UNITED NATIONS OFFICE FOR PROJECT SERVICES

YEMEN INTEGRATED URBAN EMERGENCY SERVICES PROJECT (YIUSEP)

Environmental and Social Management Framework (ESMF)

9 May 2018
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<tbody>
<tr>
<td>ARP</td>
<td>Abbreviated Resettlement Plan</td>
</tr>
<tr>
<td>AWD</td>
<td>Acute Watery Diarrhea</td>
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<tr>
<td>CERC</td>
<td>Contingent Emergency Response Component</td>
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<tr>
<td>CFR</td>
<td>Case Fatality Rate</td>
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<tr>
<td>CSO</td>
<td>Civil Society Organization</td>
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<tr>
<td>DLAs</td>
<td>District Local Authorities</td>
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<tr>
<td>DNA</td>
<td>Damage and Needs Assessment</td>
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<tr>
<td>EA</td>
<td>Environmental Assessment (OP 4.01)</td>
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<tr>
<td>EFSNA</td>
<td>Emergency Food Security and Nutrition Assessment</td>
</tr>
<tr>
<td>EHNP</td>
<td>Emergency Health and Nutrition Project</td>
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<tr>
<td>EHS</td>
<td>Environmental, Health and Safety</td>
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<tr>
<td>EPL</td>
<td>Environmental Protection Law (26/1995)</td>
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<tr>
<td>ERP</td>
<td>Employment to Population Ratio</td>
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<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
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<tr>
<td>ESMF</td>
<td>Environmental and Social Management Framework</td>
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<tr>
<td>FMFA</td>
<td>Financial Management Framework Agreement</td>
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<tr>
<td>FAO</td>
<td>Food and Agricultural Organization of United Nations</td>
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<tr>
<td>FCV</td>
<td>Fragility, Conflict and Violence</td>
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<tr>
<td>GDP</td>
<td>Gross Development Product</td>
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<tr>
<td>GIZ</td>
<td>Gesellschaft für Internationale Zusammenarbeit</td>
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<tr>
<td>GRM</td>
<td>Grievance Redress Mechanism</td>
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<tr>
<td>IDP</td>
<td>Internally Displace Person</td>
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<tr>
<td>IPC</td>
<td>Integrated Food Security Phase Classification</td>
</tr>
<tr>
<td>LC</td>
<td>Local Councils</td>
</tr>
<tr>
<td>LED</td>
<td>Light-Emitting Diode</td>
</tr>
<tr>
<td>LFPR</td>
<td>Labor Force Participation rate</td>
</tr>
<tr>
<td>LTI</td>
<td>Lost time to injury</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>PAP</td>
<td>Project Affected People</td>
</tr>
<tr>
<td>PHSP</td>
<td>Project Health and Safety Plan</td>
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<tr>
<td>PMU</td>
<td>Project Management Unit</td>
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<tr>
<td>PTC</td>
<td>Public Telecommunication Corporation</td>
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<tr>
<td>PV</td>
<td>Photo Voltaic</td>
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<tr>
<td>PWP</td>
<td>Public Works Project</td>
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<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
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<tr>
<td>RoY</td>
<td>Republic of Yemen</td>
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<tr>
<td>RPF</td>
<td>Resettlement Policy Framework</td>
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<tr>
<td>RMF-IU</td>
<td>Road Maintenance Fund Implementation Unit</td>
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<td>SAP</td>
<td>Safeguard Action Plan</td>
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<td>SMEPS</td>
<td>Small and Medium Enterprise Perceptions Survey</td>
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<tr>
<td>TFPM</td>
<td>Task Force on Population Movement</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children's Emergency Fund</td>
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<td>UNOPS</td>
<td>United Nations Office for Project Services</td>
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<tr>
<td>UW-PMU</td>
<td>Urban Water Project Management Unit</td>
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<tr>
<td>WASH</td>
<td>Water, Sanitation and Hygiene</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WWTP</td>
<td>Wastewater Treatment Plant</td>
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<tr>
<td>YIUSEP</td>
<td>Yemen Integrated Urban Services Emergency Project</td>
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Glossary of Terms Used in the ESMF

**Chance find procedure.** A chance find is archaeological material encountered unexpectedly during project construction or operation. A chance find procedure is a project-specific procedure which will be followed if previously unknown cultural heritage is encountered during project activities. The chance finds procedure will set out how chance finds associated with the project will be managed. The procedure will include a requirement to notify relevant authorities of found objects or sites by cultural heritage experts; to fence off the area of finds or sites to avoid further disturbance; to conduct an assessment of found objects or sites by cultural heritage experts; to identify and implement actions consistent with national law; and to train project personnel and project workers on chance find procedures.

**Child labor** consists of work by children that is economically exploitative or likely to be hazardous or to interfere with the child’s education, or to be harmful to the child’s health or physical, mental, spiritual, moral, or social development.

**Compliance** compares how well a process meet the requirements placed on the process.

**Disposal.** Final placement or destruction of wastes, polluted soils, and toxic or hazardous materials. Disposal may be accomplished through approved secure landfills, surface impoundments, or incineration.

**Effluent.** Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall; generally refers to wastes discharged into surface waters.

**Environmental, Health, and Safety Guidelines** (EHSGs) are technical reference documents with general and industry-specific statements of Good International Industry Practice. The EHSGs contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable cost. For complete reference, consult the World Bank Group Environmental, Health, and Safety Guidelines, [http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_externa.../sustainability/our+approach/risk+management/ehsguidelines](http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines).

**Environment and social impact assessment (ESIA)** is a safeguards instrument to identify and assess the potential environmental impacts of a proposed project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures.

**Environmental and social management plan (ESMP)** is a safeguards instrument that details: (a) the measures to be taken during the implementation and operation of a project to eliminate or offset adverse environmental impacts, or to reduce them to acceptable levels; and (b) the actions needed to implement these measures.

**Environmental and social management framework (ESMF)** is a safeguards instrument that examines the issues and impacts associated when a project consists of a program and/or series of subprojects, and the impacts cannot be determined until the program or subproject details have been identified. It sets out the principles, rules, guidelines and procedures to assess environmental and social impacts, and contains measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project impacts.

**Good International Industry Practice (GIIP)** is defined as the exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such exercise should be that the project employs the most appropriate technologies in the project-specific circumstances.

**Grievance.** An issue, concern, problem, or claim (perceived or actual) that an individual or community group wants a company or contractor to address and resolve.

**Grievance Redress Mechanism (GRM)** is a locally based, formalized way to accept, assess, and resolve community feedback or complaints from individuals or communities who believe they are adversely affected by the Project.
**Hazardous wastes.** By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Substances classified as hazardous wastes possess at least one of four characteristics—ignitability, corrosivity, reactivity, or toxicity—or appear on special lists.

**Landfill.** Sanitary landfills are land disposal sites for nonhazardous solid wastes at which wastes are spread in layers and compacted to the smallest practical volume.

**Leachate.** A liquid that results when water collects contaminants as it trickles through wastes, agricultural pesticides, or fertilizers.

**Mitigation.** Measures taken to reduce adverse impacts on the environment.

**Monitoring.** Periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements or pollutant levels in various media or in humans, animals, and other living things.

**Occupational Health and Safety** deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards (WHO).

**Sludge.** A semisolid residue from any of a number of air or water treatment processes. Sludge can be a hazardous waste.

**Solid wastes.** Nonliquid, nonsoluble materials, ranging from municipal garbage to industrial wastes, that contain complex, and sometimes hazardous, substances. Solid wastes include sewage sludge, agricultural refuse, demolition wastes, and mining residues. Technically, solid wastes also refer to liquids and gases in containers.

**Stakeholder.** Persons or groups who are directly or indirectly affected by a project as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. They may include locally affected communities or individuals and their formal or informal representatives, national or local government authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses.

**Stakeholder Engagement** is a broad, inclusive, and continuous process between a project proponent and those potentially affected by the project that usually spans the project’s life. It includes consultations, information disclosure and dissemination, and participation.

**Wastewater treatment plant.** A facility containing a series of tanks, screens, filters, and other processes by which pollutants are removed from water.
EXECUTIVE SUMMARY

This Environmental and Social Management Framework (ESMF) was prepared for the Yemen Integrated Urban Services Emergency Project (YIUSEP).

The World Bank is financing the YIUSEP to support Yemen’s reconstruction and recovery, under the provisions of World Bank OP 10.00, paragraph 12, Projects in Situations of Urgent Need of Assistance or Capacity Constraints. The project aims to restore access to critical urban services in selected cities where most of the conflict-related damage has occurred. The targeted services cover four sectors: (i) tertiary municipal services and solid waste management; (ii) urban water and sanitation; (iii) urban roads; and (iv) electricity for critical services. The Project is implemented in the form of subprojects in at least three cities for the first year of intervention. Likely candidates for the first year are Aden, Hodeidah, and Sana’a.

The United Nations Office for Project Services (UNOPS) is responsible for overall project implementation, in cooperation with three local implementing partners: the Public Works Project (PWP), and the Urban Water Project Management Unit (UW-PMU), and the Road Maintenance Fund Implementation Unit (RMF-IU). UNOPS has recruited an Environmental and Social Safeguards Officer (ESSO), based in Sana’a, to oversee Project safeguards, as well as an international expert to support the ESSO and ensure the overall implementation of the ESMF.

The ESMF is guided by the requirements of the World Bank’s Operational Policy on Environmental Assessment (OP 4.01), including the World Bank Group Environment, Health and Safety (EHS) Guidelines. It also meets the UNOPS Environmental, Health and Safety (EHS) procedures and practices and complies with Yemeni environmental and social laws and regulations.

The ESMF distinguishes between the impacts associated with generic construction activities that would be the direct responsibility of contractors from sector-specific impacts that would be the responsibility of UNOPS and its implementing partners. Appropriate mitigation measures are defined for every type of impact.

The ESSO will screen all subproject proposals prepared by UNOPS and its implementing partners to determine the environmental and social issues that might be triggered by the subproject, and to decide what type and level of assessment is needed.

The subproject screening process will involve the following steps:

1. Determination of applicability of environmental and social safeguards. Subprojects unlikely to have direct or indirect environmental or social impacts will not require further work.
2. Eligibility of subprojects for Project financing. The ESSO will identify, analyze and assess if the subproject is likely to have any of the following attributes on an exclusion list.
3. Determination of the need for works contracts for the subproject in order to apply environmental and social clauses for contractors.
4. Application of a checklist to screen eligible subprojects.
5. Assigning each eligible subproject one of the following risk levels:

**Level 1. Subprojects that are unlikely to have direct or indirect environmental or social impacts (equivalent to Category C in OP 4.01).** These subprojects do not require safeguards instruments such as clauses for contractors, ESIAs or ESMPs.

**Level 2. Subprojects that involve works but do not have impacts beyond generic construction impacts that are managed by contractors.** These subprojects will require an ESMP consisting only of a description of the subproject and the Environmental and Social Clauses for contractors (see Chapter 10). These subprojects might also require an Abbreviated Resettlement Action Plan (ARAP) prepared under the Resettlement Policy Framework.

**Level 3. Subprojects that cause no more than three environmental or social impacts** (see checklist above and Chapter 6). In addition to the Environmental and Social Clauses for Contractors, these subprojects will require an assessment limited to the triggered impacts and will define proportionate and sufficient mitigation measures specific to these impacts, taking into account the mitigation measures described in Chapter 7. These mitigation measures will be
implemented by UNOPS and its implementing partners.

**Level 4. Subprojects that trigger significant environmental and social impacts.** These subprojects will require a full ESIA and ESMP. They might also require an ARAP or a RAP.

UNOPS will apply the World Bank’s requirements for consultation and disclosure of safeguards instruments. Consultations will be initiated as soon as subprojects screening has been completed and consultation records will be kept in the Project Office. Consultations will take into consideration the sociocultural context of Yemen.

UNOPS and its implementing partners will incorporate environmental and social clauses for contractors in tender documentation and contract documents, so that potential bidders are aware of environmental and social performance requirements expected from them and are able to reflect that in their bids. UNOPS and its implementing partners will enforce compliance by contractors with these clauses.

The clauses cover four issues: (i) Environment, Health and Safety (EHS); (ii) environmental and social monitoring by contractors; (iii) environmental and social liabilities; and (iv) grievance mechanism for workers. These clauses will be referred to in all subproject ESMPs. Subproject ESMPs will also include any training required for contractors to understand and satisfactorily meet the Project’s environmental and social requirements.

UNOPS will monitor and report on the ESMF implementation with inputs from implementation partners and the TPM agent. The ESSO will ensure that safeguards monitoring is included in the Project’s quarterly reports to the World Bank.

The Project will establish a Grievance Redress Mechanism that will be used for environmental, resettlement and social issues. UNOPS and the Implementing Partners will each recruit or designate a GRM focal point to handle Project activity-related complaints.
Chapter 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

1. This Environmental and Social Management Framework (ESMF) was prepared by UNOPS to address the environmental and social impacts and risks of the Yemen Integrated Urban Services Emergency Project (YIUSEP).

2. The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social impacts of subprojects prepared during Project implementation. It includes guidelines to prepare measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts of subprojects, provisions for estimating and budgeting the costs of such measures, and information on the agencies responsible for addressing project impacts.

3. UNOPS has in parallel prepared a Resettlement Policy Framework (RPF) to meet the requirements of the World Bank’s Resettlement Policy (OP 4.12).

1.2 Background

4. The ongoing conflict in Yemen has caused major loss of life, internal displacement, destruction of infrastructure and disruptions in service delivery across Yemen’s main sectors, exacerbating a humanitarian situation that was already quite fragile. Since the start of the conflict in March 2015, the provision of public services such as health, education, electricity and water has come to a virtual standstill in many governorates. The destruction of infrastructure has severely affected access to life-saving assistance while restrictions on imports (e.g. of food, fuel, and/or medicines), mobility limitations, interruption in the power supply, reduction of staff due to non-payment of salaries, and lack of operating budget for local authorities, have caused significant disruptions to the supply chain and to the overall availability of services.

5. In light of the reduced or even absent provision of public services, communities have adopted various coping strategies, including using alternate water and energy sources, relying on alternate service providers and community-based service delivery initiatives to address the shortfall. For example, in Amran City, many residents are relying on off-grid solar solutions to access electricity. These alternative mechanisms have played a critical role in ensuring the resilience of communities.

6. Preliminary findings from the second phase of the Damage and Needs Assessment (DNA) illustrate that urban services in Yemen are deeply interconnected. Physical damage to infrastructure and the lack of functionality in one sector often spill over into other sectors with significant consequences on both the access to and quality of services. For example, in cities such as Aden, the lack of functionality in the water sector is tied most directly to the lack of electricity rather than to physical damage to water infrastructure. As a result, wastewater continues to overflow into Aden’s streets, which in turn has significant implications for the health and transport sectors. Similarly, the absence of electricity across many cities in Yemen is not solely tied to infrastructure damage of energy facilities but rather to the lack of fuel, amongst others due to severe transport limitations and access constraints. These cross-sectoral linkages demonstrate the need for an integrated, multi-sectoral approach that provides synergies and responds to the multi-faceted needs on the ground.
Chapter 2

PROJECT DESCRIPTION

7. The World Bank is financing the Yemen Integrated Urban Services Emergency Project (YIUSEP), under the provisions of World Bank OP 10.00, paragraph 12, *Projects in Situations of Urgent Need of Assistance or Capacity Constraints*.

8. The overall objective of the Project is to restore access to critical urban services in selected cities of Yemen where most of the conflict-related damage has occurred. The targeted services cover five sectors: (i) tertiary municipal services and solid waste management; (ii) urban water and sanitation; (iii) urban roads; and (iv) electricity for critical services and housing. The Project is being implemented in the form of subprojects in at least three cities for the first year of intervention. Likely candidates for the first year are Aden, Hodeidah, and Sana’a. No investments in any of the sectors will be undertaken unless there is sufficient evidence that the supply chain and/or related network or system will be operational enough to assure full utilization of the investment.

9. The Project is implemented by the United Nations Office for Project Services (UNOPS). UNOPS will work with three local implementing partners: the Public Works Project (PWP), the Urban Water Project Management Unit (UW-PMU), and the Road Maintenance Fund Implementation Unit (RMF-IU).

2.1 Component 1. Service Restoration

2.1.1 Tertiary Municipal Services and Solid Waste Management

10. The Project subcomponent includes small-scale, neighborhood-level tertiary municipal goods and infrastructure that will improve access to municipal services. Selection of investments will be based on the priority needs identified by each targeted urban community in collaboration with the relevant District Local Authorities (DLAs) and/or communities. Since infrastructure will be provided through local contractors, this subcomponent will also help restore local economic activity and generate local employment through the participation of small private sector contractors, building material suppliers, and service providers.

11. Activities supported by the subcomponent may include:

i. **Solid waste management.** Prior to any investments in this sector in any city, a site suitability assessment will be undertaken of existing landfill sites. The assessment will produce an action plan designed to enable solid waste collection activities in conjunction with a pragmatic and conflict-sensitive landfill site management program that implements mitigation measures determined to satisfy safeguard requirements and minimize environmental impacts. Based on the action plan, possible activities in the sector may include: output-based service contracts to restore collection and transfer of solid waste to the landfill sites; environment and social safeguards mitigation measures for landfill sites; weighing stations for landfill sites; and limited provision of inputs (e.g. waste collection bins, etc.). Given the imminent health impacts of the uncollected garbage in the streets, waste collection – as one of the responses to the cholera epidemic – will be undertaken in parallel to the necessary mitigation measures at the landfills as identified by the site suitability assessment. If the assessment finds an existing landfill site to be unsuitable because of severe health and environmental risks and therefore remedial actions are not feasible within the scope of this Project, the Project will either dispose of the waste in an alternate landfill – if possible – or not conduct waste collection from this city.

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1 The housing sector subcomponent will not include any investments or works but will focus on technical assistance to prepare for housing sector reconstruction once the situation permits.
ii. **Neighborhood sanitation activities** may include the rehabilitation of existing inspection chambers and manholes (including replacement of damaged manhole covers), and the repair or expansion of sewer pipes not covered by LCs, subject to their linkages to functional water treatment/disposal systems.

iii. **Rainwater drainage** will improve storm water drainage by constructing channels, box culverts, and water breakers in existing water pathways; rehabilitating existing channels; and providing grills to ensure outlets are not blocked. To the extent possible, these activities will be coordinated with solid waste collection programs.

iv. **Stone paving of neighborhood streets** that are not covered under the urban roads subcomponent. Stone paving of streets will also include paving of pedestrian sidewalks.

v. **Rehabilitation of local parks and green spaces** including cleaning and paving of existing pathways, providing sitting spaces and shades, tree plantation/greenery suitable for the local climate, repair of the commonly-used fencing and gates that have been damaged, and children’s play areas. The rehabilitation of local parks and green spaces will have significant social benefits for the beneficiary communities, as visiting green spaces and public parks during weekends and public holidays has become the main source of entertainment for many families due to lack of alternatives.

12. The subcomponent is implemented by UNOPS in partnership with PWP.

2.1.2 **Urban Water and Sanitation**

13. The subcomponent includes small- to medium-scale goods and infrastructure works, as well as critical supplies (such as fuel) to restore water and sanitation service delivery at the city level. The selection of activities will be based on the priority needs to be identified by UNOPS, UW-PMU, and LCs in consultation with the relevant DLAs and/or local communities. These subprojects will complement water and sanitation system activities currently foreseen under the Yemen Emergency Health and Nutrition Project (EHNP) Second Additional Financing (P164466), which focuses on the rehabilitation of medium- to large-scale water and sanitation infrastructure including Waste Water Treatment Plants (WWTPs).

14. Activities to be supported by this subcomponent may include:
   i. replacement of needed assets like pumps, generators, water treatment units, related facilities, and spare parts;
   ii. rehabilitation of pipes, water tanks, existing wells, and WWTPs;
   iii. service delivery maintenance support to LCs including transportation allowance for critical staff, fuel supply, and electricity expenses (as needed);
   iv. awareness campaign on utility payment through citizen engagement;
   v. support for the establishment of private tanker filling stations and associated accreditation;
   vi. creation of a directory of service providers and their contact information, including making the directory widely available, allowing household consumers to contact multiple water delivery services to get more reliable water supply at competitive prices; and
   vii. sector specific analytical work required during the course of Project implementation.

15. Particular attention will be paid to investments in sanitation to ensure that the entire supply chain from collection to final treatment is functional or made functional through the investments. As water supply in the network was intermittent prior to the conflict, investments in water treatment inputs or facilities, or leak detection equipment will be considered only if evidence can be presented that demonstrates the viability of such investments.

16. The subcomponent is implemented by UNOPS in partnership with the UW-PMU. Activities under this subcomponent will be coordinated with UNICEF under the EHN.

2.1.3 **Urban Roads**

17. The subcomponent will rehabilitate primary and secondary urban roads including those at the entrances to the cities. Activities may include spot and pothole repairs, crack sealing, patch works, asphalt resurfacing, road safety improvement works and intersection rehabilitation. This
subcomponent will contribute to increasing mobility and access, including supporting regeneration of economic activity, and improving road safety. The choice of activities is based on the priority needs identified by UNOPS and RMF-IU in consultation with the DLAs and/or local communities. Each rehabilitation works contract will maximize the use of manual labor to support local employment.

18. The subcomponent is implemented by UNOPS in partnership with the RMF-IU.

2.1.4 Electricity for Critical Services

19. This subcomponent supports the restoration of electricity supply to critical urban services. During the first year, it will prioritize off-grid electricity solutions for functional water, sanitation, health and education facilities. Demand for such activities will be closely coordinated with relevant UN agencies. Other urban services may be included in later years based on local-level demand. The short- to medium-term activities under this subcomponent may include:

   i. rehabilitation of existing conventional (diesel) generation systems
   ii. installation of new off-grid generation using diesel, renewable energy (such as rooftop or ground-mounted solar photovoltaic (PV) panels for buildings) or diesel-solar PV hybrid technologies;
   iii. restoration of fuel supply, where needed;
   iv. solar PV and light-emitting diode (LED) street lights; and
   v. energy efficiency improvements, where possible.

20. The long-term, sustainable option is to move to grid-based electricity supply platforms that can provide more reliable and affordable electricity. While the focus of this Project in the short-term will be on off-grid solutions targeted for electricity supply to critical urban services, the feasibility of private sector service contracts for decentralized production and provision of electricity may be examined in the later years of the Project.

21. The subcomponent is implemented by UNOPS. Activities under this subcomponent will be coordinated with public service institutions (e.g. hospitals, health facilities, schools, local water corporations, etc.), municipal authorities, international agencies (e.g. WHO and UNICEF), and other relevant stakeholders.

2.1.5 Housing Sector

22. This subcomponent will focus on conducting technical assistance (TA) for the housing sector, which is the most impacted sector in terms of recovery needs. TA may include: (a) addressing Housing Land and Property (HLP) rights through a detailed assessment of current HLP status, identifying potential aspects that will affect housing reconstruction efforts, and suggesting solutions that include community participation in mapping property rights, taking into account the gender gap in property rights; (b) conducting a damage survey (where feasible) to evaluate the structural soundness of damaged houses, categorizing the level of damage to each housing unit and conceiving an appropriate level of activity for each; (c) developing a housing assistance targeting framework and eligibility criteria; (d) mapping of organizations (government agencies, non-governmental organizations (NGOs,) and private sector) available to support the reconstruction process and assessing their capacity; (e) developing suitable financing strategies for housing reconstruction; (f) developing hazard-resistant housing solutions that build on local architecture; and (g) developing instructive materials and guidelines adapted to vernacular construction techniques, and preparing a communications and training strategy.

23. If the assessments are completed and appropriate reconstruction strategies can be developed prior to Project completion, funding could be provided under this project to support the repair and rebuilding of damaged residential structures.

2.2 Component 2: Implementation Support and Capacity Development
2.2.1 Project Implementation and Management Support

24. This subcomponent will finance: (a) general management support (indirect) costs for UNOPS; (b) direct project management and supervision costs required to support the implementation of the Project; (c) Project monitoring, evaluation and coordination at the city level; (d) a subproject-tailored, global information system (GIS)-based expenditure tracking and information dissemination system to promote transparency and accountability; e) independent audits of project activities, if required; and f) the establishment of a Grievance Redress Mechanism (GRM) in the UNOPS Sana’a office to document any possible complaints and ensure follow-up. UNOPS will perform project management and implementation support functions through their local office in Sana’a. Its project management and implementation support team will include a program manager, procurement specialists, finance specialists, an environment and social safeguards specialist, a logistician officer, and an administrative officer.

2.2.2 Technical Assistance

25. This subcomponent will support capacity building activities for the stakeholders who will be involved in the delivery of activities under the Project at central and local levels. These activities will focus on technical skills for all sectors involved in the Project, including more effective human resource management, coordination, transparency and accountability, safeguards, and public financial management. The outcomes of the first round of capacity development will allow the Bank team to gain a better understanding of the capacity needs on the ground and tailor the activities under this subcomponent accordingly.

26. This subcomponent will also support citizen engagement and communication throughout the Project, including facilitation of a bottom-up process for needs prioritization at the local level, as follows:

a) A context-sensitive public communication plan will be devised and rolled out with the start of subproject implementation and throughout Project duration. The goal of this outreach campaign is to ensure the transparency of subprojects’ cost, selection rationale, and implementation schedule. This will be complemented by a GRM system put in place to allow citizens to voice grievances related to Project activities. Citizen communication will also be utilized to encourage beneficiaries to pay for the improved services to enable local providers to sustain these services after Project completion.

b) Facilitate citizen engagement in the identification, prioritization and monitoring of investment projects. This will require conducting initial assessments and contextual analyses to develop suitable processes for citizen participation. Various modalities would be considered, including focal group discussions, town halls, and online voting platforms. The resulting participatory processes will be applied to the selection of investment projects in the second and third year of the Project. Citizen participation in the decision-making on annual investment plans will be subject to technical priorities determined by UNOPS in consultation with its local partners. This citizen input will help to validate priorities identified by the implementing agency and to choose between competing investment options. Citizen consultations arrangements, subject to local political realities, will aim to strengthen the role of key local entities, such as the DLAs, in institutionalizing and sustaining sound citizen participatory practices. The Project will also explore using UNOPS’ citizen-based monitoring mechanisms.

27. UNOPS will implement these activities by engaging Civil Society Organizations or other relevant technical experts, as needed.

2.2.3 Third Party Monitoring

28. UNOPS will engage a Third-Party Monitoring (TPM) agent to undertake independent results

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2 The GRM system will be focused on selection and implementation of capital works and related investments.
verification of subprojects funded under the Project. The TPM agent will report on the activity outputs, the restoration of services for the intended beneficiaries, and the fiduciary and safeguard processes followed by the local partners. The Terms of Reference (TOR) for the TPM agent will be developed by UNOPS and agreed upon with the World Bank. UNOPS will regularly share the TPM reports with the Bank and will include in the report the actions taken to address any implementation issues identified by the TPM agent.

2.3 Component 3. Contingent Emergency Response

29. The objective of this component is to improve the country’s response capacity in the event of an emergency, following the procedures governed by World Bank OP 10.00, paragraph 12 (Rapid Response to Crises and Emergencies). There is a probability that, during the life of the Project, a natural disaster, epidemic or another emergency that will have a major adverse economic and/or social impact. The Contingent Emergency Response Component (CERC) allows UNOPS to reallocate funds from other Project components or to serve as a conduit for additional financing from other funding sources for eligible emergencies to mitigate, respond to and recover from the potential harmful consequences arising from the emergency. Disbursements under this subcomponent will be subject to the declaration of emergency by the RoY, the international community, or the United Nations.
Chapter 3
ENVIRONMENTAL AND SOCIAL BASELINE

3.1 Introduction

30. The Republic of Yemen is located in the southern Arabian Peninsula. Its total area is 527,968 km², with an estimated population of 27,431,706 in 2016 (13,856,00 female and 13,475,706 male). Three large cities are targeted for the first year of the Project: Sana’a, Aden and Hodeida.

31. Sana’a is one of the oldest continuously inhabited cities in the world. At an elevation of 2,300 meters (7,500 ft), it is also one of the highest large cities in the world. The Old City of Sana’a, a UNESCO World Heritage Site, has a distinctive architectural character, most notably expressed in its multi-story buildings decorated with geometric patterns.

32. Sana’a (Amanat Al Asimah) had an estimated population of 2,821,334 in 2016 that was disproportionately female: 1,530,409 females and 1,290,924 males. It is the largest city in Yemen. However, the city itself is not part of the Sana’a Governorate, but forms the separate administrative district of "Amanat Al-Asimah".
33. Aden is a port city located by the eastern approach to the Red Sea. It encloses the eastern side of a vast, natural harbor that comprises an oil refinery and a tanker port. It had an estimated population of 894,000 in 2016, including 479,000 females and 415,000 males.
34. Hodeidah is a port city situated on the Red Sea approximately 225 km west of Sana’a. It had an estimated population of 597,487 in 2016 that was disproportionately male: 273,650 females and 313,837 males.

![Map of Hodeidah](image)

**Figure 5. Map of Hodeidah**

3.2 The Conflict

35. The ongoing conflict started in March 2015. It has led to the destruction of basic infrastructure, the disruption of social services, mass displacement and loss of lives and livelihoods. There are over two million internally displaced persons (IDPs), nearly half of them children, representing over 300,000 households. There are also nearly a million returnees, as well as over 280,000 refugees and migrants.

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Individuals (in)</th>
<th>Individuals (out)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>158,604</td>
<td>272,676</td>
</tr>
<tr>
<td>Aden</td>
<td>41,028</td>
<td>42,006</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>10,500</td>
<td>6,900</td>
</tr>
</tbody>
</table>

**Table 1. Distribution of IDPs in Hodeidah, Aden and Amanat Al Asimah**

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Household</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>31,028</td>
<td>186,168</td>
</tr>
<tr>
<td>Aden</td>
<td>55,444</td>
<td>322,664</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>191</td>
<td>1,146</td>
</tr>
</tbody>
</table>

**Table 2. Distribution of Returnees in Hodeidah, Aden and Amanat Al Asimah**
Table 3. IDPs/Returnees Percentage by Gender.

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Men</th>
<th>Women</th>
<th>Boys</th>
<th>Girls</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>22%</td>
<td>23%</td>
<td>28%</td>
<td>27%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Aden</td>
<td>23%</td>
<td>23%</td>
<td>32%</td>
<td>22%</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>21%</td>
<td>22%</td>
<td>30%</td>
<td>26%</td>
<td>52%</td>
<td>48%</td>
</tr>
</tbody>
</table>


36. The conflict is rapidly pushing the country towards social, economic and institutional collapse, as the conflict has triggered an economic decline that has steadily eroded people’s coping mechanisms.

3.2.1 Food

37. The food and nutrition situation has rapidly deteriorated because of the conflict, leaving large parts of the population vulnerable to famine. A total of 107 out of 333 districts now risk sliding into famine, which is an increase of 13% since April 2017. An estimated 17 million Yemenis are food insecure and require urgent humanitarian assistance to save lives and protect livelihoods according to the Integrated Food Security Phase Classification (IPC), which is largely based on data from the Emergency Food Security and Nutrition Assessment (EFSNA). Approximately 10.2 million people are in crisis and 6.8 million in the emergency phase. At national level, the population falling into the Emergency and Crisis phase has increased by 20 percent since the previous IPC analysis in June 2016.

38. The high level of food insecurity has made poor households turn to subsistence agriculture as a coping mechanism. As a consequence, there is an urgent need for better access to information and improved seed technology, including in urban areas such as Sana’a and Aden.

3.2.2 Health

39. The conflict has caused a deterioration of health care services in a number of governorates. Any further escalation and spread of violence could result in a further dramatic deterioration of the country’s already weak health system.

40. There used to be 229 hospitals, 791 health centers, 2,849 health units, and 2,566 reproductive health centers in Yemen. The total number of beds was estimated at 15,692. When functional, these facilities used to provide access to approximately 68 percent of the population. In addition, there were 168 private for-profit hospitals, 324 dispensaries, 541 health centers, and 657 private clinics concentrated mostly in and around urban areas.

41. The conflict has heavily impacted the health care facilities, causing a lack of medicine, electricity, fuel, that has been compounded by a cholera outbreak. Both petrol and diesel became scarce, affecting all administrative, curative, preventive, emergency response initiatives, including the vaccination cold chain, medical supplies, and drug delivery to the governorates and districts. In addition, constant and frequent interruption of electricity has affected the overall system, and in particular water pumps, computers, refrigerators, operations for the injured, blood banks, emergency units and so forth. Even generators, designed to buffer the system against such problems, were negatively affected and they quickly burned out from overuse.

42. The main public health concern is the outbreak of diseases associated with poor access to water and sanitation. The origin of these outbreaks has been traced to contaminated water sources, especially wells that have not been disinfected, mainly due to insecurity and inaccessibility. The rapid spread of disease has also been blamed on the declining amounts of water available to households, caused by prohibitive prices and power cuts that prevent water pumping.

43. In addition to the impact on WASH in schools in the south, many schools in conflict-affected areas of the North also have been damaged or destroyed by fighting, including damage to WASH facilities. Beyond the impact of conflict, WASH in schools throughout the country is inadequate, with the vast majority of Yemeni schools lacked sufficient water and sanitation facilities even before the crisis.
Table 4. Current Status of Health Facilities in Hodeidah, Aden and Amanat Al Asimah

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Health Facilities partially/totally not functioning %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>43%</td>
</tr>
<tr>
<td>Aden</td>
<td>59%</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>60%</td>
</tr>
</tbody>
</table>

Table 5. Population Coverage by Health Centers in Hodeidah, Aden and Amanat Al Asimah

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Population Coverage by Health Centers %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>57%</td>
</tr>
<tr>
<td>Aden</td>
<td>41%</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>40%</td>
</tr>
</tbody>
</table>


44. Most devastating was the outbreak of acute watery diarrhea (AWD)/cholera. This outbreak stemmed from the reduced per capita household water availability due to increased costs of water and/or destruction of the water systems.

45. Yemen is also facing a cholera outbreak of unprecedented scale. Cholera hit the country in April 2017. As of 5 November 2017, there were more than 900,000 suspected cholera cases and 2,192 associated deaths were reported since the second wave of Acute Watery Diarrhea (AWD). The outbreak has affected 21 of the country’s 22 governorates, infecting 305 out of 333 districts. On 14 May 2017, a state of emergency was declared, indicating that the health system is unable to contain this unprecedented health and environmental disaster. The highest cumulative suspected cases were reported from the governorates of Hodeidah, Amanat Al Asimah, Hajjah and Amran, which accounts for 41% of all suspected cholera cases. Cholera is affecting the most vulnerable Yemenis: Over 2 million IDPs are particularly at-risk due to the conditions in overcrowded shelters and settlements with inadequate water and sanitation facilities.

Table 6. Summary of key cholera indicators by Governorate Cumulative (27/04/2017 to 26/11/2017)

<table>
<thead>
<tr>
<th>Governorates</th>
<th>Cases</th>
<th>Deaths</th>
<th>CFR</th>
<th>Affected Rate</th>
<th>-3 weeks</th>
<th>-2 weeks</th>
<th>-1 week</th>
<th>Current week</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Hudaydah</td>
<td>139,145</td>
<td>271</td>
<td>0.19%</td>
<td>429.70</td>
<td>3,266</td>
<td>2,915</td>
<td>2,601</td>
<td>2,078</td>
<td>-11</td>
</tr>
<tr>
<td>Aden</td>
<td>20,286</td>
<td>62</td>
<td>0.31%</td>
<td>219.78</td>
<td>311</td>
<td>214</td>
<td>197</td>
<td>115</td>
<td>-18</td>
</tr>
<tr>
<td>A. Al Asimah</td>
<td>91,799</td>
<td>70</td>
<td>0.08%</td>
<td>324.63</td>
<td>1,917</td>
<td>1,722</td>
<td>1,484</td>
<td>1,289</td>
<td>-13</td>
</tr>
</tbody>
</table>

WHO: Electronic Disease Early Warning System Epidemiological Bulletin

3.2.3 Shelter

46. An estimated 5.4 million people need emergency shelter or essential household items, including IDPs, host communities and initial returnees. Ongoing conflict-related displacements, as well as initial returns to some areas, are driving these needs. 2.6 million people are in acute need of assistance.

3.2.4 Economic activities

47. The ongoing conflict has had major economic consequences: GDP has contracted by 38% cumulatively and rose to 40% in 2015. A Small and Medium Enterprise Perceptions Survey (SMEPS), conducted in 2015, found that after six months of war 74% of the firms surveyed reported physical damage. Labor markets have been significantly affected with employment declining by 13% in Sana’a City, Hodeidah and Aden, whilst participation in the labor market has declined sharply. Input markets have also been hit with supplies unable to move around the country due to conflict and damage to both roads and market places. Trade has been badly affected by the war. Total imports are estimated to have dropped 54% between 2014 and 2015 with total exports dropping 51% in the same
period where there is significant damage to four of Yemen’s seven major ports. Trade financing has become a major problem with Western banks cutting credit lines to traders shipping food into Yemen and letters of credit have become very difficult to obtain.

3.2.5 Employment and Unemployment

Table 7. Labor force, Employment/Unemployment (Percent and Percentage Point Change)

<table>
<thead>
<tr>
<th></th>
<th>Employment to Population Ratio (EPR)</th>
<th>Labour Force Participation Rate (LFPR)</th>
<th>Unemployment Rate (UR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sana’a City</td>
<td>32.8</td>
<td>36.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>37.7</td>
<td>40.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Aden</td>
<td>32.9</td>
<td>41.9</td>
<td>21.5</td>
</tr>
<tr>
<td>Total</td>
<td>35.1</td>
<td>39.1</td>
<td>10.2</td>
</tr>
<tr>
<td><strong>2015</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sana’a City</td>
<td>28.6</td>
<td>33.6</td>
<td>14.8</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>36.9</td>
<td>37.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Aden</td>
<td>27.3</td>
<td>34.2</td>
<td>20.3</td>
</tr>
<tr>
<td>Total</td>
<td>32.1</td>
<td>35.3</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sana’a City</td>
<td>-4.2</td>
<td>-2.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>-0.8</td>
<td>-3.3</td>
<td>-6.1</td>
</tr>
<tr>
<td>Aden</td>
<td>-5.6</td>
<td>-7.6</td>
<td>-1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>-3.0</td>
<td>-3.8</td>
<td>-1.1</td>
</tr>
</tbody>
</table>

Source: LFS 2014 and Rapid Survey, 2015, ILO and CSO.

48. Hodeidah registered the highest EPR of 37.7 per cent and LFPR of 40.4 per cent. Sana’a City had the lowest EPR (32.8 per cent) and LFPR (36.2 per cent). Aden was characterized by a low EPR (32.9 per cent) but the highest LFPR (41.9 per cent). The total (women and men) rates of unemployment ranged between a minimum of 6.7 per cent in Hodeidah and a maximum of 20.3 per cent in Aden, with Sana’a at 9.6 per cent. As a consequence of the war, all three indicators registered a substantial decline. The EPR fell by 3.0 percentage points, the LFPR by 3.8 and the UR by 1.1. Aden registered the most pronounced decrease (5.6) of the EPR, followed by Sana’a (4.2) and Hodeidah (0.8). At first glance, this outcome may appear surprising in view of the earlier findings regarding the impact of the crisis on employment levels, but it becomes understandable once we recall that the total WAP has declined substantially. Another explanation lies in the movement of working age people out of Hodeidah and Sana’a, while the cessation of violence attracted people from other areas to Aden.

49. The declines in LFPRs follow rather closely the EPRs, although in this ordering Hodeidah comes second and Aden third. As a result, perhaps somewhat counter-intuitively, the governorate with the strongest decline in the UR is Hodeidah, followed by Aden (the governorate with the best labor market performance), while the unemployment rate of 14.8 increased in Sana’a City.

3.2.6 Poverty

50. Even prior to the current conflict, Yemen was one of the poorest countries in the world and the poorest country in the Middle East and North Africa (MENA) region. The conflict has led to an increase in poverty to 54.4 percent affecting urban households relatively more than rural households. The conflict has sharply driven down household income through higher unemployment and/or falling wages for public and private sector wages at all skill levels. In addition, prices for major goods and services such as food and fuel have risen, as a consequence of lower and irregular supplies, thus reducing households’ real income. Household expenditure, on which poverty is calculated, has also sharply declined. Overall household expenditures declined. Urban households suffered even higher losses compared to rural households. In terms of poverty impact, urban households are relatively and absolutely more affected than rural households, which may reflect the fact that much of the uprisings
took place in urban areas while many rural areas may have been affected only indirectly.

51. Initial simulations of the impact of the ongoing conflict show that the poverty incidence may have almost doubled from 31% in 2014 to 62% in 2016). The impact of crisis manifests itself in multiple ways across different sectors and further weakened a financially weak energy sector. Transmission lines were damaged many times and the lack of fuel and maintenance seriously disrupted the operations of most power plants. Long-term power outages across broad swaths of the country interrupted health service provision, including the vaccination cold chain. The conflict caused significant delays in the implementation of on-going and planned power generation, transmission and distribution projects, which will further worsen the already acute power supply situation. Similarly, in the water sector, public programs and services suffered widespread disruptions, with an immediate impact on the availability of water supply, sanitation, irrigation, or extension services for agriculture. In addition, health and education, schools, and health centers were temporarily closed and sector infrastructure was damaged, severely impacting basic social service delivery. In addition, urban centers, endured direct damage to public property and suffered significant losses due to foregone municipal revenues. While the adverse impact of the conflict has been felt everywhere in the country, the major urban centers, such as Aden, Taiz, and Sana’a, appear to have suffered more.

3.2.7 Education

52. The 2017/2018 school year started with a setback of the education process in 13 out of 22 governorates due to the extended time of non-payment of salaries for teachers crippling the education system. Two-thirds of teachers are affected due to non-payment of salaries for more than a year, losing their main source of income and becoming unable to provide for their family. Schooling was disrupted in 12,240 schools in 13 governments during the 2016/2017 school year due to non-payment of salaries, affecting an estimated 4.5 million students.

Table 8. Number of schools damaged, hosting IDPs or occupied

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>23</td>
</tr>
<tr>
<td>Aden</td>
<td>21</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>34</td>
</tr>
</tbody>
</table>

3.2.8 Communication

53. Before the conflict, latent demand for internet-enabled services was becoming increasingly evident with consumers requesting for faster services particularly in urban centers. The demand for internet-enabled 3G services was growing as Yemenis started switching from using basic mobile phones to smartphones and computers (i.e., laptop, tablet, desktop) that require mobile broadband speeds and data capacity. Seeing the latent demand and potential growth in revenue, the private mobile operators in Yemen were, for several years, requesting the government to upgrade their licenses so they could provide mobile internet services.

54. As witnessed in other conflict countries the telecommunications market is one that adjusts to fragility and conflict situations and continues to provide communication services. There is no reason to assume that Yemen would be fundamentally different. Although with some limitations, all four mobile operators in Yemen and the state-owned fixed infrastructure telecommunications operator are continuing to provide services. This is despite direct attacks on their infrastructure. The resilience of the telecommunications sector can be attributed to the fact that it remains profitable for both, private and public operators even during conflict, and in certain instances more profitable as demand for communications increases.

55. The state-owned Public Telecommunication Corporation (PTC) in 2014, had 13,000 km of fiber optic running across the country. This backbone infrastructure connects Yemen to the international submarine fiber network at the ports of Aden, Al Mukalla and Hodeidah and up runs up to Sa’ dah at the border with Saudi Arabia. While the extent of the damage is yet to be determined, fiber optic networks are usually deployed above ground in Yemen which makes them visible and vulnerable. Furthermore, there were reports in April 2015 indicating that phone lines in Aden had been severed.
following fighting. Further damage is expected to have occurred, and the full picture is not available at the moment. However, the telecommunications sector has been included in the Disaster Needs Assessment Phase II of the World Bank.

56. In December 2015, there were an estimated 16.88 million mobile customers in Yemen, down 4.2% from 17.62 million a year earlier and a recent peak of 18.36 million at the beginning of 2015. The decline was due to the escalating violence in the region, in particular the start of an airstrike in late March 2015, which has reportedly had a devastating impact on the nation’s telecommunication infrastructure. While the impact of conflict on mobile penetration rates is almost immediate, so is the rebound during times of peace.

Table 9. Actions for broadband infrastructure (3G and faster speeds)

<table>
<thead>
<tr>
<th>Potential lead</th>
<th>Impact</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow more operators to invest in and provide 3G/4G services (i.e. license.)</td>
<td>Operators have been seeking licenses to be able to upgrade their networks and are ready to deploy. Impact would lead to increased availability of mobile internet services</td>
<td>Immediate</td>
</tr>
<tr>
<td>harmonization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MoTIT/ or other entity with executive power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spectrum management for mobile internet</td>
<td>Spectrum allocations will need to be re-evaluated in order to maximize network coverage and quality of mobile internet services</td>
<td>Immediate</td>
</tr>
<tr>
<td>MoTIT/ or other entity with executive power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National fiber backbone infrastructure expansion</td>
<td>PTC had about 13,000 km of fiber running across the country. Damage to these assets will need to be examined</td>
<td>Reconstruction phase</td>
</tr>
<tr>
<td>Public Works Project/Public Telecommunications Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allow deployment of fiber via linear infrastructure including electricity grids and roads/highways</td>
<td>About 75% of the cost of laying fiber is in works and digging the tranches for the ducts. The global trend is for fiber ducts to be built alongside construction of electricity grids, highways among other utility infrastructure</td>
<td>Reconstruction phase</td>
</tr>
<tr>
<td>Public Works Project/Multiple ministries</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3 Solid Waste Management

Table 10. Solid Waste (SW) collection coverage in the cities of Amanat Al Asimah, Aden and Hodeidah

<table>
<thead>
<tr>
<th>City</th>
<th>SW quantity generated tons per day</th>
<th>Service coverage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>1500</td>
<td>70%</td>
</tr>
<tr>
<td>Aden</td>
<td>650</td>
<td>80%</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>350</td>
<td>50%</td>
</tr>
</tbody>
</table>

Variation of coverage due to lack of equipment availability
Source: CiF in Sana'a, Aden and Hodeidah.

3.3.1 Current Situation of Sana’a Landfill

57. The present disposal site for the Sana’a region (Amanat Al Asimah), Sana’a Governorate and Amran City is located along the road from Sana’a to Amran city, at a distance of approximately 15 km north-west to the center of Sana’a City. The landfill in the last few years became close to the settlement area at the north-west border of the city. The landfill covers an area of approximately 40 ha. The length of the site in the direction of Amran Road is about 830 m and the average width of the site is about 480 m. The site is surrounded by a wall on three sides and a wire fence on the north side. A weighbridge is located beside the office at the entrance of the landfill site, but is damaged and not operated.

58. The formal legal ownership of the site is by the Secretariat of Capital Sana'a and it is operated and maintained by Landfill Department under the SWMS General Directorate. The landfill has been
in operation for about 40 years, almost reached its backfilling capacity and serves the Sana’a region predominantly for disposal of municipal solid waste. There is no sealing installed (neither at the base nor at the surface) and subsequently no leachate captures or degasification system installed. Waste is delivered in various types of trucks, disposed of and emplaced in layers and covered with soil depending on availability of suitable material. At the site no sufficient arrangements have been made so far against littering of the neighborhood by windblown light material and against access of birds to the spread and uncovered waste.

59. The disposal area is defined and a landfill manager is supervising the daily operations. A bulldozer, which is the one and only mobile equipment in operation, is leveling the waste in the working area and tipper trucks are sometimes available for transportation of cover materials. The waste is being spread in thin layers by a bulldozer, but is not regularly covered with soil. Other equipment like the compactor is broken.

60. Side slopes in most parts of the landfill are too steep (1:1 to 1:2) to allow an effective placing of soil cover on these steep landfill slopes or an access by vehicles. Additionally, the present situation with steep slope inclination causes danger because of a potential instability of the landfill itself with the risk of landslides.

61. The landfill was equipped with an entrance building and a weighbridge where delivering waste trucks have been recorded. The entrance building included staffing rooms and a work shed /garage is located within the entrance area, but all infrastructures were destroyed during the war in 2016. Standard registration forms were previously used for registration of the quantity of waste delivered by each truck and of the number of deliveries made each day. Weights have been measured and recorded according to the zone from where the waste was collected. However, the weighbridge and the control room were destroyed and now only records are made about delivering vehicles entering the site.

3.3.2 Current Situation of Aden Landfill

62. The landfill is situated in the downstream of Bir Ahmed water basin close to the coast in Al Boriqah district at Beer Al neama’a area at a distance of approximately 32 km from the city center. The landfill covers an area of approximately 4 km² and receives about 650 tons per day. The formal legal ownership of the site is by the Aden CIF and it is operated and maintained by Landfill Department under the CIF. The landfill has been in operation for more than 15 years. Waste is delivered in various types of trucks from the city of Aden and Alhwtah city in Lahej Governorate and then disposed in a pit and spread in thin layers which are covered with sand.

63. Before the war a standard registration form was used for registration of the quantity of waste delivered by each truck and of the number of deliveries made in each day. Weights are recorded according to the district from where the waste was collected.

64. The landfill was equipped with entrance building and weighbridge where delivering waste trucks were recorded. The landfill site has no fence to protect it from outsiders. A weighbridge at the landfill is currently out of operation and located beside the landfill management office. There still four trucks are operated and need maintenance.

65. The waste pickers used to be presented before the war. However, currently no waste pickers allowed at the landfill site due to the security measures. Sorting facilities, one for paper, cardboard, used tires and plastic, operated by the private sector, are located next to the landfill. These facilities have been also destroyed during the war.

3.3.3 Current Situation of Hodeida Landfill

66. The present landfill/disposal site for Hodeida City is located in Aljabanah area in Hodeidah Harad road at a distance of approximately 17 km from the city center. The landfill covers an area of approximately 1 km² and receives about 350 tons per day. The formal legal ownership of the site is by the Hodeida CIF and it is operated and maintained by landfill department under the CIF. The landfill has been in operation for more than 20 years. Waste is delivered in various types of trucks from the city of Hodeidah and then disposed in a pit and spread in thin layers which are covered with
67. Although no recent topographical surveys or operational plans are available, the disposal area is defined and a landfill manager is supervising the daily operations.

68. There is no sealing installed (neither at the base nor at the surface). Waste is delivered in various types of trucks, disposed of and emplaced in layers which are covered with sand depending on availability of suitable material. At the site no sufficient arrangements have been made so far against littering of the neighborhood by windblown light material and against access of birds to the spread and uncovered waste. A bulldozer, which is the one and only mobile equipment still in operation and is leveling the waste in the working area with tipper trucks sometimes available for transportation of cover materials. The waste is being spread in thin layers by a bulldozer, but is not regularly covered with soil.

3.4 Urban Water Supply and Sanitation

69. Much of water infrastructure is in poor condition and physical losses are high. The private sector supplies the needs of unconnected households through tankers, local networks and water shops, and also meets the shortfalls in supply to households connected to the network. Costs, however, are high, water from a private tanker can cost up to ten times as much as network water. It is predominantly the poor who are not connected to networks, and who have therefore to pay these high prices.

70. Shortages meant that expanded networks have resulted in reduced per capita supply, with pre-crisis average per capita supply in some large towns as little as 30 liters per capita per day. Evidently, these utilities are running in order to stand still. They are also conflicted between three, at times, incompatible mandates: affordable service expansion and provision, a business approach, and protection of the poor, all of which are to be served by a scarce water resource. In all cities, tariffs remain below operation and maintenance cost-recovery levels.

71. With large and visible installations in the heart of population centers, urban water utilities proved exceptionally vulnerable to the unrest. In addition, water services are dependent on energy, materials, and spare parts, supplies of which suffered widespread disruption. In all urban centers, utilities suffered from lack of electricity and diesel, which caused reduced production from wells, as well as persistent problems in distribution. Reduced supply performance and overall chaotic conditions also reduced both billing and customer payments, resulting in a cash flow crisis, which in turn impacted on service delivery performance. Non-revenue water increased as the number of illegal connections rose. Sana’a LC, for example, suffered a 20 percent drop in water supplied and billed, and a 47 percent drop in collections during 2011. By December 2011, the LC lacked resources to purchase fuel, resulting in a further vicious circle of reduced supply, reduced billings, and reduced collections. When fuel is available on the black market, it is sold at YR 130–150/liter, against the official price of YR 59/liter. Diesel shortages also affected private pumping and water sales, and retail water shops faced steep increases in the cost of both raw water and packaging. The retail cost of a cubic meter of water rose from YR 2,000 ($10) to YR 14,000 ($70), and many shops had to cease trading altogether.

Table 11. WASH Cluster Targets Progress in Hodeidah, Aden and Amanat Al Asimah

<table>
<thead>
<tr>
<th>Governorates</th>
<th>Total people targeted</th>
<th>Total people reached</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amanat Al Asimah</td>
<td>1,474,023</td>
<td>78,306</td>
<td>95%</td>
</tr>
<tr>
<td>Aden</td>
<td>669,519</td>
<td>60,571</td>
<td>91%</td>
</tr>
<tr>
<td>Hodeidah</td>
<td>906,405</td>
<td>54,303</td>
<td>94%</td>
</tr>
</tbody>
</table>

Yemen WASH Cluster Dashboard March 2017

72. With large and visible installations in the heart of population centers, urban water utilities proved exceptionally vulnerable to the unrest. In addition, water services are dependent on energy, materials, and spare parts, supplies of which suffered widespread disruption. In all urban centers, utilities suffered from lack of electricity and diesel, which caused reduced production from wells, as
well as persistent problems in distribution. Reduced supply performance and overall chaotic conditions also reduced both billing and customer payments, resulting in a cash flow crisis, which in turn impacted on service delivery performance. Non-revenue water increased as the number of illegal connections rose. Sana’a LC, for example, suffered a 20 percent drop in water supplied and billed, and a 47 percent drop in collections during 2011. By December 2011, the LC lacked resources to purchase fuel, resulting in a further vicious circle of reduced supply, reduced billings, and reduced collections. When fuel is available on the black market, it is sold at YR 130–150/liter, against the official price of YR 59/liter. Diesel shortages also affected private pumping and water sales, and retail water shops faced steep increases in the cost of both raw water and packaging. The retail cost of a cubic meter of water rose from YR 2,000 ($10) to YR 14,000 ($70), and many shops had to cease trading altogether.

Table 12. WASH Cluster Response

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Target 2017</th>
<th>Total Results</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population served with support to operation, maintenance and rehabilitation of public water systems</td>
<td>5,492,703</td>
<td>4,825,286</td>
<td>12,785</td>
</tr>
<tr>
<td>Affected people with access to safe water as per agreed standards through water trucking</td>
<td>778,053</td>
<td>1,232,622</td>
<td>153,456</td>
</tr>
<tr>
<td>Affected people provided with hygiene kits for self-protection</td>
<td>1,379,678 Basic kits</td>
<td>492,986</td>
<td>44329</td>
</tr>
<tr>
<td>People living in areas at high risk for cholera have access to safe drinking water(CR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of people in cholera high risk areas benefiting from household level water treatment and disinfection(CR)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of DTCs provided with WASH services(CR)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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3.5 Water and Sanitation

Table 13. Performance Indicators of Water Services in Aden, Hodeidah and Sana’a

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Aden</th>
<th>Hodeidah</th>
<th>Sana’a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population of urban centers</td>
<td>977,676**</td>
<td>632,840**</td>
<td>2,300,000**</td>
</tr>
<tr>
<td>Number of IDPs in the served Area</td>
<td>26,658**</td>
<td>10,500*</td>
<td>149,994**</td>
</tr>
<tr>
<td>Number of served people and (Coverage by Network)</td>
<td>753,210</td>
<td>468,100</td>
<td>911,370</td>
</tr>
<tr>
<td>Percentage of Water Coverage per population</td>
<td>75%</td>
<td>73%</td>
<td>37%</td>
</tr>
<tr>
<td>Number of population without access to improved water source</td>
<td>251,124</td>
<td>272,278</td>
<td>1,538,624</td>
</tr>
<tr>
<td>Number of days of service per month</td>
<td>17</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Quantity of water pumped in the network (m³) per month</td>
<td>3,491,015</td>
<td>1,214,066</td>
<td>345,923</td>
</tr>
<tr>
<td>Percentage of basic monthly salaries paid to LC Staff and labor.</td>
<td>100%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

* IDPs in Hodeidah city only according to (TFPM, 2017).

73. It should be noted that there are discrepancies in population numbers and IDPs for the three cities between the GIZ Emergency Indicators, September 2017.

3.5.1 Sana’a Water and Sanitation Local Corporation

74. Prior to the crisis, about 790,720 people had no access to improved water sources and 197,680 people to sanitation service:
   - Total water produced in 2014 was 16,578,185 m³, reduced in 2015 to 6,678,203 m³
   - Accumulated No. of water connections to end of Sept. 2015 was 94,563
   - Accumulated No. of sanitation connections at end of Sept. 2015 was 85,758.

75. The water supply and sanitation services have been affected by conflict-related damage to
WASH infrastructure. The lack of fuel set public water networks and commercial water trucking at imminent risk of stopping services. Prices for commercial water trucking services have more than doubled. Sanitation is also deteriorating with sewage treatment plants working at reduced functionality. When considered with declining access to safe drinking water, these trends point to a potential public health crisis.

76. The Main Office and pumping station buildings have sustained extensive damage windows and doors but the main building structure has no structural damage and still in working order as are the furnishings and office equipment. A concrete storage tank located in Alnahdin area, has been totally destroyed.

77. Two tube wells and two well head structures at Nqom Alhafa have been totally destroyed. At the same location an additional 4 well heads have been partially damaged. An electrical panel and cabling have sustained irreparable damage.

78. Sana’a LC has 160 km of distribution network piping which has no reported damage. Water supplied through the distribution network is available less than once a week. Water quality checks are conducted in the Sana’a LC laboratory.

79. Sana’a LC is operating an Activated Sludge – Extended Aeration process WWTP that is designed to treat 50,000 m³. The Sana’a LC is reporting no damage to its WWTP or the sewerage network. However, 2 trucks with cranes and 30-ton winches have been totally destroyed, and installation and maintenance tools have been damaged.

3.5.2 Aden Water and Sanitation Local Corporation

80. Prior to the crisis, about 375,750 people had no access to improved water sources and 392,450 people to sanitation service.

- Total water produced in 2014 was 41,375,064 m³, which was reduced to 2,851,200 m³ in 2015
- Accumulated No. of water connections to end of Sept. 2015 was 124,974
- Accumulated No. of sanitation connections at end of Sept. 2015 was 105,978

81. Aden was hit by violence that left large parts of the city in ruins and has destroyed major water supply and sanitation components. The lack of fuel set public water networks and water trucking services at imminent risk of stopping of services.

82. The main office building of the Aden Water and Sanitation Local Corporation was partially damaged. The building’s infrastructure, as well as office equipment and furniture, were also partially damaged. Six store buildings have also sustained some damaged including the contents. Additionally, the water lab sustained damage to equipment, supplies and work surfaces. The LC reports that none of the pumping station buildings are damaged while. However, some electro-mechanical equipment has been demolished. Two water storage reservoirs have been totally destroyed and eight have sustained partial damage.

83. The LC is reporting that 55 tube wells have incurred partial damage, but well heads and associated equipment are in working order. One hundred and seventy-seven submersible pumps have been damaged: 75 completely destroyed and 102 partially, as have electrical panels and cables.

84. The number of operating wells at the end of 2014 was 110 and at the end of September 2015 only 80 remained in service. Aden LC has 65.8 km of main water lines; 13 km have been totally destroyed. The remaining 52.6 km show signs of partial damage. The distribution network piping amounts to 14.5 km all of which seem to have suffered partial damage.

85. Aden LC has a wastewater treatment system (Bio-Oxidation Pond) that is designed to process 95,000 m³ per day. Prior to the conflict the system was receiving inflow of 23,974 m³. Since March 2015 the wastewater treatment has been interrupted particularly with overflow in the collection network pumping stations. The network has collection piping and trunk mains of some 18.25 km which have sustained varying measures of damage; three sewerage pumping stations have been totally destroyed and the remaining 34 have incurred some damage. A fleet of twelve flushing trucks appear
to have all been damaged partially. Aden LC is reporting that their Installation and Maintenance tools have sustained some damage.

3.5.3 **Hodeidah Water and Sanitation Local Corporation**

86. Prior to the crisis, about 1,312,650 people in the entire Governorate had no access to improved water sources and 1,370,990 people to sanitation service.

- Total water produced in 2014 was 14,015,785 m³ which was reduced in September 2015 to 13,542,109 m³
- Accumulated No. of water connections to end of Sept. 2015 was 66,255
- Accumulated No. of sanitation connections at end of Sept. 2015 was 66,225

87. The water supply and sanitation services have been affected by conflict-related damage to WASH infrastructure. The lack of fuel set public water networks and water trucking services at imminent risk of stopping of services. Prices for commercial water trucking services are four times higher.

88. Hodeidah Local Corporation has indicated that its main office building in Hodeidah, pumping stations buildings and storage structure has no damage as well as tube wells, well heads and associated equipment and distribution network none of which seems to have any damage. Water supplied through the distribution network is available regularly between 12 and 14 hours per day. Water quality checks are conducted in the Hodeidah LC Laboratory.

89. Hodeidah LC has a wastewater treatment system (Stabilization Pond) that was designed to treat 53,000 m³ per day. Prior to the conflict the inflow was 42,000 m³/day. The associated electromechanical equipment at the pond sites has sustained partial damage and mechanical equipment for screening and sand removal has been totally destroyed. The network has incurred no damage. However, one pumping station (No. 5) has been totally demolished, but with no damage to any O&M tools and vehicles.

3.6 **Road sector, Conflict-related Damages**

**Table 14. Amanat Al Asimah roads**

<table>
<thead>
<tr>
<th>Area</th>
<th>Length (m)</th>
<th>Width (m)</th>
<th>% Good</th>
<th>% Fair</th>
<th>% Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Western Entrance of the Capital (Alsobaha Entrance – Matnaah Section A)</td>
<td>10,000</td>
<td>30-60</td>
<td>30</td>
<td>45</td>
<td>25</td>
</tr>
<tr>
<td>The Western Entrance of the Capital (Alsobaha Entrance – Matnaah Section B)</td>
<td>10,000</td>
<td>30-60</td>
<td>10</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>The South-Eastern Entrance of the Capital (khawlan street)</td>
<td>9,600</td>
<td>24-50</td>
<td>35</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>Sheraton Zone</td>
<td>10,200</td>
<td>20-40</td>
<td>40</td>
<td>42</td>
<td>18</td>
</tr>
<tr>
<td>Bait Baous zone</td>
<td>4,800</td>
<td>14-21</td>
<td>25</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Fifty Street</td>
<td>5,200</td>
<td>25-50</td>
<td>35</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>Taiz Street</td>
<td>8,600</td>
<td>25-40</td>
<td>40</td>
<td>45</td>
<td>15</td>
</tr>
<tr>
<td>Sixty Street</td>
<td>8,000</td>
<td>60</td>
<td>50</td>
<td>45</td>
<td>5</td>
</tr>
</tbody>
</table>
3.7 Electricity sector

90. Even before the conflict, much of Yemen’s population was deprived of basic electricity services. Yemen was the least electrified country in the MENA region, with a pre-crisis access rate from all sources of only 55%. The country’s per capita electricity consumption stood at 243 kWh in 2013, almost one-sixth of the regional average (The World Bank Group, 2016). Electricity supply and demand were seriously out of balance. Installed generation capacity was about 1,300 MW in 2015 (20% short of peak demand) giving only about half the population access to (often unreliable electricity). The remainder of the population lacked any form of electricity access, with severe consequences for socioeconomic development and poverty.

91. The ongoing conflict has significantly worsened the electricity supply situation from an already low level, with severe impact on health, education, environment, water and sanitation, and the private sector, which all rely heavily on a functioning power supply. As documented in the World Bank’s
Damage and Needs Assessment (DNA Phase I) and the multi-agency DNA (World Bank, UN, EU and IsDB), the ongoing conflict has significantly impacted Yemen’s electricity infrastructure and cut off most of Yemen’s population from PEC’s services. Public electricity supply has been completely shut down in most populated areas and PEC has become virtually bankrupt. The current supply of public power capacity is averaging 200–250 MW, most of which is supplied to the port cities Aden and Al-Mukalla in the South (PEC, 2015). The capital Sana’a, which has a demand of around 500 MW, is barely supplied with 40 MW for a few hours a day (The World Bank, 2016). The rest of the country, including the port city of Hodeida, is lacking access to any reliable public energy services. Total power generation in 2015, including from PEC and private generators, dropped by 77 percent compared to 2014 (MOPIC, 2016).

92. The top-down model of service delivery has been replaced by a combination of locally managed urban public services and a private-sector driven bottom-up model. The almost complete collapse of public electricity supply and limited fuel availability for diesel generators has spawned a booming industry for small to medium-scale solar systems, especially since 2015. A recent market assessment commissioned by the World Bank estimates that over the last five years, around 1 billion USD has been invested into solar PV systems for the residential sector in Yemen. Based on interviews, the report estimates the market penetration of PV systems may have reached up to around 50% of households in rural areas and 75% in urban areas. The market is entirely driven by the private sector, with a supply chain that ranges from trading houses that import panels, control units and batteries from the GCC to small-scale electronics retailers that expanded their business to solar panels. In the capital Sana’a alone, over 170 such retailers registered with the Government to enter the solar market over the period 2014 to 2016. While a supply shortage limited growth until the second quarter of 2015, prices have come down significantly since Q3 2015 as supply has caught up with demand (RCREEE, 2016).

93. The poor have limited access to solar so far, and there are concerns about the quality of the installed technology. The market assessment found that almost all systems are paid in cash and that debt finance is not readily available to most households. While several financial institutions offer loans for solar systems, these are often mainly targeted at government employees and customers able to provide guarantees. And according to the market assessment many household solar installations suffer from high failure rates due to improper system design, poor quality components, and a lack of after-sales service. Households that gain access to electricity through solar are thus at a risk of losing it again in case the system fails (RCREEE, 2017).

Table 17. Coverage of electricity (Current Situation) Minimum Required Power 350 MW, Amanat Al Asimah

<table>
<thead>
<tr>
<th>Public Grid</th>
<th>Hezez Station 7 MW</th>
<th>Coverage 2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Service Suppliers</td>
<td>Different suppliers 10 MW</td>
<td>Coverage 2.8%</td>
</tr>
<tr>
<td>Households PV Solar Systems and privately-owned Generators</td>
<td>The minimum requirement for households, enterprises and workshops</td>
<td>Coverage 30%</td>
</tr>
</tbody>
</table>

Table 18. Coverage of electricity (Current Situation) Minimum Required Power 300 MW, Aden

<table>
<thead>
<tr>
<th>Public Grid P</th>
<th>Al Heswa, Al Mansorah, Khour Maxsar 70 MW</th>
<th>Coverage 23%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Service Suppliers (Rental)</td>
<td>Two rented 96 MW</td>
<td>Coverage 32%</td>
</tr>
<tr>
<td>Households PV Solar Systems and privately-owned generators</td>
<td>The minimum requirement for households, enterprises and workshops</td>
<td>Coverage 30%</td>
</tr>
</tbody>
</table>

Table 19. Coverage of electricity (Current Situation). Minimum Required Power 400 MW, Hodeidah

<table>
<thead>
<tr>
<th>Public Grid</th>
<th>Ras Katneeb Station Zero</th>
<th>Coverage 0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Service Suppliers</td>
<td>22 MW</td>
<td>Coverage 5.5%</td>
</tr>
<tr>
<td></td>
<td>The minimum requirement for households, enterprises and workshops</td>
<td>Coverage 30%</td>
</tr>
</tbody>
</table>
Chapter 4
INSTITUTIONAL FRAMEWORK AND ARRANGEMENTS

94. The Project is an emergency operation processed under World Bank OP 2.30 and OP 10.00 paragraph 12. UNOPS is the recipient of funds and the alternative implementation agency on an exceptional basis under the Financial Management Framework Agreement (FMFA) between the World Bank and UN agencies.

4.1 UNOPS

4.1.1 Project Implementation

95. The Project is implemented by UNOPS through direct implementation, as well as project cooperation agreements between UNOPS and three local partners: (i) the Public Works Project (PWP), (ii) Road Maintenance Fund (RMF), and (iii) Urban Water PMU.

96. UNOPS is responsible for: (i) project implementation; (ii) monitoring of project targets and results in coordination with the local partners; (iii) handling relevant procurement, financial management, and disbursement management including the preparation of withdrawal applications under the project; and (iv) ensuring that all reporting requirements for IDA are met per the Project Financing Agreement. The figure below describes the Project’s governance and management structure.

97. UNOPS will decide on an appropriate contractual arrangement with each entity in accordance with its own operational guidelines. Local partners will play a critical role on technical aspects, such as coordinating with local stakeholders, identifying initial investments, and preparing initial specifications, as well as carrying out the assigned activities in accordance with the procurement plan. UNOPS will retain overall responsibility to the World Bank for the implementation of the Project. During Project implementation, UNOPS may engage additional local partners, if deemed necessary, following the same assessment process it has been following to engage the three initial local partners.

98. UNOPS has a regional office and hub based in Amman, Jordan that provides support and advice as needed. In addition, a Regional Oversight and Management Advisor oversees the operations in the region and provides management advice to the Regional Director. The Regional Office is also supported by UNOPS headquarters, based in Copenhagen, Denmark.
99. UNOPS has already started establishing an office in Sana’a, and Aden will follow soon. UNOPS office in Sana’a houses the project management and implementation support team of international and national staff comprising a program manager, procurement specialists, finance specialists, an environmental and social safeguards officer (ESSO), a logistician officer, an IT officer, and an administrative officer.

100. To facilitate the investment planning process and ensure cross-sectoral coordination, UNOPS chairs a TC composed of representatives from the local partners. Other members can be coopted during the project, if needed. The World Bank may join the TC as an observer. The TC plays an advisory role and will meet twice a year and on a needs basis. Its main tasks include: (i) conducting a periodic review of the implementation of the Project and provide recommendations for improvement; (ii) reviewing proposed subprojects for the yearly investment plans and recommending a shortlist; and (iii) strategically communicating the Project and its investments to other donors and stakeholders.

4.1.2 Annual Investment Plans

101. For the first year, a preliminary list of activities has been prepared by UNOPS in collaboration with local partners. For subsequent years, a citizen-informed annual investment plan recommended by the TC and finalized by UNOPS will be submitted to the World Bank for non-objection prior to commencement of implementation. The annual investment plans will be reviewed during implementation to ensure the continued appropriateness of the selected investments.

4.1.3 ESMF Implementation

102. UNOPS is responsible for the overall implementation of the ESMF. More specifically UNOPS:

i. ensures the timely commencement of site specific ESIA and ESMPs, as needed.

ii. ensures that no contracts for works that have physical impacts are signed or reconstruction, or rehabilitation of proposed activities start without the required safeguards instruments in place.

iii. reviews tender documents and construction contracts regarding due consideration of the safeguards instruments, and the inclusion of effective and enforceable contractual clauses.

103. The permanent Environmental and Social Safeguards Officer (ESSO) is responsible for on-site compliance with environmental and social mitigation measures and health and safety requirements at subproject level. The ESSO is supported by an international expert, who will oversee the overall implementation of the ESMF, as well as assist in the monitoring and reporting of safeguards aspects throughout project implementation.

104. In addition, each of the three implementing partners will designate a safeguards focal point for ensuring on-site compliance with environmental and social mitigation measures and health and safety requirements at subproject level.

4.2 Local Implementing Partners

105. The Project is designed to work directly with independent institutions, such as PWP, UW-PMU and RMF-IU, as implementers for the benefit of local communities and local service providers such as Local Water and Sanitation Corporations. Line Ministries (Central Government) in Sana’a or in Aden will not play a direct role in the design or the implementation of project activities. The Project considers local councils as stakeholders who play a role in assisting and supporting the design and the implementation of the proposed provisions/activities.

106. UNOPS has assessed the environmental and social safeguards capacity of the three local implementing partners. PWP, UW-PMU and RMF-IU and have a track record of successful implementation of safeguards requirements and compliance with the World Bank safeguards policies; and these management units have retained their capacities and functionality despite the current conflict in the country.
4.2.1 Public Works Project (PWP)


107. The Public Works Project (PWP) was established in 1996 to mitigate the adverse effects of the 1995 economic reform program. Its main objectives are to:

- Create job opportunities for skilled and unskilled laborers
- Provide infrastructure service projects for the poor and deprived communities
- Improve the economic and environmental conditions of the poor
- Develop local contracting and consulting industry
- Enhance community participation in the development process

108. By 2014, PWP had completed 3,900 subprojects that benefitted 14.7 million of Yemen’s poor and provided a large number of job opportunities. PWP has become a key tool to eradicate poverty by providing basic services to the neediest segments of society, and by improving the economic livelihoods and infrastructure for poor communities.

4.2.2 Urban Water PMU

109. The UW-PMU has implemented several water supply and sanitation projects in Yemen. It was established in 2002 as a financially and administratively independent Project Management Unit (PMU) to manage all activities related to the implementation of the World Bank Urban Water Supply and Sanitation Adaptable Program Loan – P057602. During the implementation of this project, the UW-PMU attracted funds from various donors. It has implemented projects that include 1,000 km of water supply networks, 250 km of sewer lines, reservoirs with a total capacity of 40,000 m$^3$, three wastewater treatment plants, drilling and construction of 65 production and investigation boreholes and several emergency rehabilitations works. It is present in Sana’a city and has close relationships with Local Water and Sanitation Corporations.

4.2.3 Road Maintenance Fund Implementation Unit (RMF-IU)

110. The Road Maintenance Fund is an independent agency with management autonomy under the direct supervision of the Minister of Public Works and Highways (MPWH). It employs about 220 staff. The RMF is responsible for regular maintenance of the national road network, highways as well as rural roads of Yemen. The RMF has five departments directly under the Chairman, including a directorate of supervision and quality control, in charge of implementing maintenance related projects. Procurement of consulting services and contractors is carried out by the directorate of studies, design, and contracting.

111. The RMF has a proven record of implementing donor-funded maintenance contract, including World Bank funded projects.

4.3 The World Bank

112. The World Bank Task Team will review site-specific safeguards instruments, e.g. ESMPs and RAPs to ensure that their scope and quality are satisfactory to the Bank.

113. The World Bank will also monitor the implementation of the different prepared instruments through regular supervision missions (which will include an environmental and/or social specialist) during which document reviews, and site visits and spot-checks by TPM will be conducted as needed.

4.4 TPM

114. UNOPS will engage a Third-Party Monitoring (TPM) agent to undertake independent results verification of subprojects funded under the Project. The TPM agent will report on the activity outputs, the restoration of services for the intended beneficiaries, and the fiduciary and safeguard processes followed by the local partners. The Terms of Reference (TOR) for the TPM agent will be developed by UNOPS and agreed upon with the World Bank. UNOPS will regularly share TPM reports with the Bank and will include in the report the actions taken to address any implementation
issues identified by the TPM agent. The TPM agent will monitor environmental and social safeguards compliance.

4.5 Other National Organizations

4.5.1 Local Councils
Local councils are the administrative body which have been elected by the local community for each governorate/ directorate. They cooperate with governmental offices in implementing, operating and supervision of projects. They approach donors for financing the demanded projects and facilitate handing over the different important infrastructure services projects to the related ministry office.

4.5.2 Local Cleaning Funds
115. Local Cleaning Funds are independent local entities for each governorate that have operational and maintenance procedures for the collection, separation, transport of solid waste, and for the management of landfills. They fall under local authorities (sub-national authorities) and were created as a result of decentralization efforts following the Yemeni Local Authority Law of 2000. They are entitled to and usually receive certain local revenues for their operation.

116. Local Cleaning Funds are expected to have clear policies and procedures, but their capacity to implement these policies and procedures varies greatly between governorates and depends on the level of local funding they receive. They perform best in large cities such as Sana’a and Aden.

4.5.3 Civil society organizations
117. There over 12,000 registered CSOs in Yemen, but only a few hundred CSOs have the capacity and resources to fulfill their mandates. As a consequence, UNOPS will be selective in engaging CSOs with the project activities.

118. Nonetheless, under subcomponent 2.2 of the project and starting with the second year of implementation, the project will expand to include additional activities that will be based on community priorities identified through citizen engagement mechanisms and the community validation of investment options. UNOPS will implement these activities by engaging Civil Society Organizations or other relevant technical experts, as needed.
Chapter 5
LEGAL AND REGULATORY FRAMEWORK

119. The ESMF is prepared to:
   i. meet the requirements of the World Bank’s Environment Assessment Policy (OP 4.01), including the World Bank Group Environment, Health and Safety (EHS) Guidelines, most particular the General Guidelines, the Guidelines for waste management facilities, and the Guidelines for water and sanitation
   ii. meet the UNOPS Environmental, Health and Safety (EHS) procedures and practices
   iii. comply with national environmental and social laws and regulations.

5.1 World Bank Requirements
120. The Project triggers the World Bank’s Operational Policy on Environmental Assessment (OP 4.01) and the Operational Policy on Resettlement (OP 4.12)\(^3\). This ESMF covers OP 4.01 requirements; while the Project’s Resettlement Policy Framework (RPF) covers OP 4.12 requirements.

   \(5.1.1\) World Bank Policy on Environmental Assessment, OP 4.01
121. Considering the nature and magnitude of potential environmental impacts that might result from Project funded activities, the Project was assigned EA Category B according to OP 4.01.
122. The proposed activities consist of the rehabilitation and improvement of existing small-scale facilities. These activities are expected to have adverse environmental and social impacts that will be limited in most cases, temporary and for the most part reversible. Neither Category A subcomponents nor project activities are eligible for funding.
123. OP 4.01 provides for the use of an Environmental and Social Management Framework (ESMF) when a project consists of a series of subprojects, and the impacts cannot be determined until the subproject details have been identified. The ESMFs examine the issues and associated impacts, sets out the principles, rules, guidelines and procedures to assess the environmental and social impacts during project implementation. It contains measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts of subprojects, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project impacts.
124. As there is no cultural inventory in Yemen, OP 4.11 may be triggered in case of archaeological finds, in which case its implementation falls within the OP 4.01 procedures.

   \(5.1.2\) Environment, Health and Safety Guidelines
125. The World Bank Group Environment, Health and Safety (EHS) guidelines\(^4\) are referenced in footnote 1 of OP 4.01. They are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). They define acceptable pollution prevention and abatement measures and emission levels in World Bank financed projects.
126. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS

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\(^3\) OP 4.01 and OP 4.12 are part of the 10 World Bank’s Safeguard Policies. The following are the Safeguards Policies that are not triggered by the Project: OP 4.04, Natural Habitats, OP 4.09, Pest Management, OP 4.10, Indigenous Peoples, OP 4.11, Physical Cultural Resources, OP 4.36, Forests, OP 4.37, Safety of Dams, OP 7.50, Project in Disputed Areas, and OP 7.60, Projects on International Waterways.

\(^4\) A complete list of industry-sector guidelines can be found at: [www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines](http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines).
Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them.

127. The application of the Guidelines to existing facilities may involve the establishment of site-specific targets with an appropriate timetable for achieving them. The environmental assessment process may recommend alternative (higher or lower) levels or measures, which, if acceptable to the World Bank, become project- or site-specific requirements.

128. If less stringent levels or measures than those provided in the EHS Guidelines are appropriate, in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent.

129. Due to the nature of IUSP activities, the Project will use as appropriate the General Guidelines, including (i) Environmental, (ii) Occupational Health and Safety, (iii) Community Health and Safety, and (iv) Construction and Decommissioning, as well as the Guidelines for Construction and Decommissioning, as well as any other relevant Guidelines.

5.1.3 World Bank Operational Policy on Involuntary Resettlement

130. The RPF provides a detailed description of OP 4.12 requirements.

5.2 UNOPS Requirements

131. UNOPS has Environmental, Health and Safety (EHS) procedures and practices that include: (a) a Project Health and Safety Plan (PHSP), which is a management framework to ensure safer construction practices and to prevent dangerous acts that could lead to accidents on site; (b) standard contracts to which the PHSP is attached as an integral part; and (c) training programs for on-site staff on EHS aspects before projects begin.

5.3 National Policies, Laws and Regulations

132. The Republic of Yemen (RoY) has drafted policies and established institutions and responsibilities for environmental management, joined international conventions and developed sector legislation and procedures.

5.3.1 National Environmental Action Plan

133. The RoY enacted a National Environmental Action Plan (NEAP) in 1995 that was prepared with the support of the UNDP and the World Bank. The NEAP defines priority actions regarding key environmental issues such as water resources, land resources, natural habitats, and waste management.

5.3.2 Environmental Protection Law

134. The Environmental Protection Law (Law 26/1995; EPL), enacted in 1995 in the wake of the NEAP, constitutes the framework environmental legislation for Yemen. It includes provisions for environmental protection in Yemen, the issuance of permits, and Environmental Impact Assessments (EIAs). The provisions of the law are implemented through By-Law 148/000.

135. The law is also designed to: (i) incorporate environmental considerations in economic development plans at all levels and stages of planning, (ii) protect the national environment from activities practiced beyond national boundaries, and; (iii) implement international commitments ratified by the RoY in relation to environmental protection, pollution control, the conservation of natural resources, and global environmental issues such as the depletion of the ozone layer depletion and climate change.

5.3.2.1 Environmental Protection Authority
136. The EPL established an Environmental Protection Council (EPC) and granted it power to take all measures necessary to protect and improve the quality of environment and to prevent pollution of the environment. Decree 101/2005 established the Public Environmental Protection Authority (EPA) to replace the EPC and lays down its objectives, tasks and management. The functions assigned to the EPA include:

- preparing and executing appropriate policies/strategies/plans to protect the environment
- conducting environmental surveys
- assessing areas/resources/species to be protected through necessary measures conserving the ecosystem including flora and fauna, wild and marine life as per existing laws and monitoring their application
- developing legislative proposals for environment protection in coordination with other agencies involved
- developing a National Emergency Plan to combat natural disaster and environmental pollution in consultation with the agencies concerned implementing environmental protection law and other relevant laws/regulations
- reviewing EIA studies for public/private sector projects for giving clearance and monitoring their execution
- coordinating relevant programs/activities with national, regional and international agencies and organizations
- recommending necessary laws, regulations and systems to protect the environment, in accordance with regional and international agreements on environmental protection.
- collecting data, assessing and evaluating the status of the environment, and setting up suitable monitoring systems
- laying down appropriate standards for protecting the environment from pollution and formulating policy guidelines to combat industrial pollution and protect animal, plant and marine ecology

5.3.2.2 Environmental Impact Assessments

137. The EPL requires the preparation of EIAs for projects proposed by the public and private sectors. The proponent is responsible to undertake the EIA, but the report may be prepared by the proponent or the competent authority or both. Line ministries and Government bodies commission EIA studies at the request of funding agencies and seek the advice of the EPA.

138. The EPA is responsible for implementing screening procedures, assisting in scoping, evaluation and approval of the Environmental Impact Statement (EIS). However, there is still no regulatory framework to support the implementation of the EPL and the provision of undertaking EIAs for projects is not strictly enforced, particularly for project that are not internationally funded.

139. Given the current context, modifications to the EIA procedures are not expected during the project. Current procedures will be taken into account, but there is no expectation at this point that the EPA will review the Project’s safeguard instruments.

5.3.2.3 National Environmental Standards and Specifications

140. The former Environment Protection Council (EPC) issued environmental standards and specifications as annexes to the Executive Regulations, covering potable water quality, wastewater quality for agriculture, and ambient air quality, emissions, noise, biodiversity and protected areas. These include standard application forms intended for use by all relevant government bodies.

141. The EPC has released draft standards for wastewater quality and air quality but a comprehensive set of standards is not yet available. In their place international standards, primarily those of the World Health Organization (WHO) are used.

142. Decree 148/2000 sets permissible limits for pollutants for use by all government bodies (see Annex 3).
5.3.3 ESIP

143. In October 2002, the Environmental Protection Authority (EPA) issued the Environment and Sustainable Investment Program 2003-2008” (ESIP). The ESIP outlines a strategy and priority interventions to control and reverse environmental degradation and support sustainable human development in Yemen. The ESIP focuses on six areas of intervention:

i. Habitat and biodiversity conservation;
ii. Sustainable land management;
iii. Sustainable water management;
iv. Sustainable waste management;
v. Sustainable climate change and energy management;
vi. Institutional development and capacity building.

5.3.4 International Conventions

144. The RoY is party to a number of international environmental agreements, the most important of which are:

- World Heritage Convention (UNESCO)
- International Convention on Civil Liability for Oil Pollution Damage (CLC)
- The Convention on Biodiversity (CBD)
- The Convention on the Conservation of Migratory Species (CMS)
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- The United Nations Framework Convention on Climate Change (UNFCCC)
- Kyoto Protocol (Yemen is not yet a party to the Paris Climate Agreement)
- The United Nations Convention on Combating Desertification (UNCCD)
- The Environmental Modification Convention (ENMOD)
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat
- Law of the Sea
- The Montreal Protocol on Substances that Deplete the Ozone Layer
- Stockholm Convention on Persistent Organic Pollutants

145. In general, national agencies are not currently in a position to handle the technical complexities and reporting requirements of international agreements.

146. Project activities are not expected to be in breach of any international agreement to which the RoY is a party.

5.3.5 Resettlement

147. The law most directly relevant to Project resettlement issues is the Public Eminent Domain Law (Law 1/1995), most particularly Articles 12-16 on temporary acquisition, and Articles 21-27 defining provisions for land acquisition. The Yemeni laws and regulatory framework are presented extensively in the Resettlement Policy framework (RPF), which outlines the key issues and procedures for involuntary land acquisition under this Law.

5.3.6 Gender

148. Yemen ratified the Convention on Elimination of all Forms of Discriminations Against Women (CEDAW) in 1984, and prepared a National Strategy for Women Development in 1997, which was updated in 2015. Implementation of CEDAW is delegated to relevant ministries and authorities (Decree 55/2009). Based on amendments proposed by the Women National Committee, 24 laws were amended to ensure building gender balance in accordance with the convention.

149. The Labor Law (Law 5/1995) states that women are equal to man in all aspects without any
discrimination, and that equality should be maintained between women and men workers in recruitment, promotion, wages, training, social insurance. It also regulates work time for pregnant women.

5.3.7 Labor

150. The Labor Law regulates the rights and wages of workers, their protection, occupational health and safety. In addition, the Social Insurance Law regulates retirement compensation.

5.3.8 Child Labor

151. Yemen has ratified ILO Convention Number 138 on Minimum Age for Admission to Employment (Law 7/2001). The Convention establishes a minimum age for admission to employment.

152. Yemen has also ratified the ILO Convention 182 on the Worst Forms of Child Labor. It refers to child labor as work that is mentally, physically, socially or morally dangerous and harmful to children; and interferes with their schooling by depriving them of the opportunity to attend school, by obliging them to leave school prematurely; or by requiring them to attempt to combine school attendance with excessively long and heavy work.

153. Drawing a line between “acceptable” forms of work by children and child labor can prove difficult, as it depends on the child’s age, the types of work performed, the conditions under which it is performed and national.

5.4 Comparison between World Bank Requirements and Yemeni Requirements

154. The following table compares World Bank environmental and social requirements with Yemeni Requirements, identifies gaps and suggests how these gaps can be resolved. The Table covers OP 4.01 requirements, as well as OP 4.11, Physical Cultural resources, in a subsidiary manner. A gap analysis for OP 4.12 can be found in the RPF.

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5 The World Bank requirements are based on Table 1 of OP 4.00, Piloting the Use of Borrower Systems to Address Environmental and Social Safeguard Issues in Bank-Supported Projects
Table 20  Comparison of World Bank and Yemeni Environmental and Social Requirements

<table>
<thead>
<tr>
<th>World Bank Requirements</th>
<th>Yemeni Requirements</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OP 4.01, Environmental Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment (EA) so that appropriate studies are undertaken proportional to potential risks and to direct, and, as relevant, indirect, cumulative, and associated impacts. Use sectoral or regional environmental assessment when appropriate.</td>
<td>The Environmental Protection Council must inform the proposed projects proponents of the screening results within three months from submission of the project proposal and determines the appropriate EA instrument and required studies required to assess potential risks and impacts. The <strong>EIA guideline</strong> provides the possibility of using regional and international assessment procedures and norms when applicable. If the project is rejected, the rejection note should indicate the basis for the rejection, as well as the relevant sections of the regulatory framework. The EIA guideline also provides the possibility for project proponents to contest any rejection and to appeal to the special court, within a period of 60 days. The court is required to make a final judgment within six months (Chapter 1 Article 3, EPL 26/1995 - By-law 148/2000).</td>
<td>No Gap OP 4.01 and Yemeni environmental laws and regulations complement each other.</td>
</tr>
<tr>
<td>2. Assess potential impacts of the proposed project on physical, biological, socio-economic and physical cultural resources, including transboundary and global concerns, and potential impacts on human health and safety.</td>
<td>All concerned authorities, including those responsible for socioeconomic and development planning, must mainstream environmental concerns and pollution control measures and the conservation of natural resources when planning for development projects and national socioeconomic plans; issue investment permission either with national or international capital investment should not agree on any investment which could significantly harm the environment and increase pollution; and concerned authorities should include pollution impact mitigation measures and environment management plan in all projects and to be also included in the contracts planned to be signed with national and international investments entities (EPL Chapter 2 Article 4). Includes a requirement to protect local environment from transboundary impacts and versa, according to the international conventions mentioned in national laws which link the regional and international environmental conventions. National contribution arrangement will be indicated in this and other laws in protection of global environmental concerns e.g. ozone layer and climate change (EPL Chapter 2 Article 5 and 7).</td>
<td>No Gap OP 4.01 and Yemeni environmental laws and regulations complement each other.</td>
</tr>
<tr>
<td>3. Assess the adequacy of the applicable legal and institutional framework, including applicable international environmental agreements, and confirm that they provide that the cooperating government does not finance project activities that would contravene such international obligations.</td>
<td>National law commits to implement international environmental convention, pollution control and conservation of natural resource and biodiversity as approved by the Yemeni Parliament (EPL Chapter 2, Article 3).</td>
<td>No Gap OP 4.01 and Yemeni environmental laws and regulations complement each other.</td>
</tr>
<tr>
<td>4. Provide for assessment of feasible investment, technical, and siting alternatives, including the &quot;no action&quot; alternative, potential impacts, feasibility of mitigating these impacts, their capital and recurrent costs, their suitability under local conditions, and their institutional, training and monitoring requirements associated with them.</td>
<td>The Law requires the preparation of an EIA during the preparation of all projects and the inclusion of mitigation measures in the project's capital and recurrent costs (Cabinet Decree Number 89/1993). The EIA should describe: (i) proposed project activities, design of activity, the surrounding environment that may be affected, including a land use map of the adjacent areas, the requirement and types and source of energy, raw material and infrastructure services and roads emergency plan and safety, waste disposal etc; (ii) and (iii) alternatives using less polluted inputs, as well as consideration of the 'no-project' alternative (EPL Article 37 Para (b)). The EIA guidelines require that ESIA consider the social acceptability or refusal of the local communities to the proposed project, with evidence and record of public consultations and, if it is accepted, should include baseline data, indicators and monitoring plan. It also includes requirements for monitoring, capacity building, verification of monitoring results and findings (EPL Article 60).</td>
<td>No Gap OP 4.01 and Yemeni environmental laws and regulations complement each other.</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------</td>
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<td></td>
</tr>
<tr>
<td>5.</td>
<td>Where applicable to the type of project being supported, normally apply the EHS Guidelines. Justify deviations when alternatives to measures set forth in the EHS Guidelines are selected.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Prevent and, where not possible to prevent, at least minimize, or compensate for adverse project impacts and enhance positive impacts through environmental management and planning that includes the proposed mitigation measures, monitoring, institutional capacity development and training measures, an implementation schedule, and cost estimates.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Involve stakeholders, including project-affected groups and local nongovernmental organizations, as early as possible, in the preparation process and ensure that their views and concerns are made known to decision makers and taken into account. Continue consultations throughout project implementation as necessary to address EA-related issues that affect them.</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 9 of Labor Law Number 5/1995, Law Number 25/1997 and Law Number 25/2003 address Occupational health and safety and work environment in Articles 113 to 118. Employers are required to provide necessary occupational safety and health conditions, including: ventilation and lighting of workspaces; protection from emissions (gas, dust, etc) hazards; protection from machine accidents and hazards; provision of gender-specific toilet facilities; provision of safe drinking water for workers; basic firefighting equipment and emergency exits; provision of appropriate personal protection equipment; fair compensation; access to periodic medical examinations; availability of first aid. The competent authority shall ensure the availability of the appropriate work environment and conditions for occupational safety and health. The Ministry of Labor is charged with advising employers in the field of occupational health and safety; organize and implement accident prevention training programs; exchange of technical information; identify and evaluate the means of accident prevention measures; etc. The Minister may establish sub-committees for occupational health and safety in the governorates and in the sectors and industries, which include the relevant bodies. The composition decision shall determine the functions of these committees, their terms of reference and the rules governing their work. Where employers fail to implement labor protection and labor safety regulations, they could receive a one week stop order from the Minister, until the reasons for the breach are explained. The Minister must refer the matter to the competent arbitration committee if the partial suspension is extended or if a total suspension is requested. If the risk is still not removed by the employer, the workers who have stopped working are entitled to full wages. The employer can appeal the decision of partial or total suspension if the decision is found to have been arbitrary. |

There is a gap between the World Bank’s EHS Guidelines, UNOPS EHS procedures and practices and Yemeni laws and regulations. Projects should apply whichever is more stringent.

National law gives priority to the principle of environmental protection and pollution prevention, and not only to the mitigation or compensation of impacts. All new projects must carry out EIAs to prevent adverse impact and must obtain an environmental permit. No project or new structure that could harm, pollute or deteriorate the environment and natural resources is allowed and all new projects should use best available practices for clean production and apply environment protection/pollution prevention measures. Yemeni Law encourages related sectors and projects to provide institutional capacity and training for projects to enhance their capacity and knowledge in handling environmental issues. It also encourages research and development in all environmental aspects (EPL, Article 90). |

No major gap

Article 35 of the Yemen Constitution declares that Environment protection is the responsibility of the state and the community and that it is a duty for every citizen. Community and NGO participation are considered an essential part of consultation while planning proposed projects, and is a continuous process before, during and after project implementation (EPA EIA Guideline). Furthermore, NGOs and individuals can directly sue any person or entity who cause harm to the environment and natural resources or participate in its deterioration and pollution (EPL Article 4, para 4 and Article 82). |

No major gap
8. Use independent expertise in the preparation of EA where appropriate. Use independent advisory panels during preparation and implementation of projects that are highly risky or contentious or that involve serious and multi-dimensional environmental and/or social concerns. National law recognizes the importance of accredited independent consultants or Environmental Non-Governmental Organizations ENGOs and environmentally concerned CBOs (EPA EIA guideline). No major gap

9. Provide measures to link the environmental assessment process and findings with studies of economic, financial, institutional, social and technical analyses of a proposed project. Government planning authority should provide measures to incorporate environmental concerns in socioeconomic plans in all planning cycles and put the environmental concerns as integral part of the development planning to be sustainable in all sectors to avoid any environmental negative impacts in future (EPL Article 4 Para 6). No major gap

11. Disclose draft EA in a timely manner, before appraisal formally begins, in an accessible place and in a form and language understandable to key stakeholders. ESIAs should include a reference list and a non-technical summary for public use and disclosure in a form and language understandable to general public (EPA EIA guideline). No major gap

**OP 4.11, Physical Cultural Resources**

1. Use an environmental assessment (EA) or equivalent process to identify PCR and prevent or minimize or compensate for adverse impacts and enhance positive impacts on PCR through site selection and design. National list and Annexes of sites and locations with important physical cultural resources and environmental sensitivity such as wetland sites, coral reefs, protected areas and national parks etc. (Chapter 3 Article 37, EPL Number 26,1995) No major gap

2. As part of the EA, as appropriate, conduct field-based surveys, using qualified specialists. Field-based surveys conducted by specialists and describe the proposed site for project including map, borders and neighborhoods with design of infrastructures, facilities and services and all inputs and outputs (EPL and EIA Guideline). No major gap

3. Consult concerned government authorities, relevant non-governmental organizations, relevant experts and local people in documenting the presence and significance of PCR, assessing the nature and extent of potential impacts on these resources, and designing and implementing mitigation plans. In the event of a chance find of PCR above land or underneath, government authorities must be consulted and the site must be guarded safely until the related governmental authority experts came, investigate and have a hold on it, in return the finder is entitled to suitable reward regardless of the value and age of the PCR. The General Organization for Antiquities and Museums (GOAM) has the mandate to stop any works that could damage antiquities and cultural heritage areas and to preserve cultural field work and excavation findings (Presidential Decree No. 21/1994, Parliament Decree No 14/1994 and Law No. 8/1997 Amending Antiquities Law Number 21/1994 of Antiquities Law Article 9). To fill the gap any cultural heritage encountered during the work should be recorded in GOAM and the Yemeni Heritage Management Platform Data Base launched in 2017 as part of an agreement between UNESCO, Doha Office GOAM and Oxford University. To fill the gap there should be a clause in all works contracts regarding chance finds.

4. For materials that may be discovered during project implementation, provide for the use of “chance find” procedures in the context of the PCR management plan or PCR component of the environmental management plan. During projects planning in urban and rural areas the project should plan for the protection of PCR. If there is an indication of existence of any PCR, the relevant authority must be consulted before commencement of project works. Project works should be located no closer that 500m from the nearest known PCR (Presidential Decree No 21/1994, Parliament Decree No 14/1994 and Law No 8/1997 Amending Antiquities Law No 21/1994 Article 12).
Chapter 6
TYPOLOGY OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

155. This chapter identifies negative environmental and social impacts that might result from subproject activities. It distinguishes between the impacts associated with generic construction activities that would be the direct responsibility of contractors from sector-specific impacts that would be the responsibility of UNOPS and its implementing partners.

6.1 Construction Related Impacts

156. Most impacts that are directly related to construction activities are directly managed by contractors. These also include impacts related to the construction or management of project related facilities by the contractor, such as offices, storage facilities or guard houses.

157. Local contractors are expected to conduct all works using workers that already reside in the cities where the works are conducted. Thus, subprojects will trigger minimal labor influx and contractors are not expected to build or operate residential labor camps to host such workers.

158. The following is a list of the main generic construction related impacts:

6.1.1 Community Health and Safety
   i. Increased road traffic flows due to construction transport
   ii. Temporary disruption of economic activities, including disruption of traffic and congestion
   iii. Public safety during and after construction

6.1.2 General Environmental Impacts
   iv. Dust generation during excavation, backfilling, and compaction
   v. Increased levels of noise and vibration due to heavy vehicles and construction equipment, which are a nuisance to the community around the site
   vi. Air pollution due to emissions from construction vehicles and equipment
   vii. Production of liquid wastes, leading to soil or groundwater pollution
   viii. Production of hazardous, or potentially hazardous, wastes from: (i) construction debris; or (ii) use of chemicals during construction
   ix. Disposal of construction debris and waste materials
   x. Changes in runoff water patterns and effluents
   xi. Bad odors
   xii. Landslides and soil erosion
   xiii. Poor coordination, planning and sequencing of construction could lead the breakage of underground pipes (electric power cables, telephone lines, water distribution)
   xiv. Destruction of vegetation
   xv. Destruction of significant physical cultural property

6.1.3 Occupational Health and Safety
   xvi. Work related accidents and injuries
   xvii. Risk to workers from hazardous material used for construction, such as acetylene, petroleum, diesel, lubricating oil, paints and chemicals.
   xviii. Poor onsite sanitation or water supply, leading to illness and disease
6.2 Sector Specific Impacts

The management of sector specific impacts will be the responsibility of the relevant implementing partner, and in the case of electricity for critical services subprojects, will be the direct responsibility of UNOPS. Following is a description of sector-specific impacts, beyond construction impacts.

6.2.1 Tertiary Municipal Services and Solid Waste Management

159. Except for solid waste management, subprojects under this subcomponent will only cause minor and reversible environmental impacts that are related to construction activities.

160. The key potential environmental impacts specific to solid waste management include:

i. The formation of breeding sites for disease vectors
ii. The spread of diseases because of improper disposal of domestic and medical waste
iii. The risk that wastepickers and members of neighboring communities might get ill because of pollution or catch a disease
iv. The risk of disproportional impacts on vulnerable groups such as the Al Muhamasheen
v. The risk of child labor
vi. Groundwater and watershed pollution as a result of poor leachate treatment
vii. Disputes over the use of treated concentrate for irrigation
viii. Poor operation and management of the landfill might aggravate underlying environmental issues.

6.2.2 Urban Water and Sanitation

161. The project will support small to medium-scale infrastructure works, as well as critical supplies (such as fuel) to restore water and sanitation service delivery at the city level. The selection of activities will be based on the priority needs to be identified by UNOPS, in consultation with the UW-PMU LCs, relevant DLAs and/or local communities. The Project will only restore existing systems; there will be no expansion of the existing systems nor creation of new ones.

162. Urban water and sanitation subprojects will have strong positive health and environmental impacts. They are generally of small size and should cause only minor negative environmental that can be readily addressed through proper design, construction, and operation and maintenance.

163. The main negative impacts of urban water and sanitation projects include:

i. increased quantities of wastewater in the absence of sufficient sanitation facilities
ii. pollution from sewage discharges, with consequent health risks
iii. formation of stagnant effluent ponds that might be breeding sites for disease vectors

6.2.3 Urban Roads

164. The Project will rehabilitate selected primary and secondary urban roads including those at the entrances to the cities. Activities may include spot and pothole repairs, crack sealing, patch works, asphalt resurfacing, road safety improvement works and intersection rehabilitation.

165. Urban roads subprojects will have highly positive environmental impacts and provide an improved environment for city dwellers. The pavement slope can also be utilized to channel storm water and collected waters, which can be used to irrigate urban gardens.

166. The main potential sector-specific impact is the filling or blockage of culverts, drainage ditches

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6 For the purposes of the ESMF, a child is a person under age 18.
7 The Al-Muhamasheen is a minority social group in Yemen. Although Arabic speaking, they are considered to be at the bottom of the now abolished caste ladder, are socially segregated, and are mostly confined to menial jobs in the country’s major cities.
and canals as a result of construction, the temporary disruption of economic activities and the potential loss of income, which is addressed under the Project’s Resettlement Policy Framework (RPF), and environmental impacts due to uncontrolled sources of construction materials. Construction materials for urban roads, such as base-course materials and hot mix asphalt are usually sourced from existing crushers and mixing plants that are licensed by local authorities. Electricity for Critical Services

167. The Project will support off-grid electricity solutions for functional water, sanitation, health and education facilities. Subprojects will have overall positive impacts by providing a competitive, cost-effective, pollution free reliable mode of Solar PV power that will meet underserved demand. Potential environmental impacts will be temporary or short-term, and are related to installation activities and minor construction.

168. Sector specific impacts include electric shocks that can kill or injure workers or other persons, and the handling and disposal of batteries and solar panels.
Chapter 7
IMPACT MITIGATION MEASURES

169. This Chapter defines mitigation measures for the impacts described in Chapter 6.

7.1 Construction

170. UNOPS and its implementing partners will mitigate construction impacts by including environmental and social clauses in all construction contracts, by ensuring that contractor personnel are familiar with these clauses, and by also requiring contractors to comply with the National Labor Law (Decree 5/1995) and applicable International Labour Organization conventions on workplace conditions. UNOPS will prepare safety manuals or handbooks for contractors as required.

171. The following table lists the potential impacts of mitigation activities and matching mitigation measures.

Table 21. Potential impacts and matching mitigation for construction activities.

<table>
<thead>
<tr>
<th>Potential impact</th>
<th>Mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community Health and Safety</strong></td>
<td></td>
</tr>
<tr>
<td>i. Increased road traffic flows due to construction transport</td>
<td>• Inform the public about the schedule of maintenance activities</td>
</tr>
<tr>
<td></td>
<td>• Control and manage traffic, by using traffic cones, barriers, fences, or lights as appropriate</td>
</tr>
<tr>
<td></td>
<td>• Limit speed in inhabited areas</td>
</tr>
<tr>
<td>ii. Temporary disruption of economic activities, including disruption of traffic and congestion</td>
<td>• Inform and coordinate with the local councils and the public on the maintenance schedule</td>
</tr>
<tr>
<td></td>
<td>• Shorten works period</td>
</tr>
<tr>
<td></td>
<td>• Provide alternative access to residences and roadside businesses Inform and coordinate with the local councils and the public on the maintenance schedule</td>
</tr>
<tr>
<td></td>
<td>• Avoid work during night hours</td>
</tr>
<tr>
<td>iii. Public safety during construction</td>
<td>• Erect removable barriers in high risk areas</td>
</tr>
<tr>
<td></td>
<td>• Install warning signs</td>
</tr>
<tr>
<td></td>
<td>• Protect proper shielding scaffolds</td>
</tr>
<tr>
<td><strong>General Environmental Impacts</strong></td>
<td></td>
</tr>
<tr>
<td>iv. Dust generation during excavation, backfilling, compaction, or transportation of construction materials</td>
<td>• Use well-maintained equipment</td>
</tr>
<tr>
<td></td>
<td>• Spay water for dust control</td>
</tr>
<tr>
<td>v. Increased levels of noise and vibration due to heavy vehicles and construction equipment, which are a nuisance to the community around the site</td>
<td>• Use quiet/well-maintained equipment</td>
</tr>
<tr>
<td></td>
<td>• Use operational noise mufflers</td>
</tr>
<tr>
<td></td>
<td>• Limit noisy activities to normal daylight hours</td>
</tr>
<tr>
<td></td>
<td>• Limit vehicle speed at critical locations</td>
</tr>
<tr>
<td>vi. Air pollution due to emissions from construction vehicles and equipment</td>
<td>• Properly maintain construction machinery to minimize exhaust emissions of CO, suspended particulates and fumes</td>
</tr>
<tr>
<td>vii. Production of liquid wastes, leading to soil or groundwater pollution</td>
<td>• Remove and recycle liquid waste</td>
</tr>
<tr>
<td>viii. Production of hazardous, or potentially hazardous, wastes from construction debris or the use of chemicals during construction</td>
<td>• Treat hazardous waste separately from other waste</td>
</tr>
<tr>
<td>x. Disposal of construction debris and waste materials</td>
<td>• Properly dispose of solid waste at designated permitted sites</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| x. Changes in runoff water patterns and effluent | • Side slope roads to prevent the accumulation of water on the road surface  
• Revegetate disturbed soils  
• Ensure that ditches and culverts are not blocked by the construction activities |
| xi. Bad odors | • Inform nearby houses |
| xii. Landslides and soil erosion | • Where feasible, provide an open area ~1 m wide, behind cut side channels, to accommodate fallen debris which must be cleaned  
• Where feasible, increase the mass thickness of the rock fill to provide additional stability  
• Provide adequate drainage systems |
| xiii. Poor coordination, planning and sequencing of construction could lead the breakage of underground pipes (electric power cables, telephone lines, water distribution) or paved roads | • Coordinate with local councils and other implementing partners  
• Postpone asphalt pavement until the water distribution and sanitation networks are completed  
• Protect underground pipes during construction  
• Repair damaged infrastructure on the completion of the works |
| xiv. Destruction of vegetation | • Restore vegetative cover, where feasible  
• Wherever feasible, plant endemic trees with minimal water demand at ~4 meters from the edge of the road shoulders and as much as possible within the road right of way (ROW).  
• Minimize impact animal and amphibian road crossings by reducing speed limits in critical areas and planting trees or other vegetation.  
• Maintain clean culverts and rehabilitate them to provide safe crossing for amphibians. |
| xv. Destruction of significant physical cultural property | • Contracts to include provisions for chance find  
• Train crew/supervisors to spot potential archaeological finds.  
• In the event of a potential find, liaise with the Archaeological Department at Ministry of Culture or a local university for quick assessment and action. |
| xvi. Work related accidents and injuries | • Provide occupational health and safety training to all employees involved in works  
• Provide protective masks, helmet, overall and safety shoes, safety goggles, as appropriate  
• Provide workers in high noise areas with earplugs or earmuffs  
• Ensure availability of first aid box |
| xvii. Risk to workers from hazardous material used for construction, such as acetylene cylinders, petroleum, spirits, lubricating oils, paints and chemicals. | • Train workers regarding the handling of hazardous materials  
• Store hazardous materials as per the national and international laws and guidelines including the World Bank Environmental, Health, and Safety (EHS) Guidelines® |

® World Bank General EHS Guidelines are available at the following website: http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines
Poor onsite sanitation or water supply, leading to illness and disease

- Provide employees with access to toilets and potable drinking water

The risk of employing children for construction activities

- verify that workers are older than 18 when hiring
- exclude all persons under the age of 18
- review and retain copies of verifiable documentation concerning the age of workers

7.2 Sector Specific Mitigation Measures

7.2.1 Tertiary Municipal Services and Solid Waste Management

The discussion on suitable mitigation measures for this sector focuses on landfills and solid waste collection. Landfills are managed by the local Cleaning Fund in each city. The following table details potential impacts and matching mitigation measures for landfill subprojects.

Table 22. Potential impacts and matching mitigation measures for landfill subprojects

<table>
<thead>
<tr>
<th>Potential impact</th>
<th>Mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>The formation of breeding sites for disease vectors</td>
<td>• Cover solid waste with soil;</td>
</tr>
<tr>
<td></td>
<td>• Take necessary actions to fight vectors, such as spraying with insecticides</td>
</tr>
<tr>
<td></td>
<td>• Ensure proper utilization or disposal of separated solid waste for reuse.</td>
</tr>
<tr>
<td>The spread of diseases because of improper disposal of medical</td>
<td>• Dispose of medical waste separately from other waste</td>
</tr>
<tr>
<td>The risk that waste collection workers, pickers and members of neighboring communities might get ill because of pollution or catch a disease</td>
<td>• Train waste collection workers, pickers and selected members of the community on health and hygiene</td>
</tr>
<tr>
<td></td>
<td>• Conduct cleaning and awareness campaigns and provide waste pickers with safety and hygienic materials as well as the labor</td>
</tr>
<tr>
<td>The risk of disproportional impacts on vulnerable groups such as the Al Muhamasheen</td>
<td>• Give special consideration to the most vulnerable groups</td>
</tr>
<tr>
<td>The risk of child labor</td>
<td>• Prevent child labor.</td>
</tr>
<tr>
<td>Groundwater and watershed pollution as a result of poor leachate treatment</td>
<td>• Test the characteristics of leachate and the treated effluent</td>
</tr>
<tr>
<td></td>
<td>• Test groundwater quality at source development at regular intervals.</td>
</tr>
<tr>
<td></td>
<td>• Upgrade the performance of the leachate treatment facility</td>
</tr>
<tr>
<td></td>
<td>• Provide training for local NGOs and members of the community on O&amp;M of the system</td>
</tr>
<tr>
<td></td>
<td>• Discuss the use of the effluent for irrigating non-edible crops, such as garden nurseries, palm trees, or cotton</td>
</tr>
<tr>
<td>Disputes over the use of treated concentrate for irrigation</td>
<td>• Discuss effluent use, potential crops and disposal of treated concentrate with land owners downstream of the landfill</td>
</tr>
<tr>
<td>Poor operation and management of the landfill might aggravate underlying environmental issue</td>
<td>• Support training of local authority, local NGOs and members of the community on O&amp;M of the system</td>
</tr>
<tr>
<td></td>
<td>• Support training on the administrative and financial management of the project</td>
</tr>
<tr>
<td>Complaints by adjacent residents/beneficiaries</td>
<td>• Provide appropriate mitigation measures to remedy complaints</td>
</tr>
</tbody>
</table>

9 For the purpose of this ESMF, a child is a person under age 18.
173. The following is a list of additional environmental mitigation measures that UNOPS and PWP will consider when designing landfill subprojects:

7.2.1.1 Long Term Remedial Measures

i. Landfills should be designed, located and operated based on national, international guidelines, environmental impact analyses (EIA), and take into consideration the local climate (precipitation, evaporation, and temperature, wind direction), groundwater levels, and nearby residential areas.

ii. The landfill should be designed and managed to maintain a perennial water deficit within the landfill by maximizing runoff and minimizing infiltration into the waste.

iii. Authorities must allocate suitable land in their long-term strategies for future landfills needs.

iv. Operational standards (guidelines) for landfill practices needed to provide the requirements for environmentally sound design and operation which considers all site-specific conditions (especially climatic data, hydrologic and geologic factors).

v. Avoid the co-disposal of waste water from septic tanks into the landfill body, to minimize the leachate generated and groundwater contamination

vi. Responsible authorities should provide the basic facilities needed for sorting and source separation of waste

vii. Landfill gas control and collection system should be implemented for more efficient utilization and to prevent the gas accumulation even where the case is not economically feasible.

viii. Increase the knowledge and awareness between residences for the importance of waste sorting and source separation and it is beneficial effect on social, economic and environmental aspects

ix. Declare and organize scavenger work through merging it formally in the system. Scavenging can be an effective way for managing waste, because the reduction whereas it reduces the cost of formal waste management systems as it reduces the quantity of waste for collection

x. Encourage the private sector to invest in all forms of waste recycling and management projects

xi. Reducing the quantity of the biodegradable waste that is landfilled which is considered with encouraging landfill methane recovery the major strategies for reducing the methane emissions, by implementing special standards starting with industries, companies and big waste generators

7.2.1.2 Short Term Remedial Measures

i. Ensure that daily covers are practiced. Leachate problem could be minimized by limiting the water getting into the landfill through surface water diversion to ensure that no water can enter the landfill and also to ensure a low water table within the landfill by frequent pumping that should be coupled with the daily soil cover. A low-permeability cover affects the water content of the landfill.

ii. Improve access roads

iii. Build the basic infrastructure, fencing and weighbridge.

iv. Stop open burning inside landfills.

v. Establish surface drainage system for limiting the infiltration of the water through the landfill cover

vi. Raise the awareness and competences of the employees

vii. Build leachate collection and gas venting facilities

viii. Ensure that no disposal of hazardous and medical waste takes place; it is important that only

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municipal waste is disposed in landfill, and no industrial or hazardous waste. Waste should be sorted and sites should be carefully selected to especially avoid negative impacts on groundwater resources.
7.2.2  Urban Water and Sanitation

Table 23. Potential impacts and matching mitigation for urban water and sanitation subprojects

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigation Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased quantities of wastewater in the absence of sufficient sanitation facilities</td>
<td>• Ensure sufficient sanitation infrastructure for urban water projects</td>
</tr>
</tbody>
</table>
| Pollution from sewage discharges, with consequent health risks                    | • Ensure safe final disposal of effluent from treatment ponds or reuse with extreme precaution to avoid direct contact with humans or animals.  
• Provide training for selected members of the community on health and hygiene education |
| Formation of stagnant effluent ponds that might be breeding sites for disease vectors | • Ensure proper utilization or disposal of effluent and sludge                     
• Take necessary actions for fighting vectors, such as spraying with insecticides, reclaiming stagnant pools, using nets on windows and beds |
| Temporary disruption of economic activities/businesses and potential loss of income | • Provide appropriate measures for compensation for the affected businesses         |

7.2.3  Urban Roads

Table 24. Potential Impacts and matching mitigation measures for urban roads subprojects (Standard routine maintenance work)

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigation Measure</th>
</tr>
</thead>
</table>
| Filling or blockage of culverts, drainage ditches and canals during as a result of construction | • Side slope roads to prevent the accumulation of water on the road surface  
• Revegetate disturbed soils  
• Periodically clean and maintain ditches and culverts |
| Temporary disruption of economic activities/businesses and potential loss of income | • Provide appropriate measures for compensation for the affected businesses                                                                  |
| Disruption of environment due of uncontrolled source of construction materials   | • Ensure that construction materials are brought from licensed sources in the same area and transported in licensed trucks with controlled load and well contained and covered |

7.2.4  Electricity for Critical Services

Table 25. Potential impacts and matching mitigation for Electricity for Critical Services subprojects

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigation Measure</th>
</tr>
</thead>
</table>
| Electric shock can cause death or injury to the workers or the public             | • Build security fences around substation  
• Put in place warning signs  
• Carefully design using appropriate technologies to minimize hazards |
| Impacts of hazardous wastes resulting from the disposal of batteries and panels used in solar PV systems | • Ensure proper recycling and disposal paths exist for batteries |
Chapter 8

SUBPROJECT SCREENING

174. The ESSO will screen all subproject proposals prepared by UNOPS and its implementing partners to determine the environmental and social issues that might be triggered by the subproject, and to decide what type and level of assessment is needed. The ESSO will use the same screening process for resettlement issues.

175. While the Project is expected to only operate on public/state lands, the screening will assist in managing the presence of squatters or other encumbrances on state lands. The screening form also caters for “chance finds” relating to the Physical Cultural Resources under OP 4.11.

8.1 Steps in the Screening Process

Step 1. Applicability

176. Project activities include works, as well as the purchase of goods and services. All works contracts will be supply and install, and all infrastructure goods, such as street lights, solar panels, pipes, pumps or other large equipment, will be installed by contractors that are funded by the Project under a works’ contract. The project will also include service contracts, including the hiring private local contractors to collect accumulated wastes from specific municipal areas and to transport the waste to the cities’ landfills, as well as the rental of equipment for the landfills’ operators to properly dispose the collected waste.

177. The first step of screening is for the ESSO to determine the extent of potential direct and indirect environmental and social impacts for each subproject. No further attention is required if the subproject is unlikely to have direct or indirect environmental or social impacts.

Step 2. Eligibility (Negative List)

178. The second step is to determine if the subproject is eligible for financing under the Project. The ESSO will identify, analyze and assess if the subproject is likely to have any of the following attributes:

Category A attributes, such as:
- Activities with significant adverse impacts that are sensitive, diverse, or unprecedented, or that affect an area broader than the sites or facilities subject to physical works
- Major resettlement
- Greenfield subprojects

Solid Waste
- New disposal site

Irrigation
- Construction of new or the expansion of existing irrigation and drainage schemes.

Income Generating Activities
- Activities involving the use of fuelwood, including trees and bush.
- Activities involving the production or use of hazardous substances or explosives

Labor
- Activities with potentially significant adverse impacts related to labor influx, child or forced labor.
Natural Habitats
- Activities with impacts to natural habitat should be excluded, particularly impacts to critical natural habitats, sensitive areas, high biodiversity values, and protected areas.

Pesticides
- Activities requiring pesticides that fall in WHO classes IA, IB, or II.

Physical Cultural Resources
Damage to cultural property, including but not limited to activities that affect:
- Archaeological and historical sites
- Religious monuments, structures and cemeteries

Involuntary Resettlement
- Activities requiring the involuntary taking of private land and relocation of PAPs
- Activities that require the relocation of encroachers or squatters

Dams
- Construction of dams more than 5 meters high
- Rehabilitation of dams more than 15 meters high
- Any activities that may be affected by the operation of an existing dam

Subprojects with any of the above attributes will not be eligible for support under the Project.

Step 3. Use of Contractors
The third step is to determine if the subproject includes the provision of work contracts. All subprojects involving works will be subjected to the environmental and social clauses for contractors (Chapter 10).

Step 4. Possible Environmental and Social Impacts
179. The ESSO will screen every subproject for environmental and social impacts using the following checklist:

A. Zoning and Land Use Planning
1. Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?
2. Will the subproject involve significant land disturbance or site clearance?
3. Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?

B. Utilities and Facilities
4. Will the subproject require the setting up of ancillary production facilities?
5. Will the subproject require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)?

C. Water and Soil Contamination
6. Will the subproject require large amounts of raw materials or construction materials?
7. Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?
8. Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?
9. Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?
10. Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?
11. Will the subproject involve the use of chemicals or solvents?
12. Will the subproject lead to the destruction of vegetation and soil in the right-of-way,
borrow pits, waste dumps, and equipment yards?

13. Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors?

D. Noise and Air Pollution Hazardous Substances

14. Will the subproject increase the levels of harmful air emissions?
15. Will the subproject increase ambient noise levels?
16. Will the subproject involve the storage, handling or transport of hazardous substances?

E. Destruction/Disruption of Land and Vegetation

17. Will the subproject lead to unplanned use of the infrastructure being developed?
18. Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?
19. Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?
20. Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?
21. Will the subproject lead to erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains?
22. Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?
23. Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?

F. Expropriation and Social Disturbance

24. Will the subproject impact internally displaced persons (IDP) negatively?
25. Will the subproject lead to induced settlements by workers and others causing social and economic disruption?
26. Will the subproject lead to environmental and social disturbance by construction camps?
27. Will the subproject cause economic displacement?
28. Will the subproject temporarily displace squatters, economically or physically, or other informal groups?
29. Will the subproject cause a loss in productive assets or income source?
30. Will the subproject restrict access to resources?
31. Will the subproject affect the livelihoods or vulnerable people, such as persons with disabilities, widows or the elderly?
32. Will the subproject create social conflict over the distribution of benefits or resources?

180. The ESSO or the focal points in the implementing partners might need to conduct field visits to determine if any of the above impacts might be triggered. Any subproject triggering any of the above impacts, or any sector specific impacts in Chapter 6 will require an Assessment of the triggered impacts, and a Plan to mitigate the specific impacts. This abbreviated assessment and mitigation plan will take into account the list of issues (Chapter 6) and matching mitigation measures (Chapter 7).

Step 5. Subproject Risk Levels

181. In light of the screening checklist and process above, the ESSO will assign each eligible subproject one of the following risk levels.

Level 1. Subprojects that are unlikely to have direct or indirect environmental or social impacts (equivalent to Category C in OP 4.01). These subprojects do not require safeguards instruments such as clauses for contractors, ESIA or ESMPs.

Level 2. Subprojects that involve works but do not have impacts beyond generic construction impacts that are managed by contractors. These subprojects will require an ESMP consisting only of a description of the subproject and the Environmental and Social Clauses for contractors (see Chapter 10). These subprojects might also require an Abbreviated Resettlement Action Plan (ARAP) prepared under the RPF.

Level 3. Subprojects that cause no more than three environmental or social impacts (see checklist
above and Chapter 6). In addition to the Environmental and Social Clauses for Contractors, these subprojects will require an assessment limited to the triggered impacts and will define proportionate and sufficient mitigation measures specific to these impacts, taking into account the mitigation measures described in Chapter 7. These mitigation measures will be implemented by UNOPS and its implementing partners. They might also require an ARAP or a RAP.

**Level 4. Subprojects that trigger significant environmental and social impacts.** These subprojects will require a full ESIA and ESMP. They might also require an ARAP or a RAP.

182. Subprojects with significant impacts, such as the rehabilitation of landfills or sewerage systems, will be assigned Risk Level 4 and will require a full Environmental and Social Assessment (ESIA) and Environmental and Social Management Plan (ESMP) that meet the requirements for Category B projects in OP 4.01. The ESIA and ESMP will take into account the list of issues (Chapter 6) and matching mitigation measures (Chapter 7).

### 8.2 Landfills

183. UNOPS has already commissioned a separate site suitability assessment for three existing sanitary landfill sites. Each of these sites is expected to be a Level 4 subproject. The ESSO will determine if further work is needed to understand existing conditions (e.g. potential leaching/groundwater contamination, health and safety), including the preparation of full ESIA, ESMP and RAPs.

184. In addition, to avoid potential health and environmental risks associated with the lack or improper treatment of collected wastewater, investments in sanitation will only take place if the entire supply chain from collection to final treatment is functional or made functional through Project investments.

### 8.3 Screening form

185. Within one week of receiving a draft subproject proposal, the ESSO will prepare and sign a screening form (Template in Annex 1.) indicating if the ESMF is applicable to the subproject and if the subproject triggers any of the attributes in the negative list.

186. The screening form will indicate the subproject risk level, include a section detailing how each of the triggered environmental and social issues will be addressed, and include guidance on the preparation of an ESIA and ESMP when necessary. The signed screening form will be passed on by the ESSO to the Program Manager and the relevant subproject engineer for further processing.

187. UNOPS will use the same screening process for resettlement issues.
Chapter 9
SUBPROJECT ESIAS AND ESMPs

188. Level 3 and Level 4 subprojects will require the preparation of subproject-specific safeguard instruments. This chapter details the procedures and accountability for their preparation.

9.1 Preparation of the ToRs

189. The focal point in the concerned implementing partner will prepare draft ToRs for abbreviated assessment and mitigation plans (Level 3 subprojects) and submit them for review and clearance to the ESSO.

190. The ESSO, in collaboration with the focal point of the concerned implementing partner, will prepare the ToRs for ESIAs and ESMPs (Level 4 subprojects), and through the Program Manager will submit them to the World Bank for review and clearance. Prior review by the World Bank will be limited to Level 4 subprojects, such as landfills and certain sanitation systems.

191. Annex 3 contain annotated outlines for Level 4 ESIAs and ESMPs. ESMPs should identify and summarize expected subproject environmental and social risks and impacts and present measures to mitigate them, including monitoring and reporting requirements, expected timelines for their implementation, and costs and accountability for the implementation and supervision of the agreed mitigation measures. It should specify the parameters to be monitored, methods to be used, sampling locations, and the frequency of measurements.

9.2 Preparation of the Safeguard Instruments

192. Implementing partners, either directly or through consultants that they recruit, will prepare abbreviated assessments and mitigation plans for Level 3 subprojects. The draft assessments and mitigation plans will be submitted to the ESSO for review, consultation, and clearance, before being finalized and disclosed.

193. UNOPS will competitively select consultants to prepare ESIAs and ESMPs for Level 4 subprojects. The ESSO will supervise the preparation of the instruments and interact with the consultants. The Program Manager will submit draft ESIAs and ESMPs to the World Bank for their review, clearance and disclosure.

9.3 Consultation and Disclosure Requirements

194. For each subproject, the ESSO and the concerned implementing partners will initiate consultations with individuals and communities that might be affected by the subproject, as soon as subproject screening has been completed. The purpose of the consultations will be to: (i) inform them about the activities to be undertaken, their timetable and possible impacts, and; (ii) document and address their concerns. Consultation summaries should be included in safeguard instruments, including who was consulted, where and when, what concerns were expressed, and how these concerns were addressed. The records of consultations are kept in the Project Office.

195. The consultation process will take in account the sociocultural context of Yemen. Consultations can take the form of focus groups, discussions with elders/community leaders, or interviews. Separate consultations will be done for women in order to ensure that any special concerns and needs are taken into account during the preparation of the safeguard instruments. In light of the FCV context, the ESSO will ensure that PAPs are not exposed to risks as part of their participation in subproject consultations, for example by avoiding large meetings, and not disclosing personal information/photos.

196. Provisions and specifics for consultations, including budgets, will be included in the relevant ToRs and subsequent safeguards documents.
9.4 Implementation of Subproject Mitigation Measures

197. UNOPS and the implementing partners are responsible for implementing measures in mitigation plans (Level 3 subprojects) and ESMPs (Level 4 subprojects) that are beyond the control of contractors, in accordance to the mitigation measures defined in Chapter 7. In addition, subprojects should regularly consult with project affected persons and communities throughout subproject implementation, as necessary, to address safeguards-related issues that affect them.
Chapter 10

ENVIRONMENTAL AND SOCIAL CLAUSES FOR CONTRACTORS

198. Most environmental and social impacts of subprojects result from activities directly under the control of contractors and will be mitigated directly by the same contractors. For Level 2 subprojects, which might represent the majority of subprojects, the ESMP will consist solely of measures implemented by subcontractors. As a consequence, ensuring that contractors effectively mitigate construction related impacts is the core of the Project’s mitigation strategy. This will be done by ensuring that the environmental and social management of construction activities are mandatory parts of construction works contracts.

199. UNOPS and its implementing partners will incorporate standardized environmental and social clauses in tender documentation and contract documents, so that potential bidders are aware of environmental and social performance requirements expected from them, are able to reflect that in their bids, and required to implement the clauses for the duration of the contract. UNOPS and its implementing partners will enforce compliance by contractors with these clauses.

200. The clauses cover four issues:
   i. Environment, Health and Safety (EHS)
   ii. Environmental and social monitoring by contractor
   iii. Environmental and social liabilities
   iv. Grievance mechanism for workers

201. These clauses will also be referred to in all subproject ESMPs. Subproject ESMPs will also specify any training required for contractors to understand and satisfactorily meet the Project’s environmental and social requirements.

10.1 Environment, Health and Safety

202. Clauses for contractors which address environment, health and safety concerns are presented in Annex 2.

10.2 Environmental and Social Monitoring by Contractors

203. UNOPS will require that contractors monitor, keep records and report on the following environmental and social issues for their subproject. The application of this requirement will be proportionate to the activities and to the size of the contract, in manner acceptable to the World Bank:
   i. Safety: hours worked, recordable incidents and corresponding Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, high potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment, skills training, and so forth).
   ii. Environmental incidents and near misses: environmental incidents and high potential near misses and how they have been addressed, what is outstanding, and lessons learned.
   iii. Major works: those undertaken and completed, progress against project schedule, and key work fronts (work areas).
   iv. E&S requirements: noncompliance incidents with permits and national law (legal noncompliance), project commitments, or other E&S requirements.
   v. E&S inspections and audits: by contractor, engineer, or others, including authorities—to include date, inspector or auditor name, sites visited and records reviewed, major findings, and actions taken.
   vi. Workers: number of workers, indication of origin (expatriate, local, nonlocal nationals),
gender, age with evidence that no child labor is involved, and skill level (unskilled, skilled, supervisory, professional, management).

vii. Training on E&S issues: including dates, number of trainees, and topics.

viii. Footprint management: details of any work outside boundaries or major off-site impacts caused by ongoing construction—to include date, location, impacts, and actions taken.

ix. External stakeholder engagement: highlights, including formal and informal meetings, and information disclosure and dissemination—to include a breakdown of women and men consulted and themes coming from various stakeholder groups, including vulnerable groups (e.g., disabled, elderly, children, etc.).

x. Details of any security risks: details of risks the contractor may be exposed to while performing its work—the threats may come from third parties external to the project.

xi. Worker grievances: details including occurrence date, grievance, and date submitted; actions taken and dates; resolution (if any) and date; and follow-up yet to be taken—grievances listed should include those received since the preceding report and those that were unresolved at the time of that report.

xii. External stakeholder grievances: grievance and date submitted, action(s) taken and date(s), resolution (if any) and date, and follow-up yet to be taken—grievances listed should include those received since the preceding report and those that were unresolved at the time of that report. Grievance data should be gender-disaggregated.

xiii. Major changes to contractor’s environmental and social practices.

xiv. Deficiency and performance management: actions taken in response to previous notices of deficiency or observations regarding E&S performance and/or plans for actions to be taken—these should continue to be reported until UNOPS determines the issue is resolved satisfactorily.

### 10.3 Environmental and Social Liabilities of Contractors

204. Contractors will be legally and financially accountable for any environmental or social damage or prejudice caused by their staff, and thus are expected to put in place controls and procedures to manage their environmental and social performance. A breakdown for the cost of noncompliance for each mitigation measure will be enclosed in bidding documents. These will include:

- Mitigation measures to be included in the contract will be specified in the subproject ESMP
- Deductions for environmental noncompliance will be added as a clause in the Bill of Quantities (BOQ) section
- Environmental penalties shall be calculated and deducted in each submitted invoice
- Any impact that is not properly mitigated will be the object of an environmental/social notice by UNOPS
- For minor infringements and social complaints, an incident which causes temporary but reversible damage, the contractor will be given a notice to remedy the problem and restore the environment. No further actions will be taken if the Project engineer confirms that restoration is done satisfactorily.
- For social notices, the Project engineer will alert the contractor to remedy the social impact and to follow the issue until solved. If the contractor does not comply with the remediation request, work will be stopped and considered under no excused delay
- If the contractor hasn’t remedied the environmental impact during the allotted time, the Project engineer will stop the work and give the contractor a notification indicating a financial penalty according to the non-complied mitigation measure that was specified in the bidding document.
- No further actions will be required if the Project engineer sees that restoration is done satisfactorily. Otherwise, if Contractor hasn’t remedied the situation within one day any additional days of stopping work will be considered no excused delay
- Environmental notifications issued by the Project engineer might include one or more environmental penalty
• In the event of repeated noncompliance totaling 5% of the contract value, the Project Engineer will bring the environmental and social notices and the deduction history to UNOPS procurement in order to take legal action.

10.4 Grievance Mechanism for Workers

205. Contractors will put in place a Grievance Mechanism for their workers that is proportionate to their workforce, according to the following principles\(^{11}\):

- **Provision of information.** All workers should be informed about the grievance mechanism at the time they are hired, and details about how it operates should be easily available, for example, included in worker documentation or on notice boards.
- **Transparency of the process.** Workers must know to whom they can turn in the event of a grievance and the support and sources of advice that are available to them. All line and senior managers must be familiar with their organization's grievance procedure.
- **Keeping it up to date.** The process should be regularly reviewed and kept up to date, for example, by referencing any new statutory guidelines, changes in contracts or representation.
- **Confidentiality.** The process should ensure that a complaint is dealt with confidentially. While procedures may specify that complaints should first be made to the workers’ line manager, there should also be the option of raising a grievance first with an alternative manager, for example, a human resource (personnel) manager.
- **Non-retribution.** Procedures should guarantee that any worker raising a complaint will not be subject to any reprisal.
- **Reasonable timescales.** Procedures should allow for time to investigate grievances fully, but should aim for swift resolutions. The longer a grievance is allowed to continue, the harder it can be for both sides to get back to normal afterwards. Time limits should be set for each stage of the process, for example, a maximum time between a grievance being raised and the setting up of a meeting to investigate it.
- **Right of appeal.** A worker should have the right to appeal to UNOPS or national courts if he or she is not happy with the initial finding.
- **Right to be accompanied.** In any meetings or hearings, the worker should have the right to be accompanied by a colleague, friend or union representative.
- **Keeping records.** Written records should be kept at all stages. The initial complaint should be in writing if possible, along with the response, notes of any meetings and the findings and the reasons for the findings.
- **Relationship with collective agreements.** Grievance procedures should be consistent with any collective agreements.
- **Relationship with regulation.** Grievance processes should be compliant with the national employment code.

\(^{11}\) Based on Annex D of the Guidance Note for IFC’s Performance Standard 2.
Chapter 11
MONITORING AND REPORTING

206. The ESSO will monitor the overall implementation of the ESMF\textsuperscript{12} by UNOPS and its implementing partners, most particularly the:

i. timely preparation of environmental and social screening forms for all subprojects (list of subprojects by risk category by date)

ii. timely preparation and clearance of subproject ESIsAs and ESMPs, as needed (list of instruments with dates)

iii. management of prior review requirements of the World Bank (non-objection requests with dates)

iv. monitoring of ESMP implementation, including monitoring of mitigation measures and monitoring of contractors environmental and social performance (indicators)

v. training of project staff, implementing partners, and contractors (list of persons, dates and places)

207. The ESSO will prepare:

i. quarterly reports summarizing monitoring results, to be included in the Project’s Quarterly Reports to the World Bank

ii. reports that aggregate and analyse monitoring results ahead of regular “reverse” World Bank implementation support missions with UNOPS

iii. an annual evaluation of all environmental and social monitoring results, which will be submitted to the World Bank as part of overall project implementation reporting.

208. Safeguards aspects are also part of the scope of the Third-Party Monitoring (TPM) services TPM contracted by UNSO. More specifically, TPM will report on the compliance with safeguards requirements and on the implementation of environmental and social mitigation measures.

11.1 Subproject Environmental and Social Database

209. The ESSO will establish, maintain, and update a database of subprojects that will be shared with the implementing partners. The database will include for each subproject:

i. type of subproject, name of subproject, implementing partner

ii. safeguards risk level

iii. timeline (clearance of screening form, clearance of ToRs, clearance of safeguard instruments)

iv. supervision reports by ESSO and focal points during implementation

v. contractor reports

vi. noncompliance by contractors

vii. cross references to the Grievance Redress Mechanism’s log of complaints.

11.2 Monitoring of Level 3 and 4 ESMP

The ESSO will conduct onsite visits of level 3 and 4 subprojects at least once a month to monitor the implementation of their ESMPs.

210. The following tables provide indicative monitoring plans for landfill subprojects and large water and sanitation subprojects, which are to be included in subproject ESMPs.

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\textsuperscript{12} Along with the ESMP, the ESSO will monitor the RAPs/ARAPs as well as the status of resolution of grievances/complaints. The ESSO will also evaluate that the livelihoods of PAPs were restored as per the RAPs/ARAPs.
### Table 26. Monitoring Plan for landfill subprojects, Construction

<table>
<thead>
<tr>
<th>What</th>
<th>How</th>
<th>Who</th>
<th>When</th>
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</table>
| Health and safety measures:  
- Protective clothes  
- Site protection  
- Disposal of hazardous materials  
- Readiness of health facilities for emergencies  
- Normal working hours (not more than 8 hours / day) | Site inspection checklists and photos | Environmental specialist; Local NGOs Local Authorities UNOPS/ PWP engineers. | monthly |
| Noise and dust levels  
- Ear protection and dust masks for workers  
- No work at night time  
- Spray water | Site inspection checklists and photos | | monthly |
| • Traffic diversion and work progress in stretches. | Site inspection checklists and photos | | monthly |
| • Complaint handling | Checking logs | GRM personnel | monthly |

### Table 27. Monitoring Plan for landfill subprojects, Operation

<table>
<thead>
<tr>
<th>What</th>
<th>How</th>
<th>Who</th>
<th>When</th>
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</table>
| Performance of health facility  
General hygiene conditions  
- Safe disposal of all toxic including medical waste and proper treatment of the leachate and ventilation of gasses  
- Groundwater quality test  
Water quality tests for:  
  - EC  
  - pH  
  - Conductivity  
  - Total Coliform  
- Efficiency of leachate treatment  
  - Effluent quality test for:  
    - BOD/COD  
    - pH  
    - Conductivity  
    - Fecal Coliforms  
- Reuse of effluent and types of irrigated crops.  
- Health and safety of workers and farmers  
- Capacity building programs.  
- Training of members of community or local NGOs on health & Hygiene awareness | Visual inspection  
- Interviews with staff and community members  
- Laboratory tests results  
- WHO standards for drinking and irrigation water  
- Monitoring checklists  
- Visual inspection at the landfill site  
- Samples collected from outlet of leachate treatment works  
- Focus groups with communities to evaluate the effectiveness of health and hygiene awareness campaigns  
- Checks on courseware qualities for capacity building programs (Administrative, financial and O&M)  
- Interviews with awareness teams | Environmental specialist Local Authorities EPA Local NGOs The community UNOPS/ PWP | Semi-annually (for one year after the start of operation) |
Table 28. Monitoring plan for urban water and sanitation subprojects

<table>
<thead>
<tr>
<th>What</th>
<th>How</th>
<th>Who</th>
<th>When</th>
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</thead>
<tbody>
<tr>
<td>• Proper operation of the network.</td>
<td>• Monitoring checklists</td>
<td>Environmental Specialist</td>
<td>Semi-annually (for one year after the start of operation)</td>
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<td>• Efficiency of treatment ponds.</td>
<td>• Visual inspection at the</td>
<td>Local Authorities</td>
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<td>• Effluent quality tests for:</td>
<td>scheme routes and at manholes.</td>
<td>Local NGOs</td>
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<tr>
<td>- BOD</td>
<td></td>
<td>Communities</td>
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<tr>
<td>- pH</td>
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<td>UNICEF/ UW/UNOPS</td>
<td></td>
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<tr>
<td>- Conductivity</td>
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<td></td>
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<td>- Fecal Coliforms</td>
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<tr>
<td>• Reuse of effluent and types of irrigated crops.</td>
<td>• Samples collected from outlet of treatment works</td>
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<tr>
<td>• Disposal/reuse of sludge</td>
<td>• Focus groups with</td>
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<td>• Health and safety of workers and farmers</td>
<td>communities to evaluate the</td>
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<tr>
<td>• Capacity building programmes.</td>
<td>effectiveness of health and</td>
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<td>• Training of members of community or local NGOs on health &amp; hygiene awareness</td>
<td>hygiene awareness campaigns</td>
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<td>• Complaint handling</td>
<td>• Checks on courseware</td>
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<td>qualities for capacity building programs (Administrative, financial and O&amp;M)</td>
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<td></td>
<td>• Interviews with awareness teams</td>
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<td></td>
<td>• Checking logs</td>
<td>GRM personnel</td>
<td>monthly</td>
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11.3 Monitoring of Contractors

211. As part of their regular activities, the ESSO and the focal points of the implementing partners will monitor and document (including pictures) contractor environmental and social performance for each subproject throughout construction. This will involve both spot check visits to work locations, and reviews of records kept by the contractor and of reports submitted by the contractor. The frequency of site visits should be commensurate with the magnitude of activities and their associated environmental and social impacts. Sites where serious accidents are recorded should be visited within one working day of the accident. Overall, each construction site should be visited at least once during subproject implementation.

212. Each visit and interaction with a contractor should be documented in the database, including identification of contractor noncompliance, the significance of the non-compliance, and guidance provided on actions to be taken. The ESSO or the focal points will follow up as needed to ensure timely resolution of issues of noncompliance with environmental and social clauses. This may include additional visits to the contractor’s site or offices, further communications with contractor personnel, issuance of notices of deficiency or warnings to the contractor, and other actions as needed (see Chapter 10).

213. At any stage of construction or other work, if the contractor has not taken appropriate action to achieve compliance with the environmental and social clauses after repeated notices of violation and warnings of noncompliance, and significant environmental or social impacts are occurring or imminent, UNOPS or the concerned implementing partner should order the contractor to stop work until environmental and social performance is brought under control and up to acceptable standards.

11.4 Completion Reports

214. Upon completion of subprojects, the ESSO or the concerned focal point will prepare a subproject completion report, to identify any unresolved environmental or social, with recommended remedial action. This report will be shared with the Program Manager who will decide the way forward.

215. For subprojects with significant environmental or social impacts, the completion report might recommend periodic routine inspections/monitoring during operation of the facility by dedicated environmental and social specialists.
Chapter 12

STAKEHOLDER ENGAGEMENT

216. The executive summaries of the ESMF (and RPF full document) will be translated into Arabic by UNOPS, and hard copies in English and Arabic will be available at the UNOPS project office in Sana’a, as well as on the UNOPS project web site and the web sites of the implementing partner’s (PWP, UW-PMU, and RMF-IU). The ESMF will also be made publicly available through the World Bank website.

217. UNOPS held institutional consultations with its implementing partners, as well as public consultations with its implementing partners, the Public Works Project (PWP), the Road Maintenance Fund Implementation Unit (RMF-IU), and the Urban Water Project Management Unit (UW-PMU). The purpose of the consultations was to discuss the ESMF, identify key issues, and determine how their concerns would be addressed in subproject design and implementation.

218. Two sets of meetings were held with the implementing partners. The first set of meetings in November 2017 provided the opportunity to present the overall project design, explain its benefits, and begin to outline some of the anticipated adverse environmental and social impacts expected to result from subproject activities. The second set of meetings was the opportunity to share the draft RPF and ESMF and to collect views and observations.

12.1 Meeting with PWP on 6 November 2017

219. UNOPS RPF and ESMF consultant met with Public Works Project staff in their Sana’a office on Monday 6/11/2017 to discuss the preparation of the ESMF:

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<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng. Saed Abdo Ahmed</td>
<td>PWP Director</td>
</tr>
<tr>
<td>Eng. Ibtihal Fuad</td>
<td>Investment Planner Water and Environment</td>
</tr>
<tr>
<td>Eng. Abdulwali Alshami</td>
<td>Head water and Environment unit</td>
</tr>
<tr>
<td>Eng. Nasrah Salem</td>
<td>Technical Support</td>
</tr>
</tbody>
</table>

12.2 Meeting with PWP on 10 January 2018

220. UNOPS’s RPF and ESMF consultants met with the following PWP staff to collect their comments and observations on the draft RPF and ESMF:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng. Saed Abdo Ahmed</td>
<td>PWP Director</td>
</tr>
<tr>
<td>Eng. Ibtihal Fuad</td>
<td>Investment Planner Water and Environment</td>
</tr>
<tr>
<td>Eng. Abdulwali Alshami</td>
<td>Head water and Environment unit</td>
</tr>
<tr>
<td>Eng. Jamil</td>
<td>Procurement Officer</td>
</tr>
</tbody>
</table>
PWP acknowledges the contents of both reports and the methodology.
They appreciate keeping cost of ES safeguard issues to be defined in the bill of quantity aiming for the contractor commitment.
PWP is committed to implement the RPF and ESMF
PWP will take steps to form the GRM committee follow the steps mentioned in both reports.

12.3 Meeting with UW-PMU

221. UNOPS RPF and ESMF consultants met with Eng. Jamal Al-Sayyadi the Director General of Urban Water and Sanitation Project at his office in Sana’a on Monday 6/11/2017 to discuss the preparation of the ESMF.

222. The UW-PMU Director General brought up the following issues:

- UW-PMU does not currently have environmental and social officers. Consultants were used in previous project to manage safeguard issues
- UW-PMU plans to recruit environmental and social officers under the Project
- UW-PMU have prepared and submitted a list of subprojects to be implemented by UNOPS

223. UW-PMU shared the following documents with the consultant:

- ESMF and environmental and social clauses for contracts
- The list of projects for the first year

12.4 Meeting with UW-PMU on 13 January 2015

224. UNOPS’s ESSO, as well as the RPF and ESMF consultants, met with Eng. Jamal Al-Sayyadi, the UW-PMU Director, in his office to discuss the draft RPF and ESMF. The UNOPS team highlighted that urban water and sanitation subprojects would be limited to supplying and replacing of work projects equipment.

12.5 Meeting with RMF-IU on 4 November 2017

225. UNOPS RPF and ESMF consultants met with the following RMF staff on Saturday 4/11/2017 to discuss the preparation of the ESMF:
226. RMF usually conducts roads rehabilitation outside of cities. They showed the consultants the steps that they follow to prepare ESIsAs and RAPs for Category B subprojects, including forming beneficiary associations for each subproject and signing a social memo with local councils.

227. The RMF team brought up the following issues:

- New material for road maintenance is usually bought by the contractor from licensed quarries.
- The waste material from the roads is disposed with arrangements with the local councils of each directorate in each city as urban center.
- The construction of new roads is done by the Local Office of Public Works and Highways rather than RMF.
- The cost of implementing mitigation measures specified in the ESMF should be included in the bill of quantities.
- All RMF-IU documents are available at [http://www.rmfyemen.org/rmfindex.php?id_p=showPage&id_m=10](http://www.rmfyemen.org/rmfindex.php?id_p=showPage&id_m=10)
- RMF-IU is screening subprojects for environmental and social impacts using their own checklist. It was agreed that the consultant would go through their checklists and see if we need to add or delete something. The list will be discussed during the final public consultation.

228. RMF shared the following documents with the consultant:

- ESMF and RPF for RAMP
- Environmental clauses for tender documents
- List of subprojects implemented

12.6 Meeting with RMF-IU on Saturday, 6 January 2018

229. UNOPS’s RPF and ESMF consultants met again with the RMF-IU staff that they met on 4 November 2017, to discuss the draft RPF and ESMF. RMF-IU provided the following comments and observations:

- RMF-IU acknowledge being informed regarding the content of both reports and their methodologies.
- They agree to add the cost of ES safeguard issues to the BOQ for the contractor commitment.
- They pointed out that all UNOPS subproject are classified as Category B.
- RMF IU is committed to following the World Bank’s safeguard policies.
- As a precautionary measure, they will make sure that the GRM committee is formed according to defined steps mentioned in both reports.
12.7 Public consultation with stakeholders and community leaders

230. On Monday 15th January, the public consultation concerning the ESMF and RPF discussion was held at the meeting hall (at PWP-Sana’a). Twenty-two participants, 12 females (table 1) and 10 males (table 2) representing several districts have participated in the public consultation as follows:

Table 29. Female participants at January 15th public consultation

<table>
<thead>
<tr>
<th>no</th>
<th>Name of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Noha Jamal Ali Al-Husami</td>
</tr>
<tr>
<td>2</td>
<td>Zubaidah Moqbil Mohamed Al-Zubaidi</td>
</tr>
<tr>
<td>3</td>
<td>Asma Mohamed Ali</td>
</tr>
<tr>
<td>4</td>
<td>Nizam Mohamed Shaif Al-Absei</td>
</tr>
<tr>
<td>5</td>
<td>Intisar Nasr Ahmed Al-Qubati</td>
</tr>
<tr>
<td>6</td>
<td>Aateqah Mohamed Zabarah</td>
</tr>
<tr>
<td>7</td>
<td>Intesar Hamoud Mohamed Al-Ghorbani</td>
</tr>
<tr>
<td>8</td>
<td>Aamenah Ahmed Husain Al-Najdi</td>
</tr>
<tr>
<td>9</td>
<td>Munirah Ali Mohamed Abdalla</td>
</tr>
<tr>
<td>10</td>
<td>Amriah Abdalla Al-Taizzi</td>
</tr>
<tr>
<td>11</td>
<td>Arwa Noaman Saeed Ghanem Al-Qahri</td>
</tr>
<tr>
<td>12</td>
<td>Faizah Ahmed</td>
</tr>
</tbody>
</table>

Table 30. Male participants at January 15 public consultation

<table>
<thead>
<tr>
<th>no</th>
<th>Name of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fadhl Hamoud Al-Suaidi</td>
</tr>
<tr>
<td>2</td>
<td>Yehyah Mohamed Jiash</td>
</tr>
<tr>
<td>3</td>
<td>Waleed Ali Hajeb</td>
</tr>
<tr>
<td>4</td>
<td>Ali Abdulwali Majed Al-Qatabry</td>
</tr>
<tr>
<td>5</td>
<td>Sam Abdurrahman Nasher</td>
</tr>
<tr>
<td>6</td>
<td>Abdulbaset Abdallah Hassan Al-Shamiri</td>
</tr>
<tr>
<td>7</td>
<td>Jehad Taha Mujahed Mohamed</td>
</tr>
<tr>
<td>8</td>
<td>Ahmed Abdallah Yehya Al-qaifi</td>
</tr>
<tr>
<td>9</td>
<td>Ahmed Mahyoub Al-Nawaserah</td>
</tr>
<tr>
<td>10</td>
<td>Moneer Mohamed naser Al-jahafi</td>
</tr>
</tbody>
</table>

231. The RPF and ESMF consultants started by presenting a summary of the RPF and ESMF draft reports. The participants were then divided into four groups to discuss both reports.
i. The first group discussed the expected impacts and mitigation measures for subprojects implemented by implementing partners during the implementation stage. The group acknowledged the expected impacts and the suitability of the proposed mitigation measures.

ii. The second group discussed the expected impacts of solid waste management subprojects and the mitigation measures that would be implemented by PWP. They realized the importance of rehabilitation/extension of the landfill before any collection and/or transfer of solid waste.

iii. The third group discussed the expected impacts of urban water and sanitation subprojects. They realized the importance of rehabilitating the existing WWTP at Sana'a in order to be in full operation.

iv. The fourth group discussed urban roads. They realized the importance of slope in order to avoid ponding of water on the streets.

232. Regarding the RPF, two groups discussed the importance of forming beneficiary committees (men and women) including stakeholders and community leaders. They stressed the need for project information campaigns describing the benefits of the project. Arrange training for the project maintenance, they acknowledge of the formation of GRM. The importance of labor insurance during the implementation of subprojects.

233. At the end, the four groups demonstrated an understanding of the lesson learned from the implementation of World Bank projects in Yemen as follows:

12.7.1 Positive impacts

i. participation and contribution of the local community beside availability of work opportunity

ii. control of natural disasters

iii. implementation of project having priority for community needs

iv. the provision pf subprojects to remote areas

v. giving importance to women’s participation

vi. Training and awareness; concerning of the ES impacts

12.7.2 Negative impacts

i. the impositions of international experts while local experts are available

ii. the high percentage of project funds allocated for cars

iii. a preference for renting World Bank offices instead of building their own

iv. the imposition of the English language as the sole language in tender documents, while they should be in both Arabic and English

v. the imposition of the project’s design for the interventions

vi. the imposition of many conditions and regulations by the donor as a condition for the project approval

vii. the imposition of sophisticated irrigation design beyond the ability of farmers to operate and maintain, while ignoring traditional irrigation systems.
12.8 Stakeholder Engagement Program

234. Beyond the stakeholder interviews and consultations that were conducted as part of the preparation of the ESMF and RPF instruments, the ESSO and the focal points in the implementing partners will continue to engage stakeholders throughout Project implementation, including:

- consultations with individuals and communities that might be affected by a subproject, as described in ESMF Section 9.3, Consultation and Disclosure Requirements
- consultations with PAPS, as described in the RPF, most particularly Sections 8.2, Consultations in RAP process, and 8.4, Disclosure and Approval of RAPs and ARAPs
- citizen engagement, as described in Subcomponent 2.2 of the Project, including:
  i. a context-sensitive public communication plan that will be devised and rolled out with the start of subproject implementation and throughout Project duration.
  ii. citizen engagement in the identification, prioritization and monitoring of investment projects, including consultations with local councils/communities and key stakeholders at grassroots levels
  iii. the establishment of beneficiary committees with equal male and female representation, including stakeholders and local communities
• the preparation and dissemination of a public version of the annual report in Arabic, focusing on environmental and social issues
• the involvement of stakeholders during the independent results verification of subprojects conducted by the TPM agent.
• yearly informed gender-sensitive and inclusive consultations with Project stakeholders, most particularly implementing partners, local councils, NGOs, and concerned citizens and academics, to hear about concerns and expectations.
Chapter 13
GRIEVANCE REDRESS MECHANISM (GRM)

235. This chapter describes the Grievance Redress Mechanism that UNOPS will establish and manage to enable beneficiaries to communicate their concerns regarding the Project. More specifically, the GRM details the procedures that communities and individuals, who believe they are adversely affected by the Project or a specific subproject, can use to submit their complaints, as well as the procedures used by UNOPS and its implementing partners to systematically register, track, investigate and promptly resolve complaints. The Project’s GRM will be used for both environmental and social issues (ESMF) and resettlement issues (RPF).13

236. The UNOPS Program Manager based in the Sana’a Office has the overall responsibility to address Project activity-related complaints from Project affected communities or individuals regarding any environmental or social impacts due to subproject activities. UNOPS will recruit a dedicated focal point in its Sana’a Office to handle Project activity-related complaints. Each of the three Implementing Partners will designate a GRM focal point.

13.1 Procedures for Complaints

13.1.1 Registering Complaints

237. UNOPS is providing multiple access points to the UNOPS GRM focal point for beneficiaries to voice their concerns. These access points will be advertised at subproject level, and include:

<table>
<thead>
<tr>
<th>Access Point</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Haddah Street, former European Union Office Building, Sana’a</td>
</tr>
<tr>
<td>Telephone</td>
<td>+967 1 504914 and +967 1 504915</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:grm-yemen@unops.org">grm-yemen@unops.org</a></td>
</tr>
<tr>
<td>Website</td>
<td><a href="http://www.unops.org">www.unops.org</a></td>
</tr>
</tbody>
</table>

238. Grievances can be brought up by affected people in case of: (i) non-fulfillment of contracts or agreements; (ii) compensation entitlements; (iii) types and levels of compensation; (iv) disputes related to destruction of assets or livelihoods; (v) disturbances caused by construction activities, such as noise, vibration, dust or smell. Anonymous complaints will be admissible.

239. The Implementing Partners and Project contractors will also keep a log of issues brought directly to their attention verbally or in writing by Project affected communities or individuals, and relay these concerns in writing to UNOPS on a next day basis. UNOPS will determine if these concerns rise to the level of a complaint.

240. UNOPS will register the complaint in a dedicated log, including a copy of the complaint and supporting documents. A draft template for registering grievances is found in Annex 4.

241. UNOPS will record and document complaints received in the subproject file and the subproject progress reports, including the number and type of complaints and the results of their resolution.

13.1.2 Tracking, Investigating and Resolving Complaints

242. The GRM log maintained by UNOPS will track the date the complaint was received, date responded to, the type of response, and if the complaint was resolved to the satisfaction of the plaintiff.

243. The GRM Focal Point will coordinate with implementing partners, local field staff and local

13 The Project’s Resettlement Policy Framework indicates that “throughout the resettlement process, the ESSO and the focal points would consult and sensitise PAPs and any relevant stakeholder to the types of compensation, valuation principles, and the Grievance Redress Mechanism.”
government officials to ensure prompt follow up action in response to each complaint. More specifically, the GRM focal point will for named complaints:

i. inform the plaintiff if the complaint is accepted or rejected within one week of receiving the complaint; any technical input from Project engineers; if necessary the response will require input from Project engineers

ii. if the complaint is accepted, send the plaintiff an officially stamped review card indicating:
   - plaintiff name or legal representative
   - plaintiff address
   - complaint title
   - review date
   - list of annexes submitted with the complaint

iii. work with engineers, implementing partners, and contractors to resolve the complaint within 28 days of its submission

244. UNOPS will include the log of complaints to the World Bank as part of UNOPS quarterly reporting to the World Bank.

13.1.3 Gender sensitivity

245. UNOPS will make the GRM gender sensitive by recruiting female staff to:

- inform women about the project and its possible benefits to women, in a culturally sensitive manner
- inform women of the Project’s GRM and its procedures
- receive any project-related complaints from women

13.1.4 Activating the GRM mechanism

246. UNOPS will conduct a kick off workshop involving the implementing partners and beneficiary representatives to inform them on GRM procedures.

13.2 Grievance Redress Service


247. The World Bank’s Grievance Redress Service (GRS) provides an additional, accessible way for individuals and communities to complain directly to the World Bank if they believe that a World Bank-financed project had or is likely to have adverse effects on them or their community. The GRS enhances the World Bank’s responsiveness and accountability by ensuring that grievances are promptly reviewed and responded to, and problems and solutions are identified by working together.

248. The GRS accepts complaints in English or the official language of the country of the person submitting the complaint. Submissions to the GRS may be sent by:

- Email: grievances@worldbank.org
- Fax: +1-202-614-7313
- Letter: The World Bank
  Grievance Redress Service (GRS)
  MSN MC 10-1018
  1818 H St NW
  Washington, DC 20433, USA

13.3 World Bank Inspection Panel


249. The Inspection Panel is an independent complaints mechanism for people and communities who believe that they have been, or are likely to be, adversely affected by a World Bank-funded project. The Board of Executive Directors created the Inspection Panel in 1993 to ensure that people have
access to an independent body to express their concerns and seek recourse. The Panel assesses allegations of harm to people or the environment and reviews whether the Bank followed its operational policies and procedures.

250. The Panel has authority to receive Requests for Inspection, which raise issues of harm as a result of a violation of the Bank’s policies and procedures from:

- Any group of two or more people in the country where the Bank financed project is located who believe that, as a result of the Bank’s violation of its policies and procedures, their rights or interests have been, or are likely to be adversely affected in a direct and material way. They may be an organization, association, society or other group of individuals;
- A duly appointed local representative acting on explicit instructions as the agent of adversely affected people;
- In exceptional cases, a foreign representative acting as the agent of adversely affected people;
- An Executive Director of the Bank in special cases of serious alleged violations of the Bank’s policies and procedures.

251. The Panel may be contacted by:

email at ipanel@worldbank.org
phone at +1-202-458-5200
fax at +1 202-522-0916 (Washington, D.C.)
mail at: Inspection Panel, Mail Stop MC 10-1007, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.
Chapter 14
CAPACITY

252. This chapter reviews the capacity and skills available within UNOPS and its implementing partners to implement and monitor the ESMF, and proposes measures to enhance this capacity.

14.1 UNOPS

253. UNOPS will:

i. Deploy a permanent environmental and social safeguards officer (ESSO) based in UNOPS’ Sana’a office from Year one to oversee the management of environmental and social safeguards for the Project. The ESSO will:

- Review and clear environmental and social screening forms for all subprojects that are prepared by the implementing partners
- Prepare ToRs for ESIAs and ESMPs required as part of subproject preparation
- Provide draft ToRs for ESIAs and ESMPs Category 4 subprojects to the World Bank for their prior review
- Supervise the preparation of ESIAs and ESMPs. ESIAs and ESMPs for Category 3 and Category 4 projects will be prepared by consultants selected by UNOPS
- Provide draft ESIAs and ESMPs for Category 4 subprojects to the World Bank for review and clearance
- Monitor subproject compliance with their ESMP, including field visits and spot checks
- Work closely with UNOPS engineers and procurement officers to incorporate safeguard issues into subproject design, appraisal and resource mobilization
- Oversee and coordinate the environmental and social focal points in the local implementing partners
- Compile quarterly, biannual and annual reports on safeguards performance of the Project that will be incorporated into the Project’s M&E report
- Provide assistance and deliver capacity building trainings to UNOPS staff and implementing partners
- Organize and oversee the preparation, production and distribution of training manuals and awareness materials

ii. Deploy a second ESSO in UNOPS’ future Aden office from Year 2. The Aden ESSO will fulfill the same role as the Sana’a ESSO for the Aden based portfolio. A third ESSO might be recruited in Year 3 for UNOPS activities in Eastern Yemen.

iii. Recruit an international expert to be available -on a needs basis- to oversee the overall implementation, monitoring, and reporting of safeguards aspects

14.2 Public World Projects (PWP)

254. PWP currently employs an environmental and a social expert who cover safeguard issues for PWP’s current portfolio of projects. These two experts will cover safeguards for the Project, including the preparation of environmental and social screening forms for all subprojects, and monitoring contractor compliance with subproject ESMP requirements and any RAPs or ARAPs. As necessary, PWP will recruit additional staff or employ local consultants.

14.3 UW-PMU

255. UW-PMU does not currently have any permanent staff covering environmental or social safeguards and instead will hire local or international consultants as needed. The Project will fund the recruitment of one environmental and social safeguard specialist to serve as the Project’s safeguards
focal point within UW. The focal point will prepare the environmental and social screening forms for all subprojects, and monitor on-site contractor compliance with subproject ESMP requirements and any RAPs or ARAPs.

14.4 RMF-IU

256. RMF-IU currently employs two environmental and social experts. The Project will provide them with on the job training and guidance to raise their capacity and serve as the safeguards focal point within RMF-IU. The focal point will prepare the environmental and social screening forms for all subprojects, and monitor on-site contractor compliance with subproject ESMP requirements and any RAPs or ARAPs.

14.5 Capacity Development

257. UNOPS will fund safeguards training and capacity enhancement for the UNOPS Project team, implementing partners, participating contractors, and Local Councils. UNOPS will also finance the production of training manuals and awareness materials as needed.

258. More specifically, the ESSO will:

i. organize a launch workshop with the focal points in the implementing partners to operationalize the ESMF and agree on roles and responsibilities moving forward

ii. jointly with the safeguard focal points, organize a workshop with UNOPS engineers and technical staff to explain the ESMF and its implementation

iii. organize specialized and on-the-job training and technical assistance for the safeguards focal points in the implementing partners

iv. jointly with the safeguards focal points, organize one-day workshops with contractors to explain the ESMF and the environmental and social clauses for contractors

v. jointly with the safeguards focal points, organize sessions to sensitize the local councils to the ESMF and its implementation

Table 31. Indicative costs of capacity building activities

<table>
<thead>
<tr>
<th>Capacity Building Measures</th>
<th>Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-day training on ESMF for implementing partners and their consultants</td>
<td>2000/session</td>
</tr>
<tr>
<td>1-day consultation with local councils and key stakeholders</td>
<td>1000/session</td>
</tr>
<tr>
<td>1-day training on ESMP and contractual clauses for contractors</td>
<td>1000/session</td>
</tr>
<tr>
<td>Production of environmental and social awareness materials (brochures, posters, fliers)</td>
<td>5000</td>
</tr>
</tbody>
</table>

259. The cost of environmental and social mitigation and monitoring measures shall be included in subproject costs.
ANNEX 1

TEMPLATE FOR SUBPROJECT SCREENING

<table>
<thead>
<tr>
<th>Subproject name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Subproject location</td>
<td></td>
</tr>
<tr>
<td>Implementing Partner</td>
<td></td>
</tr>
<tr>
<td>Is OP 4.01 applicable?</td>
<td></td>
</tr>
<tr>
<td>Is the subproject eligible (yes/no)?</td>
<td></td>
</tr>
<tr>
<td>Risk level (1 to 4)</td>
<td></td>
</tr>
<tr>
<td>Field Visit (yes/no; include date)</td>
<td></td>
</tr>
<tr>
<td>Observations/comments</td>
<td></td>
</tr>
<tr>
<td>Signature of ESSO</td>
<td></td>
</tr>
<tr>
<td>Signature of Program Manager</td>
<td></td>
</tr>
</tbody>
</table>

FOLLOW THE STEPS BELOW

**Step 1. Applicability**
Is the subproject likely to have direct or indirect environmental or social impacts?

Yes  Continue to Step 2

No  Go to bottom of page and sign the screening form

**Step 2. Eligibility (Negative List)**
The project is ineligible if it has any of the following attributes. If it is the case, complete the form and sign it.

<table>
<thead>
<tr>
<th>Category A attributes, such as:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Activities with significant adverse impacts that are sensitive, diverse, or unprecedented, or that affect an area broader than the sites or facilities subject to physical works</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Major resettlement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Greenfield projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Solid Waste</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• New disposal site</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Irrigation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Construction of new or the expansion of existing irrigation and drainage schemes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Income Generating Activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Activities involving the use of fuelwood, including trees and bush.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Activities involving the production or use of hazardous substances or explosives</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Activities a high risk of significant adverse impacts related to labor influx, child or forced labor.

### Natural Habitats
- Activities a high risk of significant adverse impacts related to labor influx, child or forced labor.

### Pesticides
- Activities requiring pesticides that fall in WHO classes IA, IB, or II.

### Physical Cultural Resources
Damage to cultural property, including but not limited to activities that affect:
- Archaeological and historical sites
- Religious monuments, structures and cemeteries

### Involuntary Resettlement
- Activities requiring the involuntary taking of private land and relocation of PAPs
- Activities that require the relocation of encroachers or squatters

### Dams
- Construction of dams more than 5 meters high
- Rehabilitation of dams more than 15 meters high
- Any activities that may be affected by the operation of an existing dam

#### Step 3. Use of Contractors
Does the subproject include the provision of works contracts?
- **Yes** The subproject is subjected to the environmental and social clauses for contractors (Chapter 10). Continue to Step 4
- **No** The subproject is not subjected to environmental and social clauses for contractors. Continue to Step 4

#### Step 4. Environmental or social impacts
Is the subproject likely to cause any of the following environmental or social impacts?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

#### A. Zoning and Land Use Planning
1. Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?
2. Will the subproject involve significant land disturbance or site clearance?
3. Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?

#### B. Utilities and Facilities
4. Will the subproject require the setting up of ancillary production facilities?
5. Will the subproject require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)?

#### C. Water and Soil Contamination
6. Will the subproject require large amounts of raw materials or construction materials?
### Draft Environmental and Social Management Framework for Yemen IUSEP

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<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Will the subproject generate large amounts of residual wastes,</td>
<td></td>
</tr>
<tr>
<td>construction material waste or cause soil erosion?</td>
<td></td>
</tr>
<tr>
<td>8. Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?</td>
<td></td>
</tr>
<tr>
<td>9. Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?</td>
<td></td>
</tr>
<tr>
<td>10. Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?</td>
<td></td>
</tr>
<tr>
<td>11. Will the subproject involve the use of chemicals or solvents?</td>
<td></td>
</tr>
<tr>
<td>12. Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?</td>
<td></td>
</tr>
<tr>
<td>13. Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors?</td>
<td></td>
</tr>
<tr>
<td><strong>D. Noise and Air Pollution Hazardous Substances</strong></td>
<td></td>
</tr>
<tr>
<td>14. Will the subproject increase the levels of harmful air emissions?</td>
<td></td>
</tr>
<tr>
<td>15. Will the subproject increase ambient noise levels?</td>
<td></td>
</tr>
<tr>
<td>16. Will the subproject involve the storage, handling or transport of hazardous substances?</td>
<td></td>
</tr>
<tr>
<td><strong>E. Destruction/Disruption of Land and Vegetation</strong></td>
<td></td>
</tr>
<tr>
<td>17. Will the subproject lead to unplanned use of the infrastructure being developed?</td>
<td></td>
</tr>
<tr>
<td>18. Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?</td>
<td></td>
</tr>
<tr>
<td>19. Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?</td>
<td></td>
</tr>
<tr>
<td>20. Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?</td>
<td></td>
</tr>
<tr>
<td>21. Will the subproject lead to erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains?</td>
<td></td>
</tr>
<tr>
<td>22. Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?</td>
<td></td>
</tr>
<tr>
<td>23. Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?</td>
<td></td>
</tr>
<tr>
<td><strong>F. Expropriation and Social Disturbance</strong></td>
<td></td>
</tr>
<tr>
<td>24. Will the subproject impact internally displaced persons (IDP) negatively?</td>
<td></td>
</tr>
<tr>
<td>25. Will the subproject lead to induced settlements by workers and others causing social and economic disruption?</td>
<td></td>
</tr>
<tr>
<td>26. Will the subproject cause environmental and social disturbance by construction camps?</td>
<td></td>
</tr>
<tr>
<td>27. Will the subproject cause economic displacement?</td>
<td></td>
</tr>
<tr>
<td>28. Will the subproject temporarily displace squatters, economically or physically, or other informal groups?</td>
<td></td>
</tr>
<tr>
<td>29. Will the subproject cause a loss in productive assets or income source?</td>
<td></td>
</tr>
<tr>
<td>30. Will the subproject restrict access to resources?</td>
<td></td>
</tr>
<tr>
<td>31. Will the subproject affect the livelihoods or vulnerable people, such as persons with disabilities, widows or the elderly?</td>
<td></td>
</tr>
<tr>
<td>32. Will the subproject create social conflict over the distribution of benefits or resources?</td>
<td></td>
</tr>
</tbody>
</table>
### Step 5. Subproject Risk Levels

In light of the above, assign risk levels

<table>
<thead>
<tr>
<th>Level 1.</th>
<th>The subproject is unlikely to have direct or indirect environmental or social impacts (equivalent to Category C in OP 4.01). These subprojects do not require safeguards instruments such as clauses for contractors, ESIAs or ESMPs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2.</td>
<td>The subproject involves works but causes none of the impacts listed in Step 4. The subproject requires an ESMP consisting of a description of the subproject and the Environmental and Social Clauses for contractors (see Chapter 10).</td>
</tr>
<tr>
<td>Level 3.</td>
<td>The subproject causes no more than three environmental or social impacts listed in Step 4. In addition to the Environmental and Social Clauses for Contractors, the subproject requires an assessment limited to the impacts identified in Step 4 and the definition of proportionate and sufficient mitigation measures specific to these impacts, taking onto account the mitigation measures described in Chapter 7. These mitigation measures will be implemented by UNOPS and its implementing partners.</td>
</tr>
<tr>
<td>Level 4.</td>
<td>The subproject causes more than three environmental or social impacts listed in Step 4. The subproject requires a full ESIA and ESMP.</td>
</tr>
</tbody>
</table>

---
ANNEX 2
ENVIRONMENT, HEALTH AND SAFETY (EHS) CLAUSES FOR CONTRACTORS

Purpose
The purpose of the environment, health and safety (EHS) clauses for contractors is to define minimum standards of construction practice acceptable to UNOPS. The clauses will be concluded in the bidding documents and contracts.

Contractor Environmental and Social Management Plan
Prior to starting construction, each contractor must prepare and submit a Contractor Environmental and Social Management Plan (CESMP) to the UNOPS supervision engineer for acceptance.

The CESMP will provide a detailed explanation of how the contractor will comply with the project the EHS clauses for contractors and demonstrate that sufficient funds are budgeted for that purpose and sufficient capacity is in place to oversee, monitor and report on CESMP performance.

The CESMP must include specific mitigation measures based on the subproject ESM, the final design, the proposed work method statements, and the nature of the project site. The CESMP should include management plans that cover the following issues:

Gender based Violence
Contractors must address the risk of gender-based violence, through:

i. mandatory and repeated training and awareness raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women;
ii. informing workers about national laws that make sexual harassment and gender-based violence a punishable offence which is prosecuted;
iii. introducing a Worker Code of Conduct as part of the employment contract, and including sanctions for non-compliance (e.g., termination)
iv. adopting a policy to cooperate with law enforcement agencies in investigating complaints about gender-based violence.

Child Labor
Contractors must not employ workers below the age of 18.

Labor influx
Where contractors and labor come from outside the local area, contractors will need to maintain labor relation relations with local communities through labor codes of conduct.

Roads
In order to carry out the rehabilitation works, it may be necessary to close or divert certain specified roads, either permanently or temporarily during the construction period. The contractor should arrange diversions for providing alternative route for transport and/or pedestrians.

After breaking up, closing or otherwise interfering with any street or footpath to which the public has access, the Contractor shall make such arrangements as may be reasonably necessary so as to cause as little interference with the traffic in that street or footpath during construction of the rehabilitation works as shall be reasonably practicable.

Wherever the rehabilitation works interfere with existing public or private roads or other ways over
which there is a public or private right of way for any traffic, the Contractor shall construct diversion ways wherever possible.

**Movement of Trucks and Construction Machinery**

The Contractor moving solid or liquid construction materials and waste shall take strict measures to minimize littering of roads by ensuring that vehicles are licensed and loaded in such a manner as to prevent falling off or spilling of construction materials and by sheeting the sides and tops of all vehicles carrying mud, sand, other materials and debris. Construction materials should be brought from registered sources in the area and debris should be transferred to assigned places in the landfill with documented confirmation.

**Traffic Safety Measures**

The Contractor shall provide, erect and maintain such traffic signs, road markings, barriers and traffic control signals and such other measures as may be necessary for ensuring traffic safety around the rehabilitation site.

The Contractor shall not commence any work that affects the public motor roads and highways until all traffic safety measures necessitated by the work are fully operational.

**Access across the Construction Site and to Frontages**

In carrying out the rehabilitation works, the Contractor shall take all reasonable precautions to prevent or reduce any disturbance or inconvenience to the owners, tenants or occupiers of the adjacent properties, and to the public generally. The Contractor shall maintain any existing right of way across the whole or part of the rehabilitation site and public and private access to adjoining frontages in a safe condition and to a standard not less than that pertaining at the commencement of the contract. If required, the Contractor shall provide acceptable alternative means of passage or access to the satisfaction of the persons affected.

**Noise and Dust Control**

The Contractor shall take all practicable measures to minimize nuisance from noise, vibration and dust caused by heavy vehicles and construction machinery. This includes:

- respecting normal working hours in or close to residential areas
- maintaining equipment in a good working order to minimize extraneous noise from mechanical vibration, creaking and squeaking, as well as emissions or fumes from the machinery
- shutting down equipment when it is not directly in use
- using operational noise mufflers
- Provide a water tanker, and spray water when required to minimize the impact of dust
- limiting the speed of vehicles used for construction

**Waste Disposal**

The Contractor must agree with the municipality about arrangements for construction waste disposal. The municipality shall designate a dumping site or landfill for the disposal of solid waste.

The contractor will take measures to avoid soil and groundwater contamination by liquid waste.

**Protection of the Existing Installations**

The Contractor shall properly safeguard all buildings, structures, works, services or installations from harm, disturbance or deterioration during the concession period. The Contractor shall take all necessary measures required for the support and protection of all buildings, structures, pipes, cables, sewers and other apparatus during the concession period, and to repair any damage occurs in coordination with Municipality and concerned authorities.
Protection of Trees and Other Vegetation

The Contractor shall avoid loss of trees and damage to other vegetation wherever possible. Adverse effects on green cover within or in the vicinity of the rehabilitation site shall be minimized. The contractor will restore vegetative cover, where feasible.

Physical Cultural Resources

The contractor will train construction crews and supervisors to spot potential archaeological finds. In the event of a potential find, the contractor will inform the implementing partner who will in turn liaise with the archaeological department at the Ministry of Culture, or a local university for quick assessment and action.

Clearance of Rehabilitation Site on Completion

The Contractor shall clear up all working areas both within and outside the rehabilitation site and accesses as work proceeds and when no longer required for the carrying out of the Rehabilitation works. All surplus soil and materials, sheds, offices and temporary fencing shall be removed, post holes filled and the surface of the ground restored as near as practicable to its original condition.

Worker Health and Safety

To avoid work related accidents and injuries, the contractor will:

- Provide occupational health and safety training to all employees involved in works
- Provide protective masks, helmet, overall and safety shoes, safety goggles, as appropriate
- Provide workers in high noise areas with earplugs or earmuffs
- Ensure availability of first aid box
- Provide employees with access to toilets and potable drinking water
- Train workers regarding the handling of hazardous materials
- Store hazardous materials as per the statutory provisions of Manufactures, Storage and Import of Hazardous Chemicals Rules (1989), under the Environment (Protection) Act, 1986

Site Construction Safety and Insurance

Further to enforcing the compliance of environmental management, contractors are responsible on providing insurance for construction labors, staff attending to the construction site, citizens for each subproject, the insurance requirements and clauses are stated in the bidding documents complying to the labor law.
ANNEX 3
YEMENI ENVIRONMENTAL QUALITY STANDARDS

Table 32. Permissible limits for key air pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Time Period</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide and Dioxide gas (CO/CO₂)</td>
<td>8 hours</td>
<td>10 micrograms/m³</td>
</tr>
<tr>
<td>Nitrogen oxide (NOₓ)</td>
<td>24 hours</td>
<td>150 micrograms/m³</td>
</tr>
<tr>
<td>Sulphur oxide (SO₃)</td>
<td>24 hours</td>
<td>250 micrograms/m³</td>
</tr>
<tr>
<td>Ozone (O₃)</td>
<td>8 hours</td>
<td>120 micrograms/m³</td>
</tr>
<tr>
<td>Particulate Matter (PM)</td>
<td>24 hours</td>
<td>70 micrograms/m³</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Annually</td>
<td>1 micrograms/m³</td>
</tr>
</tbody>
</table>

The Yemeni standards for air quality do not specify sources of industrial emissions; they are also less strict than those in the World Bank Group EHS Guidelines.

Table 33. Maximum noise level allowed in different environments (Decibel Unit dB)

<table>
<thead>
<tr>
<th>Environment</th>
<th>7h00-18h00</th>
<th>18h00-23h00</th>
<th>23h00-07h00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural housing and entertainment places</td>
<td>45</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>Suburban housing areas</td>
<td>50</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>Urban housing areas</td>
<td>55</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>Housing areas in city centers</td>
<td>60</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>Industrial and commercial areas</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

Table 34. Physical Characteristics of drinking water

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Unit</th>
<th>Optimal limit</th>
<th>Maximum limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taste</td>
<td>Acceptable to consumers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Acceptable to consumers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Platinum Cobalt</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>Turbidity Unit</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Temperature</td>
<td>Degree Celsius</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>pH (Potential of hydrogen)</td>
<td></td>
<td>6.5-8.5</td>
<td>5.5-9</td>
</tr>
<tr>
<td>Electrical Conductivity EC</td>
<td>Micro mohs/cm</td>
<td>450-1000</td>
<td>2500</td>
</tr>
</tbody>
</table>

Table 35. Inorganic substances in drinking water

<table>
<thead>
<tr>
<th>Substance</th>
<th>Symbol</th>
<th>Optimal limit (mg/L)</th>
<th>Maximum limit (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dissolved Salts</td>
<td>TDS</td>
<td>650</td>
<td>1500</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>HCO₃</td>
<td>150</td>
<td>500</td>
</tr>
<tr>
<td>Chloride</td>
<td>Cl⁻</td>
<td>200</td>
<td>600</td>
</tr>
<tr>
<td>Sulphate</td>
<td>SO₄²⁻</td>
<td>200</td>
<td>600</td>
</tr>
<tr>
<td>Fluoride</td>
<td>F⁻</td>
<td>0.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Calcium</td>
<td>Ca</td>
<td>75</td>
<td>200</td>
</tr>
<tr>
<td>Magnesium</td>
<td>Mg</td>
<td>30</td>
<td>30-150</td>
</tr>
</tbody>
</table>
Barium | Ba | 0.1 | 0.15
Sodium | Na | 200 | 400
Potassium | K | 0-12 | 12
Nitrate | NO₃ | 10 | 50
Iron | Fe | 0.3 | 1
Manganese | Mn | 0.1 | 0.5
Copper | Cu | 0.1 | 1.5
Zinc | Zn | 5 | 15
Total Hardness (as Calcium Carbonate) | TH | 100 | 500
Aluminum | Al | 0.2 | 0.3
Nickel | Ni | 0.05 | 0.1
Boron | B | 0.50 | 1
Silica | SiO₂ | | 40

Total residual chlorine concentration in treated water reaching the consumers should be between 0.2 to 0.5 ppm. It might be increased in the event of an epidemic to the level determined by the related authorities and international organizations.

Table 36. Maximum limits for organic pollutants in drinking water

<table>
<thead>
<tr>
<th>Substance</th>
<th>Maximum limit (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldrin</td>
<td>0.0002</td>
</tr>
<tr>
<td>Lindane</td>
<td>0.004</td>
</tr>
<tr>
<td>Methoxine</td>
<td>0.01</td>
</tr>
<tr>
<td>Toxaphene</td>
<td>0.002</td>
</tr>
<tr>
<td>2,4 Dichlorophenoxy acetic acid</td>
<td>0.1</td>
</tr>
<tr>
<td>Propionic acid</td>
<td>0.01</td>
</tr>
<tr>
<td>Malathion</td>
<td>0.19</td>
</tr>
<tr>
<td>Parathion</td>
<td>0.035</td>
</tr>
<tr>
<td>Permethrin</td>
<td>0.01</td>
</tr>
<tr>
<td>Dimethoate</td>
<td>0.002</td>
</tr>
<tr>
<td>Diazinon</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Table 37. Maximum limits for toxic substances in drinking water

<table>
<thead>
<tr>
<th>Substance</th>
<th>Unit</th>
<th>Maximum limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (Pb)</td>
<td>mg/L</td>
<td>0.05</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>//</td>
<td>0.01</td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td>//</td>
<td>0.01</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>//</td>
<td>0.05</td>
</tr>
<tr>
<td>Cyanide (CN)</td>
<td>//</td>
<td>0.01</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>//</td>
<td>0.005</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>//</td>
<td>0.001</td>
</tr>
<tr>
<td>Antimony (Sb)</td>
<td>//</td>
<td>0.005</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>//</td>
<td>0.5-1.0</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>//</td>
<td>0.01-0.1</td>
</tr>
<tr>
<td>Halogenated methane group (TTHM) includes: Chloroform, Bromoform, Bromodichloromethane and Dibromochloromethane</td>
<td>µg/L</td>
<td>150</td>
</tr>
</tbody>
</table>
The amount of radioactive materials in water should not exceed the limits mentioned below:

The microbiological pollutants in treated public water supplied through the distribution network or any other distribution means must be free of Total Coliform and Colon Bacillus form as mentioned below:

**Table 38. Bacterial Pollutants**

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Unit</th>
<th>Maximum limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total coliforms</td>
<td>CFU/100 ml</td>
<td>Zero</td>
</tr>
<tr>
<td>Fecal coliform</td>
<td>CFU/100 ml</td>
<td>Zero</td>
</tr>
</tbody>
</table>

**Microbiological pollutants in untreated public water conveyed into the distribution network**

- 98% of the annually tested samples must be free of total coliforms.
- The fecal coliform must not exceed three in any one isolated sample and not successive samples.
- Water not supplied through the distribution network such as: wells, springs, rain water reservoirs the Fecal coliform that found in a 100 ml water sample must not exceed 10-15 coliform.

**Biological Pollutants**
The drinking water must be free from the following:

- Protozoa harmful to health.
- Parasitic worms (Helminths) that can involve human as a host during its life cycle and transfer infection to human.
- Parasites including fungi that affect health or produces toxic materials that affect human health.

**Waste Water**
Physical Standard physical requirements:

- Maximum temperature should not exceed 45 °C
- Should not contain substances susceptible to freezing, settling or become viscous in temperature ranging from 0-40 °C
- Should not contain solid or liquid hazardous and explosive materials

**Table 39. Maximum levels of chemical substances in industrial and commercial waste water discharged in the public sewerage network**

<table>
<thead>
<tr>
<th>Compound/Substance</th>
<th>Symbol</th>
<th>Unit</th>
<th>Maximum limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Oxygen Demand</td>
<td>COD</td>
<td>mg/L</td>
<td>2100</td>
</tr>
<tr>
<td>Biochemical Oxygen Demand</td>
<td>BOD</td>
<td>mg/L</td>
<td>800</td>
</tr>
<tr>
<td>Power of Hydrogen</td>
<td>pH</td>
<td></td>
<td>5.5-9.5</td>
</tr>
<tr>
<td>Maximum Temperature Degree</td>
<td>C°</td>
<td>C</td>
<td>45</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>TSS</td>
<td>mg/L</td>
<td>1100</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>TDS</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Oil and Grease</td>
<td>---</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Phenolic Compounds</td>
<td>---</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Sulphate</td>
<td>S0₄</td>
<td></td>
<td>1000</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>P</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Cyanide</td>
<td>CN</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Sulphur</td>
<td>S</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Hydrogen Sophie</td>
<td>H₂S</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Iron</td>
<td>Fe</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Substance</td>
<td>symbol</td>
<td>Limitation</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>--------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Chloride</td>
<td>Cl</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Fluoride</td>
<td>F</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>As</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Tin</td>
<td>Sn</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Barium</td>
<td>Ba</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Boron</td>
<td>B</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td>Cd</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Chromium (VI)</td>
<td>Cr</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>Cu</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>Pb</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>Hg</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>Ni</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Selenium</td>
<td>Se</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>Ag</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>Mn</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Beryllium</td>
<td>Be</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>Zn</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Cobalt</td>
<td>Co</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Lithium</td>
<td>Li</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Vanadium</td>
<td>V</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>Al</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Wastes that must be handled with control set up by the administration under the competent authority of which wastes lie:

1. Clinical wastes generated from medical care in hospitals, clinics and medical centers.
2. Wastes generated from pharmaceutical preparations and products.
3. Wastes generated from medicaments and drugs.
4. Wastes generated from production of biological insecticides, preparation of medicaments from plants and shrubs and its usage.
5. Wastes generated from wood chemical protective materials and their preparation and utilization.
7. Wastes generated from thermal processing and printing processes which contains cyanide.
8. Wastes from unusable mineral oil.
9. Wastes from oil/water and mixes of hydrocarbons etc.
10. Wastes from substances and compounds containing alkaline phenol with multitude bonds (PCBs) and/or phenyls of multiple chlorine bonds.
11. Wastes from tar sediments resulting from refining and distillation and any thermal processing analysis.
12. Wastes from production of links, paints, coloring materials, lacquers, varnishes and their preparation and usage.
13. Wastes left from the production of resins, gingival, plastics, furs, sticking materials and their preparation and usage.
14. Wastes from chemical materials generated from research and development activities or from any uncategorized/ or new educational activities the effects of which on human beings and the environment are not known.
15. Wastes of explosive nature not subjected to any other legislation.
16. Wastes left from production of chemical, processing and photographic materials and their usage and preparation and usage.
17. Wastes from surface treatment of plastics and metals.
18. Residues resulting out of disposing of industrial wastes.
Hazardous wastes for which transportation and handling is prohibited except with a permission from the Competent Authority include:

c) Wastes that include the following materials in their composition:

1. Carbonic metal.
2. Barium and barium compounds.
3. Chrome hexa equivalence compounds.
4. Copper compounds.
5. Zinc compounds.
6. Arsenate, arsenic compounds.
7. Selenium, selenium compounds.
8. Cadmium, cadmium compounds.
9. Antimony, antimony compounds.
10. Tellurium, tellurium compounds.
11. Mercury, mercury compound.
12. Thallium, thallium compounds.
13. Lead, lead compounds.
14. Fluorine inorganic compounds except calcium fluoride.
15. Cyanide inorganic compounds.
16. Acid solutions or acids in solid state.
17. Alkaline solutions or alkalines in solid state.
18. Rock silk(Asbestos) (fiber dust)
19. Phosphorous organic compounds.
20. Cyanide organic compounds.
21. Phenol, phenol organic compounds including chlorophenol.
22. Organic compounds of Ether/air.
24. organic solvents expect halogenic solvents.
25. Any similar substance to bi-benzene of multiple chlorine bonds.
26. Any substance similar to dioxin-pho-bi-benzene of chloride bonds.
27. Most organic halogen compounds

d) Pesticides and home insecticides.
e) Petroleum substances.
f) Substances from which ionic radiations are emitted.
g) Inflammable and explosive substances.
ANNEX 4
SAMPLE TABLE OF CONTENT
FOR LEVEL 4 ESIAS AND ESMPs

Environmental and Social Impact Assessment
The consultant will prepare the ESIA according to the following table of content:

h) Executive summary. Concisely discusses key findings and recommended actions.

i) Project description. Concisely describes the proposed facility and its associated facilities, its geographic location, including detailed maps, and its layout.

j) Policy, legal, and administrative framework
   i. Discusses the policy, legal, and administrative frameworks within which the EA is carried out.
   ii. Describes ROY requirements and procedures, including reporting requirements of the National Environmental Authority.
   iii. Describes the relevant World Bank Safeguards Policies triggered under this Project, including the World Bank Group General Environmental, Health and Safety (EHS) Guidelines and the appropriate Industry Sector Guidelines.
   iv. Explains the environmental requirements of any cofinancers.
   v. Identifies relevant international environmental agreements to which the country is a party.

k) Baseline data
   vi. Presents data directly relevant to decisions about project location, design, operation, or mitigatory measures, including physical aspects (such as topography, landforms, geology, soils, climate, air quality, and hydrology), and socioeconomic conditions (such as demography, settlements, community structures, vulnerable and marginal groups, sources and distribution of income, employment and labour markets, land use, and cultural heritage).
   vii. Identifies any changes anticipated before the project commences.
   viii. Takes into account current and proposed development activities within the project area but not directly connected to the project.
   ix. Collates data from existing sources, and if necessary collects original data.
   x. Identifies and estimates the extent, quality, accuracy and reliability of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention.
   xi. Organizes and presents data according to three levels of detail: (a) footprint, (b) a buffer area of 1 km around the facility and its associated facilities, and (c) area of influence.
   xii. Presents summary data in geographic format.

l) Environmental impacts
   i. Predicts and assesses the project's potential positive and negative environmental and social impacts that might change the baseline conditions, in quantitative terms to the extent possible, during the construction, operation and decommissioning phases.
   ii. Differentiates between short, medium and long-term impacts, and estimates the magnitude of impacts, and identifies generic both generic environmental and social impacts and site-specific impacts.
   iii. Identifies mitigation measures and any residual negative impacts that cannot be mitigated.
   iv. Explores opportunities for environmental enhancement.

m) Analysis of alternatives
   i. Systematically compares feasible alternatives to the proposed facility associated
ancillary facilities, such as technology, design, and operation—including the "without project" situation—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements.

ii. For each of the alternatives, quantifies the environmental impacts to the extent possible, and attaches economic values where feasible.

iii. States the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement.

n) Public consultations and disclosures

i. The consultant is expected undertake minimum of two public consultations for each transmission line, during the preparation and finalization of the ToRs and when the draft ESIA reports is ready

ii. The public consultations should be documented, including both the positive and negative concerns of the Project Affected Persons (PAPs) and how their views are incorporated into the design of the project

iii. Disclosure of the report shall be done in a manner, form and language that are understandable, accessible which enable the public full participation.

o) Appendices

i. List of EA report preparers—individuals and organizations.

iv. References. Documents all sources of written information, both published and unpublished, used in the ESIA.

v. Records of public participation and consultations for obtaining the informed views of the affected and interested parties, as well as local nongovernmental organizations (NGOs), on the positive and negative impacts of the proposed project. The records will summarize concerns and opinions presented during the consultations. The record will also specify any means other than consultations (e.g., surveys) used to obtain the views of affected groups and local NGOs.

vi. Records of consultation meetings with institutional stakeholders

vii. Tables presenting the relevant data referred to or summarized in the main text.

viii. List of associated reports (e.g., resettlement plan).

Environmental and Social Management Plan

The ESMP will specifically describe individual mitigation and monitoring measures during both construction, operation and decommissioning, assign institutional responsibilities, and estimate the resources required for its implementation. The ESMP will include:

a) Mitigation Plan. Identifies feasible and cost-effective measures that may avoid potentially significant adverse environmental impacts or reduce them to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient. The plan distinguishes between the construction and operations phases. The plan is organized specifically, the plan:

i. identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement), and identifies both generic and site specific environmental and social mitigation measures during construction and maintenance phases;

ii. describes with technical details—each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate;

iii. includes measures to minimize migratory bird collisions with transmission lines;

iv. include emergency/disaster preparedness plans;

v. describes with details other plans that will be required during the construction and operation phases (e.g. Contractor ESMP, Occupational Health and Safety plans and labour influx plan);

vi. estimates any potential environmental impacts of these measures;
vii. provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project.

viii. includes additional data collection to fill identified data gaps

b) Contractor clauses
   i. Defines environmental and social clauses that UNOPS will include in supply and installation bidding documents and contracts for the construction and supervision consultants, to ensure satisfactory environmental, social, health and safety performance of contractors
   ii. The clauses will cover occupational health and safety in communities affected by the rehabilitation activities and its associated ancillary facilities, worksite health and safety; environmental management of construction sites; labor camps/labor influx; labor rights and the employment of community members; and land, property and livelihood compensation

c) Monitoring Plan
   i. Defines monitoring objectives and indicators, and specifies the type of monitoring, with linkages to the impacts assessed in the EA report and the mitigation measures described in the ESMP,
   ii. Provides: (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

d) Institutional Arrangements
   i. Describes institutional arrangements, responsibilities and procedures within UNOPS, the implementing partner, and the asset owner and its contractors to carry out each of the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training).
   ii. Includes training of contractors regarding the environmental and social clauses that apply to them.
   iii. Estimates the resources required by the asset owner to implement and monitor the ESMP, such as level of effort (LOE), and equipment.
   iv. As necessary, proposes capacity building, additional technical support or organizational changes, to ensure the timely and effective implementation of the ESMP.

e) Grievance Redress Mechanism
   i. Describes the GRM procedures for receiving, handling and resolving complaints for each transmission line

f) Implementation Schedule and Cost Estimates:
   i. implementation schedule for mitigation measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans;
   ii. the capital and recurrent cost estimates and sources of funds for implementing the EMP.

g) Chance Find Procedures
   i. Describe the ‘Chance Find’ procedures to ensure preventive and mitigation measures are formulated and implemented in the event physical cultural resources are encountered during project implementation

h) Implementation Schedule and Cost Estimates:
   i. implementation schedule for mitigation measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans;
   ii. the capital and recurrent cost estimates and sources of funds for implementing the EMP.
ANNEX 5
SAMPLE GRIEVANCE AND RESOLUTION FORM

Name (Filer of Complaint): ____________________________
ID Number: ____________________________ (PAPs ID number)
Contact Information: ____________________________District/Community mobile phone)

Nature of Grievance or Complaint:
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Date Individuals Contacted Summary of Discussion
__________________________________________ ____________________________
__________________________________________ ____________________________
__________________________________________ ____________________________

Signature ____________________________ Date: ____________

Signed (Filer of Complaint): ____________________________
Name of Person Filing Complaint: ____________________________ (if different from Filer)
Position or Relationship to Filer: ____________________________

Review/Resolution
Date of Conciliation Session: ____________________________
Was Filer Present? Yes No
Was field verification of complaint conducted? Yes No
Findings of field investigation:
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

Summary of Conciliation Session Discussion:
__________________________________________________________________________________
__________________________________________________________________________________

Issues:
__________________________________________________________________________________

Was agreement reached on the issues? Yes No
If agreement was reached, detail the agreement below:
If agreement was not reached, specify the points of disagreement below:
__________________________________________________________________________________

Signed (Conciliator): ____________________________ Signed (Filer): ____________________________
Signed: ____________________________
Independent Observer
Date: ____________________________