks (e.g. from water‐borne or other vector‐borne diseases or communicable infections such as HIV/AIDS)? |  | Minor /small |  |  |
| Yes. The project may have some health risks (other than communicable infection) if the e-waste is mixed with water. Third parties after extraction and reprocessing waste can potentially dispose the e-waste in water bodies.  |
| **4.5** Does the project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction, operation, or decommissioning? |  | Minor /small |  |  |
| Yes. The project may have some risk related to occupational health due to physical, chemical and radiological hazards. |
| **4.6** Does the project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)? |  | Minor /small  |  |  |
| No. The project will not be engaging security personnel. |
| **ESS-5: LAND ACQUISITION, RESTRICTION ON LAND USE AND INVOLUNTARY RESETTLEMENT** |
| **5.1** Would the project potentially involve temporary or permanent and full or partial physical displacement? | None |  |  |  |
| No. The project would not involve temporary or permanent and full or partial physical displacement. |
| **5.2** Would the project possibly result in economic displacement (e.g. loss of assets or access to resources due to land? | None |  |  |  |
| No. The project would not result in economic displacement. |
| **5.3** Would the proposed project possibly affect land tenure arrangements and/or community-based property rights or resources? | None |  |  |  |
| No. The proposed project would not affect land tenure arrangements and/or community-based property rights or resources. |
| **ESS-6: BIODIVERSITY CONSERVATION and SUSTAINABLE MANAGEMENT OF LIVING NATURAL RESOURCES.** |
| **6.1** Would the project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? | None |  |  |  |
| No. The project would not potentially cause adverse impacts to habitats. |
| **6.2** Is there any project activity that may have potential impacts on parks, natural reserve or local community)  | None |  |  |  |
| No. There are no such project activities. |
| **6.3** Does the project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? | None  |  |  |  |
| No. The project does not involve construction rehabilitation that may cause adverse impacts on habitats and ecosystems. |
| **6.4** Would the project activities pose risks to endangered species? | None  |  |  |  |
| No. The project would not involve landfill site or dumping, so there is no risk for endangered species. |
| **6.5** Would the project pose habitat loss and fragmentation? | None |  |  |  |
| No, The project would not pose habitat loss and fragmentation. |
| **ESS-7: INDIGENOUS PEOPLE/LOCAL COMMUNITIES** |
| **7.1** Are indigenous peoples present in the project area (including project area of influence)? Any health impact to them? | None |  |  |  |
| No. There are no indigenous people in the project area.  |
| **7.2** Is it likely that the project or portions of the project will be located on lands and territories claimed by indigenous peoples? | None |  |  |  |
| No. The project will not be operating on land or territories claimed by IPs. |
| **7.3** Would the proposed project potentially affect the rights, lands and territories of indigenous peoples? | None  |  |  |  |
| No. The project will not affect the rights, land, and territories of IPs.  |
| **7.4** Does the proposed project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples? | None  |  |  |  |
| No. The project will not be utilizing or commercially developing natural resources on lands and territories claimed by IPs |
| **7.5** Would the project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples? | None  |  |  |  |
| No. The project will not be affecting the traditional livelihoods, physical and cultural survival of IPs.  |
| **ESS-8: CULTURAL HERITAGE** |
| **8.1** Will the proposed project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values? | None  |  |  |  |
| No. |
| **8.2** Would the project potentially affect the Cultural Heritage of indigenous peoples? | None  |  |  |  |
| No. |
| **ESS-9: FINANCIAL INTERMEDIARIES NA** |
| **ESS-10: STAKEHOLDER ENGAGEMENT and INFORMATION DISCLOSURE****(N.B. The reference to “significant/large” impacts in this sub-section is to beneficial impacts as a result of outreach and communication activities undertaken by the Project)** |
| **10.1** would the project help to improve information flows between proponents and different stakeholder groups, improving the understanding and ‘ownership’ of a project? |  |  |  | Significant /large |
| Yes, the project will improve information flows between proponents and different stakeholder groups |
| **10.2** Would the engagement enable project proponents to better respond to different stakeholders’ needs? |  |  |  | Significant/large |
| Yes,the engagement will enable better responses to stakeholder needs |
| **10.3** would the project help to identify important environmental characteristics or mitigation opportunities that might be overlooked? |  |  |  | Significant /large |
| Yes,the project will help to identify important environmental characteristics or mitigation opportunities that might be overlooked |
| **10.4** Would the project ensure that the magnitude and significance of impacts has been properly assessed; and improves the acceptability and quality of mitigation and monitoring process? |  |  |  | Significant /large |
| Yes,the project will ensure that the magnitude and significance of impacts has been properly assessed. |
| **10.5** Would the project potentially engage the stakeholders, implementing agencies and community workers while implementing the information disclosure and waste management plan |  |  |  | Significant /large |
| Yes, the project willengage the stakeholders, implementing agencies and community workers while implementing the information disclosure and waste management plan |

As given in table above, for ESS3, Resource Efficiency, Pollution Prevention and Management, the aspects of waste management in the department/ministries consisting of solid waste management, water and sanitation, occupational health, and safety of healthcare workers are relevant to this project activities. Mitigation and management of these issues has an overarching impact on health of the workers reducing the risk, safety and health hazards, and providing a safe environment friendly infrastructure

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

Proper management of electronic waste can minimize the risks both within and outside the departments. The first priority in this respect is waste segregation, preferably at the point of waste generation. Other important steps are institution of the waste storage, transportation and its final environment friendly disposal.

Further, the environmental and social aspects related to e-waste management have been assessed using screening matrix as illustrated in the table below:

Table 5.2: Project Activities and Environmental 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 | Healthcare workers | Cultural Issues | Gender Issues | Recreational Sites | Historical/ | Archeological Sites |
| Waste segregation | N | N | N | N | N | N | N | N | N | N | N | N | 0 | -2 | 0 | N | -2 | N | N | N | N | N |
| Waste collection | N | N | N | N | N | N | N | N | N | N | N | N | -1 | -1 | +1 | N | -1 | N | N | N | N | N |
| Waste storage | N | N | N | N | N | N | N | N | N | N | N | -1 | N | -2 | N | N | -1 | N | N | N  | N | N |
| Waste transportation | -1 | -1 | N  | N  | N | N | N | N | N  | N  | N | N | -1 | -1  | N | N | -1 | N | N  | N | N | N |
| Waste disposal (burning) | -1 | -2 | N  | N  | -1 | N  | N | N  | N  | N  | N  | N | N | -2 | +1 | N | -1 | 0 | 0 | 0 | N | 0 |
| Waste Disposal (burial) | -2  | 0 | 0 | N  | N  | N  | N  | N  | N  | N  | N  | N  | N  | -1 | N  | N  | -1 | N  | N  | N  | N  | N  |
| Waste Disposal (incineration)  | 0 | -2  | 0  | N  | N  | N  | N  | N  | N  | N  | N  | N  | N  | -2  | N  | +1 | -2  | N  | N  | N  | N  | N  |
| Sewage disposal | N  | N  | -1 | -1 | -1 | 0 | N | 0  | N | N | -1 | N | N  | -1 | N | N | 0 | N | N | 0 |  | 0 |
| Renovation/rehabilitation | -1 | -1 | -1 | -1 | -1 | -1 | 0 | N | -1 | -1 | 0 | N | N | N | +2 | -1 | -1 | N | N | -1 | N | N |

With the help of the E&S matrix, interaction of various project activities with various components/aspects of the environment was identified. This interaction was then categorized with respect to its severity of impacts, as follows:

Table 5.3: Impact Screening Score

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

With the help of the above ranking, all impacts low or high are identified to mitigate for cost effective solution for the protection of environment and human health. The following impacts were categorized as “Low negative” in severity.

* Health hazard for staff, by not following safety protocols, while installing the equipment.
* Improper waste segregation, collection, transportation, storage, and disposal.
* Safety hazards caused by various stages of improper waste management
* Improper inventory system to discourage pilferage
* Indoor air quality and exhaust.
* Contamination of surface area by improper storage and segregation
* Proper ventilation during storage
* Containerization and transportation of the waste
* Number of equipment to be installed
* Personal protection equipment
* During working hours (photo copier, printers, routers, switch board) etc.

With the help of the following matrix, interaction of various project activities with various components/aspects of the environment was identified. This interaction was then categorized with respect to its severity of impacts, as follows:

Table 5.4: Summary of the Impacts

| E&SS | Parameters  | Impacts |
| --- | --- | --- |
| None/insignificant  | Minor /small | Moderate  | Significant  |
| Major  | Severe  |
| ESS-1 | Surface water & sediments |  |  |  |  |  |
| Ground water  |  |  |  |  |  |
| Air emission & ambient air quality |  |  |  |  |  |
| Noise & vibration |  |  |  |  |  |
| Landscape & visual amenity  |  |  |  |  |  |
| Soil & land use  |  |  |  |  |  |
| Climate change mitigation & adaptation |  |  |  |  |  |
| ESS-2 | Labor & working condition  |  |  |  |  |  |
| ESS-3 | Resource efficiency, pollution prevention & management |  |  |  |  |  |
| ESS-4 | Community health & safety |  |  |  |  |  |
| ESS-5 | Land acquisition, land use & involuntary resettlement |  |  |  |  |  |
| ESS-6 | Biodiversity conservation & natural resources. |  |  |  |  |  |
| ESS-7 | Indigenous people/local communities |  |  |  |  |  |
| ESS-8 | Cultural heritage |  |  |  |  |  |
| ESS-9 | Financial intermediaries  | NA |  |  |  |  |
| ESS-10 | Stake–holder engagement & information disclosure. |  |  |  |  |  |

Based on the above screening results, the proposed project has been assessed as **low risk** for environmental impacts and **low risk** for social impact. The risk rating for screening results falls between insignificant to minor impacts. The risk rating is below 6. The likelihood matrix of the project identifies some impacts that may occur at some time, and some that are not likely to occur in normal circumstances.

## Impacts and Mitigation Measures

There are no likely significant impacts of the proposed project that would suggest that a sub threshold ESIA is warranted. The proposed project involves e-waste management practices, which will cause short-term temporary or negligible impacts on the environment within the ministries because very small quantity of the waste is being generated in a year. The same waste is being stored in a warehouse and then after every year the waste will be auctioned through a contractor.

According to the assessment results of this study, it has been established that the prevailing practices of e-waste management, especially in the informal sector poses potential risks for having adverse impacts on the environment including soil and water quality, biodiversity and community health. Currently, the informal sector is not following any standardized procedures for overall handling of e-waste, which has serious repercussions on the surrounding areas. It must be noted that based on the principle of proportionality, the likelihood of generation of e-waste as a direct result of this project activity is minimal. However, given the prevailing practices of e-waste management, the project could in the long run, result in generation of obsolete ICT which could accordingly have significant direct and indirect negative impacts on the bio-physical environment. In order to analyze the extent of issues related to e-waste management, field studies were conducted along with interviews of Ministry of Environment Local Government and Rural Development (MELGRD), Pakistan Environmental Protection Agency (Pak EPA), and World Wide Fund for Nature (WWF- Pakistan). Interviews were conducted at the following sites: Rawalpindi (Imperial Market, College Road, Dubai Plaza, Bhabra Bazaar and Raja Bazaar); Lahore (Mayo Hospital, Shah Alami, Hafeez Center, Bandh Road, Shahdara, Township) and Shershah Karachi. Field visits were carried out to assess waste reprocessing, reuse, recycling and its final disposal. The visits were conducted at Dubai Plaza Sixth road, Raja Bazar, Imperial Market, Defense Road Sialkot, Railway Station Mor Gujranwala and two facilities (Barkat Market and Bandh Road) Lahore. Overall, all facilities observed were extracting and reprocessing the waste. The informal settings were found to extract copper, aluminum, plastic, gold and ferrous from the waste. The cleanliness of the settings was not maintained, and occupational safety of the workers was not ensured. It was observed that no worker was found to use the PPEs. Manual handling without safety measures, storage and reprocessing waste has increased health risks among the workers. A large quantity of the waste after extracting metals is disposed in open dump sites, which contaminate the soil and ground water.

## E-waste Generation in the Project

The e-waste generation is proportionately based on the exact numbers of equipment to be disposed of. Overall, the environmental risk of e-waste generation associated with the replacement of IT equipment in three organizations i.e. MOC, BoI, and TDAP is low, and does not have any adverse impacts. Therefore, it is proposed that the environmental and social screening be carried out to assess the exact quantity and types of IT equipment and the quantum of obsolete IT equipment that would be generated and prepare an e-waste management plan accordingly. The objectives of the screening activity are to:

• Develop a baseline assessment of current e-waste quantities and challenges in project areas;

• Identify relevant stakeholders to support the waste management system;

• Evaluation of the social and environmental impacts of the current management system;

• Develop a roadmap for proper e-waste management, as well as recommendations for advocacy efforts.

The preliminary details of the total types and quantity of IT equipment that will be needed by the project are summarized in the table below, as provided by the MOC.

Table 5.5: IT Equipment

| S/N | Items  | As per survey conducted by NITB | Confirmed by Divisions |
| --- | --- | --- | --- |
| **1** | Workstation (Nodes) | 138 | 167 |
| **2** | Computers  | 70 | 105 |
| **3** | Scanners  | 32 | 42 |
| **4** | LAN Nodes | 138 | 224 |
| **5** | Printers  | -- | 27 |
| **6** | Microsoft window server 2016 edition with 5 CALS with each server | -- | 02 |
| **7** | Kaspersky End point security business. Lattest version 3 years. | -- | 167 |
| **8** | VMWare v Sphare ESXi TM 6.5, standard hypervisor server-- | -- | 04 |
| **9** | Server machine | -- | 02 |
| **10** | Firewall with 3 years license, complete security bundles | -- | 02 |
| **11** | Layer 3 core switch | -- | 01 |
| **12** | Layer 2 switch (24 port) | -- | 02 |
| **13** | Layer 2 switch (48 port) | -- | 04 |
| **14** | 42 U Rack with KVM consol | -- | 01 |
| **15** | 42 rack with fan & PDU | -- | 01 |
| **16** | Data rack for switchhes 12 U with all accessories | 03 | 03 |
| **17** | SFP 12\*1G SFP LX | 12 | 12 |
| **18** | UPS 6.0 KVA Rack Mount APC or equivalant | 01 | 01 |
| **19** | UPS 3 KVA Rack Mount APC or equivalant | 01 | 01 |

In order to address the associated environmental impacts of e-waste management, an E-Waste Management Plan is proposed which shall cover the following associated impacts and hazards along with the mitigation measures:

### Health Hazards

**Impacts**

Poor management of e- waste causes air pollution and respiratory diseases. Although the project has no significant potential hazards and very low risk are associated with the installation of IT equipment, but still there is a need to mitigate the issues. These impacts occur by not following the waste management rules, standard protocols and trainings of the workers.

**Mitigation Measures**

The health hazards are direct in nature, following the standard protocols; trainings of the workers regarding the collection and storage of the waste and proper knowledge of the impacts are the important aspects to reduce the hazards.

Moreover, proper management of electronic waste can minimize the risks both within and outside the department. 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, waste reduction, avoidance of hazardous substances whenever possible (e.g. PVC-containing products, mercury lights, switch boards, paints etc), 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 institutions are generally associated with handling of (bare wires, cutters, paints, mother boards, broken CRT tubes equipment), gases, and other similar broken equipment. These hazards include risk of cuts, pricks, gas poisoning, and other bodily injuries. The workers, staff as well as the visitors are susceptible to these safety hazards. Moreover, the safety hazards occur due to the non-compliance of the safety protocols. The handling of the waste, storage and transporting the waste to warehouses causes safety risks. Improper use of the personal protection equipment or lack of PPE or improper PPEs could have health risks.

**Mitigation Measures**

Strictly following standard operating procedures to handle ICT waste and proper use of personal protective equipment (PPE) particularly prick-proof gloves and masks is of foremost importance to avoid safety hazards associated with paints, printers, wires, broken CRT tubes sharps, gases, and others.

### Soil Contamination

**Impacts**

At project sites minor impacts are expected due to installing the IT related equipment and storing the obsolete waste. If it is not properly stored, the leakage may lead to surface contamination.

**Mitigation Measures**

The obsolete waste will be collected in closed containers and waste will be segregated properly. For storage dry places will be recommended. Waste will not be disposed in open dump sites or placed in open soil surface.

### Water Contamination

**Impacts**

Activities that can cause soil contamination can also cause water contamination.

Spillage of contaminated effluents such as arsenic, ferrous from CRT and chemicals (paints, colors) during the facility renovation/rehabilitation activities can also contaminate the water resources.

**Mitigation Measure**

Proper storage of obsolete waste, safe transportation to warehouse, training for storage and operating standard protocols can reduce the risks and this would be the prime responsibility of institutions producing waste. The ministries will train the staff that are collecting and transporting waste to warehouses and storing waste before they auction it.

### Air Quality Contamination

**Impacts**

The project will cause low level air contamination by using printers, photocopiers, desktops and other switch boards, due to the low quantity of gaseous materials. Closed rooms and poor ventilation may increase the pollution level. Obsolete waste, after being stored, may also cause air pollution if it is not stored in properly ventilated rooms or places.

**Mitigation Measure**

All photocopier, printers will must be placed in ventilated rooms. The obsolete waste will also be placed in ventilated rooms. Exhaust fans should be installed in the room and obsolete waste should be transported frequently to the storeroom.

### Archeological Sites

There are no known archaeological monuments within the proposed development site. The proposed development will not give rise to impacts upon any archaeological sites or deposits. No likely significant impacts are considered to occur. Regarding anticipated impacts of e-waste disposal on archeological site will be determined during the development of e-waste management plan.

### Impacts on Biodiversity

***Flora and Fauna*:**

The project does not envisage any adverse effects on the biodiversity, since the project interventions are limited to the procurement of ICT Equipment in existing, well-established commercial areas.

# Summary of Mitigation Measures

The Environmental & Social Risk Assessment showed that the proposed project has been assessed as low risk for the environmental impacts and low risk for the social impacts at all institutions and ministries. During the stakeholder’s consultations at MOC, TDAP and BOI, it was established that there are no formalized e-waste management practices currently adopted by any of the Project’s implementation partners. At national and provincial levels, the departments only follow the general auction policy according to the rules of business, under general administration for all redundant office furniture and obsolete ICT equipment is auctioned. The average e-waste generation/year is about 600kg as per primary data collected from the MOC. In general practice, the ICT waste is collected and stored in a designated storeroom for auction. There is no certified contractor who may ensure environmentally safe practices for proper transportation and disposal of e-waste. It was analyzed after consultation meetings with employees that they are not trained and sensitized regarding the hazards associated with improper collection and disposal of e- waste. In addition, occupational health & safety protocols, 2005 are not implemented in any of the relevant departments of the project.

Similarly, field visits were conducted in Rawalpindi, Sialkot, Gujranwala and Lahore to assess the final disposal of the e-waste. During field visits, it was observed that the e-waste is brought to the market, where it either enters the second-hand market (if in working condition or refurbishable) or goes directly into the scrap market. In scrap markets the e-waste is collected and manually dismantled. The dismantled parts are then sold to various stakeholders such as metal extractors, recyclers etc. Most of the components are extracted and recycled. Plastics, gold, silver, copper and aluminum are the most sought-after materials. Apart from manual dismantling, informal recycling also involves burning of wire for extraction of copper, toner sweeping to extract aluminum; acid dipping etc. workers associated with reprocessing were working without wearing any PPEs. As there is no EPR program or formal recycling facilities in Pakistan, any products that have no resale and reuse value eventually end up in the informal recycling stream.

The following are the key mitigation measures to address the identified impacts and risks.

* A comprehensive e-waste management plan will be prepared as a guidance tool for the proper inventory waste, collection, storage and transportation within six months after onboarding the E&S staff after project effectiveness.
* Government employees involved in electrical and electronic goods handling will be provided with training and information about handling e-waste as well as about its safe disposal. This training should include simple information that describes what e-waste is, what the hazards are, and how to handle, package, store and dispose it safely. This activity will be completed after onboarding of the E&S staff and after project effectiveness.
* At institutional level a revision in the general auction policy will be initiated by first year of project implementation and completed as per given timeline by the govt approval procedures to address issues related to environmentally safe practices for ICT equipment collection, storage, transportation and disposal at all levels. This would also encompass the development of e-waste Standard Operating Procedures (SOPs) for contractors as well as the government departments.
* Appropriate suitable guidelines will be prepared for producers/manufacturers, importers, assemblers and recyclers as well as for the government organizations that are involved in the formulation and enforcement of regulations regarding generation, handling and disposal of e-waste within first year of project effectiveness preferably after onboarding the project E&S staff.

Annexure A: Environmental and Social Screening Checklist

|  |  |
| --- | --- |
| TECHNICAL AREAS | ENVIRONMENTAL & SOCIAL SCREENING CHECKLIST IMPACTS  |
| ESS-1: ASSESSMENT & MANAGEMENT OF ENVIRONMENTAL & SOCIAL RISKS & IMPACTS |
| Physical Parameters | None/ Rare | Minor/Small | Moderate/Medium | Significant/large |
| Surface water & sediments |  |  |  |  |
| 1.1 Would the project pose the clearance of vegetation that may result an increase in level of suspended solids washing into the rivers? |  |  |  |  |
| 1.2 Would the project contaminate the surface water, catchment boundaries and overland flow paths? |  |  |  |  |
| 1.3 Would the project contaminate the surface water by storing obsolete waste in the premises of the facility? |  |  |  |  |
| 1.4 Would the Project potentially result in the release of pollutants to the environment due to routine or non‐routine circumstances (collection, storage & transportation)? |  |  |  |  |
| 1.5 Will the proposed Project involve the application of chemicals that may have a negative effect on the environment or human health? |  |  |  |  |
| Ground water |  |  |  |  |
| 1.6 Will the project pose potential impact on the ground water while storing and transporting the electronic waste at facility or outside the facility? |  |  |  |  |
| 1.7 Will the project make large scale spillage by the movements of vehicles that may results in fuel and oil leaking in to underlying soil resulting contamination of water table? |  |  |  |  |
| 1.8 Will the project contaminate the ground water during the recycling/reprocessing of the waste? |  |  |  |  |
| 1.9 Would the project pose to contaminate the drinking water sources |  |  |  |  |
| 1.10 Would the project deplete the ground water if it is not properly disposed? |  |  |  |  |
| Air emission & ambient air quality  |  |  |  |  |
| 1.11 Would the project result in an increase in level of dust and particulate matter in the air surrounding the site? |  |  |  |  |
| 1.12 Would the project result in indoor air pollution while transporting or sorting the waste? |  |  |  |  |
| 1.13 Will there be any impact upon air quality during the decommissioning phase? |  |  |  |  |
| 1.14 Would the project release the greenhouse gases, oxides of sulphur and nitrogen? |  |  |  |  |
| 1.15 Would the project activity releases toxic chemical to cause indoor air pollution? |  |  |  |  |
| Noise & Vibration  |  |  |  |  |
| 1.16 Would the project increase the ambient noise level |  |  |  |  |
| 1.17 Would the project involve the storage, handling of hazardous substances? |  |  |  |  |
| 1.18 Would the project needs processing of the waste that may cause the noise pollution and increase vibration? |  |  |  |  |
| Land scope & visual amenity  |  |  |  |  |
| 1.19 Would the project include above ground installation that may alter the views to, from or beyond the site.? |  |  |  |  |
| Soil & land use |  |  |  |  |
| 1.20 Would the project results into the clearance of the vegetation that may increase soil erosion and may alter the surface temperature of the surface soil layers? |  |  |  |  |
| 1.21 Would the project lead to the compaction and water logging of soil that may expose soil to erosion and may alter the composition of the soil structure? |  |  |  |  |
| 1.22 Would the project affect the agriculture land? |  |  |  |  |
| 1.23 Would the project need site to process the waste for recycling? |  |  |  |  |
| 1.24 Would the project propose the landfill site for the final disposal of the waste? |  |  |  |  |
| Climate Change Mitigation and Adaptation |  |  |  |  |
| 1.25 Will the proposed Project result in significant greenhouse gas emissions or may exacerbate climate change? |  |  |  |  |
| 1.27 Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change? |  |  |  |  |
| 1.28 Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future? |  |  |  |  |
| ESS-2: LABOUR & WORKING CONDITION |
| 2.1 Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities? |  |  |  |  |
| 2.2 Does the Project involve large‐scale infrastructure development (e.g. dams, roads, buildings)? |  |  |  |  |
| 2.3 Does the project pose high risk to the workers/labours |  |  |  |  |
| 2.4 will the project pollute the workplace environment |  |  |  |  |
| ESS-3: RESOURCE EFFICIENCY, POLLUTION PREVENTION & MANAGEMENT |
| 3.1 Would the Project potentially result in the release of pollutants to the environment due to routine or non‐routine circumstances with the potential for adverse local, regional, and/or transboundary impacts. |  |   |  |  |
| 3.2 Would the proposed Project potentially result in the generation of waste (both hazardous and non‐hazardous)? |  |  |  |  |
| 3.3 Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials?  |  |  |  |  |
| 3.4 Does the Project include activities that require significant consumption of raw materials, energy, and/or water? |  |  |  |  |
| ESS-4: COMMUNITY HEALTH & SAFETY |  |  |  |  |
| 4.1 Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)? |  |  |  |  |
| 4.2 Would the Project result in potential increased health risks (e.g. from water‐borne or other vector‐borne diseases or communicable infections such as HIV/AIDS)? |  |  |  |  |
| 4.5 Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning? |  |  |  |  |
| 4.6 Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)? |  |  |  |  |
| ESS-5: LAND ACQUISITION, RESTRICTION ON LAND USE AND INVOLUNTARY RESETTLEMENT |
| 5.1 Would the Project potentially involve temporary or permanent and full or partial physical displacement? |  |  |  |  |
| 5.2 Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land? |  |  |  |  |
| 5.3 Would the proposed Project possibly affect land tenure arrangements and/or community based property rights or resources? |  |  |  |  |
| ESS-6: BIODIVERSITY CONSERVATION & SUSTAINABLE MANAGEMENT OF LIVING NATURAL RESOURCES. |
| 6.1 Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? |  |  |  |  |
| 6.2 Is there any Project activity that may have potential impacts on parks, natural reserve or local community)  |  |  |  |  |
| 6.3 Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? |  |  |  |  |
| 6.4 Would the Project activities pose risks to endangered species? |  |  |  |  |
| 6.5 Would the project pose habitat loss & fragmentation? |  |  |  |  |
| ESS-7: INDIGENOUS PEOPLE/LOCAL COMMUNITIES |
| 7.1 Are indigenous peoples present in the Project area (including Project area of influence)? |  |  |  |  |
| 7.2 Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples? |  |  |  |  |
| 7.3 Would the proposed Project potentially affect the rights, lands and territories of indigenous peoples? |  |  |  |  |
| 7.4 Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples? |  |  |  |  |
| 7.5 Would the Project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples? |  |  |  |  |
| ESS-8: CULTURAL HERITAGE |
| 8.1 Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values? |  |  |  |  |
| 8.2 Would the Project potentially affect the Cultural Heritage of indigenous peoples? |  |  |  |  |
| ESS-9: FINANCIAL INTERMEDIARIES NA |
| ESS-10: STAKE-HOLDER ENGAGEMENT & INFORMATION DISCLOSURE |
| 10.1 would the project help to improve information flows between proponents and different stakeholder groups, improving the understanding and ‘ownership’ of a project? |  |  |  |  |
| 10.2 Would the engagement enable project proponents to better respond to different stakeholders’ needs? |  |  |  |  |
| 10.3 would the project helps to identify important environmental characteristics or mitigation opportunities that might be overlooked? |  |  |  |  |
| 10.4 Would the project ensure that the magnitude and significance of impacts has been properly assessed; and improves the acceptability and quality of mitigation and monitoring process? |  |  |  |  |

Annexure B: Indicative E-Waste Management Plan

A generic e-waste management plan has been developed as follows:

**Structure of E-Waste Management Plan**

The e-waste management plan should broadly cover, but not limited to the following areas:

* *National Policies, Regulations and International Commitments (MEAs):* Review of relevant existing national and provincial legislation, policies, and strategies governing the e-waste management in Pakistan. Review regional and international obligations and other legal or pertinent information that may have direct or indirect linkages with e-waste management and environmental as well as human health.
* *Data Collection and Analysis:* Inventory of the types of e-waste being generated by the organization along with the volume, composition and disposal costs.
	+ Review of evaluation/quantity of the environmental and health hazards associated with the types of disposed e-waste and adopted disposal methods.
	+ Identify local e-waste destination/s, transport modes and disposition measures, thereby charting the e-waste pathway.
* *E-Waste Mitigation and Monitoring Plan*: Identification of measures and methods for reducing and managing e-waste generation onsite as well as special measures for handling such waste.
	+ Illustration and delineation of appropriate system encompassing recommendations of local and international best practices for e-waste disposal methods, keeping in view the local availability and feasibility and is therefore, in line with Good International Practices as well as guidelines that define safe, responsible and adequate e-waste management.
	+ Development of SOPs for the vendor, in order to ensure safe and effective disposal of e-waste as required including specifications for bid/contractors outlining procedures for effective disposal techniques.
	+ Monitoring mechanism
* *Institutional Arrangements and Capacity Building:* Specification and allocation of roles and responsibilities for the e-waste management plan.
	+ Development of training topics and schedule for capacity building exercises in order to ensure effective implementation of the e-waste management plan.
* *Budget Cost Allocation*: Estimation of budget cost for the implementation of e-waste management plan.

*Environmental Guidelines for Contractor (Third Party) for E-Waste Disposal*

The following guidelines shall be an integral part of the bidding documents for the third party contractors hired for disposing off the e-waste:

1. The Borrower will make reasonable efforts to ascertain that third parties who engage contracted workers are legitimate and reliable entities and have in place labor management procedures applicable to the project that will allow them to operate in accordance with the requirements of Labor Management Procedure as per WB ESS-2.
2. After the end of useful life, the e-waste shall be disposed off by hiring only a certified contractor, who shall comply with the following:
	1. *Have a license of regulatory authority/agencies with respect to transportation and disposal and obtain chain of custody documentation to the final destination.*
	2. *Dispose at licensed disposal sites which operate at acceptable standards of disposal.*
3. The Borrower will establish procedures for managing and monitoring the performance of such third parties.
4. In addition, the Borrower will incorporate the requirements of this ESS into contractual agreements with such third parties, together with appropriate noncompliance remedies.
5. In the case of subcontracting, the Borrower will require such third parties to include equivalent requirements and noncompliance remedies in their contractual agreements with subcontractors.
6. Contracted workers will have access to a grievance mechanism.

In cases where the third party employing or engaging the workers is not able to provide a grievance mechanism to such workers, the Borrower will make the grievance mechanism available to the contracted workers.

*Generic E-waste Mitigation and Monitoring Plan (EWMMP)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***S. No.*** | ***Anticipated Impacts*** | ***Mitigation Measures*** | ***Monitoring*** | ***Responsibility*** | ***Implementation Budget*** |
| *In-house storage and guidelines for e-waste management* |
| 1 | Accidental breakage of e-waste could cause adversely affect human and environmental healthBlockage of public pathways which could lead to human injuryImproper storage of e-waste is esthetically unpleasant | For the implementation of proposed mitigation measures, a dedicated staff shall be hired by the implementation depts. Adequate hands on training on handling of E waste will be provided to the staff. Separate E-Waste from other wastes to facilitate collection, treatment and recyclingDispose E-Waste generated to a certified contractor for E-Waste collectionSell or donate E-Waste to a licensed refurbisherTake-back equipment to the manufacturer, importer or assembler, if they allow it.Be responsible for following recommended disposal methods or procedures especially dates of expiry or end of usage period of the productConduct awareness and sensitization targeting the users of the electronic devices to ensure that they engage in best practice for E-waste management. | Agreement with the retailer/manufacturer stating that the e-waste shall be taken back by after the useful life of the electronic equipment is over if this option is allowedInclusion of e-waste management in the training module | MOCProcurement Department | PKR TBDStaff cost for the project life included onetime training |
| *Transport of E-waste* |
| 2 | Impacts on human healthImpact on air, water and land resources |  E-Waste is properly stored in the transportation vehicleEnsure vehicles transporting E-Waste obtain a waste transport license from relevant authorityEnsure E-Waste is disposed in licensed dumping sites/contractor | Proper registered and licensed vehicle modified for safely transporting the e-waste to the site | MOC | PKR TBD for transport of e-waste to designated identified contractor/disposal site |
| *Disposal of E-waste* |
| 3 | Air Pollution through improper disposal which leads to release of toxic, hazardous and carcinogenic gaseous emissions | Procure Electronic devices from credible manufactures to avoid purchasing second hand, refurbished or obsolete devices with a short shelf life or already E-wasteRecycle all E-waste;Establish E-Waste Collection Centers in the offices; including collection bins/receptacles;Transport all E-waste’s to the identified e-waste recycler/recycling plantConduct awareness and sensitization targeting the users of the electronic devices to ensure that they engage in best practice for E-waste management. | Warranty for Electronic Devices purchasedCredibility of manufacturers supplying the electronic devicesAvailability of E-waste receptacles in each schoolNumber of awareness and training conducted for users of electronic devices on E-wasteCertificate of disposal of E-wastes given by the Recycler Plant (if identified) that E-waste from the organization /PGG Program have been successfully disposed | MOC |  PKR TBD for procurement of recycling receptacles PKR TBD for transport of e-waste to designated identified contractor |
| 4 | Human Health Impacts due to poor disposal. Electrical and electronic equipment contain different hazardous materials, which are harmful to human health and the environment if not disposed of carefully. |
| 5 | Pollution of land resources including landfills Electrical and electronic equipment contain different hazardous materials, which are harmful to human health and the environment if not disposed off carefully. |
| 6 | Pollution of water bodies Electrical and electronic equipment contain different hazardous materials, which are harmful to human health and the environment if not disposed of carefully. |
| *7* | *Growth of informal E-waste disposal centers.**Improper and indiscriminate disposal of E-waste is likely to lead to the further encouragement for mushrooming of informal waste disposal centers which further exacerbates the problem of E-waste* |

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