Kahramanmaraş Pazarcık Kartalkaya Dam Irrigation Renovation Construction Works

Environmental and Social Management Plan (ESMP)

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	Kahramanmaraş Pazarcık Kartalkaya Dam Irrigation Renovation Construction Works **Environmental and Social Management Plan (ESMP)**
	TÜRKİYE WATER CIRCULARITY AND EFFICIENCY IMPROVEMENT PROJECT

PROJETAS Project Management and Technical Advisory Services	Document No.	Rev. No.
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ABBREVIATIONS

AFAD	Disaster and Emergency Management Presidency
AoI	Area of Influence
APs	Affected Parties (APs)
CHS	Community Health and Safety
CIMER	Presidential Communication Centre
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CLO	Community Liaison Officer
CLS	Community Level Survey
C-LMP	Contractor's Labor Management Plan
COD	Chemical Oxygen Demand
Csa	Hot-summer Mediterranean climate
DSI	General Directorate of State Hydraulic Works
EAFZ	East Anatolian Fault Zone
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
E&S	Environmental and Social
EPM	Electrical Preventive Maintenance
EPSA	Ex Post Social Audit
ESF	Environmental and Social Framework
ESS	Environmental and Social Standard
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMS	Environmental and Social Management System
ESMP	Environmental and Social Management Plan
EU	European Union
FGD	Focus Group Discussions
FMP	Flood Management Plan
FI	Financial Institution
GBVH	Gender Based Violence and Harassment
GHG	Greenhouse Gas
GIIP	Good International Industry Practices of World Bank
GLAC	Guide to Land Acquisition
GRS	Grievance Redressal Service

GM	Grievance Mechanism
HLS	Household Level Survey
HPP	Hydroelectric Power Plant
HSE	Health Safety and Environment
IFC	International Finance Corporation
IFI	International Financing Institutions
ILBANK	Bank of Provinces
ILO	International Labor Organization
IPF	Investment Project Financing
KGM	General Directorate of Highways
LAP	Land Acquisition Plan
LAPF	Land Acquisition Policy Framework
LMP	Labor Management Procedure
MoAF	Ministry of Agriculture and Forestry
MoEUCC	Ministry of Environment, Urbanization and Climate Change
NA	Not Applicable
NACHP	National Agency of Cultural Heritage Preservation
NGO	Non-governmental Organization
NTD	Note to Draft
OHS	Occupational Health and Safety
OIPs	Other Involved Parties
RP	Resettlement Plan
PAS	Project Affected Settlement
PDO	Project Development Objective
PIU	Project Implementation Unit
PMT	Project Management Team
PPE	Personal Protective Equipment
RCA	Root Cause Analysis
SEA/SH	Sexual Exploitation and Abuse/Sexual Harassment
SEP	Stakeholder Engagement Plan
SEGE	Socioeconomic Development Index
TWCEIP	Türkiye Water Circularity and Efficiency Improvement Project
TURKSTAT	Turkish Statistical Institute
ToC	Table of Content

TOR	Terms of Reference
TRGM	General Directorate of Agricultural Reform
WB	World Bank
WBG	World bank Group
WSVA	Water Source Vulnerability Analysis
WUA	Water User Association Members

GLOSSARY

Associated facility: Facilities or activities that are not funded by as part of the project, and in the judgement of the WB, are (i) directly and significantly related to the project; and (ii) carried out, or planned to be carried out, contemporaneously with the project; and (iii) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For facilities or activities to be Associated Facilities, they must meet all three criteria. If these conditions are fulfilled, the Associated Facilities will be subject to the same environmental and social policies applicable to the project in question.

Project-affected settlement (PAS): The villages or neighborhoods whose lands are subject to the project's land use.

Physical displacement: Relocation, loss of shelter or residential land resulting from the acquisition of land by a project.

Land Acquisition Plan (LAP) or Resettlement Plan (RP): The document in which a project sponsor or other responsible entity specifies the plans, procedures and appropriate and feasible measures to address physical and/or economic displacement caused by the project.

Stakeholders: Any individual, groups, organizations, and institutions affected by or likely to be affected by a project, or may have an interest in a project.

Vulnerable groups: People who by virtue of gender, ethnicity, age, physical or mental disability, economically disadvantaged, or social status may be more adversely affected by resettlement than others and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits.

EXECUTIVE SUMMARY

The Kartalkaya Dam Irrigation System, built in 1971 and still in service today, irrigates agricultural land on both the right and left banks of the Aksu River. Some of the canals were damaged due to the earthquake disaster in February 2023. The existing system has also approaching the end of its economic life and since it is built as a reinforced concrete and open canal, approximately 40% of the water supplied from the dam is lost in the canal due to evaporation and cracks in the reinforced concrete. Additionally, the amount of water allocated for irrigation is decreasing due to population growth and the influx of refugees, which has further strained water resources.

Considering all these factors, it was decided to implement the "Kahramanmaraş Pazarcık Kartalkaya Dam Irrigation Renovation Construction Project" (hereinafter referred to as the "Sub-Project") by DSİ to replace the open canal system with a pipeline system in order to prevent water loss due to both damaged canals and evaporation.

The project is located in the Middle Ceyhan Basin, within Pazarcık, Türkoğlu, Dulkadiroğlu Districts of Kahramanmaraş Province, covering a total irrigation area of 20,431 hectares. This includes the Kartalkaya Dam Left Bank Irrigation Renovation, which encompasses 13,755.75 hectares, and the Kartalkaya Dam Right Bank Irrigation Renovation, covering 6,675.12 hectares.

The "Pazarcık Kartalkaya Dam Irrigation System," located within the Pazarcık, Dulkadiroğlu, and Türkoğlu districts of Kahramanmaraş, currently serves agricultural lands through open canals. These canals sustained significant damage due to the earthquake centered in Pazarcık. The Environmental Risk level for the "Pazarcık Kartalkaya Dam Irrigation Renovation Construction Work Project" (the "Sub-Project") is assessed as "moderate," based on the following factors:

- The sub-project will replace open canals with pipe systems along existing routes, minimizing water loss. This includes the installation of 154,054 meters of GRP pipes (2200 mm to 600 mm) and 560,385 meters of PE pipes (110 mm to 560 mm).
- The sub-project will irrigate 20,431 hectares of agricultural land using a pressurized piped irrigation system.
- The construction requires minimal excavation, as pipes will be installed within the existing channels.
- There are no natural protected areas along the pipeline routes. The potential effects on protected areas within the sub-project's impact zone are addressed in the relevant sections.

The social risks associated with the sub-project are also assessed as "moderate" due to the following factors:

- Land acquisition impacts are limited since pipes will be installed along existing irrigation routes, with minimal impact on agricultural land.
- The construction period is short, which helps minimize impacts on Community Health and Safety (CHS) and Occupational Health and Safety (OHS).
- Employment opportunities are limited, though the project is expected to enhance agricultural productivity.
- While cultural heritage sites exist in the broader impact area, none are directly along the pipeline routes. Detailed information is provided in the relevant sections.

Given these factors, the potential risks and impacts of the construction works are expected to be low to medium in magnitude, primarily reversible, short-term, and largely confined to the project area and its immediate surroundings. The environmental risk is rated "moderate" and social risk is rated "moderate" Therefore, the overall environmental and social risk of the sub-project is categorized as "Moderate."

To address the environmental and social risks identified in the project, several mitigation measures will be implemented as part of the Environmental and Social Management Plan (ESMP). For environmental impacts, construction activities will strictly follow dust and noise control protocols to minimize disturbances to nearby communities. Excavation waste will be properly managed to prevent soil and water contamination. Additionally, measures will be taken to protect soil and water quality, including the use of sediment traps to prevent erosion and sedimentation in water bodies. All construction machinery will be regularly maintained to reduce emissions and fuel leaks.

Existing irrigation lines have been used in sub-project planning to minimize land acquisition impacts. Affected landowners will be compensated fairly where necessary in accordance with national and international standards. Community Health and Safety (CHS) protocols will be implemented, including public information campaigns to notify local residents about construction schedules and safety precautions. Occupational Health and Safety (OHS) measures, such as mandatory protective equipment and worker training, will also be enforced to reduce workplace accidents.

The ESMP will be implemented under the supervision of DSI and compliance with environmental and social standards will be monitored through regular progress reports. Furthermore, grievance mechanisms will be established to address any concerns from stakeholders promptly, ensuring transparency and community engagement throughout the project lifecycle.

1 INTRODUCTION

1.1 Information about the Türkiye Water Circularity and Efficiency Improvement Project

The Türkiye Water Circularity and Efficiency Improvement Project funded by the World Bank (WB) and implemented by the General Directorate of State Hydraulic Works (DSI) and Bank of Provinces (ILBANK), aims to improve the livelihoods of communities in targeted regions in Turkey, introduce them to modern irrigation systems, and enable controlled use of water resources.

The Project Development Objectives (PDOs) are:

(i) to improve and reuse wastewater services;
(ii) to enhance irrigation services and efficiency;
(iii) to strengthen institutional capacity and coordination to manage water circularity and reduce pollution in selected water-scarce regions of Turkey.

With this project, selected irrigation projects will transition from the existing (conventional) trapezoidal canal system (concrete, soil) and the method known as traditional irrigation, to a modern high-pressure, pumped pipeline irrigation system.

The closed pressurized pipeline system will enable the use of sprinkler and drip irrigation methods for watering the area.

The project also includes a participatory planning process, considering contributions from different stakeholder groups, which ensures that solution proposals are coordinated and integrated among various public institutions, state, and local stakeholders.

1.2 Relevant Project Components of the World Bank Project

Component B: Rehabilitation and Modernization of Irrigation Systems and Reuse of Treated Wastewater

This component of the Türkiye Water Circularity and Efficiency Improvement Project to be implemented by DSI, will finance the rehabilitation and modernization of irrigation infrastructure to increase water and energy efficiency and productivity. Specifically, funding will be provided for the following:

(i) converting open canal irrigation systems into more efficient "closed" (pressurized) irrigation systems to reduce non-beneficial water losses and conserve energy;
(ii) installation of smart water meters for pipeline irrigation systems;
(iii) development of new or existing irrigation plans utilizing treated wastewater in selected basins;
(iv) providing support to the Irrigation Union to promote the adoption of modern and more efficient on-farm irrigation systems such as drip and sprinkler irrigation.

1.3 Purpose of the Environmental and Social Management Plan (ESMP)

The main objective of this ESMP is to assess and address the potential social and environmental impacts and risks associated with the pre-construction, construction and operation phases of the “Kahramanmaraş Pazarcık Kartalkaya Dam Irrigation Renovation Construction Project”, which is proposed to renovate the existing irrigation system in operation for irrigation of agricultural lands in Pazarcık, Dulkadiroğlu and Türkoğlu districts.

Furthermore, the ESMP evaluates measures aimed at reducing and eliminating these impacts, and it identifies the responsible parties accountable for planning and monitoring activities within the scope of the ESMP. Measures have been established to protect environmental quality and mitigate environmental and social impacts and risks.

The different authorities involved in the project are responsible for implementing and managing measures during the pre-construction, construction, and operation phases. They are required to adhere to national legislation and international standards outlined in this ESMP while fulfilling their responsibilities. These authorities will carry out their responsibilities in accordance with national legislation and international guidelines specified in the ESMP.

Additionally, the ESMP establishes procedures for conducting environmental and social screening, review, approval, and implementation of project activities. It outlines the necessary institutional arrangements, defines responsibilities, and emphasizes the importance of capacity building to ensure successful implementation of the ESMF provisions ([1]).

The ESMP also provides a summary of stakeholder consultations conducted in preparation of the ESMP and refers to the existence of a separate Stakeholder Engagement Plan (SEP) that provides detailed information on stakeholder engagement and the grievance mechanism.

The measures outlined in this ESMP are designed to safeguard the environment, protect the personnel involved in the construction, and ensure the well-being of the local community against the adverse effects of construction activities. Additionally, the measures in the operation phase encompass elements aimed at environmental and social protection. The measures established by the ESMP for the pre-construction, construction, and operation phases are assessed through the mitigation and monitoring plans defined within the ESMP.

"Pazarcık Kartalkaya Dam Irrigation System" within the borders of Pazarcık, Dulkadiroğlu and Türkoğlu districts of Kahramanmaraş province is currently serves agricultural lands with open canals. The canals were significantly damaged due to the earthquake centered in Pazarcık. The Environmental Risk level of the "Pazarcık Kartalkaya Dam Irrigation Renovation Construction Work Project (hereinafter referred to as the "Sub-Project")" is evaluated as "moderate" based on the following considerations:

- Pipe systems will replace open channels along existing routes without the need for new land, significantly reducing water losses. In addition, 154,054 meters of GRP pipes with diameters ranging from 2200 mm to 600 mm and 560,385 meters of PE pipes with diameters ranging from 110 mm to 560 mm are planned to be laid under the sub-project.
- The Sub-Project will enable irrigation of a total of 20,431 hectares of agricultural land using pressurized and piped irrigation system.
- The Sub-project does not require major excavation or construction work, as pipes will be installed by excavating the existing channels.
- There are no natural protected areas along the pipeline routes of the Sub-project (the protected areas within the Sub-project's impact area and the expected effects on these areas are provided in the relevant sections).

The social risks associated with the sub-project are assessed as "moderate" due to the following factors:

- The land acquisition impact is limited, as the pipes will be installed along the existing irrigation routes, although some agricultural land will be affected.
- Construction work will be completed in a short period, minimizing the impacts on Community Health and Safety (CHS) and Occupational Health and Safety (OHS).
- Employment opportunities generated by the project are limited, but agricultural productivity is expected to improve.
- Cultural heritage sites are present within the project's broader impact area, though they are not located along the pipe routes. Detailed information, including distances to the sub-project units, is provided in the relevant sections.

[1] *DSİ, ESMF for the TÜRKİYE WATER CIRCULARITY AND EFFICIENCY IMPROVEMENT PROJECT, January, 2023*
https://documents1.worldbank.org/curated/en/099042723132033258/pdf/P1749150480d0a04d0b9310f8583c5f5950.pdf

Considering the above-mentioned issues and the possible risks and impacts of the construction works to be carried out within the scope of the sub-project will be low to medium in magnitude, mainly reversible, short-term and mostly limited to the project area and its immediate surroundings the overall environmental and social risk of the sub-project is categorized as "**Moderate**".

1.4 Pazarcık Earthquake

On February 6, 2023, at 04:17 local time (01:17 GMT), a Mw 7.7 earthquake occurred along the East Anatolian Fault Zone (EAFZ), according to data from the Disaster and Emergency Management Presidency (AFAD). The epicenter of the earthquake, located in Pazarcık-Kahramanmaraş (K37.288°, E37.043°), is approximately 40 km northwest of Gaziantep and about 33 km southeast of Kahramanmaraş. AFAD determined the focal depth to be 8.6 km. Nine hours after the first earthquake, at 13:24 local time (10:24 GMT), a second earthquake with a magnitude of Mw 7.6 struck the Ekinözü-Elbistan-Kahramanmaraş region. The epicenter of the second earthquake (N38.089°, E37.239°) is located approximately 98 km northwest of Adıyaman and 62 km northeast of Kahramanmaraş, with a focal depth of 7.0 km, as determined by AFAD.

Both earthquakes affected the provinces of Kahramanmaraş, Adıyaman, Hatay, Osmaniye, Gaziantep, Kilis, Şanlıurfa, Diyarbakır, Malatya, Adana, and Elazığ, which have a combined population of over 15 million. The earthquakes triggered significant aftershocks, and as of February 18, 2023, it was reported that the total number of casualties exceeded 40,000, with 110,000 people injured. Additionally, more than 100,000 buildings were reported to have collapsed or sustained severe damage.

Following the earthquake, the existing irrigation system of the Kartalkaya Dam was severely damaged.

Figure 1-1 shows the aftershocks in the region and the epicenters of the two main earthquakes. Both earthquakes occurred on the EAFZ, one of Turkey's two major active fault systems.

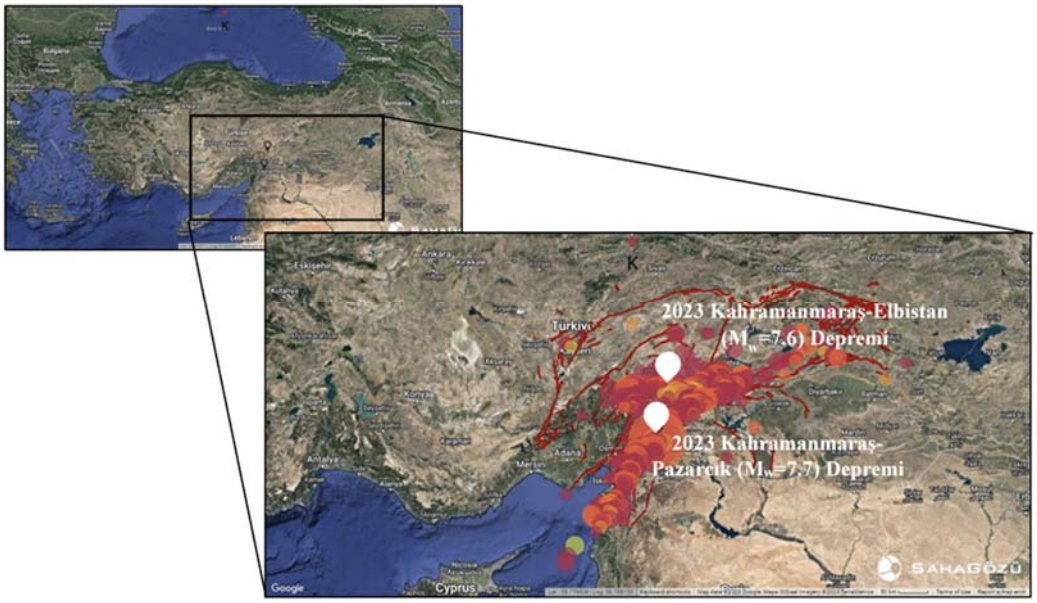

Figure 1-1 Epicenters of the two main earthquakes and aftershocks

2 SUB-PROJECT DESCRIPTION

The Kartalkaya Dam Irrigation System, built in 1971 and still in service today, irrigates agricultural land on both the right and left banks of the Aksu River. Some of the canals were damaged due to the earthquake disaster in February 2023. The existing system has also approaching the end of its economic life and since it is built as a reinforced concrete and open canal, approximately 40% of the water supplied from the dam is lost in the canal due to evaporation and cracks in the reinforced concrete. Additionally, the amount of water allocated for irrigation is decreasing due to population growth and the influx of refugees, which has further strained water resources.

Considering all these factors, it was decided to implement the "Kahramanmaraş Pazarcık Kartalkaya Dam Irrigation Renovation Construction Project" (hereinafter referred to as the "Sub-Project") by DSİ to replace the open canal system with a pipeline system in order to prevent water loss due to both damaged canals and evaporation.

The project is located in the Middle Ceyhan Basin, within Pazarcık, Türkoğlu, Dulkadiroğlu Districts of Kahramanmaraş Province, covering a total irrigation area of 20,431 hectares. This includes the Kartalkaya Dam Left Bank Irrigation Renovation, which encompasses 13,755.75 hectares, and the Kartalkaya Dam Right Bank Irrigation Renovation, covering 6,675.12 hectares.

The existing infrastructure in the project area includes, on the Right Bank, the 3,380-meter-long Haydarlı Tunnel and 62 kilometers of open concrete canals. On the Left Bank, there is a 52-kilometer-long main canal, complemented by 550 kilometers of secondary and tertiary canals.

The modernization works planned for the project area include the installation of 154,054 meters of CTP pipes with diameters ranging from 2200 mm to 600 mm, and 560,385 meters of PE pipes with diameters ranging from 110 mm to 560 mm. Additionally, all necessary engineering structures required for the operation of the project will be constructed. The project will enable the irrigation of a total of 20,431 hectares of agricultural land using a pressurized and piped irrigation system.

The modernization project will affect the districts of Dulkadiroğlu, Pazarcık, and Türkoğlu, as well as 54 neighborhoods, impacting a total population of 27,535 people. The project is expected to benefit 65,000 people, with 2,993 members registered with the local Irrigation Union.

Figure 2-1 shows the Sub-project area and units.

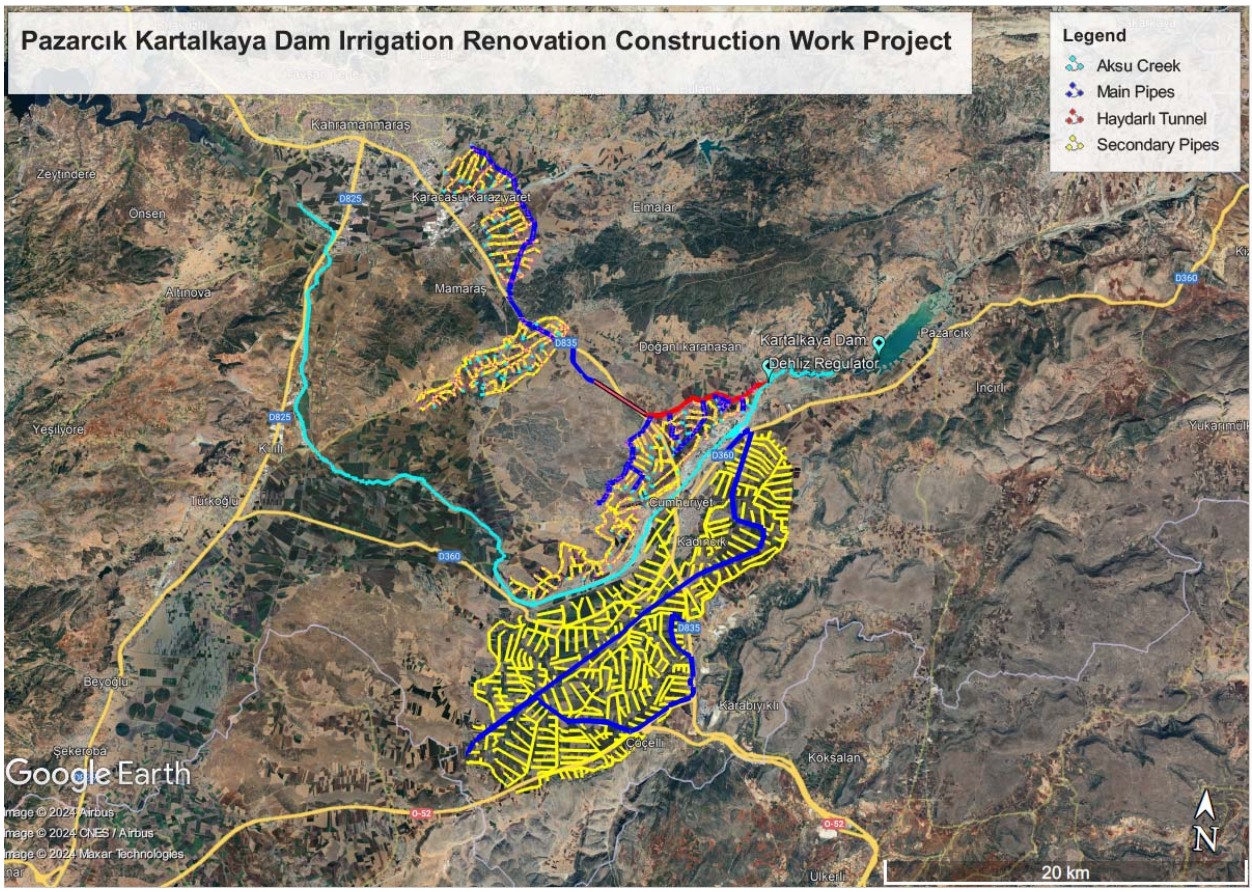

Figure 2-1 Satellite Image of Sub-project Area and Units

From an agricultural and economic perspective, the primary crops in the region include wheat, barley, chickpeas, corn, cotton, sunflowers, sugar beets, peanuts, various vegetables, and small amounts of fruit. Through irrigation modernization, water savings will allow for the irrigation of additional agricultural land beyond the current capacity. This will result in increased income per unit of land, create new employment opportunities, and contribute to economic improvement in surrounding villages that have been experiencing high levels of out-migration.

The project also acknowledges the needs of vulnerable groups within the area, which include individuals living below the poverty line, landless residents, the elderly, women, children, and people with disabilities. Data on these groups has been gathered through socio-economic surveys and from information provided by local administrators.

In summary, this project seeks to modernize the Kartalkaya Dam Irrigation System, achieving significant water savings and increased economic returns. By meeting the irrigation water needs of local agricultural lands, it will improve the living standards of residents in the region.

Following the completion of the construction of the Sub-Project, the operation of the Sub-Project will be carried out by the “Kahramanmaraş Irrigation Union” headquartered in Narlı Town, Pazarcık District.

3 LEGAL FRAMEWORK

The ESMP provides detailed explanations about the legislations concerning environmental protection, pollution prevention, and control, as well as occupational and community health and safety.

National and international laws and regulations related to environmental and social issues to which the Project is subject and the differences between these laws and regulations are detailed in Annex-10.

4 BASELINE INFORMATION OF THE PROJECT AREA

A summary of location-specific baseline information relevant to the sub-project is provided in this section.

4.1 Environmental Baseline

This section provides an overview of the environmental baseline conditions in the project area, including an assessment of environmental key components. The objective of this baseline study is to identify existing environmental conditions and any potential areas of concern that could be impacted by the proposed sub-project activities.

4.1.1 Meteorological and Climatic Characteristics

The Köppen-Geiger climate classification for Kahramanmaraş is Csa (Hot-summer Mediterranean climate). Csa refers to hot-summer Mediterranean climate, characterized by a coldest month that typically has an average temperature between 18 and −3 °C, a warmest month with an average temperature above 22 °C, and at least four months where the average temperature remains above 10 °C. Regions with this form of the Mediterranean climate typically experience hot, sometimes very hot and dry summers. Winters can be mild, cool or chilly, and some cities in this region receive somewhat regular snowfall (while others do not receive any).

The project area exhibits a climate that falls between the transitional characteristics of the Mediterranean Region and Central Anatolia Region. Summers are typically hot and dry, while winters are cold and wet, with occasional snowfall. The temperature difference between the summer and winter season is significant. The Kahramanmaraş Meteorology Station, which is part of the State Meteorology Directorate, is the closest weather station to the project area. The annual precipitation in the project area is 450.8 mm. Although the average annual temperature stands at 16.7 °C, temperatures rise to 28.5 °C in July and August. On the other hand, the coldest month is January with an average temperature of 4.8 °C ([2]).

4.1.2 Geological and Hydrogeological Characteristics of the Project Area and Surroundings

Kahramanmaraş, located at the intersection of the Arabian, African, and Anatolian plates, has a highly complex geological structure. The region is composed of rocks that vary in terms of age, lithology, and environment. In general, units belonging to the Taurus Orogenic Belt and the Southeastern Anatolia Autochthon surface in this area.

The terrain of Kahramanmaraş Province is formed on limestone, sandstone, and metamorphic rocks. Its soils consist of red-brown, red Mediterranean, brown forest soils, alluvial, colluvial, and organic soil groups. The geology of the region is composed of metamorphic and sedimentary rocks, including schist, serpentine, limestone, sandstone, marl, conglomerate, alluvial, and colluvial deposits. The texture of the soils ranges from clayey, silty-clayey to sandy-silty ([3]).

4.1.3 Existing Water Resources in the Project Area and Surroundings

The rivers in the province mainly flow into the Ceyhan River Basin, with the exception of Göksu Creek, which joins the Fırat River. The Ceyhan River runs 269.9 km within the province, with a flow rate of 27.6 m^3/s, supported by several tributaries. Key tributaries include Aksu Creek (105.1 km, 9.5 m^3/s), and Söğütlü Creek (80.7 km, 3.6 m^3/s). Sub-Project area is located on the left and right bank of the Aksu Creek.

[2] *Source: Kahramanmaraş Kartalkaya Dam Right and Left Coastal Irrigation Renovation Technical Report, DSI, 20th Regional Directorate, Planning Branch Directorate, August, 2017*
[3] *Kahramanmaraş Provincial Directorate of Agriculture and Foresty, https://kahramanmaras.tarimorman.gov.tr*

According to the regulation on "Sensitive Water Bodies and Areas Affecting These Bodies Regulation on Determination and Improvement of Water Quality" Ceyhan River, Göksun Creek, and Aksu Creek are listed as sensitive water bodies under this regulation due to their ecological significance.

Kaltalkaya Dam

The closest water reservoir to the Sub-project area is Kartalkaya Dam, which will be the main source of water for irrigation.

Kartalkaya Dam, located on the Aksu Creek in Kahramanmaraş, currently its purposes include irrigation, drinking water supply, flood control, and energy generation.

The dam was originally developed solely for irrigation purposes and began serving 22,810 hectares of agricultural land. Later, 3 m^3/s of water was allocated for drinking and usage purposes to Gaziantep Municipality in two phases: 1.5 m^3/s in 1983, and another 1.5 m^3/s in 2000. Water is supplied directly to the drinking water facility through a pressurized pipeline connected to the reservoir. In addition to the existing annual water supply of 47 hm^3, another 47 hm^3 of water is pumped (total of 3 m^3/s) to be delivered to Gaziantep Province.

Over time, the irrigation area decreased to 20,431 hectares due to development and urbanization. The dam's irrigation water flows through the Hydroelectric Power Plant (HPP) and the Dehliz Regulator, reaching the irrigation fields via open channels. The dam has a catchment area of 1,076 km^2, and the Dehliz Regulator has a catchment area of 1,697 km^2. The average annual water volume currently is 422.16 hm^3. The dam, which is an earth-filled type with a clay core, has a height of 57 m, an active storage volume of 149.76 hm^3, and a reservoir area of 196.00 hm^3. A supplementary water transfer system from the Göksu River supports both irrigation and drinking water needs. Kartalkaya Dam has a total volume of 169.79 hm^3 and an active capacity of 148.38 hm^3. Currently, the average annual flow of Kartalkaya Dam is 426.00 hm^3.

Aksu Creek

Aksu Creek originates from the slopes of Engizek Mountain in northeastern Kahramanmaraş, near the east of Küçükcerit Village. It flows for 105.1 km within Kahramanmaraş's borders. After merging with tributaries near Büyükcerit, it forms small lakes as it passes through narrow and deep valleys. It eventually flows into the Kartalkaya Dam reservoir near Pazarcık. Part of its water is used as drinking water for Gaziantep Province, while the remaining irrigates the Pazarcık and Narlı Plains. After irrigating the Kahramanmaraş Province, the riverbed widens significantly, and the river turns westwards below Kahramanmaraş.

Kartalkaya (Right and Left Bank) Current Irrigation System:

The primary water source for the Kartalkaya Right and Left Bank Irrigation is Kartalkaya Dam. The water stored in Kartalkaya Dam flows through the Kartalkaya HPP to the privately owned Kesme HPP, and then reaches the Dehliz Regulator, from where it is diverted into the irrigation canal.

The general slope of the project area is from east to west. The Aksu Creek continues westward within the irrigation area, providing a continuous flow that supports agricultural activities. Kartalkaya Dam, located approximately 4.8 km from the project area, plays a vital role in regulating water flow for irrigation and flood control.

4.1.4 Soil Properties, Vegetation, and Forest Areas in and around the Project Area

It is determined that the Sub-project area falls into the class of reddish Mediterranean soils and alluvial soils according to the Soil Map of Türkiye. Its soils consist of red-brown, red Mediterranean, brown forest soils, alluvial, colluvial, and organic soil groups. The texture of the soils ranges from clayey, silty-clayey to sandy-silty ([4]).

[4] *Kahramanmaraş Provincial Directorate of Agriculture and Foresty, https://kahramanmaras.tarimorman.gov.tr.*

The soils of the project area are alluvial at the base and colluvial on the slopes. There is a small area with soils rich in organic matter. The alluvial soils are formed from sediments brought by wind and streams and are generally heavy-textured, with granular structure in the upper layers and blocky structure in the lower layers. Colluvial soils extend along the slopes and have heavy to medium texture, with a granular structure. In the Central Plain, the soil textures range from heavy, medium, to very light; in Gavur (Sağlık) Plain, they range from heavy, medium, to light; and in Narlı Plain, they vary from heavy, medium, to light. The structure of heavy soils is granular between 0-30 cm, blocky between 30-150 cm; in medium-textured soils, it is granular, while in light and very light-textured soils, it is single-grained. The plain soils in the project area consist of various texture groups.

No problems related to soil quality were observed during the site visits and literature studies conducted by the consultant company, as well as in the documents prepared by DSİ for the Sub-project area. In addition, there are no industrial activities or mining activities in the project area that might have an impact on the soil quality.

4.1.5 Biodiversity and Protected Areas

The General Directorate of Nature Conservation and National Parks has identified protected areas that encompass significant regions with aesthetic, scientific, and natural value, as well as natural beauty. These protected areas include “National Parks”, “Nature Parks”, “Nature Monuments” and “Nature Conservation Areas”, as defined in Article 2 of the National Parks Law and evaluated in accordance with Article 3 of the same law.

Kapıçam Nature Park

Based on information from the General Directorate of Nature Conservation and National Parks, the nearest protected area to the project site is Kapıçam Nature Park ([5]). The park's ecological values represent its primary resource significance. Since the project’s piping will be installed outside the park’s perimeter wall, no impacts from project activities will affect the protected area, ensuring the project remains entirely outside of Kapıçam Nature Park.

The existing irrigation system right coast main irrigation canal passes through the Kapıçam Nature Park. Although the distance of the Nature Park to the nearest pipe in the Right Coast Irrigation System under the Sub-Project is 3.72 m, there will be no need to intervene in the Nature Park during the revision works.

Bağlama Pond

Based on information from the General Directorate of Nature Conservation and National Parks, the nearest protected area to the project site is Bağlama Pond. Bağlama Pond is located within the boundaries of Çeçelli Village in the Pazarcık District of Kahramanmaraş Province. It was designated as a protected wetland in accordance with the provisions of the Ramsar Convention (to which Turkey became a signatory in 1994) and the "Wetland Protection Regulation," which was enacted on May 17, 2005, and published in the Official Gazette (No. 25818). The lake is also classified as a natural site area. Covering an area of approximately 13 decares, Bağlama Lake has a natural lake character. Water feeding the lake emerges from beneath and around the rocky area, especially in the eastern section.

Considering internationally recognised areas of high biodiversity value such as World Heritage Natural Sites, Biosphere Reserves, Ramsar Wetlands of International Importance, Important Biodiversity Areas, Important Bird Areas, Alliance for Zero Extinction Areas, including the two areas listed above, there are no internationally recognised areas of high biodiversity value within the sub-project area pipelines.

4.1.6 Existing Environmental Infrastructures

Wastewater Treatment Plants

[5] *Source: National Geographic Information Platform Application, General Directorate of Geographic Information Systems, http://atlas.gov.tr*

During the construction phase domestic wastewater will be generated by the employees. There is no sewerage network near the Project area, which eventually connects to a wastewater treatment plant. The domestic wastewater will be collected with a sealed septic tank and transferred to the Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP, located in the project area, by sewage truck. In case Pazarcık- Narlı WWTP is not suitable for wastewater disposal, Kahramanmaraş Municipality's Municipality's Municipality's Türkoğlu- Kılılı WWTP located approximately 5.5 km west of the project area. According to the information received from the official website of the General Directorate of the EIA Permit and Inspection, the aforementioned wastewater treatment plants have Environmental Permit Certificates for wastewater discharge ([6]).

Waste Disposal Sites

It is the responsibility of the Contractor to transfer other types of wastes (hazardous wastes, waste oils, waste tires, etc.) that will arise during the construction activities of the Project to the Environmental Permit and License holder organizations that are authorized to dispose of the relevant type of waste in and around Kahramanmaraş province. During the operation phase of the project, the waste that will be generated from maintenance and repair activities should also be sent to the permit and license holder organizations in the region by DSI 20th Regional Directorate.

There is an Integrated Waste Treatment, Recycling and Disposal Facility in Kürtül Village, Onikişubat district operated by the Kahramanmaraş Metropolitan Municipality, and domestic wastes generated in Kahramanmaraş province are collected by the Municipality and disposed of in this area ([7]).

Material/Quarry Sites

Although the excavation material from the trench is planned to be used as bedding material under the pipe, if the subsoil is not technically suitable, material will need to be supplied from outside.

Similarly, material will also be procured from quarry sites to be laid on the Operation and Maintenance Roads and the camp site. The material that will be needed in this context will be supplied by the Contractor in accordance with the contract to be made with the mining sites having Environmental Permit Certificate.

Narlı Sand Quarry operating in Narlı Town of Pazarcık District is the closest sand and gravel quarry to the sub-project site and it is planned to supply the material from there during construction. Narlı Sand Quarry has an Environmental Permit for air emission and wastewater discharge.

Besides that, taking into account the sub-project area and its impact zone, the region's meteorological and climatic characteristics, geological and hydrogeological features of the project area and its surroundings, existing water resources in the project area and its surroundings, current air quality and noise levels in the project area and its surroundings, soil properties, vegetation, and forest areas in the project area and its surroundings, biodiversity and protected areas in and around the project area, the natural disaster risk of the project area, and existing environmental infrastructure facilities within the impact zone are provided as a separate document in Annex-8.

4.2 Social Baseline

The population of the region, including the project area and its impact zone, the education levels and school enrollment status of the residents, health centers in the area, the region's economic status, cultural heritage sites within the project area and its impact zone, the region's socio-economic development status, and the effects of the Pazarcık-centered earthquake that occurred in 2023 are provided in Annex-9.

[6] *The current environmental permit and licence status of facilities or enterprises can be inquired from the official website of the General Directorate of EIA Permit and Inspection https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx*

[7] *Source: Kahramanmaraş Kartalkaya Dam Right and Left Coastal Irrigation Renovation Technical Report, DSI, 20th Regional Directorate, Planning Branch Directorate, August, 2017*

5 IDENTIFICATION OF ANTICIPATED ADVERSE ENVIRONMENTAL AND SOCIAL IMPACTS

DSİ will be the main executor throughout the pre-construction and construction periods of the sub-project, while the management responsibility will be transferred to the Kahramanmaraş Irrigation Union during the operation phase, as is currently the case.

As of the time this Plan was prepared, the construction tender for the sub-project has not yet been conducted. It is anticipated that the contractor company, which will be awarded the construction tender, will employ 20 personnel before the construction and 150 personnel during the construction period. During the operation period, it is envisaged that 40 personnel will be employed under Kahramanmaraş Irrigation Union.

A construction site with worker camp of approximately 10,000 m^2 will be established to meet the social needs of these personnel, primarily accommodation, and to provide parking, maintenance, and repair areas for all the vehicles and equipment to be used during the construction. Although a construction site has not been finalized as of the time this Plan was prepared, it has been noted that the Kahramanmaraş Irrigation Union may suggest a site to the contractor company that will be awarded the tender.

For the construction site, within the framework of the Environmental and Social Action Plan, a suitable area can be determined that does not fall within agricultural land, pasture, wetland, or the short-distance protection zone of any drinking water reservoir.

Taking all these matters as a preliminary assumption, the impact area of the sub-project, the nearest settlements to the sub-project units and the environmental and social impacts of the sub-project have been evaluated under this section, and all impacts have been examined under three sub-headings: pre-construction, construction period, and operation period.

5.1 Area of Influence (AoI)

Within the scope of Pazarcık Kartalkaya Dam Irrigation Renovation Construction Work Project, it includes the replacement of the existing Right and Left Bank Irrigation Systems consisting of concrete canals with GRP and PE pipes, excavation works to be carried out for these operations, pipe installation and soil filling.

The existing irrigation system is an open canal, which allows the pipes to be installed within the existing structure and will not require any new topsoil stripping. Environmental impacts during the operational phase are minimal and potential concerns are limited to the generation of hazardous or non-hazardous waste during maintenance and temporary dust generation or chemical spills from vehicle movement. Mitigation measures for these impacts are detailed in Section 6. All identified impacts and mitigation strategies have been set out taking into account the sub-project area and nearby sensitive receptors. The impact area of the Project has been defined as extending up to 1 km from the extremes of the project area in terms of dust emissions in accordance with the National Industrial Air Pollution Control Regulation. The delineated Area of Influence (AoI) covers 54 villages in 3 districts, including impacts on both surface and groundwater as well as potential impacts on local communities (Please see Figure 5-1).

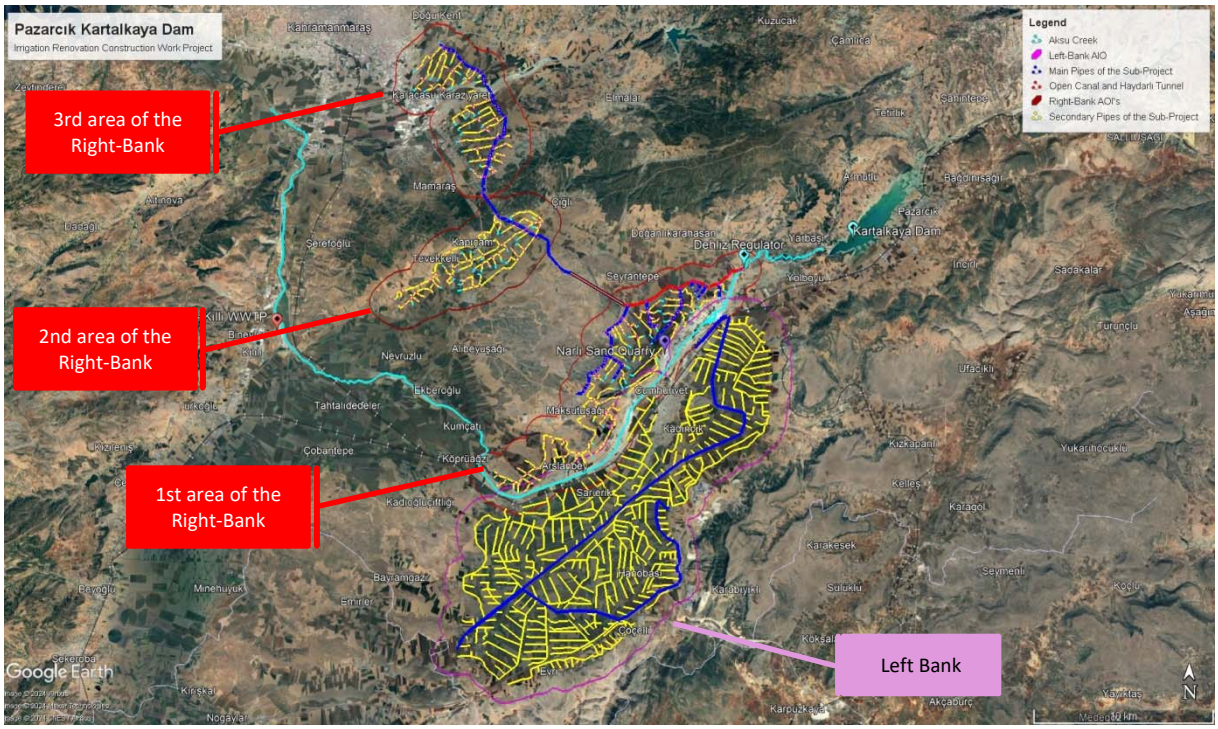

Figure 5-1 Sub-Project's Area of Influence (AOI)

5.2 Nearest Sensitive Receptors

Nearest sensitive receptors are 54 villages in 3 districts, namely Pazarcık, Türkoğlu, and Dulkadiroğlu, as they are represented in Table 5-1.

Table 5-1 Nearest Sensitive Receptors

No	District	Settlement (Villages)	Nearest Unit	Location of the Settlement relative to the Nearest Unit	Distance to the Settlements (m)
1.	Pazarcık	Akçakoyunlu	Left Bank Secondary Pipe	East	2150.00
2.	Pazarcık	Akdemir	Left Bank Main Pipe	North-East	229.00
3.	Pazarcık	Bölükçam	Dehliz Regulator	East	1550.00
4.	Pazarcık	Çiçek	In the Left Bank Area	-	150.00
5.	Pazarcık	Çiğdemtepe	In the Left Bank Area	-	20.00
6.	Pazarcık	Çöçelli	Left Bank Secondary Pipe	East	10.00
7.	Pazarcık	Dedepaşa	In the Left Bank Area	-	70.00
8.	Pazarcık	Eğlen	In the Left Bank Area	-	100.00
9.	Pazarcık	Emiroğlu	In the Left Bank Area	-	110.00
10.	Pazarcık	Evri Pınarbaşı	Left Bank Secondary Pipe	South	100.00
11.	Pazarcık	Evri Taşbiçme	Left Bank Secondary Pipe	South-East	10.00
12.	Pazarcık	Hanobası	In the Left Bank Area	-	110.00
13.	Pazarcık	İğdeli (Cimikanlı)	Left Bank Secondary Pipe	East	2,635.00
14.	Pazarcık	Kadıncık	In the Left Bank Area	-	20.00
15.	Pazarcık	Karabıyıklı	Left Bank Main Pipe	East	2,920.00
16.	Pazarcık	Karaçay	In the Left Bank Area	-	55.00
17.	Pazarcık	Karahüyük	In the Left Bank Area	-	15.00
18.	Pazarcık	Nefsidoğanlı	In the Left Bank Area	-	10.00
19.	Pazarcık	Osmandede	In the Left Bank Area	-	25.00
20.	Pazarcık	Ördekdede	In the Left Bank Area	-	25.00
21.	Pazarcık	Salmanıpek	Left Bank Secondary Pipe	North-East	1,930.00
22.	Pazarcık	Sarıerik	In the Left Bank Area	-	70.00
23.	Türkoğlu	Cennetpınarı	Left Bank Secondary Pipe	West	155.00
24.	Türkoğlu	Kelibişler	Left Bank Secondary Pipe	West	2,000.00
25.	Dulkadiroğlu	Abbaslar	1st Area of Right Bank Sec. Pipe	North-West	2,000.00
26.	Dulkadiroğlu	Alibeyuşağı	2nd Area of Right Bank Sec. Pipe	South	3,120.00

No	District	Settlement (Villages)	Nearest Unit	Location of the Settlement relative to the Nearest Unit	Distance to the Settlements (m)
27.	Dulkadiroğlu	Arslanbey Çiftliği	3nd Area of Right Bank Main Pipe	West	350.00
28.	Dulkadiroğlu	Çınarlı	Main Pipe between Haydarlı Tunnel and 2nd Area of Right Bank		180.00
29.	Dulkadiroğlu	Çiğli	2nd Area of Right Bank Sec. Pipe	North-West	780.00
30.	Dulkadiroğlu	Çokyaşar	3rd Area of Right Bank Sec. Pipe	East	135.00
31.	Dulkadiroğlu	Doğanlı Karahasan	Dehliz Regulator	North-West	1,210.00
32.	Dulkadiroğlu	Demirciler	1st Area of Right Bank Sec. Pipe	North-West	380.00
33.	Dulkadiroğlu	Denizli	1st Area of Right Bank Sec. Pipe	West	10.00
34.	Dulkadiroğlu	Dereköy	3rd Area of Right Bank Main Pipe	North	2,500.00
35.	Dulkadiroğlu	Dereli	3rd Area of Right Bank Main Pipe	North	2,000.00
36.	Dulkadiroğlu	Narlı Çerkezler (Eskinarlı)	In the 1st Area of Right Bank	-	5.00
37.	Dulkadiroğlu	Göllü	3rd Area of Right Bank Main Pipe	North	4,100.00
38.	Dulkadiroğlu	Güzelyurt	Main Pipe between 2nd and 3rd Areas of Right Bank	-	0.00
39.	Dulkadiroğlu	Kapıçam	2nd Area of Right Bank Sec. Pipe	North	10.00
40.	Dulkadiroğlu	Kocolar	2nd Area of Right Bank Sec. Pipe	North	560.00
41.	Dulkadiroğlu	Maksutuşağı	1st Area of Right Bank Sec. Pipe	North	200.00
42.	Dulkadiroğlu	Şeyhadil	3rd Area of Right Bank Sec. Pipe	North-West	4,100.00
43.	Dulkadiroğlu	Sarıkaya	3rd Area of Right Bank Main Pipe	North	3,600.00
44.	Dulkadiroğlu	Sivricehüyük	2nd Area of Right Bank Sec. Pipe	South	1,900.00
45.	Dulkadiroğlu	Tevekkelli	2nd Area of Right Bank Sec. Pipe	North	100.00
46.	Dulkadiroğlu	Yeniyurt	2nd Area of Right Bank Sec. Pipe	South-East	750.00
47.	Dulkadiroğlu	Yusufhacılı	3rd Area of Right Bank Main Pipe	North-East	4,700.00
48.	Dulkadiroğlu	Seyrantepe	Haydarlı Tunnel	North	1,250.00
49.	Dulkadiroğlu	Öksüzlü	2nd Area of Right Bank Sec. Pipe	West	750.00
50.	Dulkadiroğlu	Halkaçayırı	1st Area of Right Bank Sec. Pipe	North-West	1,250.00
51.	Dulkadiroğlu	Yavuz Selim	3rd Area of Right Bank Sec. Pipe	North-West	1,000.00
52.	Dulkadiroğlu	Kanuni	3rd Area of Right Bank Sec. Pipe	North	250.00
53.	Dulkadiroğlu	Genç Osman	In the 3rd Area of Right Bank	-	100.00
54.	Dulkadiroğlu	Karacasu Karaziyaretli	In the 3rd Area of Right Bank	-	100.00

In this regard, the most sensitive receptors close to the project area will be the population in the villages.

5.3 Environmental Impacts

Environmental impacts that are associated with the proposed project will be evaluated under this section. The impacts of the project on water resources, soil quality, waste generation, noise generation and dust emissions, biodiversity, and protected areas under the project were considered.

5.3.1 Impacts on Water Resources

Water Use

Bottled and authorized drinking water that will comply with the requirements of the Regulation on Water for Human Consumption will be provided for the drinking water needs of the personnel during both the construction and operation phases. The potable water to be used for other needs of the personnel will be supplied from Kartalkaya Dam and Kahramanmaraş Irrigation Union is the authorized institution in this regard. Potable water requirement is calculated separately for pre-construction, construction and operation phases.

Pre-Construction Phase

Approximately 20 personnel are expected to be employed during the pre-construction phase to obtain the necessary permits and prepare construction implementation plans. The average daily water

consumption per person is 183 liters ([8]). Based on this information, the water demand for the pre-construction phase can be calculated as follows.

Daily Water Demand (Personnel) = Number of Personnel x Average Water Consumption
= 20 capita x 183 l/day-capita
= 3,660 l/day = 3.66 m^3/ day

Construction Phase

Approximately 150 personnel are expected to be employed at the construction site during the construction phase. Based on this information, the water demand for the construction phase can be calculated as follows.

Daily Water Demand (Personnel) = Number of Personnel x Average Water Consumption
= 150 capita x 183 l/day-capita
= 27,450 l/day = 27.45 m^3/ day

Additionally, there will be water requirements for water spraying on roads that are used in order to prevent dust emissions. It is assumed that 10 m^3/day water is required for that purpose. The water needed will also be met from Kartalkaya Dam by the Kahramanmaraş Irrigation Union and irrigation will be conducted by water truck.

In addition, washing water will be needed to wash the vehicles that will take part in the project. This washing station, where approximately 0.2 m^3 of water will be consumed for each vehicle, will be established on a leak-proof concrete floor in the camp area. However, at this stage, it can't be determined exactly how often the vehicles that will take part in the project will be washed, and but can be predicted that a maximum of 0.5 m^3/day.

Total Daily Water Demand = Daily Water Demand for Personnel+ Daily Water Demand for Spraying + Daily Water Demand for Vehicle Washing) = 37.95 m^3/day

Operations Phase

The operation of the Sub-Project will be carried out by Kahramanmaraş Irrigation Union and 40 staff will be responsible for the operation of the irrigation system for the operation phase.

Daily Water Demand = Number of Personnel x Average Water Consumption
= 40 capita x 183 l/day-capita
= 7,320 l/day = 7.32 m^3/ day

Depending on the duration of the maintenance and repair works, there might be additional water consumption, including water required for maintenance and repair works. Water requirements will also be supplied from Kartalkaya Dam by the Kahramanmaraş Irrigation Union.

Wastewater Generation

Wastewater generated during the phases will primarily consist of domestic wastewater from the personnel involved, and it is expected that these individuals will not be residing in the villages adjacent to the project area.

Pre-Construction Phase

Approximately 20 personnel are expected to be employed at the construction site during the pre-construction phase. The average daily wastewater generation per person is 183 liters per capita/day[9]. Based on this information, the daily wastewater generation for the pre-construction phase can be calculated as follows.

[8] *Source: Daily amount of water per capita consumed in municipalities of Hatay, Osmaniye and Kahramanmaraş provinces in 2022 is 183 lt/capita-day, https://cip.tuik.gov.tr*
[9] *Source: Daily amount of Wastewater per capita disharged in municipalities of Hatay, Osmaniye and Kahramanmaraş provinces in 2022 is 183 lt/capita-day, https://cip.tuik.gov.tr/*

Daily Wastewater Generation = Number of People x Daily Wastewater Generation
= 20 capita x 183 l/day-capita
= 3,660 l/day = 3.66 m^3/ day

Construction Phase

Approximately 150 personnel are expected to be employed at the construction site during the construction phase.

Daily Wastewater Generation = 150 capita x 183 l/day-capita
= 27,450 l/day = 27.45 m^3/ day

Wastewater will be collected with a sealed septic tank both pre-construction and construction phases, and conveyed to the Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP by sewage truck. In case Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP is not suitable for wastewater disposal, Kahramanmaraş Municipality's Türkoğlu-Kılılı WWTP can be considered as an alternative. The wastewater treatment plants are municipal wastewater treatment plants and have Environmental Permit Certificates for wastewater discharge [(10)]. A contract or protocol will be signed by the contractor before the starting of the construction works with the relevant municipality regarding wastewater acceptance. Wastewater to be generated within the scope of the project will not be given to facilities without an environmental permit for wastewater discharge, and will not be discharged to the soil, surface water, lake, or any other receiving bodies in any way without obtaining an environmental permit for wastewater discharge.

Operation Phase

The compound of Kahramanmaraş Irrigation Union located within the boundaries of Narlı Municipality is connected to the sewerage system and all wastewater is sent to Pazarcık-Narlı Advanced Biological WWTP through the sewerage system. For the operation period, 40 personnel will be responsible. Wastewater generation of those personnel will be;

Daily Wastewater Generation = 40 capita x 183 l/day-capita
= 7,320 l/day = 7.32 m^3/ day

5.3.2 Soil Management

Topsoil Management

There will be no direct soil pollution during or after the activity, but the risk of accidental spillages will be managed with appropriate mitigation measures.

Within the scope of the project, mostly existing irrigation canals and the Operation and Maintenance Roads established next to these canals will be used, and a total of approximately 25.000 m additional pipeline and road except for the current canal system will be opened within the scope of the modernization project. Along the irrigation route, topsoil (vegetative soil) will be stripped to a total width of 6 m (3 m for the pipeline and 3 m for the operation and maintenance road) and a depth of 30 cm. Topsoil will be stored temporarily on the pipeline with a maximum height of 2 m and a maximum slope of 45 degrees. After the pipes are placed in the trenches, the topsoil will be laid back.

In the section stripped for the Operation and Maintenance Roads, the topsoil will not be laid back, and the topsoil obtained from here will be used primarily to meet the demands of the local people or for landscaping the areas that will be needed. This process will only occur on the specific route where the irrigation pipes will be placed, and it will account for a very small portion of the entire irrigation area.

Subsoil Management

As mentioned in the previous subheading, the irrigation pipelines for the sub-project mostly overlap

[10] *The current environmental permit and licence status of facilities or enterprises can be inquired from the official website of the General Directorate of EIA Permit and Inspection (https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx)*

with the irrigation canal routes of the existing system. Therefore, no deep excavation activities will be carried out at these points, only the existing concrete channels will be broken and the pipes will be placed and then covered. Along the irrigation route for the Right Bank Irrigation Renovation, the construction of the main and backup transmission lines will require 75,500 m³ of material for the bedding layer and 166,500 m³ for the envelope layer. For the top layer, materials excavated directly from the site will be reused. Both the bedding and envelope materials will be sourced from the Narlı Sand Quarry. Similarly, for the Left Bank Irrigation Renovation, the bedding layer will need 32,193 m³ of material, while the envelope layer will require 161,315 m³. As with the Right Bank, the top layer will use materials excavated from the site and the bedding and envelope materials will be sourced from the Narlı Sand Quarry ([11]).

In the section of approximately 25000 m, which does not coincide with the existing canal route, irrigation pipes will be placed in the trench to be opened with a width of 1.5 m and a maximum depth of 1.5 m considering the slope of the land, followed by pipe protection material, subsoil and finally topsoil, and the line surface will be restored to its original state.

Dust emissions are expected to occur during the dismantling, transportation and storage of excavation material. However, since the construction activities of the sub-project will not be carried out in multiple locations at the same time, dust emission is expected to be limited and temporary. It is also recommended that regular irrigation is practiced and that loading and unloading should be done in a non-skidding manner.

One potential risk is accidental spillage of the gravel material used during construction. However, any such spill can be easily cleaned up from the soil, minimizing the risk of pollution.

Another potential source of contamination is fuel oil and oil leakage from machinery. Nevertheless, oil changes and routine maintenance of the vehicles will not take place within the project area. Adequately sized secondary containment will also be provided for hazardous substances, such as fuel tanks and oil barrels that may leak.

Also, in case of breakdown of vehicles, during the mandatory maintenance/repair activities to be carried out in the field, laying tarpaulins against spills in the work area, keeping spill kits, and providing bottom pans under liquid equipment are also provided by the Contractor. Moreover, a construction site fuel tank will be utilized, significantly reducing the likelihood of leaks and contamination.

The risks/impacts on soil quality during the operation phase arising from repair and maintenance activities are similar to the ones described in this section, and similar mitigation measures will be taken. Normal operation of the project does not have any risks/impacts on soil quality.

5.3.3 Waste Management

Solid Wastes

The waste generated by the project will be minimal in quantity. A construction site will be established to accommodate the field personnel, and it is expected that domestic solid and liquid waste will be produced at the site. The domestic wastes generated during the pre-construction and construction phases will be handed over to the Integrated Waste Evaluation, Recycling, and Disposal Facility, which is located in Onikişubat District of Kahramanmaraş Province.

Pre-Construction Phase

The personnel working on-site will generate domestic solid waste, primarily consisting of organic waste. It is estimated that around 20 personnel will be employed during this phase. The average daily generation of domestic solid waste per capita is 0.95 kg/day ([12]). Therefore,

Total Amount of Domestic = Number of Personnel x Average Domestic Waste Generation

[11] *based on technical report of the project*
[12] https://biruni.tuik.gov.tr/medas/?kn=119&locale=tr

= 20 capita x 0.95 kg/day/capita = 19 kg/day

Construction Phase

The personnel working on-site will generate domestic solid waste, primarily consisting of organic waste. It is estimated that around 150 personnel will be employed during this phase. Therefore,

Total Amount of Domestic = 150 capita x 0.95 kg/day/capita = 142,5 kg/day

Table 5-2 provided below outlines the various types of solid waste that could be generated throughout the pre-construction and construction phases of the project, as well as the corresponding waste disposal practices.

Operation Phase

It is assumed that there will be 40 personnel for the operation phase.

Total Amount of Domestic = 40 personnel x 0.95 kg/day/capita = 38 kg/day

Table 5-2 Waste Disposal Practices for Pre-construction, Construction and Operation Phases

Waste Types	Disposal Practices
Domestic Wastes	Domestic wastes will be collected in sealed containers and subsequently disposed of through the garbage collection system of Kahramanmaraş Metropolitan Municipality and disposed of by the Integrated Waste Evaluation, Recycling, and Disposal Facility operated by Kahramanmaraş Metropolitan Municipality. All activities will adhere to the Waste Management Regulation Numbered 29314
Packaging Wastes	Packaging waste will be generated from both personnel and construction activities. It will be collected separately from domestic solid waste and transferred to licensed collection, sorting, or recycling companies. Compliance with the Packaging Waste Control Regulation numbered 31523 will be ensured.
Recyclable Materials	Various construction materials, such as concrete and metal, will be generated as construction waste. Recyclable materials among these will be segregated from other waste and delivered to licensed companies.
Hazardous Wastes	It is anticipated that empty containers contaminated with chemicals will be generated from materials used, such as painting. Proper disposal of all hazardous waste will be ensured in accordance with the Waste Management Regulation No. 29314 (02.04.2015).
End-of-Life Tires	There is a possibility of generating end-of-life tires as a result of the construction activities. The responsibility for construction-related maintenance lies with the contractor company. All end-of-life tires will be disposed of in compliance with the Regulation on the Control of End-of-Life Tires, No. 26357 (25.11.2006).
Waste Oil	Waste oil may be generated from construction machinery and vehicles used during the construction process. The contractor company is responsible for the maintenance, repair, and servicing of the machinery employed. Any necessary maintenance, repair, and servicing will not be conducted within the project area. However, it is possible to produce waste oil in case of a breakdown of vehicles during the mandatory maintenance/repair activities to be carried out in the field. Waste oil resulting from that machinery will be appropriately disposed of following the Waste Oil Management Regulation No. 30985 (31.12.2019).
Waste Batteries and Accumulators	The usage of construction machinery and vehicles during the construction process may also lead to the generation of waste accumulators. The contractor company is accountable for the maintenance, repair, and servicing of the machinery involved. If waste accumulators are produced for any reason, they will be sent to the authorized companies or licensed hazardous waste recycling facilities in accordance with the Control of Waste Batteries and Accumulators No. 25569 (31.08.2004).
Medical Waste	Construction workers' medical requirements will be addressed at health facilities located outside the project area. Basic first aid equipment will be available on-site for emergency and critical situations, and any medical waste generated due to accident interventions will be sent to licensed medical waste sterilization facilities, following the Control of Medical Waste No. 29959 (25.01.2017).
Waste Vegetable Oil	Within the scope of the project, waste vegetable oil will be generated from the dining hall located in the camp area. The resulting waste vegetable oils will be collected in sealed barrels and disposed of within the framework of the Regulation on the Control of Waste Vegetable Oils published in the Official Gazette No. 29378 (06.06.2015).
Electronic Wastes	Within the scope of the project, electronic wastes will be generated from the office works. The resulting electronic wastes will be sent to the licensed recycling facilities within the framework of the Regulation on Management of Waste Electrical and Electronic Goods published in Official Gazette No. 32055 (26.12.2022).

It is not expected that a significant amount of hazardous waste, waste oil, medical waste, waste

accumulators, waste vegetable oil, waste tires, and electronic waste will be produced during the pre-construction and construction phases but necessary mitigation measures will be taken for their separate collection, temporary storage and transfer to / disposed of by licensed facilities in compliance with relevant local regulations and the WB requirements.

It is not expected that a significant amount of hazardous waste, waste oil, medical waste, waste accumulators, waste oil, waste tires, and electronic waste will be produced during the operation phase of the project but necessary mitigation measures will be taken for their separate collection, temporary storage and transfer to / disposed of by licensed facilities in compliance with relevant local regulations and the WB requirements.

Excavation Wastes

The excavation waste generated as a result of the excavations to be carried out as part of the project will be disposed of in accordance with the regulations.

Construction Phase

A portion of the excavation material to be removed during the project's excavation works will be utilized as a top layer.

In the section of approximately 25000 m, which does not coincide with the existing canal route, irrigation pipes will be placed in the trench to be opened with a width of 1.5 m and a maximum depth of 1.5 m considering the slope of the land, followed by pipe protection material, subsoil and finally topsoil, and the line surface will be restored to its original state. It is anticipated that all excess excavation material to be generated at this point will be used during backfilling.

The concrete wastes that will emerge after the breaking of the concrete channels will be transported to the excavation sites to be approved by Narlı, Pazarcık or Kahramanmaraş Metropolitan Municipality within the framework of the provisions of the Regulation on the Control of Excavation Soil, Construction and Demolition Wastes. The recyclable parts of these wastes, such as metal, which can be recycled or reused as acreage, should be separated and delivered to licensed recycling facilities.

Operation Phase

During the operation phase, maintenance activities will be conducted, and similar to the construction phase, a portion of the excavation material will be utilized as filling material within the project. All maintenance procedures concerning the excavation process will adhere to the regulations stipulated in the Regulation on the Control of Excavation Soil, Construction, and Debris Wastes No. 25406 (18.03.2004).

5.3.4 Noise and Vibrations

The Project area is a rural area, and no significant impact is expected during the operation of the project, except temporary and limited noise that could be generated during maintenance and repair works.

Based on the Environmental Baseline, there have been noise complaints reported in Kahramanmaraş. Given the presence of sensitive receptors near the project site, it is anticipated that the construction activities may lead to an increase in complaints regarding noise.

During the construction phase, noise is expected to be generated by vehicles, machinery, and equipment. It was envisaged that a maximum of 5 vehicles would be operating at the same location at the same time during the construction of the pipeline. The specific number of machinery units estimated to be used in the construction activities can be found in Table 5-3.

Table 5-3 Number of machineries estimated to be used in the construction activities

Machinery-Equipment	Number	Expected Noise Level (dBA)[13]

[13] Regulation on Evaluation and Management of Environmental Noise(2002/49/EC)

Machinery-Equipment	Number	Expected Noise Level (dBA)[13]
Trucks	10	94
Excavator	3	109
Grader	2	109
Mobile Crane	2	105
Loader	2	109
Oil Truck	1	94
Minibus	5	90
Pick-up Truck	5	92
Tractor	1	97
Street Sprinkler	2	94

The total equivalent noise level that will occur under the most adverse conditions when 1 truck, 1 excavator, 1 mobile crane, 1 loader and 1 pick-up to be used within the scope of the project operate at the same time and in the same place is calculated by using the logarithmic noise summaration method.

Following the calculations, the overall noise level obtained was evaluated based on the distance to the nearest sensitive receptor and the related national and international legislations provided in Table 5-4.

Table 5-4 Legislative Framework for Noise

Legislative Framework		
Environmental Noise Control Regulation (Official Gazette No. 32029 Dated 30.11.2022)		
Type of Operation		Limit Value (dBA)
Infrastructure Works		65- (All sources together)**
Noise Standards - WBG EHS Guidelines: (Environmental Noise Management)		
Type of Operation	Lday * (One Hour LAeq (dBA)) (07:00-22:00)	Lnight * (One Hour LAeq (dBA)) (22:00-07:00)
Limit Value not to be exceeded by the noise from construction site activities at the sensitive receptor (Residential; institutional; educational)	55	45

**Noise impacts should not exceed the levels presented in the Table above, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site*
*** According to the Environmental Noise Control Regulation, the daytime limit value for industrial facilities and transportation resources is determined as 65 dBA, 60 dBA for the evening, and 55 dBA for the night.*

The distribution of the Total Noise Level (dBA) at 4 different frequencies (500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz) at distance "r", which are likely to occur from all sources, is given in Table 5-5.

Table 5-5 Total Expected Noise Level at "r" Distance

r (m)	L_{PT} (dB)	Aatm (dBA) (f:500)	DF (dB) (f=500 Hz)	L (dBA) (f:500 Hz)	Aatm (dB) (f:1000 Hz)	DF (dB) (f:1000 Hz)	L (dBA) (f:1000 Hz)	Aatm (dB) (f:2000 Hz)	DF (dB) (f:2000 Hz)	L (dBA) (f:2000 Hz)	Aatm (dB) (f:4000 Hz)	DF (dB) (Hz)	L (dBA) (f:4000 Hz)	L_T (dBA)
1	104,91	0,00	-3,2	101,71	0,00	0	104,91	0,00	1,2	106,11	0,02	1	105,89	110,98
5	90,93	0,00	-3,2	87,73	0,01	0	90,93	0,02	1,2	92,11	0,09	1	91,84	96,98
10	84,91	0,00	-3,2	81,71	0,01	0	84,90	0,05	1,2	86,07	0,19	1	85,73	90,92
20	78,89	0,01	-3,2	75,69	0,02	0	78,87	0,09	1,2	80,00	0,37	1	79,52	84,82
30	75,37	0,01	-3,2	72,16	0,03	0	75,33	0,14	1,2	76,43	0,56	1	75,81	81,23
40	72,87	0,01	-3,2	69,66	0,05	0	72,82	0,19	1,2	73,89	0,74	1	73,13	78,66
50	70,93	0,01	-3,2	67,72	0,06	0	70,87	0,23	1,2	71,90	0,93	1	71,01	76,65
60	69,35	0,02	-3,2	66,13	0,07	0	69,28	0,28	1,2	70,27	1,11	1	69,24	75,00
70	68,01	0,02	-3,2	64,79	0,08	0	67,93	0,32	1,2	68,89	1,30	1	67,71	73,59
80	66,85	0,02	-3,2	63,63	0,09	0	66,76	0,37	1,2	67,68	1,48	1	66,37	72,37
90	65,83	0,03	-3,2	62,60	0,10	0	65,72	0,42	1,2	66,61	1,67	1	65,16	71,28
100	64,91	0,03	-3,2	61,68	0,12	0	64,80	0,46	1,2	65,65	1,85	1	64,06	70,30
125	62,97	0,04	-3,2	59,74	0,14	0	62,83	0,58	1,2	63,60	2,31	1	61,66	68,20
150	61,39	0,04	-3,2	58,15	0,17	0	61,22	0,69	1,2	61,90	2,78	1	59,61	66,47
200	58,89	0,06	-3,2	55,63	0,23	0	58,66	0,93	1,2	59,17	3,70	1	56,19	63,70
250	56,95	0,07	-3,2	53,68	0,29	0	56,66	1,16	1,2	57,00	4,63	1	53,33	61,50

r (m)	L_{PT} (dB)	Aatm (dBA) (f:500)	DF (dB) (f=500 Hz)	L (dBA) (f:500 Hz)	Aatm (dB) (f:1000 Hz)	DF (dB) (f:1000 Hz)	L (dBA) (f:1000 Hz)	Aatm (dB) (f:2000 Hz)	DF (dB) (f:2000 Hz)	L (dBA) (f:2000 Hz)	Aatm (dB) (f:4000 Hz)	DF (dB) (Hz)	L (dBA) (f:4000 Hz)	L_T (dBA)
300	55,37	0,09	-3,2	52,08	0,35	0	55,02	1,39	1,2	55,18	5,55	1	50,82	59,68
350	54,03	0,10	-3,2	50,73	0,40	0	53,63	1,62	1,2	53,61	6,48	1	48,56	58,13
400	52,87	0,12	-3,2	49,55	0,46	0	52,41	1,85	1,2	52,22	7,40	1	46,47	56,77
500	50,93	0,14	-3,2	47,59	0,58	0	50,35	2,31	1,2	49,82	9,25	1	42,68	54,48
600	49,35	0,17	-3,2	45,98	0,69	0	48,65	2,78	1,2	47,77	11,10	1	39,25	52,58
700	48,01	0,20	-3,2	44,61	0,81	0	47,20	3,24	1,2	45,97	12,95	1	36,06	50,97
800	46,85	0,23	-3,2	43,42	0,93	0	45,92	3,70	1,2	44,35	14,80	1	33,05	49,56
900	45,83	0,26	-3,2	42,37	1,04	0	44,79	4,16	1,2	42,86	16,65	1	30,18	48,31
1000	44,91	0,29	-3,2	41,42	1,16	0	43,76	4,63	1,2	41,49	18,50	1	27,41	47,18
1500	41,39	0,43	-3,2	37,76	1,73	0	39,66	6,94	1,2	35,65	27,75	1	14,64	42,77

In the scenario where all vehicles and equipment required to construct the irrigation line operate at the same place at the same time, it is predicted that a noise level above the limits can be reached in villages. However, it is not possible for all vehicles to be active in the same area at the same time due to the agenda of the construction works and the geographical structure of the project area. Nevertheless, noise measurements should be carried out in accordance with the provisions of the Environmental Noise Control Regulation in all activities to be carried out under the project, and measures such as noise barriers around sensitive receptors should be considered if necessary. Again, considering that the noise levels of unmaintained vehicles will be high, maintenance and repairs of all vehicles and equipment to be operated under the project should be carried out regularly.

5.3.5 Impacts on Air Quality

Within the scope of the project, mostly existing irrigation canals and the Operation and Maintenance Roads established next to these canals will be used, and a total of approximately 25.000 m additional pipeline and road except for the current canal system will be opened within the scope of the modernization project. Along the irrigation route, topsoil (vegetative soil) will be stripped to a total width of 6 m (3 m for the pipeline and 3 m for the operation and maintenance road) and a depth of 30 cm. Apart from this, there is no area that would require stripping the topsoil, there are existing concrete channels and channel roads. The density of the excavation soil was determined as 1.5 tons/m^3. It is foreseen that there will be 10 hours of work per day and the excavation work will take an estimated 450 days. The calculation results are shown in Table 5-6. Topsoil and excavation calculations are represented below.

Estimated total topsoil in m^3 = 25,000 x 6 m x 0.3 m = 45,000 m^3

Estimated total topsoil in tons = 45,000 m^3 x 1.5 tons/m^3 = **67,500 tons**

Estimated excavation amount in m^3 = 25,000 x 1.5 x 1.5 = 56,250 m^3

Estimated excavation amount in tons = 56,250 m^3 x 1.5 tons/m^3 = 84,375 tons

In addition to this; along the irrigation route for the Right Bank Irrigation Renovation, the construction of the main and backup transmission lines will require 75,500 m^3 of material for the bedding layer and 166,500 m^3 for the envelope layer. For the top layer, materials excavated directly from the site will be reused. Both the bedding and envelope materials will be sourced from the Narlı Sand Quarry. Similarly, for the Left Bank Irrigation Renovation, the bedding layer will need 32,193 m^3 of material, while the envelope layer will require 161,315 m^3. Therefore; the total amount of excavation material will be approximately **491,758 m^3.**

Table 5-6 Dust emission during excavation works

Sources		Working time (h)	Uncontrolled (kg/h)	Controlled (kg/h)
Topsoil	Excavation	4500	0.3750	0.1875
	Loading	4500	0.1500	0.0750
	Transportation	-	0.0158	0.0079

Sources		Working time (h)	Uncontrolled (kg/h)	Controlled (kg/h)
	Unloading	4500	0.1500	0.0750
	Storage	8000	0.0725	0.0363
Excavation Material	Excavation	4500	0.2637	0.1318
	Loading	4500	0.1055	0.0527
	Transportation	-	0.1721	0.0861
	Unloading	4500	0.9220	0.4610
	Storage*	8000	0.0725	0.0363
Total			2.2991	1.1495

Dust emission from excavation works has been calculated as 1.15 kg/hour in total for the mitigated situation.

Additional particulate matter emissions are projected to be generated throughout the construction phase as a result of construction activities such as machinery, vehicles, and groundworks. Therefore, as a result, it is crucial to mitigate the impacts of dust on workers and residents in the nearest receptors. Construction activities can cause dust emissions due to a combination of on-site excavation and haulage of soil materials, heavy equipment contact with the soil, and wind exposure of soil stockpiles. According to the Regulation on the Control of Excavation Soil, Construction and Debris Wastes Law No. 25406 (18.03.2004), firms who are responsible for the generation of excavation waste should take precautions to prevent dust emissions during the removal of excavated soil. They are also obligated to close the activity area's surrounding area.

Within the scope of the Project's construction, exhaust emissions will also occur from construction vehicles. The unit fuel consumption amount accepted for all vehicles and work machines to be used during the Project's construction phase is taken as 25 l/h, and the specific weight of diesel oil is taken as 0.8654 kg/l for calculations. The Table 5-7 shows the vehicle features that will be used in construction.

Table 5-7 Vehicle Features to be used in Construction Work

Number	Vehicle	Diesel Fuel Consumption (l/hr)	Diesel Specific Gravity (kg/l)	Diesel Fuel Consumption (kg/h)	Diesel Fuel Consumption (ton/h)
10	**Trucks**	25	0.8654	216,35	0,22
3	**Excavator**			64,91	0,06
2	**Grader**			43,27	0,04
2	**Mobile Crane**			43,27	0,04
2	**Loader**			43,27	0,04
1	**Oil Truck**			21,64	0,02
5	**Minibus**			108,18	0,11
5	**Pick-up Truck**			108,18	0,11
1	**Tractor**			21,64	0,02
2	**Street Sprinkler**			43,27	0,04
Total				**713,96**	**0,71**

It is assumed that diesel will be used as a fuel in the construction machines to be used. Emission factors of diesel are taken from the Air Pollution and Control Inspection (TMMOB Chemical Eng. Chamber, May 1991).

The total amount of diesel fuel consumption was calculated as **0.71 ton/h** for the machinery equipment to be used within the scope of the construction activities. The mass flowrates of the pollutants in this respect are calculated from the emission rates of pollutants in Table 5-8;

Table 5-8 Emission rates of pollutants and Pollutant Calculations

Pollutant	Diesel (kg/ton)	Calculation
Carbon monoxide	9.7	9.70 kg/ton x 0.71 tons/hour = 6.88 kg/hour
Total Organic Compounds	29	29 kg/ton x 0.71 tons/hour= 20.59 kg/hour
Nitrogen oxides	36	36 kg/ton x 0.71 tons/hour= 25.56 kg/hour
Sulfur dioxide	6.5	6.5 kg/ton x 0.71 tons/hour= 4.62 kg/hour
Dust	18	18 kg/ton x 0.71 tons/hour= 12.78 kg/hour

The calculations above have been made with the assumption that all vehicles will work simultaneously. However, it is a worst-case scenario that every vehicle works at the same time. The cumulative pollution load will be lower than the calculated one as they may work in different places and at different times of the day. Although the project area is a rural area, there are no significant noise sources such as industrial activities or traffic other than agricultural activities. As a result, this load is not expected to have a significant impact on air pollution. So, it is not expected that the emission values from the vehicles will have a significant adverse impact on the existing air quality.

For the operation phase, it is anticipated that there will be no usage of any vehicles other than temporary use of maintenance/repair vehicles. No significant impact on air quality is expected during the operation of the project, except negligible/minor local impacts due to maintenance and repair.

5.3.6 Impacts on Biodiversity and Protected Areas

The closest protected areas to the Project area are shown In Annex-8along with their distances.

The distance between Kapıçam Nature Park and the right bank main pipeline is 3.72 m. In the existing irrigation network, the irrigation main canal passes through the Nature Park. However, there will be no need to use this section within the scope of the sub-project, none of the units under the sub-project will pass through Kapıçam Nature Park and the impact on the Nature Park will be eliminated. In addition, the water needed by Kapıçam Botanical Park is currently provided through the existing irrigation system. Following the implementation of the sub-project, the water needed by Kapıçam Botanical Park will continue to be provided.

In addition, the Baglama Pond within the borders of Çöçelli Village has been determined as a protected wetland in accordance with the Ramsar Convention and the "Wetland Protection Regulation". The pond is located 127 m away from the secondary pipes of the left bank irrigation area to be laid for the purpose of irrigating the areas within the borders of Çöçelli Village under the sub-project, and none of the units of the sub-project are within the borders of the pond. Therefore, it is not expected that any protected areas will be affected by the sub-project.

Based on the information obtained from Turkey National Geographic Information Systems, National Geographic Information Platform (atlas.gov.tr), there are no monumental trees, caves, or special environmental protection zones within the scope of the General Directorate for the Protection of Natural Assets in the project area.

The flora and fauna species identified within the project scope are typically prevalent throughout the country and are not anticipated to face endangerment in the foreseeable future. Consequently, adverse effects on the flora and fauna within the area due to the project are not anticipated.

5.4 Social Impacts

5.4.1 Population Change

In Turkey in general, there are different factors affecting rural-urban migration such as ‘agricultural activities are generally carried out by elderly farmers, insufficient earnings are not provided and rural settlements do not have adequate infrastructure supports’. Therefore, the Project is not expected to provide back migration or population growth.

The spread of irrigated agriculture and the use of a technological and sustainable irrigation system in agriculture creates positive income-generating results for farmers. In this way, the Project may enable people who have plan to migrate from the region to stay in the region. Even if the project does not affect the protection and/or increase of the population, there will be an increase in the number of farmers engaged in irrigated agriculture.

As a result of the Project, with the increase in agricultural irrigation, a decrease in the population may be prevented.

5.4.2 Occupational Health and Safety (OHS)

Injuries may occur as a result of potential work accidents that may arise from the tasks to be performed.

Neglecting OHS considerations in planning can cause safety hazards and increase risks during construction, with incomplete risk assessments, insufficient safety measures, and inadequate resource allocation.

Incomplete or flawed design plans can pose hazards to workers, leading to accidents and injuries if access routes, fall protection measures, or structural stability are overlooked.

Insufficient site preparation poses risks to workers, including accidents, slips, trips, and falls due to unstable soil, improper waste management, lack of barriers, and inadequate signage.

Based on the scope of the Pazarcık Kartalkaya Dam Irrigation Project, a brief assessment of potential Occupational Health and Safety (OHS) risks are as follows:

1. **Trenching/Excavations:** Opening trenches for laying pipes poses risks of cave-ins, falls, and engulfment.
2. **Manual Handling:** Handling and manoeuvring of pipes can lead to musculoskeletal injuries if proper lifting techniques are not followed.
3. **Moving Equipment:** The operation of machinery for trenching, such as excavators, presents risks of collisions, entanglement, and crush injuries.
4. **Electrical Hazards:** If any electrical equipment or wiring is involved in the project, risks of electric shocks and fires need to be addressed.
5. **Welding/Hot Work (if any):** If welding or hot work is required for any part of the project, fire hazards are present
6. **Vibration:** If heavy machinery or equipment is used, workers may be exposed to vibration, leading to conditions like hand-arm vibration syndrome.
7. **Noise:** Construction activities, especially those involving heavy machinery, can generate high levels of noise, leading to hearing damage.
8. **Confined Spaces:** While not explicitly present in the project scope, confined spaces may be encountered during construction or maintenance activities.

It is necessary to comply with national and international occupational health and safety legislation to manage these processes effectively throughout both construction and operation phases. A thorough risk assessment will be conducted prior to commencement of work, and appropriate control measures will be implemented to ensure the safety and health of workers. OHS plan and related procedures will be implemented at site. Mitigation measures to be taken for OHS are given in Chapter 6 in detail.

5.4.3 Economy and Employment

Increasing irrigable areas, solving the problem of insufficient irrigation water, producing high value-added products and increasing agricultural productivity are the outputs of the project.
When it comes to project impacts, it is predicted that limited temporary employment will be provided for construction works of the sub-project. In the scope of this works, local workers will be recruited. Moreover, priority will be given to contributing to the local economy through the use of local materials during the construction and to paying attention to the procurement of various goods and services from local resources.
Within the scope of Kartalkaya Irrigation Project, it is foreseen that the agricultural product pattern will change with irrigation modernization. With irrigation modernization, the ratio of high-income agricultural products in the project will increase and since water will be saved within the scope of the project, it will be possible to plant second crops after modernization.
As a result of the Agricultural Economy studies carried out by DSİ within the scope of Kartalkaya Irrigation Project, a net income increase of approximately 2100 TL/da (2022 U.P.) is expected in the

project area with the modernization of irrigation[14].

5.4.4 Community Health and Safety (CHS)

Community health and safety issues are associated with risk factors that may arise from the construction phase of the Project. It is anticipated that the local people will be affected by the traffic activities that are expected to intensify during the construction phase. Impacts are expected in the access routes of the villages passing through the project site. These impacts may include possible risk of traffic accidents due to shared use of these roads by the community accessing their settlements and the heavy construction machinery such as trucks, excavators, mobile cranes etc. The construction may also cause to temporary short-term closure of the roads which may lead to negative impacts such as inaccessibility to health care services of the villagers using the roads in case of emergency.

Possible damage to roads due to construction machinery and vehicles may include road damage, traffic accidents and road closures. Considering the activities to be carried out in the sub-project and the current condition of the roads, these potential impacts are anticipated to be minimal.

In road damage, heavy construction machinery and lorries may damage the surface of the roads, create potholes or crack the asphalt. Shared use of roads may increase the risk of traffic accidents for villagers and construction personnel. In particular, heavy construction traffic can trigger accidents caused by inattention. Temporary road closures during construction may affect the daily life of local people and restrict access to health services in emergencies.

During the operation phase of the Pazarcık Kartalkaya Dam Irrigation Project, there may be some potential community health and safety risks or impacts to consider. If the irrigation system is not properly maintained or if there are leaks or breaches in the pipes, it could impact the health of the surrounding community. Regular inspection and maintenance of the irrigation infrastructure are essential to mitigate this risk. Increased traffic from maintenance vehicles or farmers accessing the irrigation system could pose risks to community members, particularly if roads are narrow or poorly maintained. Traffic management measures, such as signage and speed limits, can help reduce the risk of accidents. Improperly managed irrigation systems can contribute to soil erosion and sedimentation, which may have downstream impacts on water quality and aquatic ecosystems. Implementing erosion control measures, such as vegetative buffers or sediment traps, can help reduce these impacts.

During the construction phase of the Project, local communities or contractor staff may experience negative impacts related to ethical behavior and codes of conduct, as well as sexual exploitation and abuse/harassment. The Consultant will train all Contractor staff on SEA/SH (Sexual Exploitation and Abuse/Sexual Harassment), Gender Equality and GBVH (Gender Based Violence and Harassment) and explain the Code of Conduct in detail. The subproject will introduce a Code of Conduct for all staff working in the field and establish a Grievance Redress Mechanism for project staff.

Separate, safe and easily accessible facilities for women and men in the place of work and the labour camps (e.g. toilets should be located in separate areas, well-lit) display signs that the project site is an area where SEA/SH is prohibited.

During the construction phase, the occurrence or increase of GBV and SEA/SH may occur due to an increase in regional labour flows. Therefore, GRM should be included in public participation meetings and community consultations to raise awareness on GRM. Measures such as having security guards, no criminal record of employees, use of security cameras should be taken. As noted in Section 8, complaints of discrimination and gender-based violence may also be lodged anonymously.

5.4.5 Land Acquisition and Livelihoods

5.4.5.1 Land Acquisition

[14] *Türkiye Water Circularity and Efficiency Improvement Project, Environmental and Social Management Framework (ESMF)*

The necessary works for access to each parcel within the proposed irrigation system and conducting Land Consolidation works in this context are examined in detail in Türkiye Water Circularity and Efficiency Improvement Project (TWCEIP) ESMF document.

Land requirements for each scheme shall become clear once the relevant designs for the schemes are finalized. Estimations on land requirements including both ownership and easement rights are provided below in Table 5-9. For all areas which would require land acquisition and land consolidation, a Land Acquisition Plan (LAP) or Resettlement Plan (RP) will be prepared, which will accommodate the Land Acquisition Policy Framework (LAPF) and the World Bank ESS5.

5.4.5.2 Impacts of Land Acquisition

Project activities are also likely to affect land-based livelihoods as most of the lands covered by the project are used for agricultural purposes. Mitigation efforts should be made to address the loss of assets and livelihoods. These mitigation measures are examined in detail in the LAPF document.

As Irrigation Services are improved within the scope of the project, the impacts are mostly positive. Potential negative impacts are limited to the loss of land used for horticulture/agriculture activities and structures and crops on these lands due to land acquisition and economic displacement of the inhabitants of these lands.

Mitigation measures are examined in detail in the LAPF document, and include the restoration of livelihoods to pre-project levels in accordance with ESS5. For all areas requiring land acquisition, a LAP/RP (including Land Consolidation Works) shall be prepared in line with the ESS 5 standard of the World Bank and the LAPF prepared for the Project. In areas where expropriation is to be carried out, owners and land users whose rights can be legitimized shall be compensated in cash over a substitute price equivalent to the acquisition of a substitute land of equivalent quality, in the event that a land of equivalent quality is acquired and/or ownership rights are acquired for indefinite duration. Likewise, in cases of temporary loss of land (easement rights), the easement rights of such individuals shall be compensated monetarily. No residential units are expected to be affected by the Project. For trees, compensation shall be paid over the net present value of economically valuable trees and with consideration to the species, age, market price and economic life of the products provided etc. For product/crop owners, the cost of the loss of crops shall be compensated in cash over the sale price obtained by the producer at harvest time, with consideration to the expected production amount. If possible, a sufficient amount of time shall be allowed by DSİ for the harvesting of crops in order to prevent crop losses. Additional mitigation measures are listed in the LAPF in order to ensure that livelihoods are restored to pre-project levels. A more detailed review and compensation strategy will be presented in the LAP/RP that will be prepared specifically for the Project. During the preparation of the LAP/RP, all users of lands (legal and informal) and their assets will be ascertained with a full count, and in cases where unauthorized users are identified, their damages shall be compensated over an amount sufficient to cover the substitution price.

According to ESMF, since the schemes selected within the scope of the project will be improved by using existing channels and routes to the extent possible, said impacts will be avoided and minimized. In addition to this, land consolidation will be performed prior to modernization activities, thereby further decreasing the need for expropriation. Moreover, since the entire irrigation network is designed as a closed system where pressurized pipes are utilized, it is taken under guarantee that no physical displacement should happen. Considering that open channel systems will be transformed into underground pipe networks which require less amount of land, a portion of the lands expropriated in the past will become idle. The lands can be opened for agricultural use by farmers in the area. Construction works within the scope of the project shall be planned in a manner not to disrupt existing irrigation activities. DSİ is going to plan construction works in a manner not to disrupt existing agricultural or irrigation activities with a view to preventing and/or minimizing loss of income for land owners/users and seasonal workers. The project contains mostly positive impacts due to its improvement of irrigation services. The restricted potential negative impacts of the project are limited

to the loss of the land used for horticulture/agriculture and the buildings and crops thereon due to land acquisition and the economic displacement of persons living on said lands.

5.4.5.3 Land need of the project

The Project has mostly positive impacts as it improves irrigation services. The limited potential negative impacts of the Project are limited to the loss of land used for horticulture/agriculture and the structures and products on this land due to land acquisition and the economic displacement of those living on these lands.

In order to minimize expropriation (land acquisition) needs, DSİ will make use of land consolidation activities in irrigation projects falling within the present scope. ESS5 applies for all land consolidation activities carried out.

Table 5-9 Estimated Land Acquisition Needs of Selected Irrigation Schemes

System	Property Rights				Easement Rights				TOTAL			
	Area (m2)	Number of Parcels	Number of people affected	Cost (TRY)	Area (m2)	Number of Parcels	Number of people affected	Cost (TRY)	Area (m2)	Number of Parcel	Number of people affected	Cost (TRY)
Pazarcık	47.900	100	200	2.155.500	210.650	400	500	3.159.750	258.550	500	700	5.315.250

Source: Turkey Water Circularity and Efficiency Improvement Project, Land Acquisition Policy Framework (LAPF)

It was found in the examination made on the site wherein the irrigation schemes included within the scope of renovation are located that a large portion of the lands have a size of between 1 – 20 da. This reveals the necessity for the implementation of a land consolidation project on mentioned sites.

Table 5-10 Overview of Land Consolidation Activities Related to the Selected Irrigation Schemes15

Irrigation Scheme	Area (ha)	Number of plots	Number of holdings	Cost (TRY)
Pazarcık	38,142	38,142	38,142	38,142

Source: Turkey Water Circularity and Efficiency Improvement Project, Land Acquisition Policy Framework (LAPF)

Please refer to the LAP/RP of the Project for details.

5.4.6 Cultural Heritage

The archaeological heritage sites within the Sub-Project Area and its impact area are given in Annex-9.

In addition, the association of the sub-project with each archaeological site is provided below. Apart from Domuztepe Mound, there are no registered archaeological sites through which the units of the sub-project directly pass.

Nevertheless, in the event that any cultural heritage or other possible incidental finds that need to be protected are encountered during the construction activities to be carried out within the scope of the entire sub-project, the Incidental Find Procedure will be applied.

Çöçelli 1st Degree Archaeological Site (Çöçelli Rock Tomb and Cistern)

Çöçelli 1st Degree Archaeological Site (Çöçelli Rock Tomb and Cistern) is located approximately 10 m away from the secondary pipeline of the left bank irrigation system. The existing village road passes between the archaeological site and the pipeline route (Please see Figure 12 of Annex-9). Therefore, the archaeological site is not expected to be affected by the sub-project.

Domuztepe Mound 1st and 3rd Degree Archaeological Site

Domuztepe Mound 1st and 3rd Degree Archaeological Site is located in the left-bank irrigation area and the seconder pipe will be passes over the Mound (Please see Figure 13 of Annex-9). Before starting construction activities in and around the mound, the opinion of the "Gaziantep Regional Board for the

[15] The numbers given are estimations and will be revised after the finalization of the project design.

Protection of Cultural Assets" should be obtained and if necessary, the pipeline route at this point should be revised.

Evri 1st Degree Archaeological Site

Evri 1st Degree Archaeological Site is located outside the left bank irrigation area and is 542 m away from the nearest secondary pipeline. The pipeline route is also the existing canal route and no new area is planned to be used (Please see Figure 14 of Annex-9). Therefore, the archaeological site is not expected to be affected by the sub-project.

Kubatlı Han

Kubatlı Han is located in Hanobası Village, and it was largely destroyed in the last Pazarcık earthquake. Han is located outside the left bank irrigation area and is 200 m away from the nearest secondary pipeline, and it is not expected to be affected by the sub-project (Please see Figure 15 of Annex-9).

Structure Remains and Water Cistern

The structure remains and water cistern is located outside the left bank irrigation area and is 425 m away from the nearest main pipeline, and it is not expected to be affected by the sub-project (Please see Figure 16 of Annex-9).

Hittite Stele and Other Findings

The Hittite Stele and other findings found in Karaçay village are exhibited in the Kahramanmaraş Museum. The location where the findings were found is within the left bank irrigation area and is 220 m away from the nearest irrigation pipe under the sub-project. The pipeline route is also the existing canal route and no new area is planned to be used (Please see Figure 17 of Annex-9). For this reason, no impact is expected during the sub-project construction.

Karahöyük (Külhaş Mound)

The Karahöyük (also known as Külhaş Mound), is located in the left-bank irrigation area in Karahöyük village. The Mound is approximately 120 m away from the secondary pipeline of the left bank irrigation system (Please see Figure 18 of Annex-9). The pipeline route is also the existing canal route and no new area is planned to be used. For this reason, no impact is expected during the sub-project construction.

Çatalhöyük

Registered as a First Degree Archaeological Site, Çatalhöyük in Nefsidoğanlı Village is located within the left bank irrigation system and is 11.9 m away from the nearest irrigation pipe (Please see Figure 19 of Annex-9). The pipeline route is also the existing canal route and no new area is planned to be used. Therefore, no impact is expected on the archaeological site.

Dulkadiroğlu 1st and 3rd Degree Archaeological Site

In Doğanlı Karahasan Village, located in the Dulkadiroğlu District, a 1st and 3rd Degree Archaeological Site was designated in 2014. The Archaeological Site is located outside the left bank irrigation area, approximately 750 m north of the right bank open channel (Please see Figure 20 of Annex-9). Therefore, no impact is expected on the archaeological site.

Osmandede Tomb

The tomb within the borders of Osmandede Village is currently visited by the local people (Please see Figure 21 of Annex-9). It is approximately 90 meters away from Osmandede Tomb and the pipeline system. Therefore, no impact on the archaeological site is expected.

Elif Ana Tomb

Elif Ana Tomb is located in Cennetpınarı Village and outside of the left-bank irrigation system. Located 280 m away from the nearest irrigation system, the Tomb is a place visited by local people (Please see Figure 22 of Annex-9). Therefore, no impact on the archaeological site is expected.

5.4.7 Labor Management and Labor Influx

TWCEIP Labor Management Procedure (LMP) has been prepared. LMP describe the requirements concerning labor and working conditions during the pre-construction, construction and operation stages of TWCEIP which will be financed by the World Bank and managed, supervised and implemented by the State Hydraulic Works (DSİ) Directorate General. It aims at promoting fair and equitable employment practices to secure fair treatment, non-discrimination and equal opportunities for employees in the project, protecting the rights of project employees as well as managing and controlling the operations that may pose labor-related risks. These procedures explain the requirements for compliance with labor and working conditions, reporting requirements, roles and responsibilities, monitoring and training requirements and expectations. This procedure has been adopted by DSİ and will apply to all project workers. It explains how DSİ will comply with the World Bank's Environmental and Social Standard 2 (ESS2): "Labor and Working Conditions" requirements and Türkiye's labor, employment and occupational health and safety laws. LMP evaluates the potential labor risks and impacts and explains how these risks and impacts will be mitigated and managed. DSI will endeavor to make sure that project contractors and other intermediaries hiring labor also implement these labor management procedures. LMP is a 'living' document and will be updated further as and when more information becomes available.

ESS2 applies to all project workers including full-time, part-time, temporary, seasonal and migrant workers.A moderate labour flow is expected before and during the subproject construction. Approximately 150 workers are expected to be mobilised during the construction phase. In addition, approximately 20 personnel will be responsible for the pre-construction phase and approximately 40 personnel for the operation phase. It is assumed that these figures will not result in any excessive labour flows relative to the Project area. The construction activities do not require additional or skilled labor from outside the locality, nor do they attract forced labor or child labor. There is no expectation of downsizing the current labor force.

There may be negative impacts and risks related to the workforce OHS during the implementation of the project. These are listed below:

- Work at height,
- Burns due to power shock and arcing fault (user or fault of electrical equipment such as cable plug, cable, hand tools),
- Electrical works,
- Exposure to chemicals (such as paints, solvents, lubricants, and fuels),
- Traffic accidents,
- Excavations hazards,
- Lifting of heavy structures,
- Accidents due to open construction iron rods,
- Exposure to construction airborne agents (dust, silica and asbestos),
- Ergonomic hazards during construction,
- Environmental hazards (snakes, wild bees, bees, etc.),
- Welding hazards (smoke, burn and radiation),
- Lack of awareness and knowledge about occupational health and safety requirements such as the use of personal protective equipment (PPE) and safe workplace practices, and
- Use of rotating and moving equipment,
- Ethical behaviour, SEA/SH, Gender Equality and GBVH risks.

Long overtime working hours usually represent a potential labor risk in the construction sector in Türkiye. Due to the limited timeframe of the project and the seasonal constraints in construction activities, contracted workers are exposed to the risk of being forced to work for long overtime hours, beyond the annual limits (270 hours/year) stipulated in the Labor Law. Since a large part of the labor force to be needed under the project will be hired locally, the project is not expected to cause any labor

influx risk. The workers will consist largely of Turkish workers. However, the Project management Team (PMT) will develop processes to address additional impacts if other labor risks arise during project implementation.

Contractor firms will be responsible for preparing and implementing sub-project specific Labor Management Plans. They will be responsible for contracting and managing the labor force in accordance with the terms and conditions set out in the Labor Management Plans.

5.4.8 Vulnerability, Social Equity and Equality

According to data obtained from the community level interview with the headmen of settlements, there are vulnerable people who live in the settlement affected by the Project. Vulnerable population in settlements is indicated in Table 5-11.

There is a risk of road-accidents in the roads accessing to the villages passing through the project sites which are used by the community specifically considering disabled people and children. Additionally, temporary access blockage of the roads to the villages may cause disturbance to the elderly, people with disabilities and specifically people who are dependent on home due to chronic illness as and when in need for emergency and mandatory health service visits.

The total population of 54 settlements in 2023 is 51.806. The total number of vulnerable groups indicated by Mukhtars is 14671. The table of vulnerable groups by settlements is in Annex-6.

The number of female household heads, unemployed men and illiterate women is high.

Table 5-11 Vulnerability of Project Settlements

Vulnerability	Man	Woman	Total
Woman head of household	NA	1745	**1745**
Elderly people in need of care and social assistance	992	1021	**2013**
Mentally disabled people	246	234	**480**
Physically disabled people	136	127	**263**
Unemployed	1483	851	**2334**
Widowed/divorced	633	947	**1580**
People who are homebound due to chronic illness	175	193	**368**
School-age child who cannot go to school	164	166	**330**
Illiterate adult	749	1049	**1798**
Refugee	642	657	**1299**
People who does not speak Turkish	405	463	**868**
People without social security	782	811	**1593**
Total	**6407**	**8264**	**14671**

Source: Settlement Level Survey, 2024

6 MITIGATION MEASURES AND REQUIRED ACTIONS

Table 6-1, Table 6-2, and Table 6-3 provides a comprehensive strategy to address environmental and social concerns throughout the pre-construction, construction, and operation stages. The mitigation plan will adhere to the strictest regulations and standards set by national legislation, as well as those set by the World Bank. It will also incorporate the latest legislation to ensure compliance during the execution of the mitigation measures.

Table 6-1 Mitigation Measures in Pre-Construction Phase

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
Environmental and Social Management	Inadequate management of environmental and social risks and impacts of the project	The Contractor will prepare and submit for approval (by PMT) and subsequently implement its Contractor ESMP (C-ESMP). The C ESMP should be submitted prior to the commencement of construction works and no construction activities will be carried out under the project until approval of the C-ESMP. The C-ESMP will include at least the following site-specific management plans: • Occupational health and safety (OHS) management plan including risk assessment and emergency preparedness and response plan • Community health and safety (CHS) management plan including traffic management plan • Waste management plan (see Annex-2) • Chance find procedure (see Annex-3) • Chemicals and hazardous materials management plan • Water supply and wastewater management plan • Labor management plan including Code of Conduct (to be prepared in accordance with TWCEIP LMP) • Grievance mechanism (GM) including pathways for SEA/SH complaints.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
	Lack of E&S team for managing environmental and social risks and impacts	The Contractor will employ at least a full-time OHS specialist, an environmental specialist, and a social specialist prior to the commencement of construction works. The Contractor shall submit the CVs of specialists for approval. These specialists should be present at the site throughout the construction period.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
	Lack of trainings of workers on environmental and social risks	The Contractor will prepare a training program and provide training to all his workers, before they start working on site, on basic environmental, social, health and safety risks associated with the proposed construction works and the workers' responsibility. The training program shall be repeated on a monthly basis. The Contractor's monthly training program will also cover topics related to Code of Conduct such as sexual harassment particularly towards women and children, violence, including sexual and/or gender-based violence and respectful attitudes while interacting with the local community.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Impacted Stakeholder Notification Process	The project's activities may result in adverse impacts that could cause nuisance and disturbance to the local communities.	• SEP (Chapter 8) will be developed and consulted with stakeholders ahead of project start, informing them about project and its potential environmental and social risks and impacts. • Stakeholder engagement and consultations will be continuous throughout project implementation. • The public will be notified about the upcoming works through printed and electronic media, as well as notifications posted in public places of	Included in construction cost	Implementing：DSI 20th Regional Directorate Supervising: DSI General Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		the villages located within the impact area. • The scheduling of physical works on the scheme will ensure that irrigation service delivery is not interrupted during the season. If unavoidable interruptions occur, water users will be informed about the timing and duration of the disruptions.		
Occupational Health and Safety (OHS)	• Neglecting OHS considerations in planning can increase safety hazards during construction due to incomplete risk assessments, insufficient safety measures, and poor resource allocation. • Flawed design plans may lead to accidents if access routes, fall protection, or structural stability are overlooked. • Insufficient site preparation can cause accidents from unstable soil, poor waste management, and lack of barriers or signage. • Contractors and workers lacking qualifications or OHS training elevate the risk of accidents and injuries due to inadequate work practices and supervision.	• Contractor employees will undergo a medical assessment to ensure they are medically fit to perform their role before commencing work and these controls will be repeated annually. • Risk Assessment will be carried out by contractor for all works to be done before the construction works begin. Relevant procedures and plans (including "Emergency Preparedness and Response Plan" also covering community health and safety issues) will be prepared. Both Risk assessment and Emergency Preparedness and Response Plans will include action plans against health risks and related communicable disease risks. • A full-time Occupational Health and Safety (OHS) expert will be employed by contractor, and OHS plan based on construction site OHS risk assessment, including work procedures (such as permit to works etc.), will be prepared. • Develop and implement Contractor's Labor Management Plan (C-LMP) based on TWCEIP LMP including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH, prevention of child labor and forced labor according to TWCEIP's Labour Management Procedure (LMP), incl. Workers' GM. Workers will receive written contracts including job description, working hours, wages, rights and duties, code of conduct, etc. will be arranged according to TWCEIP's LMP.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Community Health and Safety (CHS)	• Neglect of OHS considerations near the Project area may increase safety hazards during construction due to incomplete risk assessments, inadequate safety measures and insufficient resource allocation. • Repair/maintenance works that may cause temporary disturbance may threaten public health. • Local communities or contractor personnel may face negative impacts related to ethical behavior	• The boundary of the project area should be determined and the project area should be surrounded with warning equipment such as OHS curtains. Warning signs should be posted. • The public and nearby institutions and organizations, hospitals and schools should be informed at least two days before starting repair/maintenance works that may cause temporary disturbance. • The community liaison officer should be introduced to the local community. • The Consultant will train all Contractor staff on SEA/SH (Sexual Exploitation and Abuse/Sexual Harassment), Gender Equality and GBVH (Gender Based Violence and Harassment) and explain the Code of Conduct in detail. The subproject will introduce a Code of	Included in construction cost	Implementing: DSI 20th Regional Directorate Supervising: DSI General Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	and codes of conduct, as well as sexual exploitation and abuse/harassment.	Conduct for all staff working in the field and establish a Grievance Redress Mechanism for project staff. • Develop and implement Contractor's Labor Management Plan (C-LMP) based on TWCEIP LMP including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBVH, SEA/SH, prevention of child labor and forced labor according to TWCEIP's Labour Management Procedure (LMP), incl. Workers' GM. Workers will receive written contracts including job description, working hours, wages, rights and duties, code of conduct, etc. will be arranged according to TWCEIP's LMP.		
Seismicity	• Insufficient geotechnical investigations limit understanding of soil and rock conditions, including seismic characteristics, hindering proper mitigation. • Inaccurate seismic hazard assessments can result in inadequate structural designs or unnecessary costly measures. Design flaws that ignore seismic factors compromise structural integrity, increasing the risk of collapse or damage during earthquakes. • Seismic risks during pre-construction can lead to delays and higher costs due to additional studies, design changes, and mitigation efforts. • The construction materials will be earthquake-resistant and durable to prevent water pipeline leaks, deformation, and clean water loss after construction.	• While designing the irrigation system (irrigation pipelines and operation and maintenance roads), additional durability and structural measures will be developed when necessary. (Cracks, breaks, slips, deformations etc. of engineering structures that could happen especially after natural disasters)	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Air Quality, Noise	Negative public perception and community dissatisfaction arising from pre-construction activities.	A public grievance mechanism will be established to ensure any complaints/comments regarding the Project will be received and responded in a timely manner, providing solutions and taking corrective measures as appropriate.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Water Quality	Discharging domestic wastewater to the receiving environment without an environmental permit for wastewater may	Wastewater will be collected with a sealed septic tank both pre-construction and construction phases, and conveyed to the Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP by sewage truck. In case	Included in construction cost	Implementing: Contractor Supervising: DSI

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	cause pollution of surface and groundwater.	Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP is not suitable for wastewater disposal, Kahramanmaraş Municipality's Türkoğlu-Kılılı WWTP can be considered as an alternative. The wastewater treatment plants are municipal wastewater treatment plants and have Environmental Permit Certificates for wastewater discharge. A contract or protocol will be signed by the contractor before the starting of the construction works with the relevant municipality regarding wastewater acceptance.		20th Regional Directorate
Waste Management	Lack of appropriate waste sorting, temporary storage, recycling or disposal facilities in the vicinity of the project area, or the inability of facilities to accept waste, can be lead to inappropriate disposal of these wastes.	Agreement will be signed with the Integrated Waste Evaluation, Recycling, and Disposal Facility operated by Kahramanmaraş Metropolitan Municipality for the disposal of domestic wastes to be generated under the project.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Stakeholder Engagement	Inadequate Stakeholder Identification and Analysis can lead to conflicts and challenges later, resulting in delays or increased project costs.	• SEP (Chapter 8) defining separate GMs for surrounding communities and relevant project stakeholders and a dedicated GM for project staff. • Stakeholder engagement and consultations will be continuous throughout project implementation. • Disclosure and consultation of all E&S documents to stakeholders • Notify public about the upcoming works using printed and electronic media and notifications posted in public places of the villages located within the impact area. • Schedule physical works on the scheme so that irrigation service delivery is not interrupted during the season. If some interruptions cannot be avoided, inform water users on the timing and duration of the disruptions.	Available budget of Regional Directorate of State of Hydraulic Works	Implementing: DSI 20th Regional Directorate Supervising: DSI General Directorate
Worker camp	The unsuitable arrangement of the workers' camp location poses a risk of causing severe damage to environmentally and socially sensitive receptors.	The Contractor, in coordination with DSİ Regional PIU, 20th Regional Directorate and Kahramanmaraş Irrigation Union, a construction site with worker camp of approximately 10,000 m2 will be established to meet the social needs of these personnel, primarily accommodation, and to provide parking, maintenance, and repair areas for all the vehicles and equipment to be used during the construction and the selected location will be approved by DSİ Regional PIU.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Cultural Heritage	Çöçelli 1st Degree Archaeological Site (Çöçelli Rock Tomb and Cistern), Domuztepe Mound 1st Degree Archaeological Site, Evri 1st Degree Archaeological Site, Kubatlı Han, Structure Remains and Water Cistern in Karabıyık Village, Karaçay Village where the Hittite Stele and other finds were found, Karahöyük (Külhaş Mound), Çatalhöyük, Dulkadiroğlu 1st	Workers will receive training on the "Chance Find Procedure". The sub-project will keep a safe distance to the mound, which will be surrounded by a protective barricade, and will be protected during construction.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	and 3rd Degree Archaeological Site, Osmandede Tomb, and Elif Ana Tomb are located in the left bank irrigation area or in the area of influence. When a value that is part of the cultural heritage is found, if the issues related to the preservation of this value are not managed with a chance find procedure, there can be a risk of losing this value.			

Table 6-2 Mitigation Measures in Construction Phase

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
Disclosure	Insufficient disclosure of project information can hinder effective communication and stakeholder engagement, leading to limited transparency and potential mistrust.	• Before start of project, draft ESMP, SEP etc will be subject to public disclosure and consultation, and information about the public GM. • Before the start of construction works, the local people and all relevant stakeholders will be informed of the works to be performed and the measures to be taken. • The information on the start and finish dates of construction and working periods and the permits obtained from the government agencies will be shown by the settlements a signboard.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Water Use, Water Quality and Wastewater Generation	• During the realisation of the subproject activity, there is a demand for potable and potable water for the personnel who will work. Excess water use or poor management practices may deplete local water resources, affect ecosystems and water availability for others. • Untreated discharge of wastewater to surface waters or groundwater basins may cause water pollution in water resources.	• All water requirements needed during the construction phase will be supplied from Kartalkaya Dam as it is currently the main source of water used in the region. The irrigation authority is Kahramanmaraş Irrigation Union. • Wastewater will be collected with a sealed septic tank both pre-construction and construction phases, and conveyed to the Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP by sewage truck. In case Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP is not suitable for wastewater disposal, Kahramanmaraş Municipality's Türkoğlu-Kılılı WWTP can be considered as an alternative. The wastewater treatment plants are municipal wastewater treatment plants and have Environmental Permit Certificates for wastewater discharge. • Surface water resources will not be used for washing and cleaning of vehicles to be used for construction works. Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface waters. The floors of these designated areas will be made from impermeable material such as concrete, etc., inclined to collect the washing wastewater and wastewater accumulated there will	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate, and Kahramanmaraş Irrigation Union

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		be disposed of at a licensed disposal facility. • In case the trenches excavated for pipes are filled with surface water, ground water or rainwater, the potential muddy water to be discharged from these trenches will not be discharged directly to receiving bodies. • The flow of natural waters will not be obstructed or diverted to in another direction.		
Waste Management	• The project may generate a significant amount of solid waste and limited amount of hazardous waste from construction materials, packaging, maintenance activities, and operational processes. • Inadequate waste management practices, such as lack of proper waste segregation, temporary storage, recycling facilities, or disposal systems, can lead to improper disposal of solid and hazardous waste. • Improperly managed solid and hazardous waste can result in pollution of soil, water bodies, and air, potentially causing harm to ecosystems, wildlife, and human health.	• Measures will be taken to minimize waste generation such as training personnel to raise awareness (i.e., all necessary waste management training and periodic repetition of these trainings will be provided to the personnel) and managing waste in accordance with waste management hierarchy (prevent, reduce, reuse, recycle, recover, dispose). Waste prevention strategies and putting recycling/reuse/ recovery plans into practice will considerably reduce the total amount of waste and the remaining waste will be disposed by avoiding potential risks and impacts on human health and environment with appropriate mitigation measures. • Waste will be segregated as recyclable, hazardous and non-hazardous waste. Mineral construction wastes will be separated from general refuse, organic, liquid, and chemical wastes by on-site sorting and stored in appropriate containers. Non-hazardous wastes, inert and biodegradables wastes and also recyclables will be collected separately, and special attention will be paid to prevent hazardous wastes from mixing with other types of wastes. • Temporary waste storage area (to be established at the construction area) will be on an impermeable ground, covered with a roof, and equipped with a suitable drainage system, proper spill kits and appropriate firefighting equipment. Wastes will be temporarily stored in this area in separate compartments (labelled with waste codes) according to their types in order not to react with each other. Except for medical wastes, hazardous wastes shall be stored in the temporary waste storage area for a maximum of six (6) months and non-hazardous wastes for a maximum of one year. If one thousand kilograms or more per month hazardous waste is produced, a temporary storage permit will be obtained from the Provincial Directorate of Environment, Urbanization and Climate Change. • Records will be kept about the waste generation, storage and disposal. A Waste Registry Information Form will be prepared in this respect that will contain information on the waste code, amount, and transfer and disposal method as presented in the Waste Management Regulation.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		Annual Waste Declaration (for all types of waste) will be submitted via the Integrated Environmental Information System to the Ministry of Environment, Urbanization and Climate Change (MoEUCC). • All protocols to be made regarding waste management (recycling, disposal, etc.) will be submitted to the DSI Regional PIU.		
Excavation Works and Excavation Waste/Material	• Excavation generates waste material, including soil, rocks, and debris. • Improper disposal of excavation waste can harm the environment, contaminating soil, water, and nearby ecosystems. • Excavation materials can lead to the deterioration or loss of topsoil, essential for healthy plant growth and agriculture. • Excavation disturbs soil structure, exposing bare soil and increasing the risk of erosion and sedimentation in nearby water bodies. • Poorly stockpiled earth from excavation poses a safety threat, potentially endangering workers and nearby individuals. • Excavation activities can cause aesthetic damage, altering the natural beauty of the landscape.	• Excavation material will be re-used for backfilling purposes as much as possible and recovery and other re-use options will be considered as appropriate. • The contractor shall ensure that sufficient area is left along the construction route and make an arrangement for temporary storage of excavated material and topsoil. The area will be restored later, and the topsoil will be used for this purpose. • Excess excavation material (including rocks and stones extracted during the excavation) will not be left on site after completion of construction works. The excess excavation waste/material will be transported and disposed of separately by licensed transport vehicles to existing licensed excavation waste storage area(s) having sufficient capacity and identified by the relevant governmental authorities (as provided in Chapter 5), in line with the Regulation on the Control of Excavation Material, Construction and Demolition Wastes. • Excavation works will be carried out only within the related area, and any damage on neighboring areas by excavation works will be avoided. • The trenches will be protected against flooding due to surface waters. • Erosion control measures will be taken for areas where excavation materials are stored. • Excavation wastes will be stored by the Contractor in areas determined by Narlı, Pazarcık or Kahramanmaraş Municipalities or Pazarcık District Governorate within the framework of the relevant legislation	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Soil Quality (Erosion and Contamination)	• Project activities, such as land clearing and construction works can increase soil erosion by removing vegetation cover, altering natural drainage patterns, and exposing bare soil to erosion agents like wind and water. • Accidental spillages or leakages of chemicals, fuels, or other hazardous substances used in the project can contaminate the soil. • Contaminants in the soil can leach into	• In order to eliminate the risk of erosion in periods of excessive rainfall, the waters from the project surroundings and slopes will be separated from surface run-off by directing through temporary channels and soil embankments. • Erosion control measures will be implemented following the completion of excavation works. • Around the topsoil and excavated material stored at designated temporary storage areas, dikes will be established to prevent loss of soil, as needed. • All of the disturbed sites will be restored to the most possible extent in a timely manner following the completion of stripping and excavation	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	groundwater, potentially polluting water sources and posing risks to drinking water supplies.	works. • The topsoil layer on the pipeline route and operational and maintenance road route will be stripped and conserved in appropriate temporary storage areas for use in restoration activities, particularly for the pipeline. The slope to be maintained in these areas will not be more than 5% to prevent wind and water erosion losses that may occur during storage and to preserve the quality of the soil. • Topsoil and subsoil will not be mixed in any case. • Mitigation measures specified in "Chemicals and Hazardous Materials Management" and "Waste Management" sections will be applied for proper waste and chemicals and hazardous materials management. • Proper spill response kits will be available at appropriate locations at the work areas for possible spillages/ leakages. • Containers containing hazardous chemical materials will be placed in sealed vessels to prevent spills and leaks. • All chemicals storage containers, including diesel fuel, and hazardous liquid waste drum/containers will be placed in secondary containment to minimize the risk of soil contamination.		
Land Use	• Improperly planned construction activities can result in land disturbance, including excavation, grading, and temporary storage of materials, which may cause damage to the adjacent land and its structures. • Construction operations may limit or restrict landowners' access to their properties, potentially impacting their ability to carry out farming or other activities on the land.	• Training will be provided to the construction personnel so that they maintain the pre-established construction boundaries. • Implement Project Grievance Mechanism. If any complaints related to arable lands are received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions. • Contractor will ensure that necessary corrective measures are taken from its own budget, in case of direct or indirect damage caused by project activities to adjacent properties that are state-owned or private property • Acquisition of lands including easement rights to be in place before construction. LAP/RP to be implemented and compensation paid before physical works starts.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Chemicals and Hazardous Materials Management	• Improper management practices or accidental releases of chemicals and hazardous materials can lead to spills, leaks, or accidental releases, resulting in not only pollution of soil, water and air but also ecosystems by harming biodiversity and disrupting ecological balance.	• A safe, closed, leak-proof chemical and hazardous materials storage area with adequate ventilation will be maintained at the site. There will be appropriate warning signs at the area, and it will be equipped with appropriate fire extinguishers and spill kit response kits. • The temporarily storage on site of all chemical and hazardous (or toxic) substances will be in safe containers labelled with details of composition, properties, and handling information. The containers of hazardous substances will be placed in a leak-proof container to prevent	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	• Exposure to hazardous chemicals can pose risks to workers' health and safety, potentially leading to injuries, illnesses, or long-term health effects.	spillage and leaching, as appropriate. • Safety Data Sheets of all chemical and hazardous materials will be kept at the storage area and at the camp site. • The storage area will be locked and a competent worker, particularly trained in chemicals and hazardous materials, will be appointed for the management of storage area. • Adequately sized secondary containment will be provided for hazardous substances that may leak. • A secured area will be used for refueling and transfer of toxic fluids distant from the settlement area (and at least 50 meters from drainage structures and 100 meters from water bodies); ideally on a hard/non-porous surface. • Workers will be trained on correct transfer and handling of fuels and other chemical and hazardous substances and require the use of gloves, boots, aprons, eyewear and other protective equipment for protection in handling highly hazardous materials. • Strict safety protocols for workers handling with chemicals and hazardous materials will be established. • In case of spillage/leakages during the construction work, the procedures (including spill response plans) defined in emergency plans to address potential emergencies related to chemicals and hazardous materials will be followed. • Unapproved toxic materials including lead-based paints, un-bonded asbestos, etc. will not be used. • Contaminated chemicals and hazardous substances will be treated as hazardous waste and will be disposed of accordingly. • All chemicals and hazardous materials from work areas will be collected at the end of the workday and transported to the chemical and hazardous materials storage area. • Chemicals and hazardous materials that may cause leakage will be kept in secondary containment when used in the work area.		
Waste Oils	• The sub-project may generate waste oils from maintenance activities, equipment lubrication, or oil changes. If waste oils are not properly managed, there is a risk of improper disposal, such as illegal dumping or improper storage, leading to environmental pollution and potential health hazards.	• Maintenance materials such as oily rags, oil filters, waste oil, etc. will be collected and properly disposed of. Waste oils will never be disposed of on the ground and/or in water courses. • In case different types of waste oils (in different categories) generated at the construction site, these waste oils will be stored separately. • Containers which are used for storage of waste oils will be kept closed to prevent rainwater from mixing with waste oils. • The disposal of waste oils will be done by licensed recycling or disposal	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		facilities and will be transported to these facilities with licensed vehicles, in line with Waste Oil Management Regulation.		
End-of-life tires	There is a risk of improper disposal, such as dumping in unauthorized areas or burning of end-of-life tires. If end-of-life tires are not properly managed, it can release pollutants into the air, soil and water, potentially contaminating ecosystems and affecting human health.	End-of-life tires will be delivered to companies that distribute and sell tires via authorized transportation companies in line with the Regulation on the Control of End-of-Life Tires in cases when vehicles' tires need to be changed during construction activities.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Waste Batteries and Accumulators	If not managed correctly, waste batteries and accumulators can be improperly disposed of, leading to contamination of soil and water, affecting ecosystems and human health. Failure to recycle or recover valuable materials from waste batteries and accumulators can contribute to resource depletion and the need for additional raw materials.	Transportation of waste accumulators and batteries to respective disposal facilities will be conducted by licensed and authorized transportation companies in line with Regulation on Control of Waste Batteries and Accumulators. Waste batteries and accumulators will be collected separately from other waste types.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Waste Electrical and Electronic Goods	• When thrown into nature, they release toxic metals such as lead, cadmium, and mercury, which contribute to pollution. • These metals, when introduced into nature, can enter the food chain and pose a threat to human health. • Valuable metals contained within them are destroyed rather than reclaimed.	• Electronic wastes will be collected separately from other waste types. • The resulting electronic wastes will be sent to the licensed recycle facilities within the framework of the Regulation on Management of Waste Electrical and Electronic Goods published in the Official Gazette No. 32055 (26.12.2022).	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Noise	• The project activities, such as machinery operation, construction, or equipment maintenance, can generate high levels of noise, causing disturbance and annoyance to nearby residents, workers, and wildlife.	• Machinery, equipment and vehicles with lower sound power levels and sound reduced models will be preferred. • All equipment will be maintained to keep it in good working order by manufacturing maintenance procedures and installing acoustic enclosures around generators to reduce noise levels. • Construction equipment will not be operated simultaneously as much as possible. Machines that are intermittently used will be shut down or used minimally during operational breaks. • Noise-generated construction operations will be limited to restricted time periods specified in the national legislation. The construction site activities will not be carried out in the evening and nighttime periods. • Construction activities will be planned in consultation with nearby communities so that the noisiest activities are undertaken during periods that will result in the least disturbance.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		• When needed and feasible noise-control methods such as fences, barriers or deflectors will be used. • Unnecessary use of alarms, horns and sirens will be avoided. • Driving construction vehicles through settlements will be avoided where possible. • In order to protect the employees from the noise caused by machinery and equipment; work will be carried out in accordance with the provisions of relevant OHS legislation and necessary measures (such as provision of appropriate ear protection equipment to the workers) will be taken to protect workers from health and safety risks, especially hearing risk, as a result of exposure to noise. • In order to keep the noise level to a minimum, the provisions of the Environmental Noise Control Regulation will be complied with. • Compliance with the noise limit values provided in national legislation and WBG General EHS Guidelines will be ensured.		
Air Quality (dust and exhaust emissions)	• Project activities, such as earthmoving, construction, or vehicle movement, can generate dust particles that become airborne, leading to elevated dust levels in the surrounding areas. • Elevated dust levels can reduce visibility, potentially affecting road safety and creating hazards for workers and motorists. • The use of machinery, vehicles, and equipment can emit exhaust gases. Exhaust emissions contribute to air pollution, impacting air quality, and potentially leading to environmental and health issues for nearby communities and ecosystems.	• Truck loading and unloading operations will be carried out with due care, and materials will be prevented from scattering around. • Dust from exposed work sites will be minimized by applying water on the ground regularly during the dry season. • Dust from outdoor sources will be minimized by employing control measures such as covering the piles and increasing the moisture content. • Modern equipment and vehicles that can meet the applicable emission standards will be selected for construction works. • All vehicles and equipment will be regularly maintained to prevent emissions from vehicles and maintenance records will be kept. • There will be no excessive idling of construction vehicles at sites. • Operation hours of generators/machines /equipment /vehicles will be reduced, if needed. • Speed limit will be established for trucks (30-40 km/h) within the settlements. • Dust measurements will be conducted by an authorized laboratory accordingly if any grievance regarding dust generation is received from the nearest receptors. • Construction or waste materials will not be burned outdoors. • In order to minimize the dust and impacts that may occur in soil stripping and cut and fill works; measures such as water spraying at emission source, filling and unloading operations without tossing, covering vehicles with tarpaulin during material transportation and	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		keeping the upper part of the material at 10% humidity will be taken. • In accordance with the Exhaust Gas Emission Control Regulation; vehicles with traffic inspections, exhaust gas emission measurements will be used, and vehicles that need maintenance will be taken into maintenance after routine checks and other vehicles will be used until their maintenance is completed. • Compliance with the ambient air quality limit values stipulated in Regulation on Assessment and Management of Air Quality and WBG General EHS Guidelines will be ensured.		
Occupational Health and Safety (OHS)	• Workers involved in construction activities, such as installing irrigation structures or working on elevated platforms, face the risk of falls, leading to serious injuries or fatalities. • Workers may be at risk of being struck by moving equipment, falling objects, or vehicles operating in the construction area, causing injuries or even fatalities. • Workers involved in excavation or trenching activities face the risk of cave-ins, engulfment, or exposure to hazardous gases, which can result in injuries or fatalities. • Construction activities may involve working near overhead power lines or with electrical equipment, posing risks of electrocution or electrical accidents if proper precautions are not taken. • Handling and use of hazardous materials, such as chemicals or fuels, during construction can lead to exposure risks, including respiratory issues, skin conditions, and chemical toxicity.	• Plan activities to prevent injuries by addressing potential hazards at the construction site, assessing workers' skills and fitness, checking equipment functionality, and ensuring electrical safety practices. • Implement the OHS Plan and related procedures on site. • Provide employees with OHS training and conduct daily toolbox talks. • Ensure a safe and healthy work environment, informing workers of safety rules, risks, and regulations. • Employees will be familiar with emergency plans and grievance resolution. • Provide necessary personal protective equipment (PPE). • Use equipment that meets international safety standards. • Record all training, accidents, incidents, and near misses. • Send daily activity reports to DSI weekly. • Notify DSI Regional PIU of incidents or accidents, providing necessary details and follow-up actions. • Ensure health assessments for personnel exposed to occupational risks. • Implement access restrictions at construction sites and mark hazardous zones. • Install appropriate traffic control devices, including nighttime signage. • Conduct hazard identification for each task. • DSI Regional PIU will ensure OHS measures are implemented and enforce actions when needed. • Perform daily site inspections. • Only qualified drivers/operators will operate vehicles. • Enforce speed limits and conduct regular vehicle maintenance. • Follow Labor Law No. 4857 working hours. • Ensure only certified personnel work at height, with proper safety measures. • Only qualified personnel will work in hazardous conditions, such as noise or chemicals.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		• Adhere to safety guidelines for hazardous materials handling. • Store corrosive or toxic materials properly. • Ensure structural openings are protected. • Equip moving machinery with back-up alarms and guide operators with flagmen. • Mark electrical devices and inspect cords for safety. • Restrict access to excavation areas to authorized personnel. • Supervise loading and unloading activities. • Secure construction areas and prevent unauthorized access. • Implement emergency preparedness and response plans, including drills. • Provide first aid equipment and ensure emergency response protocols. • Block public access to the construction site with barriers and warning signs. • Comply with Labor Law, Occupational Health and Safety regulations, and World Bank EHS Guidelines. • Develop and implement a Labor Management Plan addressing worker conditions and rights. • Provide written contracts outlining job descriptions, wages, and working conditions for employees. • In the event of any workplace accident, incident, or near-miss, prepare a detailed incident report including the type, time, location, number of affected individuals, and corrective actions taken. • Notify the DSI Regional PIU and the World Bank (WB) immediately for major incidents and within 24 hours for other significant events. • Submit follow-up reports outlining root cause analysis, implemented corrective actions, and preventive measures to avoid recurrence. • Conduct thorough investigations for all OHS incidents, including root cause analysis and lessons learned. • Maintain a record of all incidents and corrective actions in the project's OHS register for monitoring and audits. • Establish a clear communication protocol for escalating incidents to DSI, WB, and other relevant stakeholders. • Share updates and reports with DSI and WB as part of regular project progress reviews.		
Emergency Preparedness and Response	• Incidents or emergencies that arise during the construction phase may experience delayed response times. • Incidents such as fires, structural failures,	• A sub-project-specific Emergency Preparedness and Response Plan for the construction phase covering the risks on local communities will be developed and implemented. • Measures/systems for collaboration with the local communities and	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	or hazardous material spills can escalate quickly, causing extensive damages to the construction site, equipment, and nearby properties. The resulting repair and recovery costs can significantly impact the project budget and schedule.	other external parties including local governmental agencies, media, etc. will be developed, where necessary. • Local communities will be notified by using appropriate tools (e.g., telephone call lists, vehicle mounted speakers) in case of emergencies arising from the project work/construction sites may pose risk on them. • Where necessary, the details of the nature of the emergency, protection options, etc. will be communicated through trained community liaison officer(s). • The media will be communicated through qualified, trained persons and/or by using appropriate tools (i.e., press releases), where necessary.		Directorate
Security	• Acts of vandalism or sabotage may occur, leading to damage and delays in construction. • The project may experience theft, vandalism, trespassing, or other security incidents during the construction phase, both inside and outside the project area. • Use of unsuitable security personnel may compromise the safety and reputation of the project.	• Security personnel will be hired in accordance with Article 24° of ESS4, which outlines the requirements. • A risk assessment will be conducted for the risks posed by security arrangements both inside and outside the project area. • The borrower will adhere to the principles of proportionality, GIIP, and applicable national legislation regarding the hiring, training, equipment, and monitoring of security personnel. However, since national law does not require assessments for armed security forces, ESS4 will be followed. • An inquiry will be conducted during the hiring process of security personnel (or the security service provider) to assess competency and check for any past abuse incidents. • Security personnel will receive training on the code of conduct, gender sensitivity, and local cultural awareness, or the security service provider will ensure their personnel receive similar training. The training will emphasize the use of force solely for preventive and defensive purposes, in proportion to the threat.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Traffic and pedestrian safety due to construction traffic	• Construction vehicles entering and exiting the project site can contribute to traffic congestion, especially in areas with limited road capacity. • Construction activities may create hazards such as uneven surfaces or debris, increasing the risk of accidents. • Altered walking routes and proximity to construction areas can pose risks to pedestrians, including slip and trip hazards.	• All construction areas and construction access routes will be screened for potential community interaction (with a particular attention to schools, children parks, etc.) with project construction phase traffic. Based on results, a site specific measures will be developed and implemented (i.e., improve signage, visibility) and trainings to driver/operator will be provided prior to initiation of any construction work. • Access restriction at construction areas and access routes will be implemented by specifying restricted zones. • Signs, signals, markings and other appropriate traffic regulation devices will be installed, including reflective and flashing signage for nighttime traffic safety, at all required sites.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		• Passage of construction traffic through the settlements will be avoided, whenever alternative roads are present. • Where passage through existing settlements is unavoidable, all necessary measures (i.e., speed limits, traffic signs, driver trainings) will be taken to prevent safety risks on local communities. • Only drivers/operators with valid licenses will be allowed to drive/operate vehicles. • Driving skills improvement trainings will be provided in consideration of the requirements of specific vehicles, machinery, etc. • Speed limits at all construction sites will be implemented. • Periodic medical checks for drivers/operators will be conducted. • Periodic vehicle maintenance will be conducted. • Information and awareness raising activities with stakeholders and communities including women, children as well as disabled will be provided.		
Cultural Heritage	Construction activities may accidentally damage or destroy archaeological sites, artifacts, or cultural heritage features that are discovered during excavation or earthworks.	• Contractor will take all physical activity on hold upon encountering of a chance find and immediately inform 20th Regional Branch Office of DSI and DSI Regional PIU. (Please see Annex-3 Change Find Procedure for the details) • Chance Finds Procedure will be implemented to manage potential tangible cultural heritage and documenting any discovered tangible cultural heritage by recording its forms and collecting relevant documents. • Details of Chance Finds Procedure to manage potential tangible cultural heritage can be found in Annex-3.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Stakeholder Engagement	• Insufficient communication and engagement with stakeholders, including local communities, landowners, and relevant organizations, can result in misunderstandings, mistrust, and dissatisfaction. • Inadequate consideration of stakeholder concerns, needs, and social dynamics can result in social disruptions, inequities, or negative impacts on the affected communities.	• SEP will be implemented, and GM will be operated. • Before the start of construction works, the local people and all relevant stakeholders will be informed of the works to be performed, start and finish dates, and the measures to be taken in accordance with SEP. • Contractor is responsible to: • Assign local liaison person to lead communication with and receiving requests / complaints from local population. • Consult local communities to identify and proactively manage potential conflicts between an external workforce and local people. • Install banners with the name and contact information of contractor in visible locations around/along the work sites to ensure local communities can raise concerns and ask questions to contractor • Raise awareness of local communities about any inconveniences they may experience and risks them may face due to presence of an external	Included in construction cost	Implementing: DSI 20th Regional Directorate Supervising: DSI General Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
		workforce in proximity to their settlements and works to be undertaken. • Raise awareness of workers on overall relationship management with local population, establish the code of conduct in line with international practice and strictly enforce them, including the dismissal of workers and financial penalties of adequate scale.		
Vulnerable Groups	• Construction zones can pose safety hazards to road users, including the presence of heavy machinery, loose debris, or uneven road surfaces, increasing the risk of accidents or damage to vehicles. • Construction activities may result in temporary road closures or disruptions, limiting or restricting access for local communities, businesses, and transportation. • Repair/maintenance works that may cause temporary disturbance may threaten public health. • During the construction phase of the project, local communities or contractor personnel may face negative impacts related to ethical behavior and codes of conduct, as well as sexual exploitation and abuse/harassment.	• The use of access roads should be planned in a way that does not pose risks the travel safety of shuttle vehicles in villages with bussed training, and traffic measures (warning signs, speed limits, and information about settlements and schools for the periods when large and dangerous goods will be transported) should be taken. • The grievance mechanism should be actively and efficiently operated. • The blockages in the access roads shall be at minimum during the construction period and any blockage shall be planned prior to execution. An advance notice shall be given to the Headman including timing and point of blockage and an alternate route which to be used in case of emergency. • Schedule works beyond irrigation season to the extent possible to avoid/minimize service disruption. Inform local population about construction and work schedules. • Restricted vehicle movement to defined access routes and demarcated working areas to prevent excessive damage to vegetation and soil. Use noise-generating technologies between 08.00a.m-19.00 p.m. • The community liaison officer should be introduced to the local community and updated information about the grievance mechanism should continue to be provided. • The Grievance Redress Mechanism developed for all personnel working on site will be operational and grievances will be followed up. Procedure will be provided in case of grievance. • Implementation of the Contractor's Labour Management Plan (C-LMP) based on the TWCEIP LMP will be ensured.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate
Resettlement and Land Acquisition	• Construction activities may require the resettlement of communities living in the project area, leading to the displacement of families and disruption of their social structures. • Improper rehabilitation measures can leave affected communities without adequate means to rebuild their lives or access comparable livelihood	• Land Acquisition Plan will be prepared based on TWCEIP 's LAPF. • Land acquisition and implementation of LAP/RP is supposed to be completed before construction starts.	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	opportunities.			
Documentation	Missing Documentation	All activities, information meetings, opinions/suggestions, grievances, etc. provided during the construction period will be documented continuously	Included in construction cost	Implementing: Contractor Supervising: DSI 20th Regional Directorate

Table 6-3 Mitigation Measures in Operation Phase

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
Delivery of irrigation services to water users	• Excessive/improper irrigation of fields leads to soil erosion and salinization. • Poor operation of pipes and hydraulic structures causing water loss, flooding, and waterlogging of areas along the right of way.	• Regular site observations will be made by the maintenance and operation team of DSİ. In case of any malfunction or damage that will cause any water loss, immediate intervention will be made. • An awareness-raising campaign will be undertaken to target irrigation water users and promote adequate and rational irrigation practices. • In cases where irrigation needs are not met, immediate feedback can be received from local people through the complaint mechanism.	Included in sub-project cost	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate
Water Supply	The project activity may lead to water demand. Excessive extraction or inadequate management practices may deplete local water resources, affecting ecosystems and water availability for others.	Water requirements will also be supplied from Kartalkaya.	Included in Operation service	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate
Wastewater	Untreated wastewater discharge can lead to water pollution in nearby water resources.	The compound of Kahramanmaraş Irrigation Union located within the boundaries of Narlı Municipality is connected to the sewerage system and all wastewater is sent to Pazarcık-Narlı Advanced Biological WWTP through the sewerage system.	Included in Operation service	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate
Wastes from maintenance and repair work (Waste Management)	• Improper management of maintenance and repair wastes, such as hazardous waste, oils, chemicals, or construction debris, can lead to environmental pollution, soil contamination, or water pollution. • Improper handling and disposal of maintenance and repair wastes can pose health and safety risks to workers and nearby communities, including the risk of exposure to harmful substances or	• Wastes generated during maintenance and repair works will be disposed of without causing additional pollution, as determined by the related national waste legislations. • All possible waste generated during maintenance and repair work will be disposed according to Annex 4 of the Regulation on Waste Management. • Wastes from maintenance and repair works will be characterized based on their composition, source, types, generation rates or national legal requirements and waste will be collected separately as per their type and temporarily stored in appropriate containers. • In addition to the adoption of waste prevention strategies, putting recycling plans into practice will considerably reduce the total amount of	Included in Operation service	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	accidents.	waste. • If waste materials are still generated after appropriate waste prevention, reduction, reuse, and recycling measures are put into action, waste will be disposed of at licensed facilities. • Municipal solid waste will be collected by the relevant municipality, hazardous waste will be transferred to a licensed disposal facility via licensed waste transportation companies, and recyclable wastes to a relevant licensed recycling/recovery facility.		
Air Quality and Energy Saving	The maintenance and repair activities can contribute to air pollution through the release of pollutants from machinery and vehicles, and dust generation from relevant activities.	• Dust suppression techniques such as the application of water or non-toxic chemicals should be used to minimize dust from vehicle movements. • Modern equipment and vehicles that can meet the applicable emission standards will be selected for operation works. • All vehicles and equipment will be regularly maintained to prevent emissions from vehicles and maintenance records will be kept. • There will be no excessive idling of construction vehicles at sites. • Speed limit will be established for trucks (30-40 km/h) within the settlements.	Included in Operation service	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate
Chemicals and Hazardous Materials Management	• Improper management practices or accidental releases of chemicals and hazardous materials can lead to spills, leaks, or accidental releases, resulting in pollution of soil and water resources.	• Mitigation measures provided on chemicals and hazardous materials management in Table 6-2 for construction phase will be implemented during maintenance and repair activities, as appropriate.	Included in Maintenance service	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate
Community Health and Safety (CHS)	• Accidents, injuries, and potential health risks for community members, workers, and project personnel. • Poor water quality or improper sanitation practices can lead to the spread of waterborne diseases within the community.	• Grievance mechanism will be established for operation period; will track OHS and Community Health and Safety issues especially if maintenance and/or repair works are conducted. • Other than repair works, irrigation purposed reservoirs may contain and produce water borne diseases. Although the system is closed circuit system, still warning signs shall be utilized to assure population using the irrigation system not to drink nor use the irrigation water as potable water. Such as “SULAMA SUYUDUR KESİNLİKLE İÇİLMEZ” • The environmental and social team can work together to offer preventive measures for poor water quality or inappropriate sanitation practices. • A record of symptoms/diagnoses of waterborne diseases within the community can be kept at certain periods (such as every 6 months).	Included in Operation service	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate
Seismicity	Seismic events can cause damage to infrastructure such as water intake structure,	All replaced structures of irrigation system within the maintenance and repair works of project must be selected as per high earthquake resistance	Included in Operation service	Implementing: Kahramanmaraş

Impact of Project Activity	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation (if substantial)	Responsibility
	irrigation pipes and art structures compromising their functionality.	parameters since Kartalkaya Irrigation System is located in 1st degree earthquake risk zone.		Irrigation Unit Supervising: DSI 20th Regional Directorate
Grievance Mechanism	Inadequate grievance mechanisms can lead to unresolved community concerns and grievances and escalate social tensions and conflicts within the community.	• Grievance mechanism will be established for OHS and Community Health and Safety issues in operation period. • Updated information about the grievance mechanism will be provided permanently.	Included in Operation service	Implementing: Kahramanmaraş Irrigation Union Supervising: DSI 20th Regional Directorate

7 IMPLEMENTATION AND MONITORING

7.1 Implementation Arrangements

The Contractor will develop its Contractor ESMP (C-ESMP) that will include relevant site-specific sub-management plans in line with this ESMP and Labour Management Plan based on the LMP of The Türkiye Water Circularity and Efficiency Improvement Project before construction works commence (as stipulated in Table 6-1 as well). The contractor will, but not limited to:

- Have sufficient E&S capacity with sufficient qualifications and skills assigned on site (at least one Social Expert, one Environmental Expert and one full-time OHS Expert),
- Develop C-ESMP that will include relevant site-specific sub-management plans before construction works commence, as part of their method statement and submit to DSI Regional PIU (20th Regional Directorate of DSI) for reviewing and approval by PMT,
- Duly implement the mitigation measures set out in the site-specific ESA documents and respective sub-management plans for construction work,
- Control and minimize environmental and social risks and impacts,
- Ensure that all staff and workers understand the procedures and tasks in the environmental and social management program,
- Ensure environmental hygiene and a safe and healthy work environment for the workers,
- Submit monthly environmental and social monitoring reports throughout the construction period to DSI Regional PIU through 20th Branch Office of DSI,
- Promptly notify DSI Regional PIU (through 20th Branch Office of DSI) of any incident or accident related to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public and workers in incidents including OHS accidents or that result in threatening community health and safety, and keep an incident register at construction site throughout the project life,
- Be responsible for the training of staff and workers regarding environmental, social and OHS issues.

7.2 Disclosure and Consultation of the ESMP

This ESMP along with the SEP chapter and LAP/RP prepared for this subproject will be disclosed for at least 15 days on TWCEIP and DSI's (and other relevant institutions') webpage and will be consulted upon. In line with the outcomes of the consultations the E&S documents will be updated to address the comments received from the stakeholders. The updated final versions will be redisclosed on the webpage of the respective institutions and will also be made publicly available at the construction site during the life of the Project.

7.3 Monitoring and Evaluation (M&E)

Environmental and social monitoring system starts from the pre-construction phase of the project thorough the operation phase, verifying the implementation of the mitigation measures in the E&S instruments and assessing their effectiveness, thus enabling the WB and the Borrower to take action when needed. The monitoring system provides:

- Technical assistance and supervision when needed.
- Early detection of conditions related to particular mitigation measures.
- Follow up on mitigation results.
- Provide information on the project progress.

E&S issues and implementation of the ESMP will be monitored closely and continuously throughout Environmental and Social Monitoring Reports (ESMRs) to be prepared weekly by the Contractor operating in the project site. Reports prepared by environmental, social and OHS experts assigned to the Project of the Contractor shall be validated and E&S implementation shall be independently

monitored and reported to 20th Regional Directorate of DSI for supervision and validation. The Regional Directorate shall send weekly ESMRs to DSI Regional PIU. The reporting cycle will be concluded by the submission of the weekly ESMRs which are cleared by Regional Branch Office (supervision) in a level of details satisfactory to DSI Regional PIU.

If DSI Regional PIU notices any problems in ESMP, LMP, or SEP implementation, it will inform DSI Regional Branch Office and agree with them on steps to rectify these problems. Specifically, for any incident or accident related to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public and workers including OHS accidents or incidents that result in threatening community health and safety, the Contractor will promptly notify DSI Regional Branch Office and DSI Regional PIU will immediately inform PMT. The PMT will inform the World Bank about the incident within 48 hours after the occurrence of the incident or accident. In such cases, sufficient details regarding the incident or accident will be provided, indicating immediate measures taken or that are planned to be taken to address it, and any information provided by the Contractor and Supervision Consultant, as appropriate. Subsequently, as per the Bank's request, a report on the incident or accident will be prepared and any measures to prevent its recurrence will be proposed. The report (incident report including root cause analysis, precautions and compensation measures taken) will be provided within 30 business days to the Bank, as requested.

Monthly ESMRs will be prepared by environmental, social and OHS experts assigned to the Project or E&S Monitoring Consultant of DSI Regional PIU (20th Regional Directorate of DSI) and submitted to PMT.

Quarterly ESMRs will be prepared by environmental, social and OHS experts assigned to the Project or E&S Monitoring Consultant of DSI Regional PIU (20th Regional Directorate of DSI) and submitted to PMT. The reporting cycle will be concluded by the submission of the quarterly ESMRs which are cleared by DSİ to WB.

Monitoring frequency

Personnel of DSI Regional Branch Office shall be on site as a supervisor. Environmental, social and OHS experts assigned to the Project or E&S Monitoring Consultant of DSI Regional PIU on a monthly to monitor for validating weekly ESMRs and preparing monthly and quarterly ESMRs. DSI Regional PIU's OHS expert would be on site on a monthly basis to closely monitor and inspect project site and verify compliance with all applicable mitigation measures defined in the site-specific OHS requirements defined in the ESA documents. More frequent monitoring may be conducted if needed to ensure compliance with the mitigation measures and resolution of any issues that are noted. Depending on the activity, weekly, monthly, quarterly and semi-annual monitoring activities carried out by DSI Regional PIU (20th Regional Directorate of DSI) for E&S compliance will be reported regularly to PMT. PMT will carry out its supervision monitoring as required for each project and report to World Bank quarterly on the progress and updates.

Reporting to the World Bank

In its quarterly project progress reports, DSI Regional PIU will include a section titled "Environmental and Social Standards" which will summarize the status of ESMP commitments and compliance with ESF instruments and all sub-project specific plans such as ESMP, LAP/RP, and SEP implementation based on its monitoring activities. The reports will also provide details of all grievances received (if any) during the relevant reporting period, including the nature and number of grievances, dates received, and actions taken and pending/open complaints. Such reports will highlight any issues arising from non-compliance with environmental and social requirements and how it has been/is being addressed from the environmental and social safeguards point of view.

7.3.1 Types of Environmental and Social Monitoring Reports (ESMRs)

7.3.1.1 Weekly and Monthly ESMRs

Data on E&S issues and implementation of the ESMP will be prepared by the Contractor's

environmental, social and OHS experts assigned to the Project operating at the Project site and will be submitted to the Regional Directorate of DSİ through weekly Environmental and Social Monitoring Reports (ESMR) reports. The reports will be prepared by the DSI Regional Branch Directorate and DSI Regional PIU and approved by the PMT.

DSI Regional PIU is responsible for the preparation of the Monitoring and Evaluation Report to be submitted to the PMT. DSI may use consultant/consultant firm for this activity if deemed necessary.

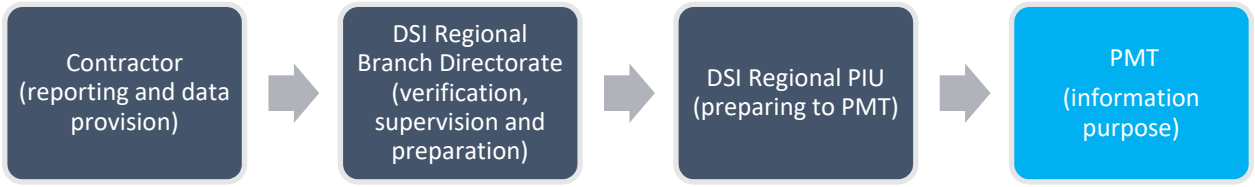

Figure 7-1 Weekly ESMR flow chart

DSI Regional PIU shall submit the monthly ESMRs to PMT which has been prepared by EHS team of DSI Regional PIU (20th Regional Directorate of DSI) which details the construction and compliance activities completed during the month, and to track the resolution of any issues that may have occurred. The reports should include the following information for the period:

- Summary of completed construction activities,
- Estimate of remaining construction and schedule,
- Summary of compliance activities (result of monitoring),
- Public and workers grievances:
  - Number and nature of cases submitted,
  - Number and nature of cases pending,
  - Number and nature of the cases resolved,
  - Time it took to resolve for each case,
- Updated list of all EHS incidents and accidents that occurred during the project,
- Follow up information from any past issues that are still being resolved,
- Photographs of project activities related to implementation of ESMP mitigation measures,
- Weekly compliance checklist each day that work occurs in the field.

Figure 7-2 Monthly ESMR flow chart

7.3.1.2 Quarterly ESMRs

Quarterly ESMRs will be prepared by environmental, social and OHS experts assigned to the Project or E&S Monitoring Consultant of DSI Regional PIU (20th Regional Directorate of DSI). PMT shall submit quarterly ESMRs after being reviewed by DSI Regional PIU, to the World Bank to document construction and compliance activities completed during the period and to track the resolution of any issues that may have occurred, for the project under implementation.

- The quarterly report should include the following information for the period:
- Key recommended follow up issues, actions, time frame and responsibility center,
- An introduction, reporting period and monitoring locations,
- Summary of completed construction activities,
- Estimate of remaining construction and schedule,
- Summary of compliance activities,

- DSI Regional PIU's oversight activities (i.e., site visits).
- Updated list of all EHS incidents and accidents that occurred during the project, including attached, notices of non-compliance that were issued,
- Follow up information from any past issues that are still being resolved.

Figure 7-3 Quarterly ESMR flow chart

7.3.2 M&E Plan

Monitoring and Evaluation activities will be conducted according to the M&E Plan below.

Table 7-1 Monitoring Plan

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
Pre-construction/ Construction	C-ESMP and site-specific management plans and procedures (preparation and periodic reviews/updates)	Number of reports prepared and revisions made. Making regular revisions in line with management plans of the Project.	Review and approval of documents	Preparation and approval of documents prior to commencement of construction works and weekly, monthly and quarterly after approval of documents during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU (monitoring) PMT (clearing)
Pre-construction/ Construction	E&S team of the Contractor and related employment records	Number of experts employed. Suitability of experts for the task.	Review and control of employment records	Weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Pre-construction/ Construction	E&S (including OHS) training of workers/personnel and related training records	Number of training and employers to be trained.	Review and control of training records and training program	Weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring)
Pre-construction/ Construction	Stakeholder Engagement and Consultations	Organizing a public consultation meeting. Establishment of a GM. SEP implementation / public meetings and consultations records.	Monthly compliance reports	Only once before the construction start	Available budget of DSI 5th Regional Directorate	Implementing: DSI 20th Regional Directorate Supervising: DSI General Directorate DSI Regional PIU(monitoring) PMT (clearing)

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
Pre-construction/ Construction	OHS expert of the Contractor and related employment records Medical assessment records	Number and qualification of OHS experts. Compliance of the personnel files with the legal requirements	Review and control of employment records Review and control of personnel files	Employment in pre-construction phase and monitoring weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Pre-construction/ Construction	Risk assessment, OHS Plan and Emergency Preparedness and Response Plans (preparation and periodic reviews/updates)	Approval status of the documents	Review and approval of documents	Prior to commencement of construction works and quarterly after approval of documents during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Pre-construction/ Construction	Safety distance maintained for the archeological areas (Çöçelli 1st Degree Archaeological Site (Çöçelli Rock Tomb and Cistern), Domuztepe Mound 1st Degree Archaeological Site, Evri 1st Degree Archaeological Site, Kubatlı Han, Structure Remains and Water Cistern in Karabıyık Village, Karaçay Village where the Hittite Stele and other finds were found, Karahöyük (Külhaş Mound), Çatalhöyük, Dulkadiroğlu 1st and 3rd Degree Archaeological Site,	Construction site. Approval of the Regional Board for the Protection of Cultural Assets or Museum Directorate	Visual inspection of protective barricade maintained for safety distance	Prior to commencement of construction works and weekly, monthly, quarterly during pre-construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	Osmandede Tomb, and Elif Ana Tomb)					
Pre-construction	Negotiation with Kahramanmaraş Municipality's Pazarcık-Narlı Advanced Biological WWTP for the acceptance of wastewater to be generated from labor camp and the project	Institutional meeting records, official correspondence and permissions	Signing a Protocol with the relevant Municipality	Before the construction of the camp site	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Pre-construction	Negotiation with Kahramanmaraş Municipality for the acceptance of wastes disposed to the Integrated Waste Treatment, Recycling and Disposal Facility in Kürtül Village	Institutional meeting records, official correspondence and permissions	Signing a Protocol with the Kahramanmaraş Municipality	Before the construction of the camp site	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Soil quality (number and suitability of topsoil and excavation material storage areas, status of reinstated areas) Soil contamination (number of contaminated sites due to leaks/spills and significance of the case) Soil erosion (number of sites where soil erosion is observed and significance of the erosion) Land use (number of complaints related arable lands received and resolved	Layout plans showing topsoil and subsoil storage locations, Spill and accident records, Visual and written records taken during the field audit	Visual observation Soil sampling and analysis (by accredited and competent firms)	Monthly during construction phase In case of complaints and/or damages occurred	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	in time, number of damages to adjacent properties and respective corrective actions taken in time)					
Pre-construction	Public and workers' Grievance mechanism	Number of complaints received. Number of complaints resolved within 30 days (target 70%). -	Existence of grievance records	Weekly, monthly and quarterly during pre-construction and construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Pre-construction	Contractor firms will be responsible for preparing and implementing sub-project specific Labor Management Plans. They will be responsible for contracting and managing the labor force in accordance with the terms and conditions set out in the Labor Management Plans.	Number of plans and revisions.	Workers' Grievance mechanism	Prior to commencement of construction works and monitoring monthly, quarterly after approval of documents during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Waste management practices on site (number of waste bins/containers, number of trainings on waste management, waste records (including protocols) and amounts, number and suitability of temporary waste storage area(s), number of secondary containments)	Construction of the temporary waste storage area Waste records (including protocols) Training records (on waste management)	Visual observation Waste records (including protocols)	Monthly During construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
Construction	Chemicals and hazardous materials management practices on site (number and suitability of chemicals and hazardous materials storage area(s), number of secondary containments, availability of safety data sheets, number of trainings on chemicals and hazardous materials management)	Establishment of hazardous and chemical material storage areas,	Visual observation Safety data sheets Training records (on chemicals and hazardous materials management)	Monthly During construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Noise (number of vehicles and machinery and their maintenance records, number of noise complaints received and resolved in time, number of trainings on noise)	Environmental Noise Measurement Results (if complaints) Complaint Records	Noise level measurements (by accredited and competent firms) Visual observation Maintenance records of vehicles/machinery and training records (on noise)	Monthly During construction phase In case of a complaint	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Dust emission (settled dust and PM 10) Dust suppression implementations Exhaust emissions (number of vehicles, machinery and equipment and their maintenance records, exhaust emission inspection results of vehicles, number of air quality complaints received and resolved in time, number of trainings on air quality, number of wet dust	Closest settlement in case of complaint	Settled dust and PM_{10} measurements (by accredited and competent firms) Visual observation Training records (on air quality management) Maintenance and exhaust emission records of vehicles	Monthly during construction phase In case of a complaint	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	suppression vehicles and amount water used for dust suppression)					
Construction	Wastewater disposal (wastewater disposal records and respective protocol) Pollution of water resources (number of contaminated water resources due to leaks/spills and significance of the case) Water use (amount of water used for drinking water and dust suppression purposes)	Sewage Truck Records	Visual observation Wastewater disposal records and respective protocol Sampling and analysis of water quality (BOD, COD, NO_3, heavy metals) Water supply and consumption records	Monthly During construction phase.	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Excavation material/waste management practices (number and suitability of excavation material storage areas, excavation material amount used for backfilling and amount send to respective storage areas, excavation material disposal records)	Excavation material storage area permits	Visual observation Excavation material amounts and disposal records	Daily during excavation works Monthly During construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Occupational Health and Safety implementations on site (OHS statistics, number of non-compliances and corrective actions taken in time, number of OHS complaints received from workers and resolved in time, number of OHS trainings, number of	OHS training records, near miss and accident records, construction site observations and interviews, official permits	OHS audits Grievance records (number and nature) Training and toolbox talk records OHS accident statistics including near misses	Weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	occupational safety meetings)		Accident reports Risk assessment Number of drills Records of occupational safety meetings Non-compliance reports PPE delivery records			
Construction	Community Health and Safety (CHS) parameters: Harm and damage records, GM records, Number, understandability and durability of warning signs, CHS informing activities	CHS informing records, near miss and accident records, site observations and interviews in AoI,	Grievance records, (number and nature) and analysis of settled grievances Internal and external audits	Weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Transport Management	Transportation waybills	OHS audits Grievance records (number and nature) Accident records Training records Internal and external audits	Monthly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Chance Find (number of chance finds encountered)	Chance find records	Visual observation Chance find records	Daily (visual observation) Monthly (Progress Report) During construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring)

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
						PMT (clearing)
Construction	Labor and Working Conditions	Employment records, personnel rights files, satisfaction surveys, worker complaint mechanism, camp site observations and interviews	-Training records -Internal and external audits -Grievance records -Accident records -Labor contracts	Weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Grievance Mechanism	Number of complaints received. Number of complaints resolved within 30 days (target 70%). Suitability of complaint opening and closing forms. Satisfaction rate (target 70%).	Grievance records (number and nature), and analysis of settled grievances Internal and external audits	Weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Construction	Resettlement and Land Acquisition	Number of engagement activities. Number of complaints. Expropriation process update. Number of cases continuing and completed. Number of lands taken with by consent. Compensation paid. LAP/RP payments. Records on harms and damages on the assets and compensations/repair	LAP/RP will be prepared.	Times specified in LAP/RP Weekly, monthly and quarterly during construction phase	Included in construction cost	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Operation & Maintenance	Community Health and Safety	Number of complaints. Number of incidents. Near miss records. Informing	Grievance records, (number and nature) and analysis	Weekly, monthly and quarterly during construction phase	Included in maintenance expenses	Contractor (reporting and data provision) DSI Regional Branch

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
		activities for local communities. Suitability and adequacy of warning signs.	of settled grievances Internal and external audits			Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Operation & Maintenance	Wastes from maintenance and repair work	Waste records	Visual observation	Monthly during maintenance and repair work	Included in maintenance expenses	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Operation & Maintenance	Noise Complaints	Complaint records	Noise level measurements (by accredited and competent firms)	Monthly during construction phase In case of a complaint	Included in maintenance expenses	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Operation & Maintenance	Use of Chemicals and Hazardous Material	Observations records	Safety Data Sheets of the hazardous materials	Monthly during maintenance and repair work	Included in maintenance expenses	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Operation & Maintenance	Incidents and accidents	Incident reports	Incident reports Grievance records	In case of a complaint Monthly during construction phase	Included in maintenance expenses	Contractor (reporting and data provision) DSI Regional Branch

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
						Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)
Operation & Maintenance	Labor and Working conditions	Number of employees. Recorded complaints. Employment records on working rights. Accommodation conditions and vehicle maintenance.	Training records Internal and external audits Grievance records Accident records Labor contracts	Weekly, monthly and quarterly during construction phase	Included in maintenance expenses	Contractor (reporting and data provision) DSI Regional Branch Directorate (verification, supervision and preparation) DSI Regional PIU(monitoring) PMT (clearing)

8 STAKEHOLDER ENGAGEMENT PLAN

8.1 Brief Summary of Previous Stakeholder Engagement Activities

Kahramanmaraş Kartalkaya Dam Irrigation Renewal Project promotion meeting was held on 12.05.2022 at Kahramanmaraş Irrigation Union Meeting Hall. There were 100 participants (73 men and 27 women) in the meeting[16].

8.2 Stakeholder Identification and Analysis

Stakeholder identification/mapping is the first step of Stakeholder Engagement Plan. The objective of stakeholder mapping is to identify each stakeholder group, and the nature of their interest and influence on the project. Stakeholder mapping is done as early as possible in the project cycle, and does not only list stakeholders, but also assess how they will be impacted by the project (direct or indirect impact) and assess their level of interest and potential influence on the project. The dynamics among the stakeholders, risks and opportunities of inclusion to the project are taken into consideration in the stakeholder mapping process.

The basis of stakeholder mapping is the level of interest and interaction with the project. Accordingly, stakeholders will be gathered in the following groups;

- Affected Parties, refers to persons, groups, and other entities within the Project Area of Influence (PAI) that are directly influenced (actually or potentially) by the project and/or have been identified as most susceptible to change associated with the project, and who need to be closely engaged in identifying impacts and their significance, as well as in decision-making on mitigation and management measures
- Other Involved Parties, refers to individuals/groups/entities that may not experience direct impacts from the Project but who consider or perceive their interests as being affected by the project and/or who could affect the project and the process of its implementation in some way.
- Vulnerable Groups, persons who may be disproportionately impacted or further disadvantaged by the project(s) compared with any other groups due to their vulnerable status, and that may require special engagement efforts to ensure their equal representation in the consultation and decision-making process associated with the project.

Table 8-1 Stakeholder Mapping

Types of stakeholders	Stakeholder Groups	Stakeholder group's interest in the project
Affected Parties (APs)	Mukhtars Local farmers Water User Association Members (WUA) Agricultural Workers	Administrative facilitation, Quick access and rapid response to issues. Resolution of issues concerning access to project areas, Ensuring product follow-up, Designating area boundaries in activities for the battle against potential product diseases, Facilitating the monitoring of product incentives and grants Neighbourhood population growth during construction Local Farmers would receive the greatest benefit. As a consequence of consolidation, construction of access roads to all farmlands, installing irrigation hydrants at locations closest to the farmlands, preventing loss of water and time, ensuring controlled irrigation, preventing fluctuations in water supply Currently, Water User Associations are responsible for the supply of water. The necessary arrangements are done by WUAs for the efficient use of water. With open channel systems, maintenance and repair costs reach high figures each year. In closed systems, maintenance and repair costs are reduced to minimum. With consolidation, the amount of agricultural lands and water-production amounts shall be clarified, bringing forth ease in water management. WUA Members are persons present within irrigated areas, who are

[16] sdvap_paydas_katilim_plani_ocak_2023.pdf

Types of stakeholders	Stakeholder Groups	Stakeholder group's interest in the project
		informed about the annual acts and transactions. WUA Members are the most enthusiastic about irrigation modernization. Agricultural workers will be convenience through the provision of access roads to lands and facilitation in transportation. In time, it will be possible to improve living conditions through Water User Associations or Muhtar's offices. Formal/informal users, non-member farmers and construction workers may also be affected by the project.
Other Interested Parties – OIPs	Kahramanmaraş Governorate Kahramanmaraş Provincial Directorate of Agriculture and Forestry Neighbourhood Muhtar's Offices **Directorate of Agriculture and Forestry:** Pazarcık District Directorate of Agriculture and Forestry Dulkadiroğlu District Directorate of Agriculture and Forestry Turkoglu District Directorate of Agriculture and Forestry **Chamber of Agriculture:** Pazarcık Chamber of Agriculture Dulkadiroğlu Chamber of Agriculture Türkoğlu Chamber of Agriculture	Increase in the neighbourhood population for the duration of construction works. Resolution of issues concerning access to project areas, Ensuring product follow-up, Designating area boundaries in activities for the battle against potential product diseases, Facilitating the monitoring of product incentives and grants. Follow-up on properties and leased lands, Clarification on crop pattern supports, Provision of trainings to increase the yield of products requiring follow-up Local HPP Project Companies, Companies which operate closed system irrigation projects may also be interested in the project.
Vulnerable Groups	Female farmers **Illiterate adults** Illiterate adult women: 1049 Illiterate adult male: 749 **Disabled people** Mentally disabled woman: 234 Mentally retarded male: 246 Physically disabled woman: 127 Physically disabled male: 136 **Elderly people** Elderly woman in need of care and social assistance: 1021 Elderly male in need of care and social assistance: 992 **Migrants and people who does not speak Turkish** Refugee woman: 657 Refugee male: 642 Woman who does not speak Turkish: 463 Male who does not speak Turkish: 405	Female farmers shall be encouraged to participate in consultation meetings. If necessary, special focus group meetings shall be held. Moreover, female farmers shall be provided with additional training as necessary to inform them about how to Access financial instruments/grants. During the design of services and activities targeting individuals who are illiterate (farmers, workers etc.), their needs shall be taken into account in order to ensure they access the same information as those who are literate. Their participation in stakeholder activities shall also be encouraged. Hearing aid devices, accessible platforms and miscellaneous special trainings shall be provided to those disabled in accordance with their needs. Taking into account the lack of information and experience on the side of older farmers when it comes to accessibility, online tools, services and channels of communication, the necessary support shall be provided for the duration of the Project in order to ensure their participation in the Project and Project activities. Project documents, brochures and announcements shall be made available in Turkish; however, for migrant workers (including seasonal agricultural workers) and those who do not speak Turkish, the use of different languages shall also be taken into consideration to increase the effectivity of engagement activities and to ensure their participation.

It is not expected that the subprojects will limit the access to water of tail end farmers during construction and operation.

In order to incorporate the opinions of vulnerable groups:

- Meetings shall be held with regional organizations and NGOs who represent the rights of the disabled.
- The elderly and the disabled (or those with additional accessibility needs), migrants, refugees and individuals whose mother language is not Turkish and other disadvantaged/vulnerable groups which may be identified during the Project shall be addressed separately in the consultations.
- Project-related information shall be provided in face-to-face meetings or through another method which suits the disadvantaged/vulnerable groups/individuals duly identified (e.g. Braille alphabet, sign language etc.).
- Consultations shall be held at locations accessible to disadvantaged/vulnerable groups/individuals.

All Project-related written or printed materials to be handed out at Project sites should be accessible to the disadvantaged/vulnerable groups/individuals under the Project. Such materials shall also be prepared with a language that is culturally appropriate and easily understandable (non-technical).

However, before sub-project works commence, consultations will be held in sub-project areas to further identify the vulnerable groups in each area.

In the event that vulnerable groups are identified during the implementation of the project, regular consultations will be held with all project stakeholders including such vulnerable groups to inform them about project's impacts, construction schedule and the compensation they will be eligible for due to a project-related loss of land or livelihood.

8.3 Stakeholder Engagement Program

8.3.1 Principles of SEP

In accordance with the principle of consultation, stakeholders will be informed and consulted during preparation stages of the project.

The Stakeholder Engagement takes into account the following principles for this project: transparent engagement, sensitive inclusive/non-discriminatory consultation, use of multiple outreach channels, user-friendly engagement tools, and inclusive and gender sensitive language.

Transparency

It is important that all the information about the project and its environmental and social risks and impacts are disclosed and shared with the stakeholders in an open manner. In order to achieve this the preparation and dissemination of relevant information and organization of meetings is important. The positive and negative impacts of the project need to be communicated openly with the stakeholders. Information disseminated will be in plain language, accurate and accessible.

Socially Inclusion

The stakeholder participation process will take into account the different and specific needs of various groups and communities. The possible communication barriers with these different groups and communities need to be overcome. The training of the public relation personnel to achieve this end is important. The different needs of the stakeholders will be handled sensitively. These sensitivities may be based on cultural appropriateness, gender, language, ethnicity, remoteness among other factors. There will be no hierarchical structure in the stakeholder engagement; all the different community members, groups and communities will participate in the stakeholder engagement on equal basis.

Different engagement media need to be used in order to overcome possible barriers in participation especially in view of vulnerable groups.

Communication Channels

- Consultation meetings,
- Establishing a local office with a responsible officer,
- Disclosure of documents and an integration of feedback provided by the stakeholders,
- Involvement of village mukhtars in the engagement process,
- The establishment and implementation of grievance mechanism,
- Website,
- Media announcements,
- Disclosure of telephone numbers and e-mail addresses.

User-friendly communication

In order to meet the transparency, sensitivity and inclusivity principles it is important that the engagement tools are accessible, understandable and not complicated. Otherwise, disadvantaged groups, like people lacking formal education experiences or member of a marginalized groups would not be able to participate.

Extent of engagement tools

As well as accessible, diversified and understandable engagement tool also need to be well disseminated. Lack of wider dissemination would let some groups, communities or individuals who are affected by the project out of the process of engagement. Because of these visual and written announcements need to be complemented by face-to-face verbal communication.

Gender sensitive language

Negative attitudes and statements against women reflect itself not only through physical behaviours but also through our "language". Language has a cultural characteristic and is reproduced by women and men over generations. Therefore, the main focus is to ensure gender sensitive language and target group for gender sensitive communication is women and men community members and stakeholders.

Further detailed information and documentation will be provided in gender action plan to be prepared by the Pazarcık Kartalkaya Dam Irrigation during implementation phase.

8.3.2 Stakeholder Engagement Methods

To sustain ownership of the project stakeholders' during project implementation, and to increase positive social impact of the Sub-Project, some stakeholder engagement methods to be used in the implementation phase are explained in the SEP of the main Project. These engagement methods will be used throughout the life cycle of the Project will be ensured. Parallel methods are planned to be used in particular for the Pazarcık Kartalkaya Dam Irrigation Sub-Project.

Table 8-2 Engagement Methods of the Project and the Sub-project

Method	**Main Project Level-** Türkiye Water Circularity and Efficiency Improvement Project	**Sub-Project Level** – Pazarcık Kartalkaya Dam Irrigation Sub-Project
Opening and Closing Meetings	At both the beginning and end of the project life cycle, multi-stakeholder meetings are held to announce and disseminate project activities and results. An opening meeting was held within the scope of TWCEIP. The closing meeting will be held at the end of TWCEIP. TWCEIP stakeholders participate in these meetings.	As a TWCEIP stakeholder, DSI 20th Regional Directorate attended the main project opening meeting. DSI will also participate in the project closing meeting. DSI will provide the necessary information about the sub-project at the meeting.
Public Consultation Meetings	Public consultation meetings are held depending on the sub-project carried out within the scope of TWCEIP.	Public consultations will be conducted when draft ESMP with SEP chapter and LAP/RP are disclosed. In case of a meeting DSI 20th Regional Directorate representatives, subcontractor company representatives, settlements Mukhtars and PAPs will attend

Method	**Main Project Level-** Türkiye Water Circularity and Efficiency Improvement Project	**Sub-Project Level** – Pazarcık Kartalkaya Dam Irrigation Sub-Project
Disclosure Activities	The current website of the Project is being used to disclose and validation of the E&S documents in both Turkish and English. The hard copies of the TWCEIP documents will be available at DSI central and local offices. It will be announced that the E&S documents are open to stakeholders for at least 15 days by: • Websites of MoAF, DSI, TWCEIP and Municipalities; • Local media ads (at least three local newspapers); and • Notifications to be sent to Mukhtars of settlements in the Basins, to be displayed in a public location in communities.	DSI will inform corporate stakeholders via e-mail, DSI 20th Regional Directorate employees through a board announcement, and Mukhtars who represent PAPs by phone. The E&S Management plans (SEP, ESMP, RP) prepared for Pazarcık Kartalkaya Dam Irrigation Sub-Project will be disclosed for 15 days and will be open to contribution from all stakeholders. Stakeholders will be able to contribute to the plans during the Public Consultation Meetings. Announced management plans will be updated and finalized according to the feedback received from stakeholders.
Digital and Visual Communication Tools	Call for E&S documents feedback will be made to stakeholders through above-mentioned channels will have the following content by the MoAF as lead partner of TWCEIP: • Brief information about the project • Brief information about the document • Disclose process and the importance of participation • Information on stakeholder engagement and grievance mechanism • Call for cooperation on participation of all stakeholders, including vulnerable groups • Contact information	The website of MoAF and the website of DSI 20th Regional Directorate will be used to inform stakeholders about the important developments of the Project. Important developments and announcements about the project will be published on the website.
Grievance Mechanism (GM)	In compliance with the World Bank's ESS10 requirement, a project-specific grievance mechanism will be developed and established. The SEP includes GM procedures to address all types of grievances, environmental, social and resettlement, that relate to the project in Chapter 8.5. The GM will also be adopted to include direct and contracted workers, which is covered in the TWCEIP LMP for the Project. In Chapter 8.5, how to set up and operate the GM is elaborated.	The sub-project will have a grievance mechanism managed by DSI. For the working principles of the mechanism, see Chapter 8.5. The sample forms in Annex 5-1 and Annex 5-2 will be used to record and close the received complaints.
Document Disclosure and Institutional Consultation Process	MoAF and DSİ announced the TWCEIP documents developed specifically for the Project to the public in both Turkish and English. In addition to the documents described, the project website includes a stakeholder engagement section, which includes the stakeholder engagement documents.	
Information and Communication	Visual materials can be used on the MoAF and DSI web page (https://www.dsi.gov.tr/Sayfa/Detay/1642) if information sharing and consultation activities are needed during the preparation and implementation stages of the project. These materials can be brochures, posters, maps in which the information to be given is explained in a simple language. The materials are shared with stakeholder institutions/organizations and the	The materials are shared with stakeholder institutions/organizations and the mukhtars. These materials can be brochures, posters, maps in which the information to be given is explained in a simple language. These materials will be presented in places that are easily accessible to stakeholders. Local offices, available in schools, mosques, clinics have been identified as places where posters can be placed. Considering that human circulation is

Method	**Main Project Level-** Türkiye Water Circularity and Efficiency Improvement Project	**Sub-Project Level** – Pazarcık Kartalkaya Dam Irrigation Sub-Project
	mukhtars. In addition, information exchange will continue throughout the project with the e-mail and telephone number provided in the contact section of the MoAF website. This contact information, which will also be used in the complaint mechanism, is also added to the contact information of CIMER and implementing institutions.	intense in these places, it is thought that the relevant materials will contribute to increasing visibility.
Coordination with Local Communities		Necessary information will be provided by contacting the headmen of settlements and PAPs. Mukhtars will be invited to the meetings and will be given priority to follow the developments in the project.

8.3.3 Consultation Schedule

The implementation program of the SEP is summarized in Table 8-3 and Table 8-4 below.

Table 8-3 Consultation Schedule

Time and location	Activity	Information to be disclose	Method	Target stakeholder	Responsible Unit
Draft E&S documents - Ankara	Consultation Meeting with institutional stakeholders	• E&S principles/ commitments of the Project • Basic information about the Project	Online or face-to-face	Institutional stakeholders	PMT
Draft E&S documents - Kahramanmaraş	Public Consultation Meeting with local stakeholders	• E&S principles/ commitments of the Project • Basic information about the Project • Stakeholder engagement and complaint mechanism	Face-to-face	Local stakeholders including PAPs and headmen. Communities of project 54 settlements, PAPs directly affected by land acquisition of the project including vulnerable groups.	DSI Regional PIU
When significant incident occurs - such as accidental or planned break of a water line and/or electricity line and/or blockage or a road or accidental environmental spill. (such as; accidental release of hazardous materials, such as fuel or chemicals used in construction	Public Consultation Meetings	Important developments regarding the project.	Face-to-face	Local stakeholders including PAPs and headmen. Communities of project 54 settlements, PAPs directly affected by land acquisition of the project including vulnerable groups.	DSI Regional PIU

Table 8-4 Consultation methods

Time and location	Activity	Information to be disclose	Method	Target stakeholder	Responsible Unit
Preparation (Before SEP approval)	Disclosure Activities	Environmental and Social Standards (ESSs) and call to disclosure process of the draft E&S management plans.	DSI will inform corporate stakeholders via e-mail, DSI employees through a board announcement, and Mukhtars who represent PAPs by phone. E&S documents will be disclosed to the public at a meeting to be held in the affected settlements. They will be announced both electronically on the project website and through the availability of printed materials regarding the project in headmen's offices, mosques and other local institutions. The SEP will be finalized based on the feedback received from local people and other stakeholders.	Project 54 settlements, PAPs including vulnerable groups.	DSI Regional PIU
Project lifetime	Digital and visual Communication Tools	Important developments of the Project	Web-site of TWCEIP	All stakeholders of TWCEIP and the sub-project	PMT
		CHS (Community Health and Safety) and GM issues	Information about project stages, meeting dates, GM and CHS will be posted in public places (headman's office, mosque, etc.). E&S Documents of the project will be reachable in the web site of MoAF. Within the scope of CHS measures, necessary signs and markings will be	Project 54 settlements, PAPs including vulnerable groups.	PMT

Time and location	Activity	Information to be disclose	Method	Target stakeholder	Responsible Unit
			hung to public spaces and construction areas for health and safety. Information about GM will be announced through a poster to be hung in public areas at PAS.		
Construction	Warnings	CHS risk and warnings.	Warning signs: Within the scope of CHS measures, necessary signs and markings will be hung.	Project 54 settlements, PAPs including vulnerable groups.	Sub-contractor, DSI Regional PIU
Construction and Operation	Stakeholder meetings and consultations	Publicise project activities and results and provide necessary information about the sub-project.	Project meeting dates will be announced and posted in public places (mukhtars, mosques, etc.).	Project 54 settlements, PAPs including vulnerable groups. Workers of the sub-project. Other local stakeholders affected by the sub-project.	PMT DSI Regional PIU
Construction and Operation	Employment call	Local employment opportunities.	Web-site of the DSI (https://bolge20.dsi.gov.tr/). Job application forms distributed to PASs, Board announcement for DSI employees.	Project 54 settlements, PAPs including vulnerable groups.	Sub-contractor, DSI Regional PIU
Project lifetime	Grievance Mechanism (GM)	SEP will be disclosed with other E&S plans. Principles of GM, Contact channels, solutions of the complaints	Online, face-to-face, by phone, through CİMER etc. The sample forms in Annex 5-1 and Annex 5-2 will be used to record and close the received complaints.	Project 54 settlements, PAPs including vulnerable groups. Workers of the sub-project. Other local stakeholders affected by the sub-project.	PMT DSI Regional PIU

8.4 Resources and Responsibilities for SEP implementation

8.4.1 Resources

DSI will be in charge of stakeholder engagement activities. The budget required for implementing the stakeholder engagement plan over project duration will be allocated and used for conducting the above specified activities with different stakeholders and for communication and visibility activities. All the activities will be conducted by use of human resources of the DSI

8.4.2 Management Functions and Responsibilities

Contractor: The contractor shall be responsible for partially implementing these SEPs, however, the responsibilities of the contractors shall be disclosed by DSİ. DSİ shall have the SEPs prepared and submitted to WB following the approval of the General Directorate.

DSI Regional Branch Directorate: The sub-project activities will be prepared by the DSI Regional Branch Directorate and DSI Regional PIU and approved by the PMT.

DSI Regional Project Implementation Unit (PIU): DSI Regional PIU is responsible for the overall implementation of sub-project activities. 20th Regional Directorate is responsible for the construction of irrigation facilities in Kahramanmaraş province as local PIU of the project. 20th Regional Directorate will assume the main responsibility for the coordination, implementation and monitoring and reporting of the implementation of the main project's SEP's implementation.

Meetings with stakeholders shall be organized and held by DSI Regional PIU. Contractors will also engage with stakeholders during the construction stage of the project: It is expected that contractors will hold regular meetings with surrounding communities to update them on the construction process, discuss community health and safety, and seek feedback and grievances from the community members.

Project Management Team (PMT): The PMT under the General Directorate shall commence the preparation of project-specific SEP. The PMT shall also review these plans and submit them to the World Bank for approval. Project implementation shall only start once SEPs are ready and pre-construction consultation processes under SEPs are finalized.

Table 8-5 presents the roles and responsibilities of each main project's SEP and the SEP of the sub-project.

Table 8-5 Responsibilities of Key Actors/Stakeholders in SEP Implementation

Unit	Responsibilities
Level: Main project – TWCEIP	
PMT	• Incorporating all stakeholder engagement activities into the overall environmental and social management systems • Developing an internal system to communicate progress and results of stakeholder engagement to the senior management and staff members • Coordinating with parties for proper implementation of processes related to grievance mechanism and stakeholder engagement issues • Consultation on specific SEP activities
PMT-Communications and Stakeholder Specialist	• Planning and implementation of the SEP • Leading stakeholder engagement activities with identified stakeholders, governmental bodies • Organizing/managing Public Participation Meetings and other events related to public disclosure of information • Coordinating interface and reporting to/from World Bank in relation to implementation of SEP • Updating the SEP periodically and upon major Project changes • Information sharing with local community members/ Local community representatives

Unit	Responsibilities
	• Prepare and implement subproject level SEPs • Consult and engage poor and vulnerable groups such as women.
PMT- Environmental and Monitoring Specialist	• Monitoring the Project progress • Ensuring the successful delivery of all defined documentation • Consolidated reporting on overall SEP activities and the Project progress • Implementing social and environmental monitoring • Monitoring and reporting to PMT and management whether the social and environmental issues stated in related documents are implemented throughout Project lifetime
PMT-GM Focal Point	• Acting as the focal point for the GM in PMT • Recording and following up grievances related with the Project • Management and coordination on resolution of grievances within the Project • Reviewing grievance records to illustrate significant non-compliance issues or recurring problems regarding the stakeholder engagement and other Project activities and coming up with actions • Coordinating and monitoring GM focal points in PMT and contractor level • Consolidating Project related grievances from all different GM levels • Informing PMT and management about the resolution process • Preparing consolidated GM reports of the Project
Governmental Bodies (Ministry of Agriculture and Forestry, Kahramanmaraş Provincial Water and Sewerage Administrations etc.)	• Providing inputs and feedback throughout the stages of the SEP. • Participation to the implementation of some activities in the SEP
Local community representatives and local government agencies	• Supporting the Sub-Project during the implementation of the stakeholder engagement activities through their available mechanisms and networks (distribution of communication materials, disclosing events/announcements via their websites, organization of meetings, reaching out to relevant stakeholders, etc.)
Chambers/Representative Institutions of Private Sector	• Providing inputs and feedback during the preparation and implementation phases of the SEP. • Participation to the implementation of some activities in the SEP
Contractors	• Informing PMT of any issues related to their engagement with stakeholders • Informing local communities of any environmental monitoring activity (e.g. noise, vibration, water quality monitoring etc.) • Developing and implementing a grievance mechanism for their workforce including sub-contractors, prior to the start of works in compliance with PMT's GM requirements
Level: Project – Pazarcık Kartalkaya Dam Irrigation	
DSI Regional PIU	• Preparing a sub-project level SEP • Coordination with PMT-Communications and Stakeholder Specialist • Planning and implementation of SEP activities with MoIT for the specific OIZ site • Informing SEP related activities to management board of the DSI. • Outreach to PAPs/stakeholders for site specific project issues • Regional and provincial level outreach • Reporting on implementation of SEP activities to PMT • Executing defined grievance mechanism in the SEP properly and informing PMT about the overall implementation status • Sending all records to Regional Directorate and the Board of Directors
GM focal point	• Receiving and responding to complaints • To ensure that the complaint is resolved by communicating with the relevant

Unit	Responsibilities
	departments • Reporting grievance records and consultation activities to management • Providing data for Monitoring and Evaluation activities

8.5 Grievance Mechanism (GM)

8.5.1 Purpose and Principles

A grievance mechanism will be established by DSI in order to receive, resolve and follow the concerns and complaints of the stakeholders including project affected people (PAPs). The GM will be accessible for the stakeholders and respond to all feedback (including grievances, complaints, requests, opinions, suggestions) at the earliest convenience.

Recording and tracking of complaints (including environmental issues) will be the primary responsibility of DSI. DSI will resolve all complaints received by following procedures and follow up on corrective measures taken. DSI's staff in this regard will have the primary role in resolving complaints as part of their daily activities. Complaints can be received in writing or orally. Personnel who receive the complaint verbally must also state the complaint in writing. The various channels through which complaints can be formally raised are:

- Telephone
- Email
- Face to face
- Grievance/Complaint Record Form (Annex -5)

The complaint mechanism established by DSI includes workers' complaints as well. DSI's responsibilities towards the Workers' GM:

- Ensuring that the workers' GM fully complies with all employment legislation.
- As a result of the changes made in the employment legislation and the lessons learned from its operation; To Ensure regular review of the Grievance Mechanism in view. of the changes made in the employment legislation and the lessons learned from its operation.
- Ensuring that the GM is communicated to all direct and indirect employees through SEP and communication tools structured for the project.
- Ensuring that the GM is a special topic during the orientation of new employees.
- Giving confidential advice to employees when employees do not want to discuss it with their managers.
- Provide advice and support to Contractor supervisors and management on their roles and responsibilities for the successful implementation and operation of the Grievance Mechanism.
- Log of grievance.

DSI's responsibilities towards the Public GM:

- DSI will accept all complaints regarding the project.
- Will forward complaints to PMT.
- Log of grievance.

8.5.2 Levels of GMs

Public GM

DSİ presently has a four-stage Grievance Mechanism (GM):

1. Water Users Association / Contractor

2. DSI Branch Directorates

3. DSI Regional Directorates

4. General Directorate of DSİ

Accordingly, affected persons or stakeholders will thus be enabled to convey their objections and grievances to any one of mentioned institutions/organizations via e-mail/telephone, written petition, personal application or through direct application to national grievance notification mechanisms such as CİMER (Presidency Communications Center). All grievances received are recorded to Document Registry Branch under DSİ General Directorate Staffing Department. Received grievances are resolved by document registry officers conveying them to the relevant divisions based on their type and contents, and being examined within the specified response time. Written applications or all grievances conveyed through CİMER are recorded by DSİ. In cases where grievances conveyed through telephone must be solved by DSİ, the aggrieved party is directed to convey their objection and/or grievance through GM. Once the grievance is received for the first time, the Grievance Registration Form under Annex 5 is filled out.

Document registry officers stationed in all units prepare monthly reports regarding grievances conveyed through both DSİ GM and CİMER.

Grivances received through Water Users Association usually concerns issues encountered during implementation phase, on the other hand, grievances received through other units may concern all work and transactions conducted by DSİ. Water Users Association records grievances they receive when necessary and when requested, to share with DSİ.

DSI will maintain operating its current Grievance Mechanism with minor adjustments to allow for project-level data collection. Any grievance during the implementation of project schemes will be communicated to the closest DSİ unit (WUA, Project Directorate, DSİ Branch Directorate, Regional Directorate or General Directorate) in person, by electronic mail or other available means. All of the objections will be recorded and objecting parties will be responded to in writing. After objections to plot plans are evaluated, the objecting parties will be informed that the procedures done will be suspended again so that they can be viewed.

GM for Workers

Workers will be able to lodge their complaints with DSI PIU. The Contractor will receive the complaints on site from workers. Complaints will be received as indicated in Figure 8-2. Workers will be provided with "feedback" and an "objection process" regarding complaints. DSI PIU officer will supervise the Contractor's complaint mechanism. PMT will be informed about the complaints and will carry out monitoring and evaluation.

DSI Regional PIU will take part in resolving complaints with its Branch Office and supervise the Contractor. The operation of the complaint mechanism will be reported to the PMT with monthly Environmental and Social Monitoring Reports (ESMR).

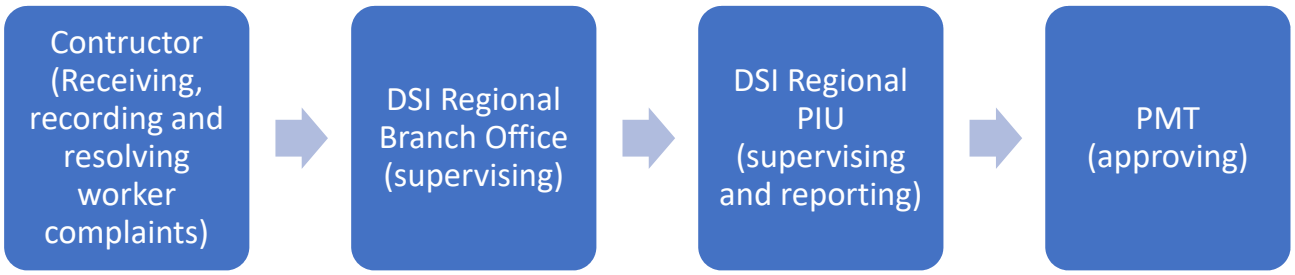

Figure 8-1 Worker GM flow chart

PMT will require contractors to develop and implement a grievance mechanism for their workforce including sub-contractors, prior to the start of works. Grievance mechanisms will be integrated into the main GM of the DSI. The workers' grievance mechanism will include:

- a procedure to receive and categorize grievances such as comment/complaint form, suggestion boxes, email, a telephone hotline;
- stipulated timeframes to respond to grievances and to resolve cases;
- a register sheet to record and track the nature and the timely resolution of grievances; and
- a responsible department to receive, record, address and track resolution of grievances.

Women and men can express their opinions, grievances, and recommendations on gender-based violence through grievance tools. The mechanism will provide a high level of accessibility, confidentiality, and responsiveness, as well as assigning and training certain staff to handle such sensitive and serious grievances. The grievance mechanism will be accessible and ensure confidentiality of personal information.

The person responsible for Contractor's GM will do the following respectively:

- Record all incoming complaints, including the following information:
  - Complainant's name (it is not mandatory to give a name),
  - Complaint subject and request,
  - Date,
  - Contact information.
- Notify the complainant within 7 days,
- Communicate with relevant units to resolve the complaint,
- Ensure that the complaint is resolved within 30 days,
- Manage solution-related applications,
- Provide feedback to the complainant regarding the resolution,
- Report weekly, monthly and quarterly.

GM in World Bank Level

Communities and individuals who believe they have been adversely affected by the World Bank (WB) or a WB project may submit their complaints to existing grievance mechanisms at the project level or to the World Bank. Complaint about the World Bank or the Project it is forwarded to the World Bank using the Grievance Redressal Service (GRS). GRS ensures that complaints received are investigated.

For the World Bank's Grievance Redressal Service (GRS) use this web link:

https://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service

Project affected communities or individuals can also raise their grievances to the World Bank Independent Inspection Panel (IIP). This panel determines whether the person or communities that made the complaint were harmed because of the breach of one or more of the WB's performance criteria. The panel can directly convey its concerns about the received complaints to the WB. At this stage, WB would have an opportunity to respond to the complaints. For information on how to submit complaints to the World Bank Inspection Panel, please visit https://www.inspectionpanel.org/.

In case of grievances regarding Gender Based Violence/SH/SEA

Women and men can express their opinions, grievances and recommendations on gender-based violence through grievance tools. The mechanism will provide a high level of accessibility, confidentiality and responsiveness, as well as assigning and training certain staff to handle such sensitive and serious grievances.

The complaint mechanism will be accessible, and the confidentiality of personal information will be ensured.

- Information activities will be carried out to inform women about the mechanism. Information activities will include the following types of information:
  - Women's rights

- Self-protection in cases of violence and sexual abuse
- Emergency phone numbers
- Contact information of institutions and organizations to which they can apply
- Complaint mechanism and privacy policy

The confidentiality principle of the grievance mechanism will be repeated in all information materials.

- The World Bank's "Good Practice Note – Addressing SEA/SH in IPF Involving Major Civil Works" document is taken as reference[17].
- The person receiving the complaint will distinguish this complaint (see Figure 8-3) from others.
- After the complaint is identified and separated from others, the following steps are followed:
  1. Accepting anonymous grievances and keeping the complainant's information confidential and submitting the complaint anonymously. The steps for sending the complaint are the same (Figure 9-1).
  2. Determining whether the person complained about is related to the project.
  3. Documenting and closing cases brought through GM if the complaint is moved to litigation.

8.5.3 Assessment and Closing Procedure

The contractor will look into the worker grievance mechanism. The contractor and the DSI Regional PIU will jointly engage in receiving and managing complaints on site. All complaints will be reported to PMT with the Environmental Social Monitoring Report (ESMR). For report frequencies, see ESMP Chapter 8 Monitoring.

The responses to the grievances would be satisfactory for both parties and the actions in Figure 9-2 would be followed and the complainant would be informed about the outcomes of the corrective activities.

[17] https://thedocs.worldbank.org/en/doc/632511583165318586029002 2020/original/ESFGPNSEASHinmajorcivilworks.pdf

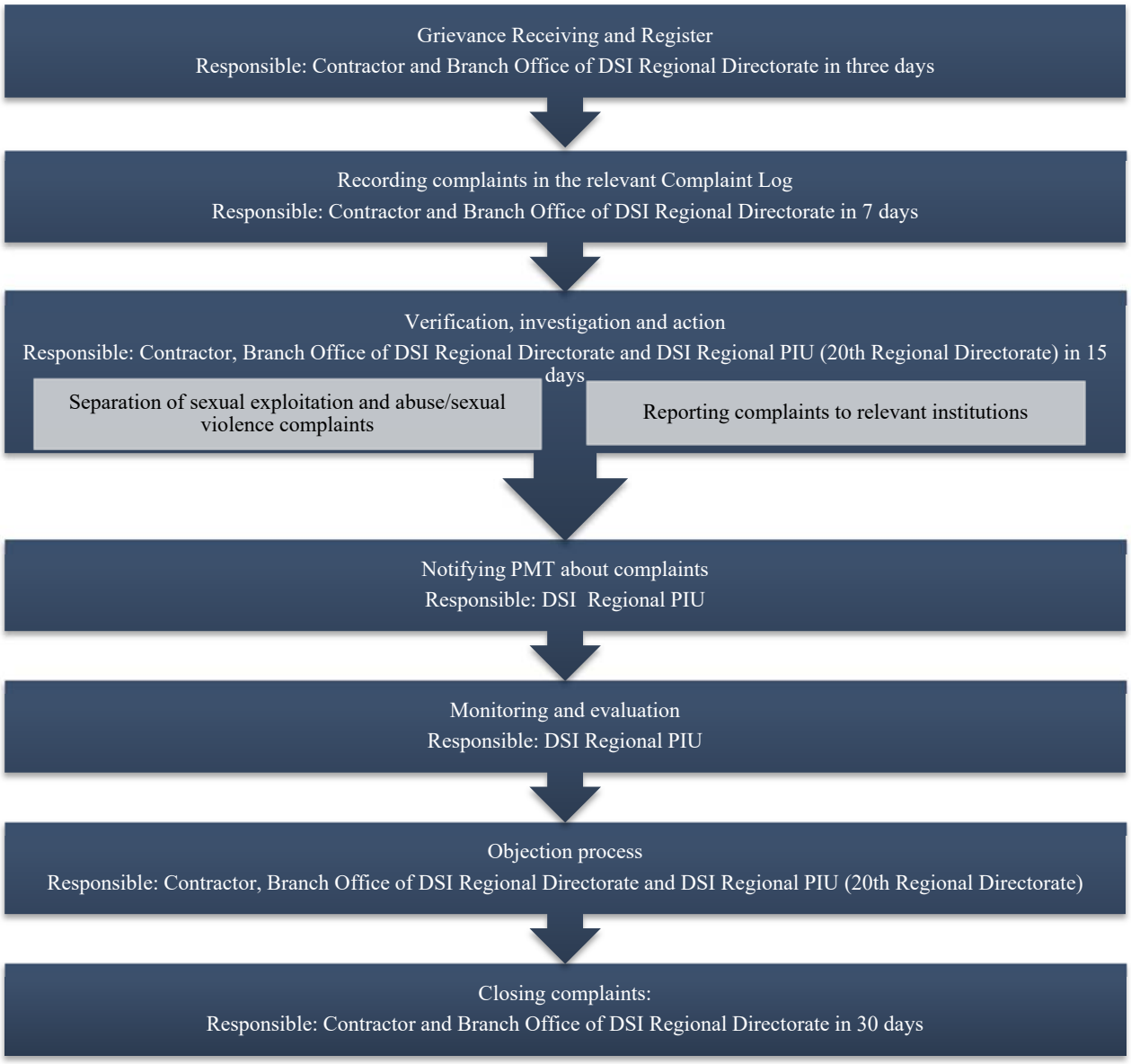

Figure 8-2 Complaint mechanism flow chart

Complaints received through DSI will be integrated into the central GM of PMT.

The GM will also enable submission of anonymous feedback. It is indicated to the complainant that lack of name-surname/contact details may lead to delays or problems during the assessment and resolution of the project. The complainant will also be informed that the personal information (including name-surname, contact details) will not be shared by the third parties or disclosed. The information received from the complainant will only be used for assessment and resolution of the feedback/complaint received.

Women, in particular, may be reluctant to use GM for complaints about GBV/SH/SEA. Therefore, the possibility to file an anonymous complaint will be open. Grievances of SEA/SH should be differentiated and reported to the appropriate authorities. The handling of SEA/SH claims should pay the utmost attention to maintaining confidentiality and the ethical handling of information in order to protect the survivor, prevent information from being leaked, and limit further harm.

The processes of recording and closing complaints will be carried out in accordance with TWCEIP's SEF. The sample forms in Annex 5-1 and Annex 5-2 will be used to record and close the received complaints.

Grievance Receiving & Register

All incoming grievances will be reflected in a Grievance Log and will be assigned an individual reference number.

The Grievance Log will also be used to track the status of a grievance, analyses the frequency of complaints arising, typical sources and causes of complaints, as well as to identify prevailing topics and any recurrent trends.

All complaints will be recorded in the respective Grievance Log with the following information:

- Grievance reference number,
- Date of the grievance,
- A location where the grievance was received and in what form (for grievance boxes),
- Complainant's contact details (in case of non-anonymous grievances)
- Content of the grievance,
- Parties responsible for addressing the issue (DSI Local PIU and its Branch Office, The Contractor and workers' representative),
- Dates when the investigation of the grievances initiated and completed,
- Results of the investigation,
- Information on the proposed corrective actions to be delivered to the complainant (in case of non-anonymous) and the date of the delivery,
- Deadlines for required actions by the personnel,
- Indication on whether the corrective action was satisfactory or a reason for non-resolution of the grievance,
- The of the close-out, and;
- Any outstanding actions for non-closed grievance cases.

Assessment of the Grievance

- All Grievances are reviewed to be classified whether they are genuine and related to Project activities or not. If the issues/disputes raised are not related to Project, guidance is provided to the Complainant to contact relevant party. Eligible complaints are responded according to the procedures outlined here.
- All Grievance received through the direct phone calls e-mails and face-to-face meetings/communications are taken under registration and DSI local PIU contact the Complainant within two (2) Business Days following registration in order to explain the Project response process to Grievance.
- DSI has ten (10) Business Days to investigate and respond to the Complaints. If the case requires a more complex investigation, updated information is provided to the Complainant explaining the actions required to resolve the Grievance, and the likely timeline.
- Responses aligning with the Project social mitigation measures and compensation items are defined beforehand according to the Project standards.

Close Out of the Grievance

Evidence of corrective actions taken following the complaint (scans, photographs or other supporting evidence) is collected and a "complaint close out form (Annex 5-2)" is signed by DSI and the complainant.

8.5.4 Communication Channels for GM

In accordance with the international requirements, a grievance mechanism will be established by DSI in order to receive, resolve and follow the concerns and complaints of the stakeholders including project affected people (PAPs). The grievance mechanism (GM) will be accessible for the stakeholders and respond to all feedbacks (including grievances, complaints, requests, opinions, and suggestions) at the earliest convenience. The responses to the grievances would be satisfactory for both parties and

activities would be followed and the complainant would be informed about the outcomes of the corrective activities.

Any grievances that may occur during the project will be addressed at four levels. The first level of GM will be at the project level. Secondly, DSI General Directorate will be responsible for overall management and supervision of the Sub-Project including compliance with SEP requirements as well as managing grievances. As the third level, the Presidential Communication Center (CİMER) will constitute the GM of this project. Lastly, communities and individuals who believe they have been adversely affected by the World Bank (WB) or a WB project may submit their complaints to existing grievance mechanisms at the project level or to the World Bank.

Table 8-6 Grievance Mechanism Contact Information

DSI General Directorate	Address	Mustafa Kemal, 06510 Çankaya/Ankara
	Phone	0312) 454 54 54
	Web	https://www.dsi.gov.tr/Sayfa/Detay/690
DSI Kahramanmaraş 20th Regional Directorate	Address	Gaziantep Karayolu Erkenez Mevkii / Kahramanmaraş
	Phone	0 344 236 00 80 (81, 82, 83)
	E-mail	dsi20@dsi.gov.tr
	Web	https://bolge20.dsi.gov.tr/Sayfa/Detay/1134
CIMER	Phone	150
	Web	https://www.cimer.gov.tr/

ANNEXES

Annex-1: EIA Exemption Letter

Annex-2: Waste Management Plan

Annex-3: Change Find Procedure

Annex-4: Markum Madencilik Environmental Permit Certificate

Annex-5: Grievance/Complaint Record Form and Complaint Close Out Form

Annex 5-1: Grievance/Complaint Record Form

Annex 5-2: Grievance/Complaint Close Out Form

Annex-6: Vulnerable groups according by settlements

Annex-7: The distribution of primary livelihoods by settlement

Annex-8: Environmental Baseline

Annex-9: Social Baseline

Annex-10: Legal Framework

Annex-11: Impacts on Air Quality