



FEDERAL REPUBLIC OF SOMALIA
MINISTRY OF ENERGY AND WATER RESOURCES
(MoEWR)

FINAL REPORT:

**Component 3: Stand-Alone Solar PV System Access to Public
Institutions (Education & Health)**

**Environmental and Social Management Plan (ESMP) for the
Health Facilities in Southwest**

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SESRP - PIU

Table of Contents

LIST OF TABLES	<i>iv</i>
LIST OF FIGURES	<i>iv</i>
LIST OF ABBREVIATIONS	<i>v</i>
1. INTRODUCTION	1
1.1 Project Background	1
1.2 Solar PV Systems for Existing Health Institutions	1
1.3 Environmental and Social Management Plan (ESMP)	2
1.3.1 Justification for the ESMP	2
1.3.2 ESMP Approach and Methodology	2
1.3.3 ESMP Content	3
2. SUB-PROJECT DESCRIPTION	4
2.1 Site Reconnaissance	4
2.2 The PV System	10
2.3 Construction Phase Activities	10
2.4 Construction Supervision and Safety	11
2.5 Operation Phase Activities	12
2.6 Decommissioning Phase Activities	12
2.7 Use of Services and Resources	12
2.8 Products, By-Products, and Waste	13
3. LEGAL FRAMEWORK	14
3.1 Somali Legal Framework and Conventions	14
3.2 World Bank Group’s Environment and Social Framework	15
4. STAKEHOLDER CONSULTATIONS	18
4.1 Introduction	18
4.2 Stakeholder Concerns	18
5. ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS	20
5.1 Positive Impacts during the Construction Phase	20
5.2 Positive Impacts during the Operating Phase	20
5.3 Positive Impacts during Decommissioning Phase	20
6. ENVIRONMENTAL and SOCIAL MANAGEMENT AND MONITORING PLAN	22
6.1 Mitigation Measures	22
6.2 Monitoring Measures	22
6.3 Incident Reporting	36
6.3.1 Incident Reporting and Initial Communications	36
6.4 Grievance Redress Mechanism	38
6.4.1 GRM Institutional Framework.....	38
6.4.2 Security Management Plan	42

7.	<i>E&S Liabilities of the Contractor</i>	43
7.1	Contractor’s General Responsibilities	43
7.2	Contractor’s Liabilities Onsite	45
8.	<i>Roles and Capabilities at the Ministerial/ PIU Levels</i>	47
8.1	Roles and Capabilities at the Ministerial/ PIU Levels	47
8.2	Proposed Training Plan for this ESMP	48
9.	<i>Annexes</i>	50
	Annex I: WHO Ambient Air Quality Guidelines	50
	Annex II: General Noise Guidelines	51
	Annex III: Noise Limits for Various Working Environments	51
	Annex IV: Summary of Recommended PPE According to Hazard	51
	Annex V: Southwest Health Facility Management Stakeholders	53
	Annex VI: Southwest Facility Users Stakeholder	54

LIST OF TABLES

<i>Table 1-1: Beneficiary Health Facilities per Federal Member States</i>	2
<i>Table 2-1: Survey Findings per Each Proposed Healthcare Facilities</i>	5
<i>Table 2-2: Geographic Locations and Proposed Sites for the New PV System</i>	8
<i>Table 3-1: World Bank Environmental and Social Safeguard Standards</i>	15
<i>Table 4-1: Main Questions and Responses from Stakeholder Engagement</i>	18
<i>Table 5-1: Summary E&S risks and impacts based on receptors and subproject phases</i>	21
<i>Table 6-1: E&S Management and Monitoring Plan</i>	24
<i>Table 6-2: Examples of Indicative Incidents</i>	36
<i>Table 6-3: Examples of Serious Incidents</i>	37
<i>Table 6-4: Examples of Severe Incidents</i>	37
<i>Table 6-5: Potential Grievances, Presentations, and Responding Authority</i>	39
<i>Table 8-1: Proposed E&S Training Program</i>	48

LIST OF FIGURES

Figure 6-1 - Overarching Incident Management and Reporting Process	36
Figure 6-2: GRM Institutional Framework	38

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
BESS	Battery Energy Storage Systems
BSSF	Business Support Services Firm
C-ESMP	Contractor's Environmental and Social Management Plan
COVID-19	Corona Virus 2019
EHSGs	Environmental Health and Safety Guidelines
ESF	Environmental and Social Framework
ESI	Electricity Supply Industry
ESIRT	Environmental and Social Incident Response Toolkit
ESMF	Environmental and Social Management Framework
ESMMP	Environment and Social Monitoring and Management Plan
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
FGS	Federal Government of Somalia
GBV/SH	Gender Based Violence / Sexual Harassment
GIIP	Good International Industry Practice
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HCFs	Health Care Facilities
HIV	Human Immunodeficiency Virus
IDA	International Development Association
ILO	International Labor Organization
IPF	Investment Project Financing
MoEWR	Ministry of Energy and Water Resources
NGO	Non-Governmental Organization
PAPs	People Affected by the Project
PIU	Project Implementing Unit
PPE	Personal Protective Equipment
PV	photovoltaic
SESRP	Somalia Electricity Sector Recovery Project
SMEs	Small Micro Enterprises
SMS	Short Text Message

1. INTRODUCTION

1.1 Project Background

1. The Federal Government of Somalia (FGS) is implementing the Somalia Electricity Sector Recovery Project (SESRP) financed by the International Development Association IDA. The SESRP aims to increase access to lower-cost and cleaner electricity services and to re-establish the Electricity Supply Industry (ESI) in the Project Areas. The FGS has created the Ministry of Energy and Water Resources (MoEWR) which will be in charge of implementing the project. The Ministry also aims to define and implement overall energy sector policies and to regulate the sector. The MoEWR hosts the Project Implementing Unit (PIU). The SESRP comprises the following major components:

- **Component 1 – Distribution network reconstruction, reinforcement, and operations efficiency in the major load centers.** Sub-transmission and distribution network reconstruction and reinforcement in the major load centers through the integration of ESPs’ distribution networks and existing generation to optimize distribution network operations and scale-up of generation capacity.
- **Component 2 – Renewable energy generation optimization.** Hybridization and optimization of existing generation for increased electricity supply through installation of Battery Energy Storage Systems (BESS) and solar PV systems at existing diesel-based generation stations.
- **Component 3 – Electricity services for improved public services delivery (Health and Education).** This component will support activities to provide electricity to existing public facilities in rural and peri-urban areas, underpinned by the nationwide geospatial plan. Key activities under this component are proposed to include standalone solar PV systems augmented by BESS targeting public institutions as the anchor loads and where viable associated distribution networks to connect other loads such as SMEs and households. Besides playing a key role in enablement of community co-benefits, facilities that have access to electricity may be better positioned to attract and retain skilled workers, especially in rural areas. Further, this will equip public service institutions to better respond to emergencies, such as COVID-19.
- **Component 4 - Sector Capacity Enhancement and Project Implementation Capacity Support.** Proposed activities include (a) strengthening of sector governance and regulation to foster autonomy, accountability, and transparency; (b) increasing sector operational efficiency; (c) undertaking of sector integrated planning analytics, including a Sector Least Cost Development Plan - covering generation, transmission, and distribution - and an Electricity Access Plan, particularly for rural areas with related Investment Prospectus – both underpinned by a geospatial least-cost analysis. Activities will also support day-to-day sector undertakings with Business Support Services Firm (BSSF) to re-establish the Somali electricity sector – providing hands-on policy, oversight, operations and management training, and capacity building of sector staff.

1.2 Solar PV Systems for Existing Health Institutions

2. Under Component 3, the SESRP will support the electrification of existing Healthcare Facilities (HCFs) where electricity supply through Solar PV Systems represents the least cost option to improve access to public services in the health sector. The solar PV systems are proposed for installation in existing health facilities both private and public depending on facilities' energy demand and thus vary from facility to facility. The generation system will combine solar PV and battery storage. New interventions will be implemented in approximately 150 health facilities (including hospitals, health centers/units, and maternal health clinics) across all FMS with approximate total demand of 20-300kW. In particular, this report targets the provision of Solar PV System infrastructure for health facilities across FMS; Hirshabelle, Southwest, Galmudug, Jubaland, and Banadir. Table 1-1 below gives a breakdown of the targeted beneficiary facilities per FMS;

Table 1-1: Beneficiary Health Facilities per Federal Member States

STATE	No. of Beneficiary Facilities	No. of Beneficiary Facilities Covered
Banadir	30	19
Galmudug	30	16
Hirshabelle	30	13
Jubaland	30	25
Southwest	30	17

1.3 Environmental and Social Management Plan (ESMP)

1.3.1 Justification for the ESMP

3. This Environmental and Social Management Plan on the proposed Solar PV system for the 150 HCFs was commissioned to examine possible risks and impacts on the environment and communities before the commencement of their construction. The ESMP identified both positive and negative impacts of the Solar PV System and has proposed measures to mitigate the negative impacts while enhancing and maximizing the positive impacts, thus ensuring the sustainability of the project. In particular, the preparation of this ESMP has had the following objectives:

- Identify key areas for environmental, social, health, and safety concerns as well as the anticipated impacts associated with the proposed subproject (installation of the Solar PV systems) implementation and commissioning
- Undertake public consultations with the potentially affected people and other interested parties.
- List of all suggested mitigation measures control technologies, and safeguards identified through the E&S screening process.
- Define the roles and responsibilities of all parties involved in project environmental and social management.
- Establish a comprehensive environmental management plan covering the construction, operation, and decommissioning phases of the project.
- Provide a subproject monitoring program for effective implementation of the mitigation measures and ascertain the efficacy of the control systems in place (which should be consistent with the provisions in the project's ESMF)

1.3.2 ESMP Approach and Methodology

4. As a WB-financed Project, the approach chosen in undertaking this study was careful to meet the objectives of the World Bank Environmental and Social Framework (ESF), where all 10 ESSs were examined for relevance. In particular, the ESMP was triggered to fulfill requirements of assessing, managing, and monitoring E&S risks and impacts brought about by the implementation of the proposed 150 subprojects, as set out in the Environmental and Social Standard 1 (ESS1) – Assessment and Management of Environmental and Social Risks and Impacts. While the Project is seeking sound and sustainable measures to avoid or reduce E&S risks and impacts, this ESMP aims to introduce management measures to mitigate the reduced/minimized risks and impacts, based on (a) the country's applicable national laws and regulations, (b) applicable requirements under the ESSs, and (c) the WBG's Environmental Health and Safety Guidelines (EHSGs), and other relevant Good International Industry Practice (GIIP). In particular, the mitigation

measures proposed have been aligned with the most relevant ones as introduced through the WBG's General EHSs typical to this type of construction, operation, and decommissioning.

5. The ESMP involved largely an understanding of the project background, the preliminary designs, and the implementation plan. The approach and methodology applied during the assessment enabled the collection of both primary and secondary data. Qualitative and quantitative methods of data collection were employed. Secondary data was obtained through literature reviews while primary data was obtained through physical observations, Photography, checklists, interviews, and stakeholders' consultation. Key activities undertaken during the assessment included the following:

- Physical inspections of the proposed project site,
- Literature review of relevant documents
- Stakeholder consultations with different stakeholders and project-affected persons
- Gathering environmental and socio-economic data of the area by use of a checklist
- Continuous discussions with the stakeholders, including interviews and taking photos in the immediate neighborhood, as well as accessing other sources of information on the proposed project details, the site planning and implementation plan,
- Evaluation of the activities around the site and the environmental setting of the wider area.
- Report writing and submission.

6. The initial stage of this assessment was subproject screening. Screening of the subproject sought to ascertain whether this project falls within a category that requires ESMP before commencement. Other considerations made during this stage included a preliminary assessment of the environmental sensitivity of the proposed project area/site. This screening indicated that the proposed solar PV system poses low-to-moderate E&S risk and thus requires an ESMP to mitigate against any adverse impact.

7. The stakeholder consultations were carried out as part of the scoping exercise between May to July 2023. The heads of the facilities were interviewed, and their sentiments were included in the ESMP in section 4.

1.3.3 ESMP Content

8. In compliance with the ESMP outline requirements described in ESS1, This ESMP consists of the set of mitigation, monitoring, and institutional measures to be taken during the implementation and operation of the Project to minimize or mitigate potential negative impacts on the environment and communities while maximizing the positive contributions of the energy sector to the well-being of the Somali people. Therefore, the ESMP was prepared as a stand-alone document and has presented the following key sections:

- Introduction
- Subprojects Description
- Legal Framework
- Environmental and Social Risks and Impacts
- Environmental and Social Management and Monitoring Plan
- Liabilities of the Contractors
- Capacity Development and Training
- Annexes

2. SUB-PROJECT DESCRIPTION

2.1 Site Reconnaissance

9. Based on a survey done in January- July 2023, the various existing health facilities were assessed for consideration as beneficiary sites. The assessment was based on the availability of sufficient roofing or land on site for installation of the Solar PV System and facility being public or private but serving a large needy population, and the capacity ranges from 10 KWp - 1030KWp. The target is to supply power from small public health centers to District Referral Hospitals and National Referral Hospitals in Southwest for reduced electricity cost. This will entail the generation of electricity from solar, and distribution internally using inverters sized for the power demand specific to each facility. The following Table 2-1 summarizes information on the existing 10 sites in the Southwest Region, which will receive the PV system within their premises. The full survey details can be found in the Subprojects' report "Data Collection and Assessment Report on Southwest Region"

Table 2-1: Survey Findings per Each Proposed Healthcare Facilities

Item surveyed	Bay Regional Hospital	Baidoa District Hospital	Afgoi General Hospital	Barawe General Hospital	Suuqa xoolaha HC	Berdale HC	Bayhaaw General Hospital	Dolawe HC	Malable HC	Baidoa Mental Health
Is the Land owned by the Public Institutions i.e., Regional State or Federal Government	Public Land	Public Land	Public Land	Public Land	Public Land	Public Land	Public Land	Public Land	Public Land	Public Land
Is the land surveyed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there Master Plan showing Space Planning	No	No	No	No	No	No	No	No	No	No
If the answer is yes for No.3, is there possibility of sharing with the team	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
What is the built and non-built area in square meter ¹	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available
Is there adequate space for the planned SPV -off grid project	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Type of the roof top-Gable, Hip or Flat	Sloping	Sloping	Flat	Flat	Sloping	Sloping	Sloping	Sloping	Sloping	Sloping
Type of the materials used for Rooftop-	Iron Sheets	Iron Sheets	Concrete	Iron Sheets	Iron Sheets	Iron Sheets	Iron Sheets	Iron Sheets	Iron Sheets	Iron Sheets

¹ There was an assumption that the Installations would be rooftop installations given the average system is less than based on 150 KWH preliminary designs and there is no need for ground installation. EBC is expected to do further designs that would inform further on this and subsequently, reports would be edited if need be.

Item surveyed	Bay Regional Hospital	Baidoa District Hospital	Afgoi General Hospital	Barawe General Hospital	Suuqa xoolaha HC	Berdale HC	Bayhaaw General Hospital	Dolawe HC	Malable HC	Baidoa Mental Health
Concrete, Steel, corrugated sheet etc.										
Is there a need for reinforcing the roof in case PV panels are required to be mounted on top	No	No	No	No	No	No	No	No	No	No
Is there a dedicated electrical/equipment room, within or a detached	No	No	No	No	No	No	No	No	No	No
If it is yes under No.7, how is the fill up status and equipment lay out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Is there need for bush and tree clearance to open up additional space for the project	No	No	No	No	No	No	No	Yes	No	yes
Is the site accessible from major roads for the project's logistics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Soil profile of the site	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil	Sandy Soil
Highest Temperature recordings in the year	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)	93.2°F (34°C)
Mean value of the	28.18°C	28.18°C	28.18°C	28.18°C	28.18°C	28.18°C	28.18°C	28.18°C	28.18°C	28.18°C

Item surveyed	Bay Regional Hospital	Baidoa District Hospital	Afgoi General Hospital	Barawe General Hospital	Suuqa xoolaha HC	Berdale HC	Bayhaaw General Hospital	Dolawe HC	Malable HC	Baidoa Mental Health
temperature in the year	(82.72°F)	(82.72°F)	(82.72°F)	(82.72°F)	(82.72°F)	(82.72°F)	(82.72°F)	(82.72°F)	(82.72°F)	(82.72°F)
Lowest value of the Temperature recording in the year	64°F (18°C)	64°F (18°C)	64°F (18°C)	64°F (18°C)	64°F (18°C)	64°F (18°C)	64°F (18°C)	64°F (18°C)	64°F (18°C)	64°F (18°C)
Average Sun Hours of the year	10 Hours	10 Hours	10 Hours	10 Hours	10 Hours	10 Hours	10 Hours	10 Hours	10 Hours	10 Hours

10. Additionally, the survey included photographing the availability of areas within the premises of the target HCFs, where PV systems can be placed, including the option of roof-mounted PV systems where open lands could not be found.

Table 2-2: Geographic Locations and Proposed Sites for the New PV System

Institution	Type	Latitude	Longitude	Photo
Bay Regional Hospital	Regional Hospital	3.11111722°,	43.64323514°.	
Baidoa District Hospital	District Hospital	3.12130587°,	°.43.64558015	
Afgoi General Hospital	General Hospital	2.1452743°,	45.11766355.	
Barawe General Hospital	General Hospital	1.1104608932 510018°,	44.028313457 96585°.	
Suuqa xoolaha	Health Center	3.11053163 °,	43.66170734°.	

Institution	Type	Latitude	Longitude	Photo
Berdale HC	Health Center	3.2173°	43.2000°.	
Bayhaaw General Hospital	General Hospital	3.13641009°,	43.65362418°.	
Dolawe HC	Health Center	2.16198954°,	45.11746883°.	
Malable HC	Health Center	2.62028524°,	44.89486125°.	
Baidoa Mental Health	Mental Health Hospital	3.13356162 °,	43.63777868°.	

11. The proposed project sites as existing medical facilities are all fenced with controlled access with gates. In addition, the facilities are well lit at night, enhancing security. All the sites as already existing development are accessible by roads whether tarmacked like in major towns or all-weather roads like in district headquarters.

12. Based on site surveys and the preliminary designs, the Solar PV systems to be roof-top mounted as it's appropriate given the availability of the existing infrastructure and the use of 250 and below kw.

2.2 The PV System

13. The proposed setup will consist of three main components: a photovoltaic (PV) panel, an inverter, and a battery. The PV panel will harness solar energy and convert it into electricity. The generated electricity will be sent to the inverter, which will transform it into a usable form compatible with the electrical appliances and systems of the facility. Any surplus electricity produced by the PV panel will be stored in the battery for later use, ensuring a continuous and reliable power supply even during periods of low sunlight. This integrated system will provide a sustainable and efficient solution for meeting the electricity needs of the facility while reducing dependence on traditional energy sources and minimizing environmental impact. The system will be modular so that it can be upgraded easily to meet future demand needs. Main components of the system include:

- The PV Generator: consists of Silicon Crystalline Photovoltaic modules of capacity at STC of 250 Wp or more.
- Powerhouse: The Battery, Multi-mode inverter, and all monitoring equipment will be installed indoors (or containerized) with adequate air ventilation according to the manufacturer's recommendations.
- Multi-mode Inverter is a 20 kW (nominal) bidirectional sinusoidal inverter.
- The Battery: The battery considered is lead-acid, deep discharge type with a permissible repeated deep discharge without damage. Other types could be used, such as "gel" lead-acid batteries which are "maintenance less" but the unit weight is higher, and the lifetime is sensitive to high temperatures. And the Li-ion batteries have a longer lifetime and are lighter and smaller. However, they have a higher investment cost and are not adapted to high air temperatures, so an additional active cooling system is needed. The design lifetime of the batteries shall be at least 15 years without losing more than 10% of the rated C10 capacity. When the batteries get damaged, they will be stored separately at the site, stored in safe hangers, and then transported outside the country for proper disposal. Cables used to connect the battery shall have a temperature rating higher than 20 °C above ambient temperature. A neutralization kit will be provided at the site to manage any battery acid spills that may occur.

14. There is the potential for fire on the site and this will be managed by creating fire safety awareness and response as well as the provision of fire protection and firefighting equipment including fire extinguishers, smoke and heat detection system, signage, danger plates, and nameplates. The fire equipment will be placed where they are visible and easy to reach.

2.3 Construction Phase Activities

15. In line with the ESF requirements for the Contractor's ESHS Management Strategy and Implementation Plans: The Bidders/Proposers will be required to submit, as part of their Bid/Proposal, ESHS Management Strategies and Implementation Plans required to manage the key ESHS risks of the project. The suitability of these strategies and plans will be assessed as part of the Bid/Proposal evaluation, and discussed during pre-contract discussions, as appropriate. These strategies and plans will become part of the Contractor's Environmental and Social Management Plan (C-ESMP). As a requirement, the Contractor shall not commence any Works unless the Supervising Engineer is satisfied that appropriate measures are in place to address ESHS risks and impacts. At a minimum, the Contractor shall apply the plans and ESHS Code of Conduct, submitted as part of the Bid/Proposal, from contract award onwards.

16. It is anticipated that the proposed site will undergo alteration during construction to install the Solar PV Panels and associated structures on the rooftops.

17. Safety protocol, requirements, and precautions and established National and International Environmental protection regulations/ standards as well as all management plans proposed under this report for this project, shall guide the contractor and project operator during the project cycle. Modest construction procedures will be followed to reduce noise and vibration levels and the production of dust and any form of pollution that may affect the patients within the facilities and immediate neighbourhood.

18. All construction activities including erecting scaffolding, installation of Solar Panel Mounts, installation of the Solar Panels, and electrical wiring will be carried out by competent personnel obtained through respectable contractors to ensure a consistently high standard of finish and providing superb value for money.

19. The final design and construction of the Solar PV System will be undertaken by a contractor selected through a competitive bidding process. Construction will be supervised by MoEWR to ensure works are undertaken following specifications. This is to ensure quality work is achieved.

20. Construction activities will involve the following:

- The contractor shall perform site investigations in good time to ensure appropriate designs and construction are done on a sound engineering basis.
- Site preparation (e.g., ground-breaking, clearance of vegetation)
- Procurement of construction materials and delivery of the same to the site.
- Storage and utilization of materials.
- Civil, mechanical, and electrical works.
- Building works, trampling, and removal of construction wastes.
- Cabling.
- Post construction clean-up, restoration, and landscaping of the site.
- Load testing.
- Remedying of defects after functional tests.
- Solid waste collection and commissioning of the Solar PV System.

21. During construction, the contractor shall observe safety and shall erect warning signs to warn of any potential hazards, ensure proper and efficient use of Personal Protective Equipment (PPE) for all on-site, and observe safe work procedures.

2.4 Construction Supervision and Safety

Throughout the construction phase, supervision shall be carried out by the MOEWR to ensure:

- Workers use personal protective equipment (such as hand gloves, helmets, safety shoes earmuffs, overalls, and dust coats) always as is appropriate.
- Motorized equipment is checked to ensure that it is in good working condition, safe to use, and produces minimal noise levels and reduced smoke emission.
- Provision of first aid kit and firefighting equipment (portable cylinders) and placement at strategic positions for access
- Proper disposal of waste material and toilet facilities are provided for construction workers.
- Emergency response procedures are in place and all workers are aware of them, as in case of fire.

- Workers shall be provided with ablutions facilities and changing rooms.

2.5 Operation Phase Activities

22. The Solar PV System will be operated and maintained by the facility after construction. During the operation phase of the project, no unauthorized person shall access the Solar PV System site. This is in line with ensuring the safety of staff and the public. Routine maintenance is to be done under supervision by authorized staff.

23. Throughout the project life, the facilities shall adhere to all requirements of Environmental Management requirements as per the ESMP to ensure the protection and conservation of the environment.

2.6 Decommissioning Phase Activities

24. The facilities shall submit a decommissioning plan to the Ministry of Environment through MoEWR in good time before decommissioning. The decommissioning plan should include a restoration plan.

25. During the decommissioning/demolition phase, the following activities will take place:

- Removal of Solar PV System panels and batteries and their associated switching equipment.
- Removal of electrical fittings, bus bars, and steel poles/structures.
- Ensure proper handling of the demolished materials and have authorized and guided transportation and disposal away from human settlements, water bodies, and wildlife conservation areas in line with the Ministry of Environment requirements for safe disposal.
- Demolish and remove all the concrete works.

26. The host environment should be rehabilitated and restored to its former state through:

- Approved and appropriate landscaping methodology.
- Planting of vegetation.
- Removal of any soil that may have been impacted by oils or fuels for offsite (away from the project area) remediation.

2.7 Use of Services and Resources

27. **Labor:** The size and composition of the workforce will be at the discretion of the contractor(s). The contractors will adhere to the ILO Employment guidelines in the recruitment and management of the employees. It is recommended that the contractor seeks unskilled labor from the immediate surrounding communities.

28. **Sewerage:** A negligible sewerage flow is anticipated for the duration of the construction period. On-site, use will be made of toilets that will be serviced periodically. For operations, a similarly negligible amount of sewage will be generated. Most of the areas are not served by a sewer system and as such the contractor(s) will be expected to utilize the existing infrastructure.

29. **Access Roads:** Existing roads will be utilized as far as possible during the construction and operational periods. No new road will be constructed because we have existing access roads to all the health facilities. The management is urged to facilitate the provision of a different access point for the patients and contractors on both safety and health considerations. During operations, there will be virtually very low traffic considering because once operational the Solar PV System will require minimal maintenance.

30. Electricity: Electricity will be essential for the proposed project both during construction and operation. The contractor will have to have a portable generator during construction for fabrication and welding where necessary, but the facility management provides electricity for operations from its constructed Solar PV System electrical network.

31. The project implementing unit at the MoEWR should ensure that all material sourcing does not trigger any environmental or social impacts. All hazardous materials should be handled according to the industry's best practices and relevant local and international regulations on hazardous waste. All new unidentified impacts should be mitigated and managed responsibly throughout the project cycle by the contractor and the project operator.

2.8 Products, By-Products, and Waste

32. During the installation of the PV system, the proposed project is anticipated to generate different types of waste, which shall include;

- Excavated soils and vegetation.
- Construction equipment and maintenance wastes.
- Dust and fumes.
- Scrap metals.
- Packaging materials, etc.
- Metal cuttings generated from the construction activities.
- Any excess construction materials brought to the project site by the contractor.

33. The contractors will be advised to seek construction materials for sites that have been permitted by the Regional / Local Authorities. Close collaboration with the Ministry of Interior will provide guidance of the access roads that are secure as well as limit traffic disturbance to community members.

34. The project will engage licensed service providers ranging from Waste Handlers (including the Asbestos materials from rooftops, if found. However, note that all rooftops were inspected and confirmed that no Asbestos containing materials were used), transporters, and PV System Installers among others.

3. LEGAL FRAMEWORK

3.1 Somali Legal Framework and Conventions

35. The following Environmental Regulations, Policies, and Acts have been found relevant and/or applicable to the planned interventions and activities:

- The Constitution
- The National Environmental Management Policy
- The National Climate Change Policy
- The draft National Environmental Management Act
- The draft National Environmental and Social Impact Assessment Regulation.
- Land Laws of 1972 and 1980
- Labor Code of Somalia. The Code includes the following relevant provisions:
 - All contracts of employment must include a) the nature and duration of the contract; b) the hours and place of work; c) the remuneration payable to the worker; and c) the procedure for suspension or termination of the contract. Furthermore, all contracts must be submitted to the competent labor inspector for pre-approval.
 - The employer is obligated to provide adequate measures for health & safety protecting staff against related risks, including the provisions of a safe and clean work environment and of well-equipped, constructed, and managed workplaces that provide sanitary facilities, water and other basic tools and appliances.
 - Workers have the right to submit complaints and the employer must give the complaints due consideration.
 - Some work is considered dangerous and unhealthy and forbidden for women and youth (15-18 years of age). This includes carrying heavy weights or workin at night.
 - The Labor Code forbids work for children below the age of 12 but allows employment of children between the age of 12-15, yet employment has to be compatible with proper protection, health and the moral of children.
 - The Code also recognizes freedom of association. Employers are prohibited from engaging in any kind of discrimination or restriction of the right of freedom of association. Workers are allowed to join the trade union.
- Civil Service Law (Law Number 11).
- Forced Labor Convention (1930/no. 29)
- The Freedom of Association and Protection of the Right to Organize Convention (1948) No 87
- The Right to Organize and Collective Bargaining Convention, 1949 (No. 98)
- Convention concerning Forced or Compulsory Labor (ILO No. 29)
- Convention on the Rights of the Child

3.2 World Bank Group’s Environment and Social Framework

36. The objective of the World Bank’s Environmental and Social Framework (ESF)² is to prevent and mitigate undue harm to people and their environment in the development process. The ESF includes 10 Environmental and Social Standards (ESSs) that provide overarching E&S guidelines for the borrowers to help them in the process of the identification, preparation, and implementation of programs and projects, which are to be funded through Investment Project Financing (IPF) window, The ESF also provides a platform for increasing participation of stakeholders in all project life cycle, thus increasing ownership and building common understanding among the local population.

37. The following ESSs (consistent with the SESRP’s ESMF – Table 3-1) have been found relevant and applicable to the proposed subprojects:

- ESS 1 (“Assessment and Management of Environmental and Social Risks and Impacts”)
- ESS 2 (“Labor and Working Conditions”)
- ESS 3 (“Resource Efficiency and Pollution Prevention and Management”)
- ESS 4 (“Community Health and Safety”)
- ESS6 (“Biodiversity and Sustainable Management of Living Natural Resources”)
- ESS 10 (“Stakeholder Engagement and Information Disclosure”)

Table 3-1: World Bank Environmental and Social Safeguard Standards

POLICY	APPLICABILITY TO THE PROJECT	TRIGGERED		POTENTIAL IMPACTS	RESPONSIBLE PARTY	TIMEFRAME
		YES	NO			
ESS1 ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS	This policy is triggered due to the interaction of the proposed projects with the natural and human environment. Also, the subprojects pose some risk which implies that the project impacts are less adverse but require Environmental Assessment which defines appropriate mitigation measures.	√		To identify, evaluate, and manage the environment and social risks and impacts namely: Soil erosion Noise and Vibration Dust Emission, increased solid waste generation including E-Waste, hydrocarbon spills, To adopt a mitigation hierarchy approach to: (a) Anticipate and avoid (b) minimize or reduce; (c) mitigate; and (d) compensate for or offset them.	Contractor	Construction Phase
ESS2 LABOR AND WORKING CONDITIONS	This policy is triggered due to the need for labour. There is a need to treat workers in the project fairly and provide safe and	√		Child/forced labour, unfair treatment, discrimination, and unequal opportunity of project workers, occupational health and safety hazards, non-payment of	Contractor and PIU	Construction & Operation Phase

² <https://thedocs.worldbank.org/en/doc/837721522762050108-0290022018/original/ESFFramework.pdf>

POLICY	APPLICABILITY TO THE PROJECT	TRIGGERED		POTENTIAL IMPACTS	RESPONSIBLE PARTY	TIMEFRAME
		YES	NO			
	healthy working conditions.			wages, limited freedom of association and lack of collective bargaining,		
ESS3 RESOURCE EFFICIENCY AND POLLUTION PREVENTION AND MANAGEMENT	This policy is triggered because the project is expected to have pollution impacts. There is a need to address resource efficiency and pollution prevention and management throughout the project life cycle.	√		To promote the efficient usage of resources, including energy, water, and raw materials, against potential impacts namely: Increased electricity consumption, Solar panel materials, environment pollution,	Contractor	Construction Phase
ESS4: COMMUNITY HEALTH AND SAFETY	This policy is triggered because the project is expected to pose health and safety hazards and there is a need to mitigate those	√		To anticipate and avoid adverse impacts on the health and safety of project-affected communities namely: Community Health Hazards, security threats, road safety risks	Contractor	Construction Phase
ESS6: BIODIVERSITY CONSERVATION AND SUSTAINABLE MANAGEMENT OF LIVING NATURAL RESOURCES	This policy is triggered because in some sites there might be a need to trim and cut down some trees	√		Low impacts in areas where tree shadows cover solar panels	Contractor	Construction Phase
ESS10: STAKEHOLDER ENGAGEMENT AND INFORMATION DISCLOSURE	This policy is triggered because there will be public participation during the project cycle	√		Limited disclosure of information, complaint over non-involvement of stakeholders,	Contractor and PIU	Construction & Operation Phase

38. Para 36 of the ESS1 states that “projects involving multiple small subprojects, that are identified, prepared and implemented during the course of the project, the Bank will review the adequacy of national environmental and social requirements relevant to the subprojects, and assess the capacity of the Borrower to manage the environmental and social risks and impacts of subprojects as required by paragraph 37 (of the ESS1). When necessary, the project will include measures to strengthen the capacity of the Borrower.”

39. Para 37 of ESS1 also states that “The Bank will require the Borrower to carry out appropriate environmental and social assessment of subprojects, and prepare and implement such subprojects, as follows: (a) High Risk subprojects, in accordance with the ESSs; (b) Substantial Risk, Moderate Risk and Low Risk

subprojects, in accordance with national law and any requirement of the ESSs that the Bank deems relevant to such subprojects.”

40. Additionally, Para 38 of ESS1 states that “If the Bank is not satisfied that adequate capacity exists on the part of the Borrower, all High Risk and as appropriate, Substantial Risk subprojects will be subject to prior review and approval by the Bank until it is established that adequate capacity exists.”

41. More stringent E&S framework will be applied throughout the life cycle of the proposed subprojects. Therefore, this ESMP has been built based on the requirements of the ESS1. In summary, this ESMP consists of the set of mitigation measures, monitoring and institutional measures that will be taken during implementation and operation of the project to eliminate adverse E&S risks and impacts, offset them, or reduce them to the acceptable levels.

42. WBG has also put guidelines for Environment, Health and Safety (EHS)³ that serve as useful references for general issues as well as sector-specific activities. The EHS guidelines are mainly on environmental, occupational health and safety, community health and safety as well as on construction and decommissioning. It contains guidelines cross cutting on environmental (waste management, ambient air quality, noise and water pollution), occupational health and safety issues among others, applicable to all the industry sectors. Considering the nature of the civil works associated with the installation of PV systems at HCFs, the General EHSF will be applied.

43. The WBG’s EHSGs have introduced international thresholds for environmental pollutants, for the project proponent, as well as for the contractor, to abide with during construction, operation and decommissioning. These included, but not limited to, WHO Ambient Air Quality Guidelines, Noise Level Guidelines, Noise Levels for Various Working Environments, Summary of Recommended Personal Protective Equipment According to Hazard, and Occupational Accident Reporting: See Annex 1 to 4 respectively:

44. These guidelines should be followed and incorporated into contracts and followed by contractors and consultants. The project should also follow relevant COVID-19 guidance, such as ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects. PIU will supervise and monitor the implementation by the Contractor(s) who will take note and implement as part of the contractual obligation of these guidelines.

³ <https://www.ifc.org/content/dam/ifc/doc/2000/2007-general-ehs-guidelines-en.pdf>

4. STAKEHOLDER CONSULTATIONS

4.1 Introduction

45. The stakeholder consultations (Annex v) were carried out as part of the scoping exercise between May to July 2023. The heads of the facilities were interviewed, and their sentiments were included in the ESMP. During stakeholder engagements, an overview of the project was presented to all those interviewed including the likely activities to take place and the associated potential risks and impacts.

46. Most of the stakeholders interviewed welcomed the project's indication that it will be beneficial to the health facilities because it will greatly reduce the operation cost for the facilities whose electricity is currently being supplied by private service providers. They also noted that the solarization of public health facilities will greatly improve health service delivery due to the ability to refrigerate medicines and install new and modern equipment in the local facilities.

47. The community was in support of the project. They noted that the project will be beneficial to the community as it will: (a) Improve their access to Health care, and (b) Reduce cost, especially in health facilities being supplied by private companies or those using generators.

4.2 Stakeholder Concerns

48. The community raised the following concerns

- a) Electronic waste (e-waste) is generated from the disposal of end-of-life solar panels and other electronic components;
- b) The use of batteries in solar energy storage systems can lead to battery waste management challenges, including proper disposal and recycling;
- c) Ensuring responsible e-waste and battery waste management practices is crucial to mitigate these environmental impacts and promote the sustainability of solar PV technology;
- d) Gender equality was raised about the project, especially on employment opportunities. They suggested that youths and women should be given priority;
- e) Increase in HIV/AIDS due to interactions of the locals with the project's technical staff from outside the project area; and
- f) GBV/SH especially demand sexual favors for job opportunities.

49. Additionally, despite the positive impacts that will accrue from Solar panel installation, they noted that health facilities are sensitive installations and hence there will be a need to take precautions during project implementation to ensure the safety of both the workers and the facility users. This will help avoid any inconvenience to the facilities. They reiterated the need for continuous stakeholder engagement to ensure any emerging issues are addressed holistically and promptly. The Following Table 4-1 summarizes questions and responses.

Table 4-1: Main Questions and Responses from Stakeholder Engagement

Questions	Response	Response by consultant on how feedback will be used or acted upon
What can you do for us as a corporate social responsibility?	At the moment none is planned.	Will be communicated to project the coordinator
Will the contractor employ locals, or will he come with employees?	Local people will be employed especially for the unskilled and semi-	Instructions to the contractors will be made clear in the contracts that priority

Questions	Response	Response by consultant on how feedback will be used or acted upon
	skilled jobs	for job opportunities will be given to locals.
How Long will the Installation take?	Project timelines will be communicated ahead of the installation face	Not for more than two week per facility
Are we expected to contribute financially to the project as the facility user?	No, the project is funded	Contractors to be aware of potential comen seeking to benefit from the project

50. Lastly, the community requested the following from the project: (a) All employment opportunities especially the non-skilled labor during the construction and operation Phases. They noted that the lack of job opportunities was a major setback to the state; (b) They inquired about the project's timelines because they were concerned that it would take too long to complete.

5. ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

51. The main activities considered under this Environmental, Social, Health, and Safety Management Plan are:

- Construction phase: Site installation, transport of equipment and materials, installation of solar panels systems, and commissioning activity
- Operating phase: Solar system operation and maintenance
- Decommissioning phase: Decommissioning activities and disposal of wastes from decommissioned materials

5.1 Positive Impacts during the Construction Phase

52. This section enumerates and discusses the positive impacts associated with the project during the construction phase.

- a) Recruitment of local labour for unskilled and semi-skilled workers required during project construction and such shall include manual lifting where necessary.
- b) Development of small businesses-due to population influx caused by project workers who shall be involved in buying goods and services

5.2 Positive Impacts during the Operating Phase

53. The positive impacts anticipated during project operation are as discussed:

- a) Strengthening service provision in community facilities such as schools, health facilities, and government offices
- b) Improving access to electricity in Underserved Counties
- c) Increase security within served community facilities and their environs

5.3 Positive Impacts during Decommissioning Phase

54. Positive impacts associated with decommissioning phase are as below:

- a) Employment opportunities for local community-where locals shall be engaged in non-skilled and semi-skilled works
- b) Site Rehabilitation will include the replacement of topsoil and re-vegetation which shall improve the visual and aesthetic state of the site,
- c) Availability of the scrap metals (in form of dismantling of metal structures, wiring, batteries, electrical and electronic parts) to be sold to earn income as well as raw material to industrial work

55. This summary aims to provide an overview of the environmental and social risks and impacts associated with rooftop solar PV installations, taking into account the receptors involved and the different project phases. Receptors in this context refer to the natural and social elements that may be affected by the project, such as ecosystems, air quality, and local communities.

56. Throughout this summary, we will explore the key challenges and opportunities that arise during the planning, construction, operation, and decommissioning phases of rooftop solar PV projects. Understanding these risks and impacts is critical for decision-makers, project developers, and stakeholders to make informed choices that align with sustainability goals and promote positive outcomes for both the environment and society.

57. By delving into the potential consequences and identifying effective mitigation strategies, we aim to facilitate a comprehensive understanding of the complexities involved in rooftop solar PV installations.

Table 5-1: Summary E&S risks and impacts based on receptors and subproject phases

Possible Receptors	Construction		Operation		Decommissioning	
	Risks & impacts	Significance	Risks & impacts	Significance	Risks & impacts	Significance
Physical Environment Ref: ESS1, ESS3	Soil erosion, Noise and Vibration Dust Emission, increased solid waste from construction materials, Extraction of construction materials, oil spills,	Moderate	Increased solid waste generation including E-Waste,	Low	Soil erosion, Noise and Vibration Dust Emission, increased solid waste from decommissioned materials, oil spills	Low
Sub-project Workers Ref: ESS1, ESS2, ESS10	Worksite Safety, accidents, Health Hazards, Labour grievances, Gender-Based Violence, Theft and damage of solar panel systems, Limited disclosure of information, blindness due to extreme welding lights, injuries from minor to major/fatal leading to disabling, catastrophic, and/or fatal.	Substantial	Slips and Falls from Height, Electrocutation/Electric Shocks and Burns	Moderate	Worksite Safety, accidents, Health Hazards, Labour grievances, Gender Based Violence, Limited disclosure of information, blindness due to extreme welding lights during dismantling of the metallic rooftop solar stands, injuries from minor to major/fatal leading to disabling, catastrophic, and/or fatal.	Moderate
Immediate Community Members Ref: ESS1, ESS4, ESS10	Security threats, traffic impacts.	Substantial	Security threats, Public Health concerns, traffic impacts	Low	Security threats, traffic impacts, Noise and Vibration during dismantling of rooftop metallic bases	Low

6. ENVIRONMENTAL and SOCIAL MANAGEMENT AND MONITORING PLAN

58. Based on requirements of the World Bank's ESSs in general, and the requirements of ESS1, in particular, this Environmental and Social Management Plan (ESMP) has been prepared to basically detail (a) the measures to be taken during the construction, operation, and decommissioning of the proposed set of PV System subprojects to eliminate or offset adverse environmental and social impacts, or to reduce them to acceptable levels; and (b) the actions needed to implement these measures. This ESMP section consists of the main three requirements of the ESS1, mitigation, monitoring, and the institutional measures to be taken during the three phases of the subprojects. Through this site-specific Plan, the PIU will (a) identify the set of responses (i.e., mitigation and monitoring/ supervision) to potentially identified adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements, in addition to (d) estimate cost of implementing the proposed measures throughout subproject's life cycle.

6.1 Mitigation Measures

59. The contractor(s) shall be held accountable for the implementation of the mitigation measures to the PIU team during the construction and initial operation phases. The cost of implementing the various mitigation measures described in the ESMP to ensure that Environmental and Social risks are managed effectively shall be included in the overall budget of the contract between PIU and the contractor. It will be entirely the contractor's responsibility to come up, at the time of preparing its offer, with costing of various mitigation measures to put in place for various impacts highlighted in this report. It is also expected that the contractor must have designated trained personnel to monitor Environmental, Safety, and Health measures during construction works, and thus report regularly to PIU.

6.2 Monitoring Measures

60. Monitoring aims to ensure that mitigation and enhancement measures are implemented to feed into the normal project reporting and evaluation, which determines the success, failure, and lessons learned. This shall be done regularly after the development of site-specific ESHSMP to ensure compliance with environmental standards and procedures including relevant policies and legislation. The Project Implementation Unit (PIU) officers from the Ministry of Health shall be responsible for the overall management of the implementation of site-specific ESMP.

61. The contractor's personnel on Environmental, Safety, and Health matters should be part of the project to provide advice on the implementation and monitoring of environmental and social measures and will be responsible for supervising and reviewing the works as regards environmental and social requirements, safety, and quality assurance systems and plan the supervision functions to ensure that works are implemented while protecting the social and environment aspects.

62. The compliance visits will be conducted to monitor the compliance of the proposed E&S mitigation measures and E&S monitoring activities. The compliance visits will mainly focus on.

- Compliance with the tender clause.
- Compliance with the mitigation measures.
- Timely and adequate implementation of environmental and social management plan.
- Overall environmental and social performance of the project.

- Work related grievances and how they were resolved
- Work related incidents and how they were addressed and reported back
- Environment and community related incidents and they were addressed and reported back

63. The contractor in collaboration with the PIU team, personnel from the Ministry of Health, and community members will ensure compliance with the environmental and social monitoring aspects of the project. The PIU team shall monitor the implementation of the mitigation measures. Arrangements for monitoring shall be developed depending on the project implementation duration. Reporting to the Ministry of Energy will be done quarterly by the PIU while the contractor will be doing monthly reporting.

64. The construction (incl. pre-construction work), operation, and decommissioning phases of the proposed stand-alone solar systems for communities shall be supervised by the PIU team. However, the Ministry of Health shall be involved throughout the project cycle in the implementation of the proposed solar and they will be getting instruction from the Project Engineers. The contractor on the other side will be responsible for various issues during the construction phase of this proposed subproject. Table 6-1 below presents the detailed Management Plan for the proposed subprojects.

Table 6-1: E&S Management and Monitoring Plan

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
Construction phase (incl. preconstruction)							
Physical Environment							
1. Noise & vibration	<ul style="list-style-type: none"> ▪ Compliance with the legal requirements for noise levels specified in the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 ▪ Implementation of Noise prevention program as stipulated in the legislation for minimizing noise and vibration generation from construction activities. ▪ Ensure that all generators and heavy-duty equipment are insulated or placed in enclosures (containers) to minimize ambient noise levels. ▪ Notification of the community facilities management and neighbors about the construction schedule & activities ▪ Noise-generating activities that take place near residential or sensitive institutional receptors will be restricted to between 0800 and 1700 hours. ▪ Working at night is not permitted. ▪ Reduce the number of people accessing a construction site at any given time 	PPEs provided Workers with Earmuffs Noise management programme	Bimonthly	Field Visits, Noise monitoring devices	Contractor	Supervising Engineering Firm	10,000
2. Increased energy consumption	<ul style="list-style-type: none"> ▪ Monitor energy use during construction and set targets for reduction of energy use. ▪ Plan well for transportation of materials to ensure that hydrocarbons (diesel and petrol) are not consumed in excessive amounts ▪ Ensure electrical equipment, appliances and lights are 	Energy consumption report Energy conservation program	Quarterly	Field Visits	Contractor	Supervising Engineering Firm	20,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
	switched off when not being used						
3. Fire Hazards	<ul style="list-style-type: none"> ▪ Contractors shall take all necessary precautions to prevent fires caused either deliberately or accidentally. ▪ Contractor shall prepare a fire prevention and fire emergency plan as part of the Environmental Plan to be submitted to the PIU ▪ The Contractor shall provide adequate firefighting appliances at specified localities on the worksite to meet any emergency resulting from ignition of a fire. ▪ No burning of any litter/ cleared vegetation on site ▪ All working areas should be no smoking zones ▪ Arrangements and labelling of battery terminals should be done adequately to prevent fire incidents 	Fire management plan Presence of firefighting equipment Fire emergency plan in place Fire training records List of fire marshals	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	5,000
4. Increased solid waste generation	<ul style="list-style-type: none"> ▪ Use of an integrated solid waste management system i.e., through a hierarchy of options: 1. Reduction at source 2. Recycling 3. Reusing 4. Incineration 5. Sanitary land filling. ▪ Through accurate estimation of the dimensions and quantities of materials required. ▪ Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time ▪ Dispose waste more responsibly by contracting a registered waste handler who will dispose of the waste at designated sites or landfills only. ▪ Waste collection bins to be provided at designated points 	Waste management plan Waste receptacles in place Waste disposal tracking documents	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	10,000
5. Generation of E-	<ul style="list-style-type: none"> ▪ Conduct regular inspections and maintain inspection 	E-waste	Bimonthly	Field Visits	Contractor	Supervising	10,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
waste Obsolete Solar Panels, Batteries, inverters	<ul style="list-style-type: none"> reports on the status of solar panel systems ▪ Have a contract with the supplier that requires for their collection and adequate disposal of E-waste ▪ Contract a licensed waste handler to ensure appropriate disposal of E-waste ▪ Assess disposal plans for E-waste 	management				Engineering Firm	
6. Generation of wastewater	<ul style="list-style-type: none"> ▪ Provide means for handling sewage generated at the construction site-use of mobile toilet ▪ Monitor effluent quality regularly to ensure that the stipulated discharge rules and standards are not violated 	Availability of sanitary facilities	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	5,000
7. Sourcing of Construction materials	<ul style="list-style-type: none"> ▪ Source building materials from local suppliers who use environmentally friendly processes in their operations. ▪ Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered. ▪ Ensure that damage or loss of materials at the construction site is kept minimal through proper storage. 	Material inventory	Monthly	Field Visits	Contractor	Supervising Engineering Firm	5,000
8. Oil spills Hazards	<ul style="list-style-type: none"> ▪ Care must be exercised not to spill any hydrocarbons ▪ All oils and lubricants shall be stored away from weather elements and under an impermeable containment ▪ No maintenance of vehicles or equipment on site ▪ Vehicles bringing workers and solar PV materials to the site must be maintained in good state and proper servicing to ensure no oils are likely to spill. ▪ Any contaminated soil shall be scooped and disposed 	No oil spills Vehicle maintenance records	Monthly	Field Visits	Contractor	Supervising Engineering Firm	5,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
	<p>of appropriately.</p> <ul style="list-style-type: none"> ▪ In case of spillage the contractor should isolate the source of oil spill and contain the spillage using sandbags, sawdust, absorbent materials ▪ Develop oil spillage plan 						
1. Worksite Safety, accidents, and Health Hazards to employees	<p>Ensure compliance with the WBG's EHSGs:</p> <ul style="list-style-type: none"> ▪ Provision of all appropriate PPEs to the contractor's employees and ensure they are always worn while they are working including but not limited to welder goggles and/or a full-face eye shield for all personnel involved in, or assisting, welding operations, gloves, safety shoes, harness, helmet, among others. ▪ Ensure engagement of competent staff for skilled works ▪ Holding toolbox talks every morning before commencing work and they will be based on working safely. ▪ Provide and place necessary and appropriate warning signs at various points that are risky. ▪ Barricade with conspicuous warning tapes within worksites ▪ Provision of the first aid kits on site with trained first aiders. ▪ Adequately inspect scaffolds and ladders that shall be used when working at height ▪ Ensure OSH awareness creation and training for all contractor staff ▪ Provide a general register for adequate reporting of accidents 	<p>No of accidents or near misses Accident registers in place Safety inspections reports</p>	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	10,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
2. Working at Heights Slips and Falls from Height	<ul style="list-style-type: none"> ▪ Carry out a risk assessment to identify hazards associated with the work process and mitigate them accordingly ▪ Assess the structural strength of buildings and roofs onto which solar panels shall be mounted ▪ Inspect all ladders and scaffolds used while working at a height ▪ Provide adequate personal protective equipment for use by contractor staff ▪ Carry out inductions and regular toolbox talks before the commencement of work by staff ▪ Assess the structural strength of buildings and roofs onto which solar panels shall be mounted 	No slips/ falls recorded Inspection reports PPE provided	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	5,000
3. Electrocutation/Electrical Shocks and Burns/Electrical Fires	<ul style="list-style-type: none"> ▪ Engage certified electricians when carrying out wiring activities ▪ Create awareness on electrical safety ▪ Provide well coded and appropriate firefighting appliances ▪ Provide for display emergency contact information for fire services ▪ Carry out Risk Assessments to identify hazards associated with work processes and mitigate accordingly ▪ Use quality materials when carrying out wiring activities 	Wiring certificate Wiring inspection report Risk assessment report	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	10,000
4. Gender Based Violence (Sexual Exploitation and Abuse of community)	<ul style="list-style-type: none"> ▪ Build and improve project staff capacity to address risks of SEA/SH through the development of guidance, training and continuous provision of learning activities and materials. 	Training records on GBV-SEA/SH	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	20,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
members by project workers (SEA)/ workplace Sexual Harassment amongst project workers (SH)	<ul style="list-style-type: none"> ▪ Regular sensitization and training for all project workers and project affected persons on human rights, gender and GBV. ▪ Created HIV awareness for workers and community members (PAPs). ▪ Develop and implement a Gender Based Violence Management Plan including a GRM that ensures confidential reporting of GBV cases. ▪ Prepare a Grievance redress mechanism detailing processes, procedures and principles for adequate and timely reporting and resolution of all grievances 	Signed code of conducts					
Community							
1. Public Health Concerns and safety risks posed by the influx of workers or people providing support services into an area as a result of the project	<ul style="list-style-type: none"> ▪ Restricting access to the site, through a combination of institutional and administrative controls i.e., complete hoarding of the site. ▪ Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of the Solar PV installation Site. ▪ Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents. ▪ Use of skilled trainers to raise awareness among project workers of the risks, expected behaviors, and consequences of violations, communicated through training, and publicized codes of conduct. ▪ Implement the provisions of the LMP 	Employment records Clean water Rest rooms provided	Monthly	Field Visits	Contractor	Supervising Engineering Firm	5,000
2. Traffic impacts on infrastructure	<ul style="list-style-type: none"> ▪ All drivers coming to the site must observe traffic rules and exercise courtesy to other road users. 	Smooth flow of vehicles Availability	Monthly	Field Visits	Contractor	Supervising Engineering Firm	5,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
		of traffic marshals					
3. Gender Based Violence (Sexual Exploitation and Abuse of community members by project workers (SEA)/ workplace Sexual Harassment amongst project workers (SH)	<ul style="list-style-type: none"> ▪ Build and improve project staff capacity to address risks of SEA/SH through the development of guidance, training and continuous provision of learning activities and materials. ▪ Regular sensitization and training for all project workers and project affected persons on human rights, gender and GBV. ▪ Created HIV awareness for workers and community members (PAPs). ▪ Develop and implement a Gender Based Violence Management Plan including a GRM that ensures confidential reporting of GBV cases. ▪ Prepare a Grievance redress mechanism detailing processes, procedures and principles for adequate and timely reporting and resolution of all grievances. 	Training records on GBV-SEA/SH Signed code of conducts	Bimonthly	Field Visits	Contractor	Supervising Engineering Firm	20,000
<i>Operation phase</i>							
Physical Environment							
Fire Hazards	<ul style="list-style-type: none"> ▪ HCF Management shall prepare a fire prevention and fire emergency plan as part of the Environmental Plan during the operation phase of the project. ▪ HCF Management shall provide adequate firefighting appliances at specified localities on the worksite to meet any emergency resulting from ignition of a fire. ▪ No burning of any litter/ cleared vegetation on site. ▪ All working areas should have no smoking zones. ▪ Arrangements and labelling of battery terminals should be made adequately to prevent fire incidents. 	Fire management plan Presence of firefighting equipment Fire emergency plan in place Fire training	Bimonthly	Field Visits	HCF Management	HCF Management	5,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
		records List of fire marshals					
Increased solid waste generation namely: Inverters and batteries used in PV systems also have a limited lifespan and can contribute to e-waste. Solar panels have a finite lifespan (typically 20-30 years), and their disposal can generate electronic waste (e-waste)	<ul style="list-style-type: none"> ▪ Use of an integrated solid waste management system i.e., through a hierarchy of options: 1. Reduction at source 2. Recycling 3. Reusing 4. Incineration 5. Sanitary land filling. ▪ Through accurate estimation of the dimensions and quantities of materials required. ▪ Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time ▪ Promote recycling and reusing of solar panel components. Implement extended producer responsibility (EPR) programs to ensure manufacturers take back and properly recycle old panels. Explore ways to refurbish or repurpose panels for other applications ▪ Promote recycling and proper disposal of inverters and batteries. ▪ Encourage regular maintenance and upgrading of PV systems to extend their useful life. ▪ Consider incentives for retrofitting or upgrading older systems rather than complete replacement. ▪ Dispose waste more responsibly by contracting a registered waste handler who will dispose of the waste at designated sites or landfills only. Waste collection bins to be provided at designated points. 	Waste management plan Waste receptacles in place Waste disposal tracking documents	Bimonthly	Field Visits	HCF Management	HCF Management	10,000
Generation of E-waste	<ul style="list-style-type: none"> ▪ Conduct regular inspections and maintain inspection 	E-waste	Bimonthly	Field Visits	HCF	HCF	10,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
Obsolete Solar Panels, Batteries, inverters	<ul style="list-style-type: none"> reports on the status of solar panel systems ▪ Have a contract with the supplier that requires for their collection and adequate disposal of E-waste ▪ Contract a licensed waste handler to ensure appropriate disposal of E-waste ▪ Assess disposal plans for E-waste 	management			Management	Management	
Workers							
Working at Heights during the maintenance works may lead to Slips and Falls from Height	<ul style="list-style-type: none"> ▪ Carry out a risk assessment to identify hazards associated with the work process and mitigate them accordingly ▪ Inspect all ladders and scaffolds used while working at a height ▪ Provide adequate personal protective equipment for use by contractor staff ▪ Carry out HS inductions and regular toolbox talks before the commencement of work by staff. Periodically assess the structural strength of buildings and roofs onto which solar panels have been mounted before undertaking maintenance works. 	No slips/ falls recorded Inspection reports PPE provided	Bimonthly	Field Visits	Contractor	HCF Management	5,000
Electrocution/Electric Shocks and Burns/Electrical Fires	<ul style="list-style-type: none"> ▪ Engage certified electricians when carrying out wiring activities ▪ Create awareness on electrical safety ▪ Provide well coded and appropriate firefighting appliances ▪ Provide for display emergency contact information for fire services ▪ Carry out Risk Assessments to identify hazards associated with work processes and mitigate accordingly. Use quality materials when carrying out 	Wiring certificate Wiring inspection report Risk assessment report	Bimonthly	Field Visits	Contractor	HCF Management	10,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
	wiring activities						
Community							
Decommissioning phase							
Physical Environment							
Noise & vibration	<ul style="list-style-type: none"> ▪ Compliance with the legal requirements for noise impact specified in the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 ▪ Implementation of Noise prevention program as stipulated in line with the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. ▪ Noise-generating activities that take place near residential or sensitive institutional receptors will be restricted to between 0800 and 1700hrs ▪ Working at night is not permitted ▪ Reduce the number of people accessing a construction site at any given time 	PPEs provided Workers with Earmuffs Noise management programme	Bimonthly	Field Visits	Contractor	HCF Management	10,000
Increased energy consumption during the dismantling of the solar rooftop bases,	<ul style="list-style-type: none"> ▪ Monitor use of electricity during decommissioning and set targets for reduction of energy use. ▪ Ensure electrical equipment, appliances and lights are switched off when not being used. 	Energy consumption report Energy conservation program	Quarterly	Field Visits	Contractor	HCF Management	20,000
Fire Hazards	<ul style="list-style-type: none"> ▪ Decommissioning Contractor shall take all necessary precautions to prevent fires caused either deliberately or accidentally during the construction process. ▪ The Decommissioning Contractor shall prepare a fire prevention and fire emergency plan as part of the 	Fire management plan Presence of firefighting	Bimonthly	Field Visits	Contractor	HCF Management	5,000

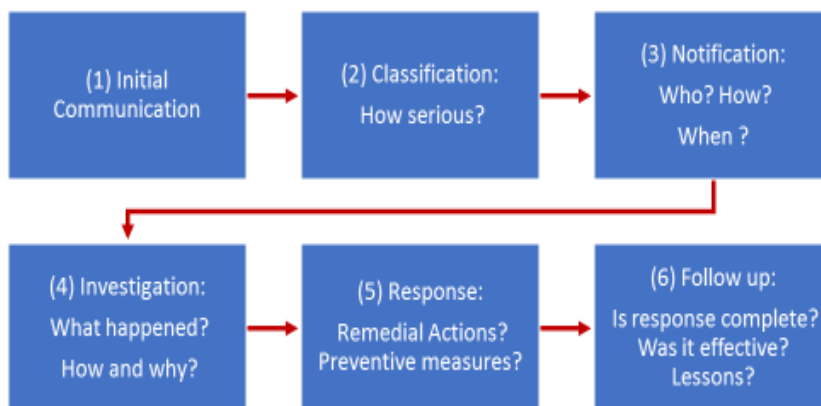
E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
	Environmental Plan to be submitted to the PIU. <ul style="list-style-type: none"> ▪ No burning of any litter/ cleared vegetation on site. ▪ All working areas should have no smoking zones. ▪ Arrangements and labelling of battery terminals should be done adequately to prevent fire incidents 	equipment Fire emergency plan in place					
Workers							
Worksite Safety, accidents, and Health Hazards to employees	<ul style="list-style-type: none"> ▪ Ensure compliance with WBGs EHS Guidelines ▪ Provision of all appropriate PPEs to the decommissioning workers and ensure they are always worn while they are working. ▪ Ensure engagement of competent staff for skilled works ▪ Holding toolbox talks every morning before commencing work and they will be based on working safely. ▪ Provide and place necessary and appropriate warning signs at various points that are risky. ▪ Barricade with conspicuous warning tapes or hoard the site. ▪ Provision of the first aid kits on site with trained first aiders. ▪ Adequately inspect scaffolds and ladders that shall be used when working at height ▪ Assess the structural strength of the building and roofs which solar panels have been mounted before starting to work. ▪ Ensure OSH awareness creation and training for all engaged staff. ▪ Provide a general register for adequate reporting of 	No of accidents or near misses Accident registers in place Safety inspections reports	Bimonthly	Field Visits	Contractor	HCF Management	10,000

E&S aspects	Mitigation measures	Monitoring/ Supervision measures	Monitoring/ Supervision frequency	Monitoring/ Supervision methods and reporting	Responsibilities		Cost estimate (USD)
					Mitigation	Monitoring	
	accidents.						
Community							
Traffic Hazards	All drivers coming to the site must observe traffic rules and exercise courtesy to other road users. Awareness creation for community members on traffic safety. Adoption of safety measures that are protective of road users: including safety / traffic signages.	Number of Project Traffic accidents	Monthly	Field Visits	Contractor	HCF Management	5,000

6.3 Incident Reporting

65. The project will follow the WB Environmental and Social Incident Response Toolkit (ESIRT) for incident management and reporting process that is comprised of six steps (See figure below).

Figure 6-1 - Overarching Incident Management and Reporting Process



6.3.1 Incident Reporting and Initial Communications

66. The incidents shall be classified into Indicative, Serious, or Severe, and then a brief one- to two-page Incident Report shall be prepared with the support of the project’s Safeguards specialist and be transmitted to the Bank within 24 hours.

67. Indicative Incidents: these are relatively small-scale, localized and one-off non-compliance incidents that negatively impact a small geographic area or a small number of people, and do not result in significant or irreparable harm to people or the environment.

Table 6-2: Examples of Indicative Incidents

Environmental	Social	Occupational Health & Safety
Small-volume hydrocarbon or chemical spills	Small-scale crop damage or livestock deaths	Underuse of personal protective equipment (PPE) by Works Contractor
Localized dust, light, or noise pollution	Grievances due to project use of public roads	Local increase in the occurrence of communicable disease
Illegal hunting of wildlife (non-endangered)	Project interference with locally significant incidents and sites	Minor job site injuries
Small volume sediment, pesticide, or fertilizer run-off into local waterways	Vehicle damage to public or private roads caused by Works Contractors	Poor “housekeeping” at site, e.g., littering and random disposal of solid waste
Minor off-site disposal of solid waste from project	Nuisance-level contact between employees and community	Lack of understandable warning or traffic control signage
Poor quality or delayed site restoration and revegetation	Minor instances of inappropriate behavior of security forces or other Contractor personnel	Almost empty first aid kit at work site
Poorly functioning erosion-control measures	Overloading of local commercial services from use by project personnel	Poorly organized or sporadic health & safety induction and training
	Minor impacts on livelihood restoration and/or access to community natural resources	Multiple “slip and trip” hazards throughout the site
	Minor impacts on cultural sites/areas	Lack of Health & Safety plan and/or training for staff

68. Serious Incidents: Incidents that negatively impact moderate to large geographic areas; many members of a community; or result in significant or irreparable harm to individual people, community

resources, or the natural environment. Also, repeated non-compliance incidents/failure to remedy non-compliance.

Table 6-3: Examples of Serious Incidents

Environmental	Social	Occupational Health & Safety
Large-volume hydrocarbon or chemical spills, or other hazardous substances impacting the environment	Cases of mistreatment of communities potentially, including vulnerable groups, by project workers or security forces, including incidents such as sexual harassment	Injury/ies requiring off-site medical attention
Large-volume or long-term sediment, pesticide, or herbicide runoff into waterways	Significant and repeated community impacts from project vehicles and construction activities	Instances of serious communicable diseases among workforces
Lack of implementation of agreed environmental restoration program	GRM not functioning	Consistent lack of health & safety plans and training at work site
	Inadequate consultation and engagement of stakeholders in the project leading to significant conflict and/or delays	Chronic non-use of PPE at project work site
	Non-violent community protests against the project, or mild community unrest	Repeated non-compliance or failure to remedy non-compliance

69. **Severe Incidents:** Incidents that result in great harm to individuals or the environment, or present significant reputational risks that could endanger the Bank’s ability to operate in a country or region. Also, persistent non-compliance includes inability or unwillingness to remedy situations that could result in serious or severe harm.

Table 6-4: Examples of Severe Incidents

Environmental	Social	Health & Safety
Hydrocarbon or chemical spills, or release of other hazardous substances into the environment, causing widespread impacts, and/or requiring large-scale remediation	Abuses of community members (including vulnerable groups e.g., women, children, youth, elderly, disabled/sick by site security or other project workers, including but not limited to GBV	Any fatality Permanent disability
Major river contamination causing decimation of fish population or other aquatic resources	Human trafficking and child labor	Outbreak of life-threatening communicable disease
	Violent community protests against the project	Criminal and political attacks at worksite
		Forced labor by project’s Works Contractor
		Works Contractor is unresponsive regarding ongoing worksite risks of bodily injury
		Persistent non-compliance and/or inability or unwillingness to remedy non-compliance that could result in bodily injury or harm
		Murders, kidnappings, manslaughter and assaults, while criminal matters and not Safeguards incidents per se, have occurred in Bank projects and should be treated as severe incidents. These incidents would be referred to

Environmental	Social	Health & Safety
		local authorities with notification to WB Security

6.4 Grievance Redress Mechanism

6.4.1 GRM Institutional Framework

70. The GRM is intended to be implemented on federal, state, district and municipality levels. The framework for the institution of the GRM will take a hierarchical approach as shown below;

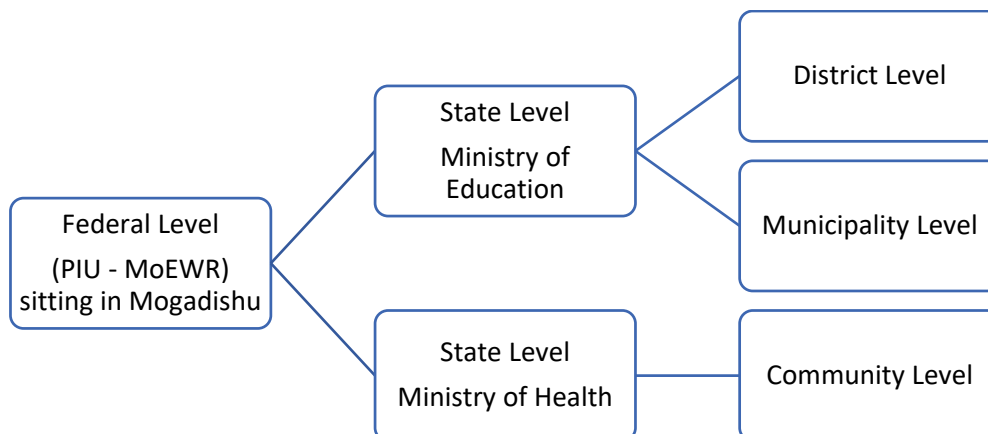


Figure 6-2: GRM Institutional Framework

71. This is the project wide GRM that is available for use by PAPs. The GRM will work interconnected with local level actors at the FMS, Ministries, Regional Level, District, and municipal levels. This is to ensure that all measures are taken to address the grievance. The GRM will be housed at MoEWR and provide access to SESRP stakeholders and contractors to register complaints received at sub-project level or the field. At the Municipality/Local Government level, a Grievance Redress Committee (GRC) shall be established and composed of local leaders, municipal representatives, the project, community-based organizations, Legal Aid and law enforcement agencies. The GRC will be headed through a consensual appointment done with affected communities, and steps will be taken to ensure that all grievances are properly documented and transferred to the digital platform for tracking of resolution. PAPs may also make complaints directly to the project wide GRM through the key contact persons (Grievance Officer), contact numbers-: +252610850613, +252628850613, email address: grm.sesrp@gmail.com, digital platform either by calling, sending text, WhatsApp etc. The project will identify an NGO GBV service provider to setting up and ethically manage SEA/SH complaints as documented in the separate GBV and SEA /HS Action Plan.

72. To ensure an effective operation of the GRM, potential grievances, tools for presentations and responding authority are classified according to the three project components on Table 6-5 below.

Table 6-5: Potential Grievances, Presentations, and Responding Authority

Project Component	Project Intervention Activity	Potential Nature of Grievance	Tools for Presentation	Ultimate Responding Authority
1	Distribution network reconstruction, reinforcement, and operations efficiency in the major load centers	<ul style="list-style-type: none"> - Land related matters, e.g., poles and cables running through or above homes and private lands - Environmental concerns due to presence of batteries and other equipment - Waste management (e.g., battery disposal) - Gender based violence / Sexual exploitation of locals because of labour influx 	<ul style="list-style-type: none"> - Physical complaint, - Written petitions, - Official Emails, - Phone calls & SMS to GRM hotlines, - Use of designated drop boxes - Channels for confidential and safe complaints for GBV/ SEA related grievances 	MoEWR, PIU, and ESPs,
2	Renewable energy generation optimization.	<ul style="list-style-type: none"> - Supply of equipment considered by consumers as substandard 	<ul style="list-style-type: none"> Physical complaint, - Written petitions, - Official Emails, - Phone calls & SMS to GRM hotlines 	MoEWR, PIU, and ESPs
3	Electricity services for improved public services delivery (Health) Institutions	<ul style="list-style-type: none"> - Accidents or injuries to student or community - Gender based violence/ Sexual Exploitation / Sexual Harassment as a result of labour influx - Security matters 	<ul style="list-style-type: none"> - Physical Complaint - Written petitions, - Official Emails, - Phone calls & SMS to GRM hotlines, - Use of designated drop boxes - Channels for confidential and safe complaints for GBV/ SEA related grievances 	Relevant ministries, PIUs and, ESPs
4	Sector Capacity Enhancement and Project Implementation Capacity Support.	<ul style="list-style-type: none"> - Gender based violence/ sexual exploitation /sexual harassment as a result of labour influx - Security related matters 	<ul style="list-style-type: none"> - Channels for confidential and safe complaints for GBV/ SEA related grievances - Physical complaint, - Written petitions, - Official Emails, Phone calls & SMS to - GRM hotlines 	

73. The GRM will be in place and functional throughout the project life cycle, until completion of all construction activities to the point that the project is decommissioned after achieving all expected deliverables. A separate mechanism will be developed to address worker grievances, which will be referred to as the Workers GRM. Grievances under the Workers GRM will be resolved by the contractors GRM has been established as early as possible in project development and supported by appropriate human and financial resources before start-up and function throughout project life, including operation and decommissioning.

74. The GRM will be a project wide GRM that will also be available for use by PAPs. The GRM will work inter-connectedly with local level actors at the FMS, Regional, Community, District, and municipal levels. This is to ensure that all measures are taken to address the grievance. The GRM will be housed at MoEWR (FGS) and provide access to SESRP stakeholders and contractors to register complaints received at sub-project level or the field. At the project level, a Grievance Redress Committee (GRC) has been established and is composed of the Director of Energy Department, project Legal Aid, Gender Specialist, Environmental and Social Safeguard Specialists of the project (see Annex VIII). State, Municipality and Community Level GRCs that consists of local leaders, municipal representatives, community-based organizations, Legal Aid and law enforcement agencies will be established after the first of the project or once the construction activities start. This GRC will be headed through a consensual appointment done with affected communities, and steps will be taken to ensure that all grievances are properly documented and transferred to the digital platform for tracking of resolution. NB aspect of gender representation shall be taken into consideration to ensure no gender is disadvantaged.

75. PAPs may also make complaints directly to the project wide GRM through the key contact persons (Grievance officer).

Hotline number: 478

Contact numbers:- +252610850613, +252628850613,

Email address: grm.sesrp@gmail.com, digital platform either by calling, sending text,

WhatsApp numbers: +252610850613, +252628850613.

76. The project will liaise with the identified NGO GBV service provider to ethically manage SEA/SH complaints, these complaints shall be documented in the separate GBV and SEA /HS Action Plan.

The GRM implementation process will involve the following steps:

- The safeguards specialists at MoEWR (FGS) will man the GRM platform for Project level to ensure timely sorting and escalation of grievances to resolving officer,
- Assign a focal person (s) from OE, Contractors and local GRC for grievance uptake and reporting,
- Train assigned focal person (s) to receive and log complaints in the GRM Database;
- Constitute GRM Committee to resolve grievances,
- Screen, classify and refer complaints to appropriate unit for redress Monitor, track and evaluate the process and results,
- Provide feedback to complainant within a period not later than 30 days for serious cases and 60 working days for catastrophic cases. The complainant shall be given an opportunity to appeal if not satisfied with resolution approach, findings or recommended remedy.
- Overall, the process for grievances reporting by aggrieved parties includes the following steps:
 - Lodge complaints through phone calls through the key contact persons, contact numbers, email addresses, text message, WhatsApp, in-person directly to the digital platform or the GRC at the local levels;
 - Acknowledgment and registration;
 - The investigation, verification, and determination of resolution options;
 - Provision of feedback to the stakeholder regarding resolution and progress towards resolution and complainant satisfied;
 - Final resolution -tracking and documenting actions and outcomes in the database and with the stakeholder;
 - Where a PAP is fully satisfied with the resolution process, the matter will be formally closed;

- If the complainant is not satisfied with the mediation provided using the project GRM, they are within their discretion to refer the complaint to the court of Law.

77. Diverse methods for reporting grievances that are culturally appropriate are to be used and they should permit self-identified, confidential, or anonymous procedures (professional letter writers, suggestion boxes, Email, toll-free telephone etc.).

Avenues for verbal complaints are:

- Complaints to members of the local Grievance Redress Committee (GRC),
- GRM specialists, E&S Safeguards & Communications desks at the SESRP –PIU,
- Open community mediation sessions,
- Operators’ Customer Care Unit,
- Town hall meetings,

Avenues for written complaints are:

- Complaint Boxes in the community, operator’s office or by hand,
- Letters or Email to the SESRP-PIU,
- Dedicated telephone lines shall include:
- SESRP -PIU hotlines
- Operator Customer Care hotlines

An email feedback system and 24/7-hour phones has been established and operationalized at the PIU.

Hotline Number: 478

Telephone: +252610850613 / +252628850613

WhatsApp: +252610850613 /+252628850613

Email: grm.sesrp@gmail.com

6.4.2 Security Management Plan

78. In line with the project SMP the following general framework shall be applicable:

- Decisions on the appropriate scope of the project's security arrangements will be guided by an assessment of (a) potential risks to the project's personnel and property, which may require a security response; (b) appropriate responses to the identified security risks; (c) potential impacts of a security incident on the project, local communities, and other parties; and (d) potential mitigation measures.
- The SMP shall define how and by whom security will be managed and delivered, the resources required, and the behavior that is expected of security personnel, as well as the security risks related to security personnel behavior and impacts on communities outlined in ESS4.
- The project will be guided by the principles of proportionality and Good International Industry Practice (GIIP), and by applicable relevant international standards and laws in relation to hiring (such as the UN Basic Principles on the Use of Force) and rules of conduct (such as the International Code of Conduct for Private Security Providers), training, equipping, and monitoring of such security workers. The project will not sanction any use of force by direct or contracted workers in providing security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.
- Periodic assessment of security risks during the life of the project allows security arrangements to be updated to reflect any new risks or changes in the operating environment. Security arrangements will be reviewed annually, or when a major event occurs that could affect the security of the project or the project's operating environment.
- The contractor EHS officer will liaise with the project coordinator at PIU (MoEWR) for the guidance on the level of security threat within different project implementation areas, and seek security clearance and physical support from the Ministry of Interior as per the security threat,
- The contractor EHS officer shall provide security clearance for project operation prior to work commencement in collaboration with the respective Project Coordinator.
- It is important to take these risks and impacts into consideration and to determine measures to address them, and this shall be part of the stakeholder engagement on the project, as described in ESS10. Project-level grievance mechanisms that are available to project workers, local communities, and other stakeholders allow them to provide feedback on the project's security arrangements and personnel.

79. The project-level grievance mechanism will be able to accept concerns or complaints regarding the conduct of security personnel and that such concerns and complaints, as well as any associated evidence and facts, be promptly documented and assessed and action be taken to prevent recurrence.

7. E&S Liabilities of the Contractor

7.1 Contractor's General Responsibilities

80. The contract shall comply with the provisions of the labour laws, legislation, and WB's ESS 2 provisions. Wherever possible, give priority to qualified local people when hiring employees. Recruitment should be fair and transparent to ensure all community segments - men, women, vulnerable individuals, minority clans, and VMGs who meet ESS 7 criteria - can access subproject benefits during construction, and that prioritizes the hire of locals for skilled, semi-skilled, and unskilled labour.

81. The contractor shall be responsible for the implementation of the contractor-related aspects of the ESMP and regular (monthly) reporting capturing the following areas as well:

- Workplace Health and Safety aspects
- Community Health and Safety
- Project Emergency Preparedness
- Management of SEA/SH Prevention and Response
- Sensitize community members and workers on contractor GRMs (both for the workers and general project GRM)
- Contractors should possess the capacity to provide training to their employees, subcontractors, and labor force regarding the environmental and social aspects of the project. This training may include safety protocols, waste management, and community engagement

82. Contractors are responsible for ensuring the safety and well-being of their workforce. They should have the capacity to develop and enforce safety protocols and provide necessary personal protective equipment (PPE) for workers.

83. The contractor on his part will have to appoint an EHS officer and a Social Specialist to coordinate and report on the ESMP implementation respectively.

84. The contractor is to engage a Community Liaison Officer to act as a link between the community and the contractor and support the Social Specialist.

85. The contractor will also have the obligation of identifying and managing the E&S risks related to his/her operations.

86. Contractors are expected to maintain accurate records and documentation related to environmental and social aspects of the project. This includes reporting on incidents, compliance, and any corrective actions taken.

87. Contractors should have contingency plans in place for responding to emergencies or unforeseen events that may have environmental or social impacts. They should be prepared to take immediate action to mitigate and manage such incidents.

88. Contractors must establish monitoring mechanisms to track their environmental and social performance throughout the project's lifecycle. Regular assessments and reporting are essential to ensure ongoing compliance.

89. Contractors should promptly report any instances of non-compliance with the ESMP to the project's management and regulatory authorities. This ensures that corrective measures can be taken in a timely manner.

90. Contractors should collaborate closely with the project management team to address any emerging environmental and social issues and to ensure that the project is executed in alignment with the ESMP's objectives.
91. Maintaining the required level of stakeholder engagement and communication, including providing project schedule information to the public, accepting, and resolving public grievances, advertising, and hiring local workers.
92. Maintain a working grievance redress mechanism.
93. The contractor is to comply with all regulations and by-laws at the county level and other relevant regulations and laws.
94. The contractor shall refer to ESMP recommendations and the ESMP when preparing the contractors-ESMP and the specific plans.
95. The contractor shall provide water required for use in connection with the work including the work of subcontractors and shall provide temporary storage tanks, if required.
96. The contractor shall make arrangements for sanitary conveniences for his workers. Any arrangements so made shall conform with the public health requirements for such facilities and the contractor shall be solely liable for any infringement of the requirements.
97. The contractor shall be responsible for all the actions of any subcontractors whom he subcontracts.
98. The contractor shall take all possible precautions to prevent nuisance, inconvenience, or injury to the neighboring properties and the public generally and shall take proper precautions to ensure the safety of the community.
99. All work operations that may generate noise, dust, vibrations, or any other discomfort to the workers and/or visitors of the client and the local community must be undertaken with care, with all necessary safety precautions taken.
100. The contractor shall make all efforts to muffle the noises from his tools, equipment, and workmen to not more than 70 dBA.
101. The contractor shall, upon completion of the work, remove and clear away all plant, rubbish, and unused materials and shall leave the whole site in a clean and tidy state to the satisfaction of the Proponent. He shall also remove from the site all waste.
102. No shrubs, trees, bushes, or underground thicket shall be removed except with the express approval of the proponent.
103. The standard of workmanship shall not be inferior to the Somali Bureau of Standards where it exists. No materials for use in the permanent incorporation into the works shall be used for any temporary works or purpose other than that for which it is provided. Similarly, no material for temporary support may be used for permanent incorporation into the works.
104. Disposing of the waste generated during construction activities by the Environment and Social Monitoring and Management Plan (ESMMP).
105. The contractor EHS officer will report on ESMMP implementation during the construction period. The aspect to be reported by the contractor will include safety issues i.e. hours worked, recordable incidents and corresponding Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, incidents and accidents, potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment, skills training, etc.); Environmental incidents and near

misses; noncompliance incidents with permits and national law; Training on E&S issues (dates, number of trainees, and topics); Details of any security risks; Worker & External stakeholder grievances and E&S inspections by contractor, including any authorities.

7.2 Contractor's Liabilities Onsite

106. **Safety of Workers:** The contractor is responsible for ensuring the safety of their workers and subcontractors. This includes providing appropriate safety training, personal protective equipment (PPE), and adherence to all relevant safety regulations and standards including WBGs and ESHGs.

107. **Structural Integrity:** Roof-mounted solar PV systems can be heavy and may require modifications to the building's structure to support the added weight. Contractors are responsible for assessing the rooftop's structural integrity/capacity, obtaining necessary permits, and ensuring that any modifications are done safely and in compliance with building codes.

108. **Electrical Safety:** Contractors must ensure the safe installation of electrical components, such as solar panels, inverters, and wiring. This includes proper grounding, insulation, and compliance with electrical codes and standards to prevent electrical hazards.

109. **Fire Safety:** The contractor should take precautions to minimize the risk of fire associated with the solar PV system. This may include installing fire-resistant materials, ensuring proper spacing between panels, and implementing fire safety measures.

110. **Infection Control:** In a healthcare facility, infection control is paramount. Contractors should take extra precautions to prevent the spread of contaminants, dust, or debris during the installation process. This is especially important in sensitive areas like operating rooms and patient rooms.

111. **Patient Privacy and Security:** Contractors must respect patient privacy and security. The installation process should not compromise patient confidentiality or access to medical facilities.

112. **Insurance and Liability Coverage:** Contractors should carry appropriate insurance coverage, including general liability insurance and workers' compensation insurance, to protect against accidents, injuries, or damage that may occur during installation.

113. **Compliance with Healthcare Regulations:** Healthcare facilities are subject to strict regulations and guidelines related to patient care and safety. Contractors must be aware of and comply with these regulations, including those related to infection control, noise levels, and security.

114. **Environmental Considerations:** Contractors should be mindful of environmental impacts during installation, such as the disposal of old equipment or hazardous materials. Proper disposal and recycling practices should be followed, and

115. **Project Timeline:** Delays or disruptions caused by the contractor's work could impact the healthcare facility's operations and patient care. Contractors should work closely with HCF management to minimize disruptions and adhere to agreed-upon timelines.

116. **Construction Management Plan:** The construction Environmental and Social Management Plan (C-ESMP) for the proposed subprojects shall include the following:

- a) **Control of Access:** The contractor shall ensure that the construction site is accessed by authorized persons only and that up-to-date records are kept.
- b) **Management of Fuels and Other Hazardous Materials:** The Contractor shall comply with all applicable laws, regulations, permit and approval conditions, and requirements relevant to the storage, use, and proper disposal of hazardous materials.
- c) **Management of the Construction Site:** The contractor shall prevent littering and the random discard of any solid waste on or around the construction site. The contractor shall manage other solid and liquid waste.
- d) **Fire Prevention and Management:** The Contractor shall prepare a fire prevention and fire emergency plan as a part of the plans to be submitted to MoEWR. The Contractor shall take all necessary precautions to prevent fires caused either deliberately or accidentally during the construction process.
- e) **Management of Air Quality:** The Contractor shall institute appropriate measures to minimize or avoid air quality impacts. This can be achieved through the formulation of air quality management plans.
- f) **Neighboring Landowner and Occupier Relations:** The Contractor shall respect the property and rights of neighboring landowners and occupiers at all times and shall treat all persons with deliberate courtesy. Additionally, the contractor shall respect any special agreements between the MoEWR and the neighbors.
- g) **Complaints Register:** The contractor shall establish and maintain a register for periodic review by the MoEWR that logs all the complaints raised by the neighbors or the general public about project activities. The register shall be regularly updated, and records maintained including the name of the complainant, his/her domicile and contact details, the nature of the complaint, and any action taken to rectify the problem. A separate mechanism will be developed to address worker grievances, which will be referred to as the Workers GRM. The primary purpose of the Workers GRM shall be to provide all workers with an avenue to raise workplace concerns. This shall be implemented in line with the Project Labour Management Plan that has been developed. The scope of the Workers GRM which will be developed shall be to create a systematic approach to improving the management of risks and impacts related to labor and working conditions in projects. The Workers GRM shall seek to engage project workers and their representatives on labor issues, including with representatives of workers' organizations where they exist; help inform the assessment of labor risks and impacts, by providing useful context and additional information.

117. **Rehabilitation and Site Closure:** After completion of construction activities, the contractor shall clear the site of construction materials and dispose of wastes in appropriate disposal sites. The contractor shall remove all temporary works on the construction site and grow grass in areas that are not covered by the installations to control erosion.

8. Roles and Capabilities at the Ministerial/ PIU Levels

8.1 Roles and Capabilities at the Ministerial/ PIU Levels

118. Investing in capacity-building programs for the Ministries of Energy and the project implementing unit's staff. This includes training in project management, environmental and social safeguards, financial management, and other relevant areas.

119. Engage and hire experienced professionals, consultants, and advisors in energy project management, environmental and social safeguards, and other critical areas. This can help bridge knowledge gaps and provide guidance on complex issues.

120. Implement robust project management systems, including tools for planning, monitoring, and evaluation. Ensure that project management software and reporting mechanisms are in place to track project progress and performance.

121. Define clear roles and responsibilities for each team member within the Ministries of Energy and the project implementing units. This helps avoid duplication of efforts and ensures that everyone knows their specific tasks.

122. Develop a comprehensive stakeholder engagement strategy to involve key stakeholders, including local communities, civil society organizations, and donors, in project planning and decision-making processes.

123. Review and strengthen the regulatory framework governing the energy sector in Somalia. Ensure that it aligns with international best practices and is conducive to investment and sustainable development.

124. Develop a comprehensive risk management plan that identifies potential risks and outlines strategies for mitigating and managing them. Regularly update and review this plan throughout the project lifecycle.

125. Establish sound financial management systems to ensure transparency and accountability in budgeting, expenditure, and financial reporting. This includes regular audits and adherence to financial regulations.

126. Strengthen the capacity to manage environmental and social aspects of the project. This may involve the development of an Environmental and Social Management Unit (ESMU) within ministries or project units, as well as training in environmental and social safeguards.

127. Develop a robust monitoring and evaluation framework to track project progress, measure impacts, and make data-driven decisions. Regularly review and adjust the framework as needed.

128. Establish clear reporting mechanisms for project updates, including regular progress reports and compliance reports related to environmental and social safeguards. Ensure that documentation is well-maintained, and

129. Maintain open and transparent communication with all stakeholders, including the public. Share project information, progress, and results through various channels, including websites, public meetings, and media.

• Planning for Closure:

- a) The implementing agency shall investigate practical options for the closure of the facility at least one year before decommissioning and submit a report to relevant authorities.
- b) The MoEWR shall develop a rehabilitation and decommissioning plan in conjunction with relevant stakeholders at least one year before the end of the facility's operations.
- c) The MoEWR shall explore options for re-use and recycling of the facility's components/structures.

- **Decommissioning**

- The MoEWR shall take into consideration the health and safety of personnel, contractors, neighbors, and the public during the planning and implementation of the demolition process.
- The MoEWR shall undertake a further survey to identify any contaminated areas and remediate them accordingly.

- **Post-closure**

130. The MoEWR shall ensure that the facility’s site is free of impacts associated with the closure and demolition. The MoEWR shall develop, rollout and implement a monitoring plan that includes:
- Monitoring of the rehabilitated site to confirm whether progress is satisfactory.
 - Outline of how land improvement and future land use will be affected by the past operations and decommissioning of the associated infrastructure.

8.2 Proposed Training Plan for this ESMP.

131. The Training Plan for Environment and Social Management Plan (ESMP) is a critical component that outlines the strategies and activities for educating and building the capacity of the contractor’s staff during the construction of the PV system, as well as ensuring enough capabilities of the MoH staff during operating the PV system at the selected sites. The Training Plan within an ESMP aims to ensure that all relevant parties understand and implement the necessary measures to mitigate and manage site-specific E&S risks and impacts effectively. The following Table summarizes the key requirements.

Table 8-1: Proposed E&S Training Program

#	Trainings/ Topics	Target trainees	Type	Time Hours	Responsibility	Cost (USD)
1	Introduction to ESMP	Hospital & Health Center Staff, Facility Management Teams, Contractors and Construction Workers	Workshops and Seminars	4	PIU / contractor	2,000
2	Regulatory Framework both Somalia, Somaliland and World Bank	Environmental Health Officers, Project Managers and Supervisors, Contractors and Construction Workers, Regulatory Authorities and Inspectors	Workshops and Seminars	4	PIU / contractor	2,000
3	Environmental & Social Impact Assessment (ESIA)	Project Managers and Supervisors, Regulatory Authorities and Inspectors	Workshops and Seminars	4	PIU / contractor	1,000
4	Occupational, Health and Safety Protocols	Safety and Security Personnel, Project Managers and Supervisors, Contractors and Construction Workers	On-the-Job Training	5	PIU / contractor	1,000
5	Community Health and Safety Protocols	Safety and Security Personnel	Simulation and Role-Playing Exercises	5	PIU / contractor	3,000
6	Waste Management	Environmental Health Officers, Project Managers and Supervisors, Contractors and Construction Workers	Field Visits and Site Tours:	4	PIU / contractor	5,000
7	Energy Efficiency,	Environmental Health Officers,	Field Visits	4	PIU / contractor	2,000

#	Trainings/ Topics	Target trainees	Type	Time Hours	Responsibility	Cost (USD)
	Renewable Energy and Water Management	Project Managers and Supervisors, Contractors and Construction Workers	and Site Tours:			
8	Stakeholder / Community Engagement	Community Liaison Officers, Contractors and Construction Workers, Civil Society Organizations (CSOs) and NGOs, Community Representatives	Focus Group Discussions	3	PIU / contractor	5,000
9	Gender and Social Inclusion	Contractors and Construction Workers, Regulatory Authorities and Inspectors	Workshops and Seminars	3	PIU / contractor	2,000

9. Annexes

Annex I: WHO Ambient Air Quality Guidelines

WHO Ambient Air Quality Guidelines ^{7,8}		
	Averaging Period	Guideline value in mg/m ³
Sulfur dioxide (SO ₂)	24-hour	125 (Interim target-1) 50 (Interim target-2) 20 (guideline)
	10 minutes	500 (guideline)
Nitrogen dioxide (NO ₂)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter PM ₁₀	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter PM _{2.5}	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

Annex II: General Noise Guidelines

Noise Level Guidelines ⁴		
Receptor	One Hour L_{Aeq} (dBA)	
	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Residential; institutional; educational ⁵	55	45
Industrial; commercial	70	70

Annex III: Noise Limits for Various Working Environments

Noise Limits for Various Working Environments		
Location /activity	Equivalent level $L_{Aeq,8h}$	Maximum $L_{A_{max,fast}}$
Heavy Industry (no demand for oral communication)	85 dB(A)	110 dB(A)
Light industry (decreasing demand for oral communication)	50-65 dB(A)	110 dB(A)
Open offices, control rooms, service counters or similar	45-50 dB(A)	-
Individual offices (no disturbing noise)	40-45 dB(A)	-
Classrooms, lecture halls	35-40 dB(A)	-
Hospitals	30-35 dB(A)	40 dB(A)

Annex IV: Summary of Recommended PPE According to Hazard

Summary of Recommended Personal Protective Equipment According to Hazard		
Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.

⁴ Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, World Health Organization (WHO), 1999.

⁵ For acceptable indoor noise levels for residential, institutional, and educational settings refer to WHO (1999)

Summary of Recommended Personal Protective Equipment According to Hazard		
Objective	Workplace Hazards	Suggested PPE
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or earmuffs).
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection against moving & falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fog, fumes, mist, gases, smoke, vapor.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mist, vapor, and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits, aprons etc. of appropriate materials.

Annex V: Southwest Health Facility Management Stakeholders

INSTITUTION REPRESENTATIVE	SIGNATURE
Nor Omar <u>Mayow</u>	
<u>Liiban</u> Hassan Abdi	
<u>Dr. Adam</u> Abdirahman Mohamed	
<u>Dr. Mohamed</u> Daud Mohamed	
<u>Farhiyo</u> Jubba	
<u>Abdifatah</u> Ibrahim <u>Hashi</u>	
<u>Dr. Abdullahi</u> <u>Mayow</u> <u>Tesiyow</u>	
Mohamed Nur Ibrahim	
Abbas Gedo	
Abdulkadir Omar Ibrahim	
<u>Dr. Abdullahi</u> <u>Moalim</u> <u>Ali</u>	
<u>Dr. Ali</u> Osman Omar	
<u>Dr. Ahmed</u> Omar Mohamed	
Mohamed Ibrahim Ali	
Mukhtar <u>Qasim</u> <u>Ali</u>	

