ALARKO TARIM

Geothermal Resource Exploration Drilling and Greenhouse Project

ENVIRONMENTAL & SOCIAL MANAGEMENT AND MONITORING PLAN

(ESMMP)

NATA alsera

FEBRUARY 2025

ANKARA

ALARKO TARIM
Geothermal Resource Exploration Drilling and Greenhouse Project
ENVİRONMENTAL AND SOCIAL DUE DILIGENCE REPORT (ESDD)

Version	Revision	Date	Prepared by			Quality Management By	Checked by	Approved by
Draft	A.0	May 2024	Utku Yazıcı Environmental Engineer	Şeyma Nur Geyik Sociologist	Celal Denizli Biologist	Esra Okumuşoğlu Geology Engineer	Evren Arı Atak Chemist	D. Emre Kaya Environmental Engineer M.Sc
Draft	A.2	July 2024	Utku Yazıcı Environmental Engineer	Deniz Dirier Sociologist	Celal Denizli Biologist	Esra Okumuşoğlu Geology Engineer	Evren Arı Atak Chemist	D. Emre Kaya Environmental Engineer M.Sc
Draft	A.3	October 2024	Utku Yazıcı Environmental Engineer	Deniz Dirier Sociologist	Celal Denizli Biologist	Esra Okumuşoğlu Geology Engineer	Evren Arı Atak Chemist	D. Emre Kaya Environmental Engineer M.Sc
Draft	B.0	November 2024	Utku Yazıcı Environmental Engineer	Deniz Dirier Sociologist	Celal Denizli Biologist	Esra Okumuşoğlu Geology Engineer	Evren Arı Atak Chemist	D. Emre Kaya Environmental Engineer M.Sc
Draft	B.2	February 2025	Utku Yazıcı Environmental Engineer	Deniz Dirier Sociologist	Celal Denizli Biologist	Esra Okumuşoğlu Geology Engineer	Evren Arı Atak Chemist	D. Emre Kaya Environmental Engineer M.Sc
Draft	B.3	February 2025	Utku Yazıcı Environmental Engineer	Deniz Dirier Sociologist	Celal Denizli Biologist	Esra Okumuşoğlu Geology Engineer	Evren Arı Atak Chemist	D. Emre Kaya Environmental Engineer M.Sc

REVISION CODESI: A: DRAFT, B: FINAL DRAFT, C: FINAL

PROJECT NO: 24-011

FEBRUARY 2025

CLIENT:

NATA

İsmetpaşa Mah. İsmet Paşa Küme Evleri Nata
Tarım No: 268 Mahmudiye / Eskişehir

CONSULTANT:

2U1K Mühendislik ve Danışmanlık A.Ş.

Tepe Prime İş ve Yaşam Merkezi
Mustafa Kemal Mahallesi Dumlupınar
Bulvarı No: 266 B Blok Kat: 2 Daire: 38
Çankaya - Ankara / Türkiye
☎: +90 (312) 295 62 48
🖷: +90 (312) 295 62 00

TABLE OF CONTENT

Page

Table of Content ..... *i*
List of Tables ..... *i*
1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN 1
1.1 Purpose of the Environmental and Social Management Plan 2
1.2 Documentation and Reporting 2
1.3 Environmental and Social Management Plan Review 3
1.4 Training 3
1.5 Duties and Responsibilities 4
2 ENVIRONMENTAL AND SOCIAL ASPECTS AND MITIGATION MEASURES IN THE BEST PRACTICE FRAMEWORK 7
2.1 Impact/Risk Mitigation Plan for the Construction Phase of the Project 8
2.2 Impact/Risk Mitigation Plan for the Operation Phase of the Project 15
3 ENVIRONMENTAL AND SOCIAL MONITORING PLAN 19
3.1 Monitoring Plan for the Construction Phase 22
3.2 Monitoring Plan for the Operation Phase 27
4 REPORTING 32

LIST OF TABLES

Page

Table 1-1. General Organizational Structure for the Implementation of the ESMP 4
Table 2-1. Activities to be carried out within the scope of the Project 7
Table 3-1. Key Performance Indicators 19
Table 4-1. Reporting Process Requirements and Role Distribution 32

1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This plan is submitted by Alarko Tarım (Alsera, the 'Project Owner'), the Environmental and Social Management Plan (ESMP) for the Geothermal Resource Exploration Drilling and Greenhouse operation and has been prepared by 2U1K Engineering and Consultancy Inc. on behalf of Alsera.

The Project Proponent is seeking possible financing from the Industrial Development Bank of Turkey (TSKB) for the construction of the Project. Therefore, the Project Owner has commissioned 2U1K to prepare the ESMP in accordance with the 'World Bank Operational Policies (OP) and National Requirements'.

The Project is in the planning stage and a baseline study has been carried out and the ESMP has been prepared to cover the results of the Environmental and Social Due Diligence study observed during the site visit.

The Management Plans and policies prepared for the Project within the scope of the ESMP and presented in the annexes are as follows:

- Stakeholder Engagement Plan (SEP)
- Zero Waste Management Plan
- Greenhouse Gas Mitigation Plan
- Emergency Action Plan
- Traffic Management Plan
- Human Resources Policy
- Code of Conduct Policy

All E&S sub-management plans to be used during the construction period will be prepared and submitted to TSKB prior to the construction period. Similarly, sub-management plans to be used for the operational period will also be prepared and submitted to TSKB prior to the operational period.

Management plans that should be prepared before the start of construction or obtained from subcontractors recommended:

- **"Pollution Prevention and Control Plan"** addressing air emissions, noise, wastewater discharges, hazardous substance management and leakage prevention during construction and operation periods
- Camp Management Plan
- Occupational Health and Safety Plan
- Contractor Management Plan
- Labour Management Plan

- Change Find Procedure
- Community Health and Safety Plan
- The Environmental and Social Management Framework (ESMF) provides technical guidance for organising and addressing environmental and social assessment management for projects whose specific location and characteristics (e.g. dimensions, design) have not yet been defined.

1.1 Purpose of the Environmental and Social Management Plan

- Explanation of the relevance of project components and activities to environmental and social impact assessment,
- Identify and address relevant national and international legal requirements and guidelines,
- Establishment of environmental and social management and monitoring plans in accordance with relevant environmental laws,
- Provision of a framework for the implementation by the Project Owner of specific management plans to meet the requirements of national legislation as well as the WB's OPs.

The ESMP ensures that the Project Owner associated with the Projects' activities throughout the life cycle of the programme continuously monitors the full range of activities proposed under the programme and accurately and effectively tracks potential unintended environmental and social impacts.

1.2 Documentation and Reporting

Documentation is an important element linked to the implementation of the ESMP. The Project Owner has already established a Quality Management System and certification/record keeping system at the corporate level and the commitments made under the ESMP will be incorporated into the Project Owner's existing management system. All procedures implemented by the company will be reviewed and revised according to best practices.

External Reporting

The entire external reporting process will be managed by the Project Owner in accordance with its obligations to Turkish governmental institutions and Lenders under national legislation.

Internal Reporting

The internal reporting process on the Project Owner's commitments under the ESMP will be jointly managed by the Human Resources Specialist, Environmental Officer and Occupational Health and Safety Officer. The Project Owner will regularly share audit and inspection findings together with proposed measures with management, ESMP Implementation Committee and

employees. The following tools will be used to ensure open communication between employees and management on occupational health and safety and environmental and social issues:

- Short Team Briefings,
- Working group meetings in the field,
- Job Specific Instructions.

1.3 Environmental and Social Management Plan Review

The ESMP will be reviewed periodically to address changes in the organization of responsible parties, process or regulatory requirements.

After all reviews, the Project Owner will coordinate through the ESMP Implementation Group to make any necessary changes to the ESMP such that updated information is communicated to all responsible parties and employees in the Project.

1.4 Training

The Project Owner will implement a training and awareness program addressing the expectations and commitments under the ESMP. As a minimum requirement, this program should be implemented as an orientation training for all employees and subcontractors, with further training programs required depending on the level of responsibility for ESMP implementation.

The training program will cover the following topics:

- The purpose of the ESMP in relation to Project activities,
- Requirements in management plans,
- Understanding of sensitive environmental and social receptors in and around the project area,
- Awareness of potential risk arising from project activities,
- Grievance Mechanism scope and Community Liaison Officer,
- Code of conduct training,
- Occupational health and safety, first aid, emergency preparedness,
- Communication with local people,
- Training on codes of conduct, including gender-based violence, sexual harassment, sexual exploitation and abuse,
- Community health and safety,

- Traffic and road safety principles.

The Project Proponent will ensure that all personnel responsible for the implementation of this ESMP are competent in terms of education, training and experience. All staff will be trained on environmental and social issues appropriate to the scope of activities and level of responsibilities.

1.5 Duties and Responsibilities

All environmental and social commitments described in the ESMP will be fulfilled by the Project proponent. Project Management will ensure that all affected parties are informed about the Project, in particular affected settlements, local communities, neighbouring facilities and surrounding governmental institutions. These groups will be involved in the identification of key issues within the Project.

The project owner has appointed personnel to manage environmental, social and occupational health and safety issues to fulfil the following responsibilities within its own organisation.

The overall organizational structure for the implementation of the ESMP is presented in Table 1-1.

Table 1-1. General Organizational Structure for the Implementation of the ESMP

Duties	Responsibilites
Project Owner	• General responsibility for implementation, • Ensure implementation of ESMP and SEP requirements to reduce environmental and social impacts, • To carry out the monitoring process related to the implementation of ESMP and SEP, • Prepare drilling studies and environmental and social monitoring reports monthly during the construction period and semi-annually during the operation period for submission to the lenders.
Stakeholder Engagement Plan and Grievance Mechanism Officer	• Ensuring that all employees attend training sessions on ESMP and SEP • Keep records of the conduct of training and awareness sessions for staff to ensure compliance with the environmental and safety commitments set out in the ESMP, • Prepare drilling studies and quarterly environmental and social monitoring reports during the construction period and semi-annual environmental and social monitoring reports during the operation period to be submitted to the Lenders, • To carry out the monitoring process related to the implementation of ESMP and SEP, • To adopt and implement the Stakeholder Engagement Plan, • Manage the employee and public grievance mechanism. • Establish and implement the grievance mechanism system to ensure that it is in line with project guidelines and best practices. • Facilitate effective communication channels for stakeholders to express their grievances by providing clear information on the existence of the mechanism and its procedures,

Duties	Responsibilites
	• Keep comprehensive records of complaints, including details of the parties involved, the nature of the complaints and the steps taken to resolve them, • Conduct impartial and thorough investigations into grievances, collaborating with relevant project teams and stakeholders to gather information and assess the validity of concerns, • Develop and recommend appropriate solutions or actions to address grievances, aiming for fair and satisfactory resolutions. • Prepare regular reports outlining the status of grievances, trends, outcomes and suggested improvements to the grievance mechanism. • Provide training to project staff and stakeholders on the grievance mechanism to ensure awareness and understanding of the process • Continuously evaluate and improve the grievance mechanism based on feedback and lessons learned, fostering an environment of continuous improvement. • Ensure that the grievance mechanism complies with legal and regulatory requirements as well as industry standards and project policies. • Engage with various stakeholders, including local communities, government bodies and project partners to foster positive relationships and proactively address concerns.
Human Resources Specialist	• Conducting the recruitment processes of project staff, • Organizing training and development programs for employees, • Within the scope of the project, work to improve working conditions of employees and increase job satisfaction, • Managing employee personal rights and payroll transactions, • Organizing activities to increase communication and cooperation among employees, • Conducting employee performance evaluation processes and creating development plans, • To plan and implement relevant occupational health and safety trainings.
Environment Officer	• Oversee and monitor compliance with and implementation of the ESMP to ensure the establishment and proper functioning of the environmental management system, • Ensure that the technical specifications of the project adequately reflect the recommendations given in the ESMP framework, • Regularly visit and inspect the Project area to determine the level of compliance of the works and provide feedback on environmental issues, • Prepare quarterly or semi-annual environmental and social monitoring reports to be submitted to Lenders, • Report regularly to the Project Company management on all environmental and social requirements during construction and operation. • Evaluation of environmental risks and opportunities, conducting studies to reduce waste. • Planning the work to be done within the scope of environmental legislation, • Providing environmental awareness and waste management trainings to employees, • Making contracts with recycling and disposal companies, • Ensuring the delivery of waste to licensed companies,

Duties	Responsibilites
Occupational Health and Safety Officer	• Ensuring the establishment and proper functioning of occupational health and safety management systems, • To ensure compliance with all OHS related regulations, • Conducting regular inspections in the project area and providing feedback on OHS issues, • Organizing training and awareness sessions on OHS, • Prepare OHS related reports regularly to the Project Company management.
Quality Management Systems Unit	• Ensuring operational controls,
Project Staff	• To be informed about environmental and social obligations under the ESMP and SEP and to participate in induction trainings to fulfil these obligations. • To apply what they have learned in trainings in their daily work and act in accordance with environmental and social management plans.
Contractor	• Preparing monthly reports within the scope of environmental and social monitoring studies and presenting them to the project owner.

2 ENVIRONMENTAL AND SOCIAL ASPECTS AND MITIGATION MEASURES IN THE BEST PRACTICE FRAMEWORK

The activities to be implemented under the Project are presented in Table 2-1 and include an assessment of the best practice mitigation measures identified for the Project.

The activities to be carried out under the Project will be in accordance with the most recent national legislation and World Bank (WB) Operational Policies. Where Turkish legislation differs from WB Operational Policies, the more stringent one will be applied for the implementation of the Project.

The mitigation plans prepared for the construction and operation phases are presented in the following sections. The activities to be carried out under the Project are presented in Table 2-1.

Table 2-1. Activities to be carried out within the scope of the Project

ENVIRONMENTAL/SOCIAL REVIEW			
	Activity	**Status**	
Activities to be carried out within the scope of field activities	A. New small-scale construction	[X] Exist	[ ] None
	B. Waste water treatment system	[X] Exist	[..] None
	C. Land acquisition [1]	[X] Exist	[ ] None
	D. Hazardous or toxic materials [2]	[X] Exist	[ ] None
	E. Traffic and Pedestrian Safety	[X] Exist	[ ] None

[1] Land acquisition involves displacing people, changing livelihoods and confiscating private property. This applies to acquired/assigned land and affects residents and/or slum dwellers and business owners on such acquired land.

[2] Toxic/hazardous substances include asbestos, toxic paints, harmful solvents, lead paint removal, etc.

2.1 Impact/Risk Mitigation Plan for the Construction Phase of the Project

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
C1	**Disclosure of Information**	Insufficient information	Included in construction costs	▪ Prior to the start of construction works, the local community and all relevant stakeholders will be informed about the works to be carried out and the precautions to be taken. ▪ Information on the start and end dates of construction works and the permits obtained from provincial/district municipalities will be displayed by the Project owner on a signage easily visible to all personnel at the construction site.	Contractor Project Owner
C2	**Occupational Health and Safety**	Occupational health and safety risks that project activities will pose to workers Non-compliance with relevant regulatory requirements	Included in drilling costs	▪ The Project Owner and the contractor will assign personnel with adequate certification and/or experience to ensure compliance with national legislation during the implementation of the project and will monitor the occupational health and safety (OHS) performance of project activities. The Project Owner will ensure the contractor implements the measures listed below and will take necessary actions/penalties on-site in case of non-compliance. ▪ A Risk Assessment study will be conducted for all activities before starting construction and drilling works. ▪ To manage potential emergencies (fire, earthquake, explosion, accident, etc.) that may occur during construction and drilling activities, an Emergency Response Plan and a project and site-specific OHS Plan, based on the risk assessment, will be prepared, implemented, and shared with all employees. ▪ Employees will be made familiar with the emergency plan. Emergency teams will be established, and drills and training programs will be conducted based on emergency scenarios. Emergencies will be immediately reported to relevant teams, and necessary resolutions will be provided. ▪ The contractor formally commits to executing all activities safely and systematically, minimizing risks to nearby residents and the environment. ▪ The contractor will assign full-time personnel with relevant OHS certification and experience to oversee on-site practices. ▪ The Project Owner will require all employees and contractors to comply with local and international health and safety legislation and guidelines. Contractors will provide all necessary personal protective equipment (PPE) (e.g., helmets, safety harnesses, protective suits, goggles, gloves, reinforced boots, etc.) to workers. ▪ Adequate shower and toilet facilities will be provided in compliance with regulations and best practices. ▪ The contractor will provide workers with technical and OHS training, including behavior rules outlining potential risks related to the construction site and tasks. Additional training will be provided on risks arising from workplace or task changes, equipment upgrades, and new technology implementation. Training will include not only occupational health and safety measures but also public health and safety precautions. ▪ All employees will be informed about working conditions, job descriptions, responsibilities, community relations, and potential job risks. They will receive OHS training, including behavior rules relevant to their tasks. All training sessions will be recorded. ▪ Employees will be required to comply with all OHS regulations, and necessary inspections will be conducted. ▪ All activities will be conducted in compliance with the OHS-related regulations and World Bank Operational Policies (OPs). ▪ Sites will be appropriately marked, and workers will be informed about the basic rules and regulations to follow. ▪ Smoking will not be permitted outside designated areas on the drilling rig and construction site. ▪ First aid equipment will be kept on-site, considering that immediate first aid intervention may be required before the injured person is transferred to the nearest healthcare facility in case of an accident. ▪ All accidents and incidents (including fatalities, lost-time injuries, spills, fires, pandemics, outbreaks of infectious diseases, social unrest, etc.) will be recorded. ▪ In the event of any significant incident (e.g., environmental, social, or occupational health and safety-related incidents), the Project Owner will immediately notify the Bank. A report detailing the root causes and corrective actions to be undertaken will be submitted to the Bank within 30 days. ▪ Excavation areas will be restricted to authorized personnel only. Loading and unloading activities will be conducted under the supervision of designated personnel. ▪ Public access to work areas will be restricted. If excavation areas remain open at night, the contractor will ensure sufficient lighting, place necessary signage, and fence the area with barriers. ▪ Special procedures (e.g., Confined Space Entry Procedure, Working at Height Procedure) will be prepared in accordance with applicable national requirements and internationally recognized standards for specific activities such as confined space work or working at height. ▪ Only personnel with valid working-at-height permits will perform such tasks, and protective measures (e.g., guardrails, fall arrest systems) will be in place. ▪ Before workers are allowed to enter a confined space, it will be ensured that they have received adequate and appropriate training on confined space risk control, atmospheric testing, the use of required PPE, and the adequacy and integrity of PPE. Additionally, before entry, adequate and appropriate rescue and/or recovery plans and equipment will be in place. Emergency response teams will coordinate to ensure the provision of proper first aid in case of any incident. ▪ Drilling areas and project activity zones will be fenced off, and necessary safety measures will be implemented to prevent unauthorized access by individuals other than personnel. ▪ The IFC/World Bank Group Environmental, Health, and Safety Guidelines will apply during project activities. ▪ All equipment used during construction and drilling phases will meet international standards for performance and safety and will be maintained in good working condition. ▪ The contractor will provide a training program for workers arriving from outside the region on effective communication and dialogue with local communities. Measures will be implemented to avoid social or cultural conflicts between host communities and external workers. The Project Owner will be responsible for ensuring the contractor complies with these criteria.	Contractor Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
C3	**Employment / Economy**	Child labor, forced labor and informal employment Contribution to the economy	Included in construction costs	▪ Care will be taken to contribute to the local economy by using local materials and procuring various goods and services from local sources. ▪ Priority will be given to local labor where possible and feasible. ▪ Efforts will be made to allocate employment opportunities to local parties and settlements in the Project impact area. ▪ Work permits of those working within the scope of the Project in accordance with the law will be checked and compliance with national and international legislation on child labor, forced labor and child labor under the age of 18 will be ensured. Anti-discrimination trainings will be organized to eliminate discrimination in the workplace, procedures will be prepared to ensure equality in discrimination, recruitment and promotion processes and regular audits will be carried out on implementation.	Contractor Project Owner
C4	**Social Life**	Possible Disturbance to Society	Included in construction costs	▪ The Contractor shall provide training to the construction site personnel on environmental and social issues. It is the responsibility of the Project Owner to ensure that the Contractor complies with the specified criteria. ▪ A Community Liaison Officer will be employed under the Project for the management of social impacts, grievance mechanism and planning of stakeholder engagement activities. ▪ Activities to be carried out during construction works will not cause any restriction/obstruction to the social and economic life of the local community. ▪ Safety and information signs will be placed on the site prior to the work to prevent any impact on the safety and daily life of local people. ▪ The Project Proponent will ensure that contractors establish codes of business ethics and control the training of workers prior to commencement of work, especially on communication with foreign local people, so that foreign local people are not adversely affected by outsourced workers.	Contractor Project Owner
C5	**Working Conditions**	Inappropriate Working Conditions, Child labor, forced labor and informal employment	Included in construction costs	▪ Employees will have access to the Grievance Mechanism and will be informed about its procedures. ▪ All employees will receive training on anti-discrimination and codes of conduct. These trainings will include explanations of concepts such as sexual harassment and abuse, gender-based violence, exploitation, and harassment. Additionally, employees will learn the steps to follow when utilizing the Project's Grievance Mechanism (detailed in the Project's SEP document) and their legal rights. Access to the Grievance Mechanism will be easy and effective. The grievance mechanism officer assigned to the Project will be introduced to all employees during training sessions. Brochures and posters containing information about the grievance mechanism and the officer's contact details will be placed in areas frequented by employees, such as dining halls, cafeterias, and service areas. ▪ Accommodation facilities will be provided for workers during the construction phase of the Project. A Camp Management Plan will be prepared to establish the conditions of the accommodations. ▪ Containers will be placed at the project site for workers' rest, accommodation, dining, and sanitary needs. These containers will meet the worker accommodation standards established by the International Finance Corporation (IFC) and the European Bank for Reconstruction and Development (EBRD), as approved by the World Bank. ▪ In accordance with the "Regulation on the Qualifications, Election, and Appointment Procedures of Employee Representatives Related to Occupational Health and Safety" issued under Law No. 6331 on Occupational Health and Safety, the election/appointment of an employee representative will be carried out. ▪ All personnel involved during the construction and operation phases (including subcontractors) will be hired under contract, and payments for wages and overtime will be made accordingly. ▪ Minimum legal working standards, including those related to child/forced labor, anti-discrimination, working hours, and minimum wage, will be met in accordance with International Labour Organization (ILO) regulations. ▪ Working conditions will comply with the World Bank Operational Policies (OPs) and national legislation. ▪ Workers will be provided with hygienic and adequate facilities. ▪ Workers will have access to primary healthcare services on-site, and prescriptions will be facilitated. ▪ No discrimination will be made in employment relations based on language, race, gender, political opinion, philosophical belief, or religion. Anti-discrimination training will be conducted, equality policies will be developed and implemented, and objective criteria will be used in recruitment and promotion processes. Regular audits will be conducted to ensure compliance with these policies. ▪ The Project Owner will prepare a Contractor Management Plan and a Workforce Management Plan to manage the contractor's work processes. These plans will include necessary training for employees. Compliance with the standards outlined in the ESMP and SEP will be ensured through subcontractor agreements. ▪ Security personnel present on-site during construction and operation phases will receive training on proper communication methods with workers and local communities.	Contractor Project Owner
C6	**Community Health and Safety**	Community health and safety risks	Included in construction costs	▪ Working hours during the construction phase will be adjusted to non-peak traffic hours to minimize the impact of increased traffic activities. ▪ The Traffic Management Plan will be updated and shared with the contractor before starting construction activities, once the final project design is completed. ▪ Additional measures will be taken to create special crossings for elderly individuals, pregnant women, individuals with small children, and people with disabilities. ▪ The project site will be fenced to protect the local community from physical hazards. ▪ During site preparation and construction activities, contractors, under the management of the Project Owner, will take necessary health and safety measures such as using appropriate warning signs, scheduling noisy work (primarily between 09:00 and 18:00), conducting regular maintenance of machinery, replacing or repairing noisy parts, and performing water spraying during dry periods. The community will be informed about construction plans and locations in a timely manner, and construction areas will be clearly marked. ▪ Warning signs will be made visible at night and during adverse weather conditions. ▪ Sufficient firefighting equipment will be available at all times on construction sites.	Contractor Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
				▪ An emergency response plan will be prepared and implemented to manage and mitigate risks to community health and safety. Project workers, the local community, and emergency response teams will be informed about this plan. Additionally, a Community Health and Safety Plan will be prepared. ▪ The local community will be informed about potential hazards and necessary precautions through signs placed in various nearby locations and brochures on bulletin boards. ▪ Detailed information on the use of the Grievance Redress Mechanism and contact details of the Grievance Redress Mechanism Officer will be disclosed to the public (project website, information brochures left at mukhtars' offices, posters and leaflets in public areas such as schools, health centres, hospitals, mosques). ▪ Damages that may occur on the surfaces of existing roads used during construction works due to heavy construction equipment will be repaired by the contractor. In case of any damage to infrastructure elements on private lands or assets on the land due to construction activities, these damages will be compensated by the contractor by mutual agreement with the relevant party.	
C7	**Land Acquisition/ Utilization**	Damage to adjacent land and structures	Included in construction costs	▪ According to World Bank OP 4.12, land acquisition is required for the Project, and land purchases have been completed through mutual agreements. ▪ The Project Owner must inform stakeholders about the reasons for the land acquisition process and provide information about the Project. ▪ Stakeholders should be informed about the Project Owner through a consultation meeting to be held in İsmetpaşa Neighborhood. ▪ In case of unintended damage to adjacent lands or structures during construction, such damages will be compensated and repaired by the Project Owner/Contractor. ▪ If complaints are received through the grievance mechanism regarding unauthorized use of private land, damage to neighboring properties, etc., case-by-case evaluations/investigations will be conducted, and corrective actions will be planned and implemented as necessary. ▪ Materials will be stored in closed and secured areas. ▪ Any additional need for closed and secure storage areas will be met by the contractor through temporary rental formalities or by obtaining the necessary permits.	Contractor Project Owner
C8	**Stakeholder Engagement**	Communication problems with stakeholders	Included in construction costs	▪ An appropriate timing for interaction/communication and engagement with communities will be planned. ▪ Regular consultations will be held with authorities and communities regarding project management. ▪ SEP will be published on the project owner's website. ▪ Comprehensive information on stakeholder engagement is provided in the project SEP and the SEP will be updated and implemented throughout the Project.	Contractor Project Owner
C9	**Grievance Redress Mechanism**	Matters Related to the Complaint	Included in construction costs	▪ An effective Grievance Redress Mechanism will be initiated to allow community members and employees potentially affected by the Project to raise concerns about the Project. ▪ Employee and Public grievance mechanism will be established. Grievance mechanism officer will be appointed. Project staff will be introduced to the mechanism. Grievance mechanism and authorized contact information will be introduced on the website and at İsmetpaşa neighborhood mukhtar's office. ▪ Employees will be trained on the use of the grievance mechanism. Grievance records will be kept up-to-date.	Contractor Project Owner
C10	**Documentation**	Missing documents	Included in construction costs	▪ All activities, information meetings, comments/suggestions, complaints, etc. provided during construction will be documented continuously.	Contractor Project Owner
C11	**Sustainable Development Goals**[3]	Failure to set sustainable goals	Included in construction costs	▪ Workers will be recruited from the region as much as possible during the project. ▪ Priority will be given to working with local suppliers and procurement of services from local employees in the service sector (fuel supply, vehicle maintenance/food, beverage and spare parts supply, etc.) as much as possible during the Project.	Contractor Project Owner
C12	**Traffic and Pedestrian Safety**	Direct and indirect threats to traffic and pedestrians posed by construction activities	Included in construction costs	▪ The Traffic Management Plan will be updated and shared with the contractor before starting construction activities, once the final project design is completed. ▪ Measures will be taken to ensure that vehicles used during the construction phase adhere to the specified speed limit (20 km/h). ▪ Traffic and warning signs will be placed around and near the project site. ▪ To ensure traffic and pedestrian safety, the project area will be made visible. In this context, adequate and appropriate lighting equipment will be used, warning and information signs will be installed, reflective barriers will be placed around the work area, and the site will be fenced with safety barriers. Additionally, markings and directional signs will be used to capture the attention of drivers and pedestrians. ▪ Activities affecting regional traffic will be planned with consideration of peak traffic hours as much as possible. ▪ All drivers involved in the Project will be informed about road safety, speed limits, traffic rules, and requirements to be followed during the project. ▪ The weight of all vehicles will comply with legal limits as specified by the Highway Traffic Regulations. ▪ If hazardous chemicals or waste are stored on-site, their transfer will be carried out by licensed carriers in a manner that poses no threat to public health. ▪ For special cargo, routes developed in agreement with the relevant authorities will be used. These designated routes will be scheduled to prevent traffic congestion on the roads and announced in advance to avoid potential disruptions. ▪ Traffic regulations will be jointly planned in consultation with the municipality. ▪ To prevent unauthorized access to the construction site, the site will be surrounded by fences/screens/security barriers, and uncontrolled entry will not be permitted.	Contractor Project Owner

[3] United Nations Development Cooperation Strategy Turkey 2016-2020 United Nations System, Sustainable, Sustainable Inclusive Growth and Development Goals in the Republic of Turkey. https://www.undp.org/sites/g/files/zskgke326/files/2022-05/undp-tr-undcs-2016-0.pdf

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
C13	**Resource Efficiency**	Wrong use of resources (water, fuel, electricity, raw materials)	Included in construction costs	▪ The required amount of drilling materials will be calculated accurately and waste generation will be minimized. The use of durable and long-lasting materials will extend the life of the drilling equipment. ▪ Water-saving drilling techniques will be applied to minimize water consumption. A closed loop system that circulates drilling fluids will be used to reduce the need for water. ▪ Energy efficient drilling equipment will be selected. ▪ Strategies will be developed to reuse materials and equipment wherever possible. At end of life, steel casing, drill pipes and other components will be recycled.	Contractor Project Owner
C14	**Air Quality**	Air pollution from construction works	Included in construction costs	▪ Dust from outdoor sources will be minimized by taking control measures such as covering excavation piles and increasing moisture content. ▪ Irrigation will be used at the project site to reduce dust from vehicle movements. ▪ Truck loading and unloading operations will be carried out meticulously and scattering of materials will be prevented. ▪ Modern equipment and vehicles that can meet applicable emission standards will be selected for construction works. ▪ All vehicles will have exhaust emission permits and all vehicles will be regularly maintained. ▪ Exhaust systems and emission levels of machinery and vehicles will be checked by the contractor. ▪ Project's grievance resolution mechanism will be implemented ▪ In case of any complaint, air quality measurement will be carried out in the area subject to the complaint in accordance with international standards and the results will be recorded. ▪ Speed limits for construction machinery will be determined and action will be taken to comply with these limits. ▪ During transportation, excavation materials will be covered with nylon tarpaulin or materials with a grain size larger than 10 mm. ▪ Damages caused by inadequate dust suppression measures (i.e. contamination of the surrounding area, wind transport to a residential area, formation of dust deposits due to wind, etc.) will be compensated by the contractor.	Contractor Project Owner
C15	**Noise**	Noise from Construction Works	Included in construction costs	▪ A Pollution Prevention and Control Plan addressing air emissions, noise, wastewater discharges, hazardous substance management and leakage prevention will be prepared and implemented prior to drilling activities. ▪ Local people living near the Project area will be informed during the construction phase. ▪ Drilling activities will be planned in consultation with local communities and activities with the highest potential to generate noise will be planned at times of the day that will cause the least disturbance. ▪ Noise control devices such as temporary noise barriers and deflectors for impact noise generating activities and exhaust silencers for combustion engines will be used. ▪ The use of roads close to settlements will be avoided or minimized for transportation activities of the Project. ▪ Outdoor equipment and vehicles will be regularly maintained. ▪ “Low noise” equipment will be used as much as possible during the drilling phase. Where drilling equipment is fitted with impermeable acoustic guards or enclosures, the covers shall be kept closed when the equipment is in operation. ▪ Equipment will be switched off or operated at a minimum level when not in operation ▪ In case of complaints, vibration levels will be monitored, and measures will be taken to reduce vibration if standards are exceeded. ▪ In case of any complaint, noise measurements will be made at the nearest noise sensitive receptors in accordance with international standards. ▪ In accordance with the relevant legislation, hearing protection equipment will be provided to employees working in noise-generating activities.	Contractor Project Owner
C16	**Waste Management**	Construction Waste	Included in construction costs	▪ A Pollution Prevention and Control Plan addressing air emissions, noise, wastewater discharges, hazardous material management, and spill prevention will be prepared and implemented prior to drilling activities. ▪ A Waste Management Plan will be prepared and implemented before drilling begins. ▪ Hazardous wastes, waste oils, used batteries and accumulators, electronic waste, recyclable waste, domestic waste, medical waste, and other similar materials will be classified, stored separately at the source, and disposed of in accordance with relevant regulations and WBG EHS guidelines. ▪ Adequate and suitable temporary storage areas for waste management will be provided. ▪ Temporary waste storage areas will comply with national and international standards, including: ▪ Storage areas will have roofs and enclosed sides, with proper drainage to prevent contact between waste and surface water or rain. ▪ Ground covering materials for storage areas will comply with IFC standards, such as reinforced concrete or impermeable epoxy for permanent installations, and modular flooring systems for temporary mobile waste storage areas in line with IFC standards. ▪ Adequate drainage systems will be in place to collect potential leaks. ▪ Proper ventilation will be provided for the storage of volatile waste. ▪ Access to storage areas will be controlled with gates. ▪ Warning signs and boards with the names and contact details of authorized personnel will be installed. ▪ Separate storage areas or compartments for different types of waste will be designated. ▪ Secondary containment measures will be applied for relevant wastes in compliance with applicable regulations and standards.	Contractor Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
				▪ Absorbents, spill kits, firefighting equipment, etc., will be readily available nearby to facilitate immediate response to emergencies such as spills or fires. ▪ Hazardous and non-hazardous wastes will be segregated at the source. ▪ Recyclable and non-recyclable solid wastes will be separately stored until collected by the municipality or licensed companies. ▪ It will be ensured that transportation, recycling, and disposal companies involved in waste management are licensed. ▪ Personnel will be trained on waste reduction, general waste management, and cleanliness. ▪ Drills will be conducted to prepare personnel for emergencies. ▪ Under no circumstances will wastes be dumped or buried on-site. ▪ A Waste Management Plan will be developed and implemented in compliance with national regulations and World Bank EHS Guidelines. ▪ Drilling waste will be regularly collected by licensed haulers and disposed of at the municipality's authorized excavation waste disposal site. ▪ Waste disposal records will be maintained regularly. A Waste Record Information Form, containing information on waste codes, quantities, transfer, and disposal methods as outlined in Annex IV of the Waste Management Regulation, will be prepared for this purpose. ▪ Wastes will be reused or recycled wherever possible. ▪ The temporary storage of medical waste will be carried out in compliance with Article 14 of the Medical Waste Control Regulation. Additionally, medical waste will be transported to processing facilities in accordance with Article 15 of the same regulation. ▪ Plant-based wastes such as seedlings and leaves will be shredded to reduce volume and then sent to the municipal solid waste landfill. ▪ Cocopeat and similar soil alternative materials used in production will be sent to licensed production facilities for reuse in areas such as landscaping and ornamental plant cultivation.	
C17	**Drilling Mud**	Failure in waste management, pollution from improper storage and disposal of sludge	Included in construction costs	▪ Specialized equipment will be used to separate the chemicals from the mud and the retained water will be allowed to circulate through the drilling system. ▪ The remaining mud will be dried after drilling and testing is completed. Drilling muds will be disposed of properly after analysis.	Contractor Project Owner
C18	**Domestic Waste**	Failure in waste management, pollution from waste	Included in construction costs	▪ Domestic wastes will be separated at source (plastic, glass, paper, etc.) and reusable wastes will be recycled. ▪ Non-recyclable wastes will be collected in closed sanitary bins and disposed of through the municipal solid waste collection system.	Contractor Project Owner
C19	**Waste Oils**	Failure in waste management, pollution from waste	Included in construction costs	▪ If different categories of oils are produced due to the works carried out at the construction site, these oils will be stored separately. ▪ Containers where waste oils are stored will be kept closed and protected from rainwater. ▪ Waste oils will be transported only by licensed transportation companies and delivered only to licensed recycling or disposal facilities.	Contractor Project Owner
C20	**Waste Batteries and Accumulators**	Failure in waste management, pollution from waste	Included in construction costs	▪ Waste batteries will be collected separately from other wastes, delivered to authorized institutions and recycled. ▪ Waste batteries and accumulators will be delivered to waste battery and accumulator disposal facilities within the Municipality through authorized transportation companies.	Contractor Project Owner
C21	**End-of-Life Tires**	Failure in waste management, pollution from waste	Included in construction costs	▪ In case tires of vehicles are replaced during construction activities, end-of-life tires will be delivered to tire distribution and sales companies through authorized transportation companies.	Contractor Project Owner
C22	**Excavated Earth, Construction and Demolition Waste**	Failure in waste management, pollution from waste, loss of topsoil	Included in construction costs	▪ Recycling and reuse of excavated soil and construction waste, especially as infrastructure materials, will be emphasized. ▪ Waste will be segregated at source for a robust recycling and disposal system. ▪ Excavation material that will not be used for backfilling will be removed from the site at regular intervals without waiting. These materials will be transferred to the permitted excavation waste storage area by licensed transportation companies.	Contractor Project Owner
C23	**Medical Waste**	Failure in waste management, pollution from waste	Included in construction costs	▪ Medical wastes will be collected separately in accordance with the regulations and will be delivered to licensed institutions for disposal. ▪ The qualifications of the red plastic bags to be used for medical waste are as follows: ‘International Biological Hazard’ emblem, tear, puncture, explosion, transport resistant, made of medium density polyethylene, sealed, double bottomed and gussetless, 100 micron thick double-layered, with a minimum lifting capacity of 10 kilograms and with ‘Caution Medical Waste’ warning on both sides. Medical wastes will be collected in coloured plastic bags or laminated cardboard boxes or containers of the same quality by filling them at most 3/4 full. Medical waste bags/containers will be delivered to the nearest health institution or the nearest municipality without compression with the help of transport companies authorised for the transport of such wastes.	Contractor Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
C24	**Wastewater Management**	Failure of wastewater management, pollution from wastewater	Included in construction costs	▪ A Pollution Prevention and Control Plan addressing air emissions, noise, wastewater discharges, hazardous material management, and spill prevention must be prepared and implemented prior to drilling activities. ▪ Drilling fluids will be stored in designated ponds within a limited area of the project site. The ponds will be lined with an impermeable membrane, and concrete ponds will be sealed. ▪ Drilling fluids will be reused wherever possible. ▪ Geothermal fluid will not be discharged into receiving environments under any circumstances. In cases where discharge is mandatory as outlined in the Water Pollution Control Regulation (SKKY), it must be tested for specific parameters and comply with relevant legislation and discharge permits. The discharge must align with the Water Pollution Control Regulation and World Bank EHS Guidelines. ▪ The Geothermal Resources and Natural Mineral Waters Law requires consideration of environmental limits for the disposal of geothermal fluid, including well test waters, after use. Reinjection will be carried out in this Project instead of discharge. ▪ The final pH level of cleaning waters must be monitored before discharge. ▪ Alternatively, after reuse, fluids must be transferred to appropriate storage facilities. They will be disposed of as hazardous or non-hazardous materials based on their chemical, biological, and physical properties. Licensed tankers will transport them to appropriate wastewater treatment plants in nearby industrial zones or municipalities. Hazardous materials must be disposed of at specialized hazardous waste treatment facilities within a reasonable distance. ▪ During the decommissioning phase, if reservoirs or tanks are no longer in use, they must be removed, and the site must be restored to prevent future material release into soil and water resources. The contents will be processed or disposed of as hazardous or non-hazardous waste depending on their properties. Once identified, they will be disposed of or processed at licensed facilities in compliance with national regulations and World Bank EHS Guidelines. ▪ Wastewater will be periodically tested in all cases to monitor potential contamination of surface or groundwater that may pose risks to community health and safety. ▪ The storage and disposal of domestic wastewater will comply with the Water Pollution Control Regulation and World Bank EHS Guidelines. ▪ Connection should be made by extending the sewerage system for domestic wastewater that will be generated from 650-700 people during the construction period. If the sewerage system cannot be extended, either a package WWTP should be installed and the receiving environment should be determined or an impermeable septic tank should be built for wastewater and it should be disposed of in the municipal WWTP by transport before it is full. ▪ As a recommended best practice, unused or abandoned wells will be sealed to prevent leakage.	Contractor Project Owner
C25	**Groundwater Quality**	Groundwater pollution from geothermal fluids	Included in construction costs	▪ No activity will be carried out below the groundwater level and in case of encountering groundwater, the activity will be stopped and work will be started in another area. ▪ Appropriate well casing and material will be selected for groundwater aquifer section(s). ▪ Consumption of underground water resources will be recorded. ▪ For groundwater contamination control, an observation well will be drilled at the point to be determined according to the flow direction of the water before drilling and water quality analyses will be performed.	Contractor Project Owner
C26	**Soil Quality**	Soil pollution	Included in construction costs	▪ All maintenance-repair-fuel replenishment will be carried out in designated areas and spills will be prevented. ▪ The ground of the area where the drilling rig will be placed will be concreted with cement resistant to chemicals and fluid temperature. ▪ Before drilling, 1 soil sample will be taken from each drilling area at the mud pool and generator location and checked for contamination. ▪ Chemicals will be stored in specific areas with covered secondary containment. ▪ Spill kits and absorbents will be available in the activity areas to intervene in case of spillage. ▪ In greenhouse areas, the arable soil on the greenhouse floor will not be touched and the soil will be protected.	Contractor Project Owner
C27	**Hazardous Materials**	Pollution from hazardous substances	Included in construction costs	▪ Hazardous wastes will be stored in robust, leak-proof, safe and internationally recognized standards. Containers will carry a “hazardous waste” label with the quantity, content, properties, storage conditions and storage date of the material stored. ▪ Containers containing hazardous materials will be placed in sealed containers to prevent spills and leaks. ▪ Hazardous waste will be transported by licensed waste transportation companies and disposed of at licensed facilities. ▪ No toxic paints, solvents or lead-based paints will be used. ▪ Hazardous waste management will be carried out in accordance with the Waste Management Regulation. ▪ Hazardous chemicals and wastes likely to be generated at the construction site will be stored in a manner that will not pose a threat to public health. ▪ Disposal of hazardous chemicals and wastes that may occur at the construction site will be carried out in licensed facilities under the supervision of authorized companies and experts.	Contractor Project Owner
C28	**Cultural Heritage**	Loss of cultural heritage	No additional costs expected	▪ An incidental find procedure will be prepared by the project owner before the start of construction works. ▪ Artifacts found during construction works will be identified and recorded as “incidental finds”. ▪ The Cultural and Natural Heritage Conservation Boards will be informed about the incidental finds and the approval of the Conservation Board responsible for the area where the construction site is located will be requested. No construction work will be carried out while waiting for the approval. ▪ Changes such as postponement or rescheduling of construction activities, which may be necessary due to a chance find, will be made. ▪ Correspondence on this issue will be updated in the ESMP annex, taking into account all decisions taken.	Contractor Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
C29	**Biodiversity**	Protection	No additional costs expected	▪ The clearing of vegetation will be limited to the required project area and adjacent work width necessary for implementation. ▪ The contractor will be proactive in environmental protection and will clearly define work area boundaries to avoid unnecessary disturbance, damage, or harm to natural habitats, particularly avoiding entry into critical, natural, or modified habitats. ▪ Before construction activities begin, amphibians, reptiles, and mammals in the project site will be surveyed. If individuals of these groups are detected, they will be carefully relocated to a safe location, with special attention given to the VU-listed species **Testudo graeca**. ▪ After vegetation clearing and the relocation of amphibians, reptiles, and mammals encountered at the site, surface soil will be carefully stripped. During the stripping process, some amphibians, reptiles, and mammals may reappear in the excavated soil. All such animals will be collected and relocated to a suitable nearby habitat. ▪ Hunting, trapping, or intentionally killing wildlife by project employees and drivers will be prohibited. ▪ Drivers and equipment operators will be encouraged to increase their awareness of wildlife conservation and to prevent or minimize animal fatalities. ▪ Animal protection policies prohibiting hunting, killing, and keeping pets will be developed and enforced. ▪ Speed control measures will be implemented in areas with free-roaming wildlife, and vehicle speeds will be reduced through regular enforcement. ▪ Mobilization areas and temporary excavation material storage areas will not be located in natural habitats. ▪ Waste generated from construction works and activities will be stored in designated areas and subsequently disposed of. The disposal of solid waste in natural habitats will not be permitted. ▪ Solid and liquid wastes will be collected in designated areas and disposed of by licensed companies or municipalities. ▪ Measures to reduce dust and air pollutants will be implemented as described in the "Air Quality" section. ▪ Noise reduction measures will be implemented as described in the "Noise" section. ▪ Environmental Awareness training will be provided to all personnel to raise awareness about the impacts of disturbance, waste, and spills on habitats and fauna. ▪ Vegetation will be rehabilitated in all areas cleared of vegetation and/or where the soil surface has been disturbed to minimize the establishment of invasive alien species. ▪ The revegetation of disturbed areas will be carried out during the same spring season or the following spring season for disturbances occurring in the dry season. ▪ Topsoil will be stripped and stored prior to construction and will be used for natural restoration. Topsoil will not be used elsewhere and will not be stored near existing invasive alien species. ▪ Topsoil will not be sourced from another area. If sourcing is necessary, it will be obtained from a reliable supplier with a certificate confirming it is free of invasive alien species. The introduction of invasive flora species to the project site and its surroundings will be prevented. Vehicles arriving from outside the project area will be washed/cleaned before entering the site. ▪ Project employees will not be allowed to bring live animals or plants to the construction site to avoid the risk of pests/invasive species. ▪ The planting of alien species will be prohibited in the project area or associated areas, including landscaping in areas to be revegetated. ▪ If invasive species are detected, plants will be cut or uprooted, and the removed plants will be left until completely dried. To accelerate decomposition and limit dispersal by birds and other animals, the plants can be stored in plastic bags. Care will be taken to avoid placing stored plants in areas at risk of rainwater runoff or water accumulation. ▪ When transporting plants off-site, they will be placed in thick, durable plastic bags and disposed of at a licensed landfill. Materials will be securely contained during transport to prevent dispersal. Dried plants can be incinerated in appropriate facilities if available. ▪ All vehicles leaving invasive species-infested areas and/or carrying contaminated soil or material will be washed in a designated washing area before being used for other purposes. ▪ Construction and security lighting will be directed inward and downward to minimize light pollution in remote areas and disturbances to nocturnal wildlife and birds. ▪ Measures for addressing impacts related to geothermal fluid leaks will follow those detailed in the sections on Air Quality, Soil Quality, Surface and Groundwater Quality, and Wastewater.	Contractor Project Owner

2.2 Impact/Risk Mitigation Plan for the Operation Phase of the Project

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
O1	**Working Conditions**	Inappropriate Working Conditions, Child labor, forced labor and informal employment	No additional costs expected	• Employees will be familiar with the Grievance Redress Mechanism officer and employees will have access to and be aware of the Grievance Redress Mechanism. • Minimum legal labor standards (child/forced labor, anti-discrimination, working hours, minimum wage) will be met according to International Labor Organization (ILO) regulations. • It will also comply with WB OPs and national legislation on working conditions.	Project Owner
O2	**Occupational Health and Safety**	Inadequate worker health and safety conditions	No additional costs expected	• The Project Owner will assign personnel with adequate certification and/or experience to ensure compliance with national legislation during operations, effectively control the project, and monitor the occupational health and safety (OHS) performance of project activities. • Risk Assessment studies related to activities will be conducted, and necessary management plans will be prepared. • All employees will be informed about working conditions, job descriptions, responsibilities, community relations, and potential job risks. Employees will receive OHS training, including behavior rules highlighting potential risks associated with their duties and the workplace. All training sessions will be documented. • All equipment used during the operational phase will meet international performance and safety standards and be maintained in good working condition. • An Emergency Preparedness and Response Plan will be prepared for potential accidents and emergencies. Emergency response teams will be established, and drills and training programs will be conducted based on emergency scenarios. • Employees will be familiar with emergency plans, and complaints will be reported to authorized teams for resolution, especially if urgent action is required. • During the operational phase, first aid equipment will be available at the rehabilitation center, considering that immediate first aid intervention may be necessary before an injured person is transferred to the nearest healthcare facility. • All activities will be conducted in compliance with both the Occupational Health and Safety Law and its related regulations, as well as the World Bank Operational Policies (OPs). • Accidents and incidents (including fatalities, lost-time incidents, spills, fires, pandemics, outbreaks of infectious diseases, social unrest, etc.) will be recorded. • All training sessions will be documented. • In the event of any significant incident (e.g., environmental, social, or occupational health and safety-related incidents), the Project Owner will immediately notify the Bank. A report detailing the root causes of the incident and the corrective actions to be taken will be submitted to the Bank within 30 days.	Project Owner
O3	**Community Health and Safety**	Community health and safety risks	No additional costs expected	• The public and surrounding institutions and organizations, hospitals and schools will be notified at least two days before the start of repair/maintenance works that may cause temporary inconvenience. • Community Liaison Officer will be introduced to the local community and updated information about the grievance redress mechanism will continue to be provided. In case of updates in the documents, the updated information will be announced to the local community through the relevant mukhtar's office.	Project Owner
O4	**Grievance Redress Mechanism**	Matters Related to the Complaint	No additional costs expected	• An effective Grievance Redress Mechanism will be introduced to allow community members and workers potentially affected by the Project to raise concerns about the Project.	Project Owner
O5	**Stakeholder Engagement**	Communication problems with stakeholders	No additional costs expected	• There will be interaction/communication with communities and appropriate timing for engagement. There will also be regular consultations with authorities and communities regarding project management.	Project Owner
O6	**Air Quality**	Poor air quality	No additional costs expected	• During the operation phase, all vehicles and equipment will be regularly maintained, and maintenance records will be kept. • Although H2S and CO2 emissions are not expected in the well fields, a monitoring system will be installed.	Project Owner
O7	**Noise**	Noise During Operation	No additional costs expected	• Equipment and vehicles used outdoors will be regularly maintained. • In case of any complaint, noise measurements will be made at the nearest noise sensitive receptors in accordance with international standards.	Project Owner
O8	**Resource Efficiency and On-site Pollution Prevention**	Resource utilization in the Operational Phase	No additional costs expected	• Geothermal fluid will be returned to the source through re-injection wells after the heat energy is utilized in the system, thus protecting the source. • Rainwater collection and utilization will be designed for the greenhouse area and well water use will be reduced. • Drainage water in greenhouses will be recycled and used at a rate of 98%. • All of the packaging used in packaging processes in production will be selected from recyclable materials. • Instead of chemicals used in production processes, the use of natural predators in the fight against diseases, the control of pests with regional and natural pheromone traps in line with physical mechanical control (IPM) will be implemented when possible.	Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
O9	**Soil Quality**	Soil pollution	No additional costs expected	• All maintenance-repair-fuel replenishment will be carried out in designated areas and spills will be prevented. • Chemicals will be stored in designated areas with covered secondary containment. • Spill kits and absorbents will be kept in the activity areas to intervene in case of spillage. • In greenhouse areas, the arable soil on the greenhouse floor will not be touched and the soil will be protected.	Project Owner
O10	**Wastewater and Water Management**	Failure of wastewater management, pollution from wastewater	No additional costs expected	• Domestic wastewater generated during the operation phase will not be discharged to the receiving environment without treatment. • Domestic wastewater that will be generated during the operation phase will be disposed of by establishing WWTP in the campus and determining the receiving environment and/or improving the municipal sewage system. • Up to 2% of the drainage water can turn into wastewater and this wastewater will be stored in a sealed pool and disposed of at the contracted treatment plant. • In case of wastewater discharge to the receiving environment, an Environmental Permit will be obtained. • Groundwater use will be recorded and a Water Sensitivity Assessment will be carried out.	Project Owner
O11	**Waste and Chemicals Management**	Failure of waste management, pollution from waste	No additional costs expected	• Waste will be segregated according to its composition, source, type, generation rates or local legal requirements. • In addition to the adoption of waste prevention strategies, the implementation of recycling plans will significantly reduce the total amount of waste. • If waste material is still generated after appropriate waste prevention, reduction, reuse and recycling measures have been taken, all necessary precautions will be taken to avoid potential impacts of the treatment and disposal of waste material on human health and the environment.	Project Owner
O12	**Domestic Waste**	Failure of waste management, pollution from waste	No additional costs expected	• Domestic wastes will be separated at source (plastic, glass, paper, etc.) and reusable wastes will be recycled. • Non-recyclable wastes will be collected in closed sanitary bins and disposed of through the municipal solid waste collection system.	Project Owner
O13	**Waste Oil**	Failure in waste management, pollution from waste	No additional costs expected	• If different categories of oils are produced due to the works carried out, these oils will be stored separately. • Containers where waste oils are stored will be kept closed and protected from rainwater. • Waste oils will be transported only by licensed transportation companies and delivered only to licensed recycling or disposal facilities.	Project Owner
O15	**Vegetative Waste**	Failure of waste management, pollution from waste	No additional costs expected	• Vegetable waste will be shredded into small pieces with a shredder to reduce its volume and sent to municipal solid waste disposal sites. • Soil alternative products will be sent to companies that use these products in different sectors, especially in landscaping and ornamental plant cultivation.	Project Owner
O16	**Waste Batteries and Accumulators**	Failure in waste management, pollution from waste	No additional costs expected	• Waste batteries will be collected separately from other wastes, delivered to authorized institutions and recycled. • Waste batteries and accumulators will be delivered to waste battery and accumulator disposal facilities within the Municipality through authorized transportation companies.	Project Owner
O17	**Medical Waste**	Failure in waste management, pollution from waste	No additional costs expected	• The qualifications of the red plastic bags to be used for medical waste are as follows: 'International Biohazard' emblem, tear, puncture, explosion, transportation resistant, made of medium density polyethylene, sealed, double bottomed and gusset-free, double-layered with a thickness of 100 microns, with a minimum lifting capacity of 10 kilograms and bearing the warning 'Caution Medical Waste' on both sides. Medical waste will be collected in colored plastic bags or boxes made of laminated cardboard or containers of the same quality, filled at most 3/4 full. Medical waste bags/containers will be delivered to the nearest health institution or the nearest municipality without compression with the help of authorized transportation companies for the transportation of such wastes.	Project Owner
O18	**Hazardous Substances**	Pollution from hazardous substances	No additional costs expected	• Hazardous wastes shall be stored in robust, leak-proof, safe and internationally recognized standards compliant containers. Containers will carry a “hazardous waste” label with the amount, content, properties, storage conditions and storage date of the material stored. • Containers containing hazardous materials will be placed in sealed containers to prevent spills and leaks. • Hazardous waste will be transported by licensed waste transportation companies and disposed of at licensed facilities. • No toxic paints, solvents or lead-based paints will be used. • Hazardous waste management will be carried out in accordance with the Waste Management Regulation. • Hazardous chemicals and wastes likely to be generated at the construction site will be stored in a manner that will not pose a threat to public health. • Disposal of hazardous chemicals and wastes will be carried out in licensed facilities under the supervision of authorized companies and experts.	Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
O19	**Employment / Economy**	Child labor, forced labor and informal employment Contribution to the economy	No additional costs expected	• Care will be taken to contribute to the local economy by using local materials and procuring a variety of goods and services from local sources. • Priority will be given to local labor where possible and feasible. • Efforts will be made to allocate employment opportunities to local parties and settlements in the Project impact area. • Work permits of those working within the scope of the Project in accordance with the law will be checked and compliance with national and international legislation on child labor, forced labor and child labor under the age of 18 will be ensured. Anti-discrimination trainings will be organized to eliminate discrimination in the workplace, procedures will be prepared to ensure equality in discrimination, recruitment and promotion processes and regular audits will be carried out on implementation.	Project Owner
O20	**Social Life**	Possible Disturbance to Society	No additional costs expected	• The Contractor will provide training to greenhouse staff on environmental and social issues. It is the responsibility of the Project Owner to ensure that the Contractor complies with the set criteria. • A Community Liaison Officer will be employed under the project for the management of social impacts, grievance mechanism and planning of stakeholder engagement activities. • The Project Owner will ensure that the contractors establish a code of ethics and control the training of workers before the start of work, especially on communication with local foreign nationals, so that local foreign nationals are not adversely affected by outsourced workers.	Project Owner
O21	**Land Acquisition/Use**	Purchasing	No additional costs expected	• Land acquisition will not occur during the operational period of the Project. • In case land acquisition occurs, the project owner will take action according to local regulations and World Bank OP 4.12.	Project Owner
O22	**Traffic and Pedestrian Safety**	Direct and indirect threats to traffic and pedestrians during operation	No additional costs expected	• Shuttle services will be provided during the operational phase to transport greenhouse workers. Considering the number of employees and the distance of the region from residential areas, significant traffic congestion is not expected during the operational phase. • Measures will be taken to ensure that vehicles used during the operational phase adhere to the specified speed limit (20 km/h). • Traffic and warning signs will be placed around and near the project site. • To ensure traffic and pedestrian safety, the project area will be made visible. In this context, adequate and appropriate lighting equipment will be used, warning and informational signs will be installed, reflective barriers will be placed around the work area, and the site will be fenced with safety barriers. Additionally, markings and directional signs will be implemented to capture the attention of drivers and pedestrians. The local community will be informed about potential dangers and risks through brochures and posters left in common areas frequently used by the community, such as local administrative offices, hospitals, health centers, mosques, coffeehouses, and marketplaces. • All drivers involved in the Project will be informed about road safety, speed limits, traffic rules, and requirements to be followed during the project. • The weight of all vehicles will comply with legal limits as specified by the Highway Traffic Regulations. • If hazardous chemicals or waste are stored on-site, their transfer will be carried out by licensed carriers in a manner that poses no threat to public health. • For special cargo, routes developed in agreement with the relevant authorities will be used. These designated routes will be scheduled to prevent traffic congestion on the roads and announced in advance to avoid potential disruptions. • Traffic regulations will be jointly planned in consultation with the municipality.	Project Owner
O23	**Cultural Heritage**	Loss of cultural heritage	No additional costs expected	• A chance find procedure will be prepared by the project owner before starting construction work. • Artifacts found during the operation period will be specified and recorded as “chance finds”. • Information about chance finds will be provided to the Cultural and Natural Heritage Protection Boards and approval will be requested from the Protection Board responsible for the area where the construction site is located. • Correspondence on this subject will be updated in the ESMP annex, taking into account all decisions taken.	Project Owner

No.	Title	Potential Impact Definition	Cost	Measures to be taken	Responsibility
O24	**Biodiversity**	Protection	No additional costs expected	• Vegetation rehabilitation will be required in all areas cleared of vegetation and/or where the soil surface has been disturbed. • The revegetation of disturbed areas will be implemented during the same spring season or the following spring season for disturbances occurring in the dry season. • The planting of alien species will be prohibited in the project area or associated areas, including landscaping in areas to be revegetated. • If invasive species are detected, plants will be cut or uprooted along with their roots. The cut or removed plants will be left until they are completely dried. If possible, to accelerate decomposition and limit dispersal by birds and other animals, the plants can be stored in plastic bags. Care will be taken not to place stored plants in areas at risk of runoff by rainwater or water accumulation. • During the transportation of plants off-site, they will be placed in thick and durable plastic bags and disposed of at a licensed landfill. Materials will be securely contained during transport to prevent dispersal. Dried plants may be incinerated in appropriate facilities if available. • All vehicles leaving areas infested with invasive species and/or carrying contaminated soil or materials will be washed at a designated washing area before being used for other purposes. • Surface geothermal fluid pipelines will be positioned above ground to allow the passage of animals, and these gaps will be maintained to remain unobstructed by any materials that may hinder animal movement. • Measures detailed in the "Noise and Vibration" section will be followed to address noise-related impacts. • Security lighting will be directed inward and downward to minimize light pollution in remote areas and reduce disturbances to nocturnal wildlife and birds. • - Measures outlined in the sections on Air Quality, Soil Quality, Surface and Groundwater Quality, and Wastewater will be followed to address impacts associated with geothermal fluid leaks.	Project Owner

3 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

The monitoring, review and audit program detailed in Section 2.1 and Section 2.2 will be implemented during the construction and operation phases to monitor the implementation of the environmental and social commitments of the ESMP requirements. Monitoring for the implementation of mitigation measures and commitments given in the ESMP will be carried out by the contractor and the Project Owner on a continuous basis in line with the Monitoring Plan starting from the construction period. Environmental and social monitoring studies will be carried out during the project. Contractors will prepare and submit these reports to the project owner on a monthly basis. The Project Owner will submit monitoring reports to the lending institution every 3 months during the construction period and every 6 months during the operation period. The Project Owner will be responsible for ensuring that contractors and subcontractors comply with applicable national/international regulations and lenders' requirements.

The Key Performance Indicators (KPIs) of this procedure will be monitored, verified and evaluated during the project monitoring phase. The KPIs are presented in Table 3-1.

Table 3-1. Key Performance Indicators

KPI	Target
Air Quality	
Air quality events	Minimizing and continuously improving the number of reported air quality incidents
Non-compliance with air quality standards	Zero complaints per year
Complaints from the community	Minimizing and continuously improving the number of community complaints about air quality
Noise	
Noise and vibration phenomena	Minimization and continuous improvement of the number of reported noise and vibration related incidents
Failure to comply with project standards	Zero non-conformity reports per year
Number of complaints received from the public about noise	Zero complaints per year
Su	
Spillage incident	Minimizing and continuously improving the number of reported water quality incidents
Failure to comply with project standards	Zero non-conformity reports per year
Wastewater collection system	Zero complaints per year
Groundwater levels of public/private wells	No significant negative impact
Water quality analysis	Meeting national and international water quality standards for surface and groundwater affected and/or in the vicinity of the project
Flood events	Zero damage to infrastructure and loads/people
Wastewater	
Wastewater production	Total amount of wastewater generated

KPI	Target
	Ratio of wastewater produced to the amount of treated water used in irrigation
Wastewater disposal	Ratio of treated wastewater used in irrigation to the amount of wastewater discharged to receiving environment
Waste	
Waste generation	Total waste generated Ratio of hazardous waste generated to total waste (by contamination + by generation)
Waste disposal	Ratio of recovered/reused/recycled waste to total waste generated
Floor	
Spillage Event	Minimizing and continuously improving the number of reported soil quality incidents
Failure to comply with project standards	Zero non-conformity reports per year
Number of public complaints about soil	Zero complaints per year
Traffic	
Number of non-conformities related to mitigation measures identified in Management Plans	Reduction in the number of reported nonconformities/continuous improvement
Number of drivers found to be exceeding speed limits or driving unsafely	Zero exceedances per year
Number of road traffic accidents: Accidental injuries and deaths, Spills (such as cargo or fuel), Wildlife-vehicle collisions.	Zero accidents per year
Number of traffic-related complaints	Zero complaints per year
Health, Safety and Environment	
Percentage of planned EHS Audit	>90
Percentage of participation in EHS meetings	>90
Percentage of nonconformity reports closed	100
Reporting of safety observations	%100
Reporting unsafe observations	%100
Reporting of near miss incidents	%100
Percentage of participants in occupational safety meeting	>90
Percentage of Risk Assessment compliance	>90
Percentage of compliance with legal requirements	>90
Results of planned audits	>85
EHS training conducted according to the training matrix	>90
More than 90% of all trainings compared to matrix	>90
Percentage of participation in planned trainings	>90
Participation in the EHS program by individual managers and supervisors	>90
Working and Working Conditions	
Number of labor grievances closed within the target timeframe	Zero time-barred labor grievances
Community Health and Safety	

KPI	Target
Number of communicable and non-communicable diseases and injuries	Negative Tendency
Number of community health and safety complaints from local residents as recorded in the grievance management system	Reduction in the number of complaints/continuous improvement
Number of public health and safety incidents reported	Zero incidents per year
Number of reported noise incidents	Zero incidents per year

3.1 Monitoring Plan for the Construction Phase

Parameter	Monitoring Area	Schedule/ Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Disclosure of Information/Stake holder Engagement	Settlements close to the project area	▪ During construction ▪ Monthly	▪ Complaints	▪ On-site inspection ▪ Meeting minutes ▪ Records of grievance resolution mechanism	▪ Closing all complaints within the targeted timeframe	▪ Regulation on Assessment and Management of Environmental Noise ▪ Air Quality Assessment and Management Regulation	▪ Complaint Records ▪ Number of Complaints ▪ Percentage of complaints closed within the targeted time frame	No additional costs	Project Owner Contractor
Working Conditions	Project site	▪ Monthly	▪ Complaints	▪ Internal and external audits ▪ Complaint records ▪ Accident records ▪ Education records ▪ Sample contracts ▪ Human Resources Policy ▪ Number of local employees ▪ Legal work permit	▪ Closing all complaints within the targeted timeframe	▪ Labor Law (Law No. 4857) ▪ Law on Trade Unions and Collective Labor Agreements ▪ ILO International Conventions	▪ Number of employee complaints ▪ Percentage of complaints closed within the targeted time frame	No additional costs	Project Owner Contractor
Occupational Health and Safety	Project site Settlements close to the project area	▪ Daily	▪ Safe conditions on the construction site ▪ Risk analysis and procedures ▪ Disease ▪ Events ▪ Complaints ▪ Safety talks and trainings ▪ EHS Audit ▪ Legal obligations ▪ Emergency Response Plan	▪ On-site inspection ▪ Interviews with employees ▪ Complaint records ▪ Training and occupational safety records ▪ Examples of contracts ▪ Internal and external audits ▪ Accident and near miss records ▪ Drill records	▪ Targets are expressed numerically in Table 3-1.	▪ Occupational Health and Safety Law ▪ Regulation on Health and Safety Conditions in the Use of Work Equipment ▪ IFC PS 1	▪ Percentage of planned EHS Audit ▪ Percentage of participation in EHS meetings ▪ Percentage of nonconformity reports closed ▪ Reporting of security observations ▪ Reporting of unsafe observations ▪ Reporting of near-miss incidents ▪ Percentage of participants in occupational safety meetings ▪ Percentage of Risk Assessment compliance ▪ Percentage of compliance with legal requirements ▪ Results of planned audits ▪ EHS training conducted according to the training matrix ▪ More than 90% of all trainings compared to matrix ▪ Percentage of participation in planned trainings ▪ Participation in the EHS program by individual managers and supervisors ▪ Participation in the EHS program by the contractor	No additional costs	Project Owner Contractor

Parameter	Monitoring Area	Schedule/ Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Community Health and Safety	Project site Settlements close to the project area	▪ Daily	▪ Safety conditions on the ground ▪ Fencing the construction site ▪ Warning signs and flashlights ▪ Complaints ▪ Events ▪ Accidents	▪ Opinion/suggestion/complaint records ▪ Field Inspections ▪ Education records	▪ No significant increase in communicable and non-communicable disease and injury rates per 1,000 inhabitants per year ▪ Reduction in the number of complaints/continuous improvement ▪ Zero incidents per year	▪ General Hygiene Law ▪ Regulation on Health and Safety Signs	▪ Number of communicable and non-communicable diseases and injuries ▪ Number of public health and safety complaints from local communities as recorded in the grievance management system ▪ Number of public health and safety incidents reported ▪ Number of reported noise incidents	No additional costs	Project Owner Contractor
Documentation	Project site	▪ During the construction phase, the contractor will report the ESMRs to the Project Owner on a monthly basis and the Project Owner will report to the Bank with the Grievance Register every 3 months.	▪ None	▪ On-site inspection ▪ Record control	▪ None	▪ OP 4.01	▪ None	No additional costs	Project Owner Contractor
Land Use	Project site Settlements close to the project area	▪ Monthly	▪ Complaint Records	▪ Grievance Resolution Mechanism ▪ Compensation for unintentional damage to land and structures during construction	▪ Closing all complaints within the targeted timeframe	▪ Law No. 5400 on Soil Conservation and Land Use ▪ O.P 4.12	▪ Complaint Records ▪ Number of Complaints ▪ Percentage of complaints closed within the targeted time frame	No additional costs	Project Owner Contractor
Grievance Redress Mechanism	Project site Settlements close to the project area	▪ Monthly	▪ Complaint Records	▪ Opinion/suggestion/complaint records ▪ On-site inspection	▪ Closing all complaints within the targeted timeframe	▪ O.P 4.01	▪ Complaint Records ▪ Number of Complaints ▪ Percentage of complaints closed within the targeted time frame	No additional costs	Project Owner Contractor
Sustainable Development	Settlements close to the project area	▪ Monthly	▪ None	▪ Opinion/suggestion/complaint records ▪ Product procurement records ▪ Staff list ▪ On-site inspection	▪ None	▪ WB OP 4.01	▪ None	No additional costs	Project Owner Contractor
Resource Efficiency	Project site	▪ Monthly	▪ Resources used (water, electricity, fuel, etc.)	▪ Control of resource utilization records ▪ Regular inspections	▪ Reduction in resource utilization	▪ WB OP 4.01	▪ Consumption in m³, L, kWh, tons	No additional costs	Project Owner Contractor

Parameter	Monitoring Area	Schedule/ Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Air Quality	Project site Settlements close to the project are	▪ During construction ▪ In case of a complaint ▪ Exhaust emission measurements every 2 years for passenger cars and once a year for other vehicles ▪ Training exercise records will be reviewed weekly ▪ Daily ▪ Monthly (for 3rd party)	▪ Complaint Records ▪ Internal field audits ▪ Environmental air quality measurements (PM10,H2S) ▪ Vehicle exhaust emission measurements ▪ Training and exercise records ▪ H2S andCO2 emissions monitoring and warning system records ▪ 3. Party control	▪ Field inspections ▪ Audit of records ▪ PM10 andH2S measurements in case of complaints ▪ H2S andCO2 alarm system data	▪ Minimization and continuous improvement of the number of reported air quality related incidents. ▪ Zero complaints per year ▪ Minimization and continuous improvement of the number of public complaints about air quality.	▪ Air Quality Assessment and Management Regulation ▪ WB O.P 4.01	▪ Air Quality events ▪ Records of Non-Compliance with air quality standards ▪ Complaints from the community	No additional costs	Project Owner Contractor
Odor	Project site Settlements close to the project area	▪ Daily ▪ In case of a complaint ▪ In case of a complaint ▪ Weekly ▪ Daily ▪ Weekly ▪ Monthly (for 3rd party)	▪ Field inspections ▪ Environmental odor measurements ▪ H2S measurements ▪ Complaint records ▪ H2S andCO2 emissions monitoring and warning system records ▪ H2S emissions monitoring and warning system maintenance records ▪ 3. Party control	▪ Field inspections ▪ Audit of records ▪ Measurements to be made in case of complaints	▪ Minimization and continuous improvement of the number of reported odor-related incidents. ▪ Zero complaints per year ▪ Minimization and continuous improvement of the number of public complaints about odor.	▪ Regulation on Control of Odor Generating Emissions ▪ DB O.P 4.01	▪ Records of non-compliance ▪ Number of grievance records ▪ Legal limits	No additional costs	Project Owner Contractor
Noise	The project site Residential units and schools close to the project area	▪ During construction ▪ Daily ▪ Monthly (for 3rd party)	▪ Complaint Records	▪ Monitoring at the nearest sensitive receptors using noise meters ▪ Field inspections ▪ Measurements in case of a complaint	▪ Minimizing and continuously improving the number of reported noise and vibration related incidents ▪ Zero non-conformity reports per year ▪ Zero complaints per year	▪ Regulation on Assessment and Management of Environmental Noise ▪ WB O.P 4.01	▪ Noise and vibration phenomena ▪ Records related to non-compliance with project standards ▪ Number of complaints received from the public about noise	No additional costs	Project Owner Contractor
Waste Management	Project site	▪ Daily ▪ Monthly (for 3rd party)	▪ Field inspections ▪ Waste quantity ▪ Measurements of soil, surface water and groundwater quality in case of contamination ▪ 3rd party audit	▪ Waste registrations ▪ On-site supervision ▪ Quality measurements in case of contamination	▪ Minimizing the total amount of waste generated ▪ Minimizing the ratio of hazardous waste generated to total waste (by contamination + generation) ▪ Increase in the ratio of recovered/reused/recycled waste to total waste generated ▪ Zero contamination event	▪ Regulation on Control of Hazardous Wastes ▪ Regulation on Control of Packaging Waste ▪ Waste Management Regulation ▪ Regulation on Control of Medical Wastes ▪ WB O.P 4.01	▪ Total waste generated ▪ Ratio of hazardous waste generated to total waste (by contamination + generation) ▪ Ratio of recovered/reused/recycled waste to total waste generated ▪ Number of contamination incidents	No additional costs	Project Owner Contractor
Drilling Mud	Drilling and testing sites	▪ Daily ▪ When the drilling operation is completed ▪ Daily ▪ In case of contamination	▪ Sludge quantity ▪ Number of incidents	▪ Field audits ▪ Examination of sludge analysis ▪ Waste records ▪ Quality measurements in case of contamination	▪ No overflow in the drilling mud pond ▪ Zero event	▪ Circular on the Disposal of Drilling Muds and Wastes Resulting from the Physical Processing of Chrome Mines (2012/15)	▪ Sludge quantity ▪ Event logs	No additional costs	Project Owner Contractor

Parameter	Monitoring Area	Schedule/ Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
						▪ Regulation on Landfilling of Wastes ▪ WB OP 4.01			
Domestic Waste	Project site	▪ During construction ▪ Daily	▪ Waste quantity ▪ Recovery/reuse/recycling rate	▪ Waste records ▪ Inspection in the field	▪ Minimizing the total amount of waste generated ▪ Increase in the ratio of recovered/reused/recycled wastes stored in sanitary landfills	▪ Packaging Waste Control Regulation ▪ Waste Management Regulation ▪ WB OP 4.01	▪ Total waste generated ▪ Ratio of recovered/reused/recycled waste to total waste generated ▪ Records related to transportation and disposal	No additional costs	Project Owner Contractor
Waste Oil	Project site	▪ During construction ▪ Weekly	▪ Waste amount ▪ Waste storage conditions ▪ Recovery/reuse/recycling rate	▪ Visual observations ▪ Waste records	▪ Minimize the total amount of waste produced ▪ Increase in the ratio of recovered/reused/recycled waste to total waste produced	▪ Waste Oil Management Regulation ▪ WB OP 4.01	▪ Total waste generated ▪ Ratio of recycled waste to total waste generated ▪ Records related to transportation and disposal	No additional costs	Project Owner Contractor
Medical Waste	Project site	▪ Monthly during construction	▪ Waste amount	▪ Waste disposal records	▪ Minimising the total amount of waste produced	▪ Regulation on Control of Medical Wastes ▪ DB OP 4.01	▪ Total waste generated ▪ Records relating to transport and disposal ▪ Number of contamination incidents	No additional costs	Project Owner Contractor
Waste Batteries and Accumulators	Project site	▪ During construction ▪ Monthly	▪ Waste amount ▪ Recovery/reuse/recycling rate	▪ Waste records	▪ Minimize total amount of waste produced ▪ Increase in the ratio of recovered/reused/recycled waste to total waste produced	▪ Waste Batteries and Accumulators Control Regulation ▪ WB OP 4.01	▪ Total waste generated ▪ Ratio of recycled waste to total waste generated. ▪ Records on transportation and disposal	No additional costs	Project Owner Contractor
Excavation Soil, Construction and Demolition Waste	Project site	▪ During construction ▪ Daily	▪ Waste amount and storage conditions ▪ Transfer records	▪ On-site inspections	▪ Minimize the total amount of waste produced ▪ Increase in the ratio of recovered/reused/recycled waste to total waste produced	▪ Regulation on Control of Excavation Soil, Construction and Demolition Waste ▪ WB OP 4.01	▪ Total waste produced ▪ Records related to transportation and disposal	No additional costs	Project Owner Contractor
Wastewater and Water Management	Drilling areas Septic pit Cold water wells	▪ During construction ▪ At the beginning of the project ▪ In case of contamination	▪ Wastewater quantity ▪ Amount of water use	▪ Site inspections ▪ □ Sewage tanker withdrawal records/Disposal records ▪ Wastewater analyses ▪ In case of contamination Soil, water quality measurements ▪ Water usage records	▪ Reduction in wastewater quantity ▪ Zero incident record ▪ Reduction in water use	▪ Water Pollution Control Regulation ▪ WB OP 4.01	▪ Wastewater quantity ▪ Number of incidents ▪ Amount of water use	No additional costs	Project Owner Contractor
Spillage of drilling fluid	Drilling areas	▪ Every 3 months ▪ Annually ▪ Emergency response during the incident	▪ Emergency response drills ▪ Emergency response plan and equipment preparation	▪ Site inspections ▪ Review of incident log and documents	▪ No uncontrolled spillage ▪ Rapid and appropriate response	▪ Water Pollution Control Regulation ▪ Regulation on Control of Soil Pollution and Contaminated Sites by Point Sources	▪ Timely and effective response in drills, ▪ Readiness of emergency equipment, ▪ Number of actual spillage incidents	No additional costs	Project Owner Contractor

Parameter	Monitoring Area	Schedule/ Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
			▪ Incident log and documents ▪ Deployment of emergency measures			▪ WB OP 4.01			
Hazardous Waste Management	Project site	▪ During construction ▪ Daily	▪ Waste amount and storage conditions	▪ Waste records ▪ On-site inspection	▪ Increase in the ratio of hazardous waste produced to total hazardous waste (by contamination + production)	▪ Waste Management Regulation ▪ WB OP 4.01	▪ Total waste produced ▪ Records related to transportation and disposal	No additional costs	Project Owner Contractor
Cultural Heritage	Project site Settlements close to the project area	▪ During construction ▪ Daily ▪ • Monthly	▪ Chance Find	▪ Inspection on site	▪ Zero Complaint Record	▪ Law on the Protection of Cultural and Natural Assets ▪ WB OP 4.11	▪ Number of chance find records and reports	No additional costs	Project Owner Contractor
Direct and indirect threats posed by construction activities to traffic and pedestrians	Project site	▪ During construction ▪ Daily	▪ Complaints ▪ Information collected through public consultation ▪ Information on existing pedestrian paths ▪ Presence and number of warning signs appropriately placed at designated locations ▪ Training records for drivers ▪ Availability of the Emergency Action Plan	▪ On-site inspection	▪ Number of non-compliances with the mitigation measures specified in the Traffic Management Plan ▪ Zero number of drivers found to exceed speed limits or drive unsafely ▪ Number of traffic accidents ▪ Zero accidental injuries and deaths ▪ Zero traffic-related complaints ▪ Driver training records ▪ Availability of the Emergency Action Plan ▪ Placement of warning signs	▪ Occupational Health and Safety Law	▪ Number of non-compliance with mitigation measures identified in the Traffic Management Plan ▪ Number of drivers found to be exceeding speed limits or driving unsafely ▪ Number of traffic accidents ▪ Zero accidental injuries and deaths ▪ Spills (such as cargo or fuel) ▪ Wildlife-vehicle collisions. ▪ Number of traffic complaints	No additional costs	Project Owner Contractor
Construction Site Entry Safety Protection Tape	Settlements close to the project area	▪ During construction ▪ Daily	▪ Complaint	▪ Inspection on site	▪ The number of unauthorized entries to the project site is zero.	▪ Occupational Health and Safety Law	▪ Number of unauthorized entries into the project site	No additional costs	Project Owner Contractor
Biodiversity	Project site	▪ During construction ▪ Daily	▪ Complaints ▪ Loss of Natural Habitats ▪ Incidents and Accidents to Flora and Fauna ▪ Training Records for Employees ▪ Availability of Invasive Species Management Plan	▪ Inspection on site	▪ Zero Complaint Record ▪ Zero Habitat Loss ▪ Zero Incidents and Accidents to Flora and Fauna ▪ Training records for employees ▪ Zero Invasive Species Spread	▪ WB OP 4.04	▪ Number of Complaint Records ▪ Habitat Losses ▪ Number of Incidents and Accidents to Flora and Fauna ▪ Invasive Species Spread Records	No additional costs	Project Owner Contractor

Parameter	Monitoring Area	Schedule/ Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Land Acquisition/Use	Project area Settlements close to the project area	▪ Monthly	▪ Complaint Records	▪ Complaint Resolution Mechanism ▪ Compensation for unwanted damages to land and structures during construction	▪ Closing of all complaints within the targeted time period	▪ WB OP 4.12 ▪ Law No. 5400 on Soil Protection and Land Use	▪ Complaint Records ▪ Number of Complaints ▪ Percentage of complaints closed within the targeted time period	No additional cost	Project Owner Contractor

3.2 Monitoring Plan for the Operation Phase

Parameter	Monitoring Area	Schedule / Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Disclosure of Information/Stakeholder Engagement	Settlements close to the project area	▪ Duration of the Project ▪ Daily	▪ Complaints	▪ On-site inspection ▪ Meeting minutes ▪ Complaint resolution mechanism records	▪ Closing of all complaints within the targeted time period	▪ Environmental Noise Assessment and Management Regulation ▪ Air Quality Assessment and Management Regulation ▪ WB OP 4.01 ▪ In case of a complaint, noise, H2S and dust measurements will be made.	▪ Grievance Records ▪ Number of complaints ▪ Percentage of complaints closed within the targeted time period	No additional cost	Project Owner
Working Conditions	Project route and maintenance areas	▪ Monthly	▪ Complaints	▪ Internal and external audits ▪ Grievance Records ▪ Accident records ▪ Training records ▪ Sample contracts ▪ Human Resources Policy ▪ Local employee count ▪ Legal work permit	▪ Closing of all complaints within the targeted time period	▪ Labor Law (Law No. 4857) ▪ Trade Unions and Collective Agreement Law ▪ ILO International Conventions	▪ Number of employee complaints ▪ Percentage of complaints closed within targeted time frame	No additional cost	Project Owner

Parameter	Monitoring Area	Schedule / Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Occupational Health and Safety	Project area Settlements close to the project area	▪ Monthly	▪ Disease ▪ Incidents ▪ Complaints ▪ Training ▪ EHS Audit ▪ Legal obligations ▪ Compliance with Emergency Response Plan	▪ On-site inspections ▪ Interviews with employees ▪ Grievance Records ▪ Training records ▪ Contract samples ▪ Internal and external audits ▪ Emergency Plans ▪ Accident records	▪ The targets are expressed numerically in Table 3-1.	▪ Occupational Health and Safety Law ▪ Regulation on Health and Safety Conditions in the Use of Work Equipment ▪ IFC PS 4 ▪ WB ÇSS	▪ Percentage of planned EHS inspections ▪ Percentage of participation in EHS meetings ▪ Percentage of closing non-conformity reports ▪ Reporting of safety observations ▪ Reporting of unsafe observations ▪ Reporting of near-miss incidents ▪ Percentage of participants in the safety meeting ▪ Percentage of compliance with the Risk Assessment ▪ Percentage of compliance with legal requirements ▪ Results of planned inspections ▪ EHS training carried out according to the training matrix ▪ More than 90% of all trainings compared to the matrix ▪ Percentage of participation in planned trainings ▪ Participation in the EHS program by individual managers and auditors ▪ Participation in the EHS program by the contractor	No additional cost	Project Owner
Community Health and Safety	Project area Settlements close to the project area	▪ Monthly	▪ Complaints ▪ Incidents ▪ Accidents	▪ Opinion/suggestion/Grievance Records ▪ On-site Inspections ▪ Training records	▪ No significant increase in communicable and non-communicable disease and injury rates ▪ Decrease in the number of complaints/continuous improvement ▪ Zero incidents per year	▪ Public Health Law ▪ Health and Safety Signs Regulation	▪ Number of communicable and non-communicable diseases and injuries ▪ Number of community health and safety complaints from local residents as recorded in the complaint management system ▪ Number of community health and safety incidents reported ▪ Number of noise incidents reported	No additional cost	Project Owner
Documentation	Project area	▪ The arrangements and precautions made in the project and the situations encountered will be reported to the	▪ None	▪ On-site Inspection ▪ Record control	▪ None	▪ WB OP 4.01	▪ None	No additional cost	Project Owner

Parameter	Monitoring Area	Schedule / Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
		Project ESIRs on a monthly basis by the contractor together with the Complaint Record during the construction phase.							
Grievance Redress Mechanism	Project area Settlements close to the project area	▪ Monthly	▪ Grievance Records	▪ Opinion/suggestion/Grievance Records ▪ On-site Inspections	▪ Closing of all complaints within the targeted time period	▪ WB OP 4.01	▪ Grievance Records ▪ Number of complaints ▪ Percentage of complaints closed within the targeted time period	No additional cost	Project Owner
Resource Efficiency	Project area	▪ Monthly	▪ Resources used (water, electricity, fuel, etc.)	▪ Control of resource usage records ▪ Regular audits	▪ Reduction in resource usage	▪ WB OP 4.01	▪ Consumption in m³, L, kWh, tonnes	No additional cost	Project Owner
Air Quality	Project area Settlements close to the project area	▪ During operation ▪ In case of a complaint ▪ Exhaust emission measurements every 2 years for passenger cars, once a year for other vehicles ▪ Training exercise records will be reviewed Monthly ▪ Daily ▪ Monthly (3rd Party)	▪ Grievance Records ▪ Internal On-site Inspections ▪ Environmental air quality measurements (PM10, H2S) ▪ Vehicle exhaust emission measurements ▪ Training and drill records ▪ H2S and CO2 emissions monitoring and warning system records ▪ 3rd Party Audit	▪ On-site Inspections ▪ Inspection of records ▪ In case of a complaint PM10 and H2S measurements ▪ H2S and CO2 alarm system data	▪ Minimize and continuously improve the number of air quality incidents reported. ▪ Zero complaints per year ▪ Minimize and continuously improve the number of public complaints about air quality.	▪ Air Quality Assessment and Management Regulation ▪ WB O.P 4.01	▪ Air Quality incidents ▪ Non-compliance Records to air quality standards ▪ Complaints from the public	No additional cost	Project Owner
Odor	Project area Settlements close to the project area	▪ Daily ▪ In case of a complaint ▪ In case of a complaint ▪ Weekly ▪ Daily ▪ Weekly ▪ Monthly (3rd Party)	▪ On-site Inspections ▪ Environmental odor analysis ▪ H2S analysis ▪ Grievance Records ▪ H2S ve CO2 emission monitoring and warning system records ▪ H2S emission monitoring and warning system maintenance records. ▪ 3rd Party Audit	▪ On-site Inspections ▪ Inspection of records ▪ Measurements to be conducted in case of a complaint	▪ Minimize and continuously improve the number of reported odor-related incidents. ▪ Zero complaints per year ▪ Minimize and continuously improve the number of public complaints about odor.	▪ Regulation on Control of Odor-Creating Emissions ▪ WB O.P 4.01	▪ Non-compliance Records ▪ Number of Grievance Records ▪ Legal limits	No additional cost	Project Owner

Parameter	Monitoring Area	Schedule / Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Noise	Project area Settlements close to the project area	▪ Duration of the Project ▪ Daily ▪ Monthly (3rd party)	▪ Grievance Records	▪ On-site Inspections ▪ Measurements to be conducted in case of a complaint	▪ Minimize and continuously improve the number of reported noise related incidents ▪ Zero non-compliance reports per year ▪ Zero complaints per year	▪ Regulation on Assessment and Management of Environmental Noise ▪ WB O.P 4.01	▪ Noise and vibration incidents ▪ Records of non-compliance with project standards ▪ Noise and vibration events ▪ Records related to non-compliance with project standards ▪ Number of complaints received from the public regarding about noise	No additional cost	Project Owner
Waste Management	Project area	▪ Duration of the Project ▪ In case of a complaint	▪ On-site Inspections ▪ Waste Type and amount ▪ Recovery/Reuse/ Recycle ratio	▪ Waste records ▪ On-site Inspection	▪ Minimize the total amount of waste produced ▪ Minimize the ratio of hazardous waste produced to total waste (by contamination + production) ▪ Increase in the ratio of recovered/reused/recycled waste to total waste produced ▪ Zero contamination incident	▪ Hazardous Waste Control Regulation ▪ Packaging Waste Control Regulation ▪ Waste Management Regulation ▪ Waste Oil Management Regulation ▪ Waste Batteries and Accumulators Control Regulation ▪ Medical Waste Control Regulation ▪ WB O.P 4.01	▪ Total waste generated ▪ Ratio of hazardous waste generated to total waste (by contamination + production) ▪ Ratio of recovered/reused/recycled waste to total waste generated ▪ Number of contamination incidents	No additional cost	Project Owner Contractor
Domestic Waste	Project area	▪ Duration of the Project ▪ Daily	▪ Waste Amount ▪ Recovery/Reuse/ Recycle ratio	▪ Waste records ▪ On-site Inspection	▪ Minimize the total amount of waste produced ▪ Increase in the rate of storage of recovered/reused/recycled waste in landfills	▪ Packaging Waste Control Regulation ▪ Waste Management Regulation ▪ WB OP 4.01	▪ Total waste generated ▪ Ratio of recovered/reused/recycled waste to total waste generated ▪ Records on transportation and disposal	No additional cost	Project Owner
Waste Oil	Project area	▪ Duration of the Project ▪ Weekly	▪ Waste Amount ▪ Waste storage conditions ▪ Recovery/Reuse/ Recycle ratio	▪ Waste records ▪ On-site Inspection	▪ Minimize total amount of waste produced ▪ Increase in the ratio of recovered/reused/recycled waste to total waste produced	▪ Waste Oil Management Regulation ▪ WB OP 4.01	▪ Total waste generated ▪ Ratio of recycled waste to total waste generated ▪ Records on transportation and disposal	No additional cost	Project Owner
Waste battery and accumulators	Project area	▪ Duration of the Project ▪ Monthly	▪ Waste Amount ▪ Recovery/Reuse/ Recycle ratio	▪ Waste records	▪ Minimize total amount of waste produced ▪ Increase in the ratio of recovered/reused/recycled waste to total waste produced	▪ Regulation on Control of Waste Batteries and Accumulators ▪ WB OP 4.01	▪ Total waste generated ▪ Ratio of recycled waste to total waste generated. ▪ Records on transportation and disposal	No additional cost	Project Owner

Parameter	Monitoring Area	Schedule / Monitoring Frequency	Monitored Parameters	Monitoring Method	Target/Threshold	Legislative Requirement	Key Performance Indicator	Cost	Responsible Party
Medical Waste	Project area	▪ During operation ▪ Monthly	▪ Amount of waste	▪ Waste disposal records	▪ Minimising the total amount of waste produced	▪ Regulation on Control of Medical Wastes ▪ DB OP 4.01	▪ Total waste generated ▪ Records relating to transport and disposal ▪ Number of contamination incidents	No additional cost	Project Owner Contractor
Hazardous Waste Management	Project area	▪ Duration of the Project ▪ Daily	▪ Waste Amount ▪ Waste storage conditions	▪ Waste records ▪ On-site Inspection	▪ Increase in the ratio of hazardous waste produced to total hazardous waste (by contamination + production)	▪ Regulation on Control of Waste Batteries and Accumulators ▪ WB OP 4.01	▪ Total waste produced ▪ Records related to transportation and disposal	No additional cost	Project Owner
Vegetative Waste Management	Project area	▪ Duration of the Project ▪ Monthly	▪ Waste Amount ▪ Recovery/Reuse/ Recycle ratio	▪ Waste records ▪ On-site Inspection	▪ Minimize total amount of waste produced ▪ Increase in the rate of storage of recovered/reused/recycled waste in landfills	▪ Waste Management Regulation ▪ WB OP 4.01	▪ Total vegetal waste produced ▪ Ratio of recovered/reused/recycled waste to total waste produced ▪ Records on transportation and disposal	No additional cost	Project Owner
Wastewater Management	Project area	▪ Duration of the Project	▪ Wastewater amount	▪ Analysis Reports ▪ Environmental Permit	▪ Existence of permits ▪ Existence of waste water management system ▪ Minimising the amount of waste water produced ▪ Increasing the rate of recycled wastewater	▪ Water Pollution Control Regulation	▪ Existence of permits ▪ Wastewater amount ▪ Analysis reports	No additional cost	Project Owner
Biodiversity	Project site and surroundings	▪ Daily ▪ Monthly	▪ Population density in plant taxa ▪ Poisoning and reproductive disorders in fauna elements ▪ On-site Inspections ▪ Training Records ▪ Grievance Records	▪ On-site Inspection	▪ Zero Complaint Record ▪ Zero Habitat Loss ▪ Zero Incidents and Accidents to Flora and Fauna ▪ Training records for employees ▪ Zero Invasive Species Spread	▪ WB OP 4.04	▪ Number of Complaint Records ▪ Habitat Losses ▪ Number of Incidents and Accidents to Flora and Fauna ▪ Invasive Species Spread Records	No additional cost	Project Owner

4 REPORTING

The reporting processes that need to be carried out during the implementation phase of the project and the requirements of these processes are presented in Table 4-1.

Table 4-1. Reporting Process Requirements and Role Distribution

Responsible Party	Reporting Process Requirement
Project Owner	▪ Summarize the environmental and social aspects of the project implementation in monitoring reports for the Bank every 3 months during the construction phase and every 6 months during the operation phase and submit them together with the Complaint Register
Contractor	▪ Prepare monthly Environmental and Social Monitoring Reports and submit them for approval by the Project Owner
Environmental and Social Audit Consultants	▪ The Audit Contractor will prepare quarterly monitoring reports during the construction works and six-monthly audit reports during the operation phase of the project on behalf of the Project Owner.