JORDAN INTEGRATED LANDSCAPE MANAGEMENT INITIATIVE (JILMI)

ANNEX 6A

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

UN environment

United Nations
Environment Programme

1. Environmental and Social Management Framework (ESMF)

Being of high political, socioeconomic and ecological importance, there is a need to promote an integrated approach for the Jordan Valley Area targeted by the project, by addressing it as a contiguous set of landscape units which are interdependent and interrelated.

This Environmental and Social Management Framework (ESMF) is needed to allow decision makers at all levels, and national and local stakeholders to understand and appreciate the potential impacts to the environment and to the social elements within the study area. It will be:

- Consistent with the GCF/UNEP Guidelines and Operational Policies and Procedures. According to GCF Safeguard Policies, this project is classified as a Category B (I2) project which means it represents "activities with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures".
- Consistent with the environmental and social policies and procedures of the Government of Jordan including the Jordanian EIA Regulation No. (37) for the year 2005.
- Based upon information and data from previous studies, surveys, and investigations as appropriate.

The specific objectives of this ESIA are to:

- evaluate the project's potential environmental risks and impacts on their areas of influence;
- identify and recommend actions to avoid and/or prevent, minimise, mitigate or compensate potential adverse environmental and social impacts that will improve environmental performance and be integrated in the project's overall management plan;
- prepare an Environmental and Social Management Plan to ensure that any potential adverse social impacts will be mitigated as appropriate; and
- help the Government of Jordan and the project development and implementation partners in conducting a process of public consultation, including public information meetings.

A multidisciplinary team of experienced practitioners has been assembled to prepare a high quality Environmental and Social Management Framework for the project. The team included environmental specialists, social specialists, gender specialist, stakeholders' consultation specialists, GIS specialists, and climate change adaptation specialists.

2. Introduction and Background

The proposed Jordan Integrated Landscape Management Initiative (JIMLI) is being developed by the National Consortium supported by the Ministry of Environment (MoEnv) and the United Nations Environment Program (UNEP). The development and implementation of this project is associated with increasing the resilience of representative Jordanian ecosystems and vulnerable communities, in the Jordan Valley Region, through climate-resilient Integrated Landscape an Water Resources Management (ILWRM).

2.1. About Jordan

Jordan is the fourth most water-scarce country in the world. Approximately 80% of its land is classified as arid and only ~7% is considered arable. Water scarcity and its adverse effects on Jordanian society and ecosystems — including reduced agricultural productivity and increased rates of desertification — will continue to be exacerbated by climate change, including decreasing rainfall and increasing temperatures. As a result, the resilience of Jordan's most vulnerable communities — particularly those in rural areas whose livelihoods are dependent on local ecosystems — are expected to be negatively affected and the incidence of poverty increased.

Future climate scenarios for Jordan suggest an increased air temperature of 1.5°C and a 15% decrease in precipitation by the year 2050. These projections are likely to exacerbate the degradation of ecosystems in the arid, semi-arid and sub-humid areas in the country. The most vulnerable ecosystems are forests (particularly in the north), freshwater ecosystems (in the Jordan Rift Valley), as well as the freshwater and marine ecosystems of the eastern and the Gulf of Aqaba regions.

The current vulnerability of Jordan's population and ecosystems — as well as the expected adverse impacts of future climate conditions — are being, and will continue to be, aggravated by the influx of

refugees from Syria, Yemen and Iraq. As the demand for natural resources such as water increases, the economic costs to address the associated problems are expected to continue to rise.

As the final details of proposed activities (e.g. specific location, etc.) under the project have not yet been determined, a framework approach has been adopted. Under this approach, the present Social Management Framework has been prepared to identify the potential but generic negative social impacts of the project. To minimize the magnitude of the potential social impacts generated by the project's implementation, proposed mitigation measures during the implementation phase have been identified, as well as grievance redress mechanisms (GRM), a monitoring plan — that aims to establish a framework and methodology for monitoring the performance of the project — and reporting on measures for social safeguards compliance.

Overall, the environmental and social impacts of the project will be positive. The project aims to: i) increase climate-resilience and enhance livelihoods of the most vulnerable people, communities and regions; and ii) improve resilience of ecosystems and ecosystems services. Socially, the project will engage women through a Gender Action Plan that ensures proactive mainstreaming of women into all activities. Livelihoods are expected to improve, based on increased adaptive capacities within the target communities.

3. Project Objective

The objective of the proposed project is to reduce the negative impacts of climate change on water resources in Jordan through a landscape-level approach — specifically Integrated Landscape and Water Resources Management (ILWRM) — including improved ecosystem management, managed aquifer recharge, rainwater harvesting, evaporation reduction, improved agricultural practices and strengthened governance. This objective is strongly aligned with the GCF's paradigm shift objective of increased climate-resilient sustainable development. Through the project, the management of water resources at a landscape level in Jordan will shift away from a business-as-usual model that is uncoordinated and compartmentalised to one that is integrated across economic sectors, government ministries, government departments, municipalities, non-government institutions and civil society, as well as into land-management policy. This proactive and transformative approach will include direct investments into the restoration of ecosystems in watersheds of the Jordan Valley to strengthen their resilience to climate change, as well as increase their capacity to supply ecosystem services. Such services — including increased water resources and flood attenuation — will buffer the impacts of climate change on the lives and livelihoods of local people. Increased water supply under climate change conditions via watershed restoration in the Jordan Valley will be supplemented by the implementation of: i) rockfill dams to promote managed aquifer recharge; ii) suspended solar panels over the King Abdullah Canal to reduce evaporation and supplement local electricity supplies; iii) small-scale water harvesting interventions in vulnerable communities; iv) water harvesting and conservation practices on smallholder farms; and v) community-based water monitoring and management. This project's focus on land, agriculture and water is well aligned with — and seeks to build upon and complement — major GoJ development and adaptation planning priorities, such as those identified in the: i) National Green Growth Plan (NGGP), which includes agriculture, water and energy as target sectors; ii) Climate Change Policy for a Resilient Water Sector (2016), which identifies solar-powered desalinisation as a priority adaptation strategy; and iii) National Vision and Strategy 2025, which highlights the need for capacity building of government institutions to review and amend legislation relevant to water demand management and land-use planning.

The maintenance and upscaling of restoration activities will be fostered by a Water Fund, as well as through participatory climate-resilient ILWRM plans which will be implemented in the target watersheds, namely the Jordan Valley, Yarmouk, Amman Zarqa and Jordan Rift Valley Side Wadis Basins. This will be complemented by facilitating the mainstreaming of climate-resilient ILWRM (including EbA) into Jordan's policy, planning and legal frameworks in agriculture, land, water and natural resource management to promote the replication and upscaling of project interventions across the country. Institutional and technical capacity for the mainstreaming of ILWRM will be built within government — for example, MoEnv and JVA — and non-government institutions responsible for land management in Jordan. Finally, the improvement of climate change adaptation knowledge management under the project will contribute to capacity building activities and promote informed decision-making by state and non-state actors related to climate-resilient ILWRM.

The objective of the proposed project is to reduce the negative impacts of climate change on water resources in Jordan through a landscape-level approach — specifically Integrated Landscape and Water Resources Management (ILWRM) — including improved ecosystem management, managed aquifer recharge, rainwater harvesting, evaporation reduction, improved agricultural practices and strengthened governance. This objective is strongly aligned with the GCF's paradigm shift objective of increased climate-resilient sustainable development. Through the project, the management of water resources at a landscape level in Jordan will shift away from a business-as-usual model that is uncoordinated and compartmentalised to one that is integrated across economic sectors, government ministries, government departments, municipalities, non-government institutions and civil society, as well as into water resources and land-management policy. This proactive and transformative approach will include direct investments into the restoration of ecosystems in watersheds of the Jordan Valley to strengthen their resilience to climate change, as well as increase their capacity to supply ecosystem services. Such services — including increased water resources and flood attenuation — will buffer the impacts of climate change on the lives and livelihoods of local people. Increased water supply under climate change conditions via watershed restoration in the Jordan Valley will be supplemented by the implementation of: i) rockfill dams to promote managed aquifer recharge; ii) suspended solar panels over the King Abdullah Canal to reduce evaporation and supplement local electricity supplies; iii) small-scale water harvesting interventions in vulnerable communities; iv) water harvesting and conservation practices on smallholder farms; and v) community-based water monitoring and management. This project's focus on land, agriculture and water is well aligned with — and seeks to build upon and complement — major GoJ development and adaptation planning priorities. Established policy priorities will implemented through the proposed project as outlined below.

Component 1 contributes to integrating climate change dimensions in all new projects and programmes, as well as developing a legal framework to regulate national activities regarding climate action and enhancing the capacities of national institutions and experts to address the challenges of climate change, as prioritised by the Executive Development Program (EDP; 2013–2016). This will be effected via: i) strengthening the mandate and capacity of main government institutions to plan and implement climate-resilient ILWRM — Activity 1.1.1; and ii) drafting amendments to Jordan's relevant policy, planning and legal frameworks to mainstream climate-resilient ILWRM — Activity 1.1.2. These also contribute to the National Vision and Strategy 2025 (implemented via the EDP), which highlights the need for capacity building of government institutions to review and amend legislation relevant to water demand management and land-use planning. In addition, Activity 1.2 promotes the implementation of the Aligned National Action Plan to Combat Desertification (2015–2020), which prioritises climate change mainstreaming. In terms of the water sector Component 1's capacity building (1.1.1 and 1.1.4) and policy reform activities (1.1.2) contribute to the National Water Strategy's crosscutting aim of capacity development. Activities 1.1.1 to 1.1.4 also contribute to the National Climate Change Policy's goal of climate resilience in Jordan and the TNC's climate actions of policy mainstreaming, and education and capacity building.

Component 2 contributes to the Aligned National Action Plan to Combat Desertification's vision of the sustainable use of land resources and enhancement of the population's livelihoods through: i) the implementation of participatory climate-resilient integrated watershed management plans at project sites, including the introduction of climate-resilient additional livelihoods and agricultural practices — Activity 2.1.1; ii) restoring ecosystems in the watersheds of the target sites — Activity 2.1.2; and iii) introducing in-field water conservation and harvesting measures on smallholder farms — Activity 2.1.3. Regarding the National Water Strategy (2016–2025), Component 2 aligns with several priorities, including: i) shifting towards higher value and water-efficient crops, and discouraging the planting of water-intensive crops — Activity 2.1.1; and ii) introducing on farm rainwater-harvesting technologies Activity 2.1.3. Component 2 also contributes to the Water Substitution Policy's (2016) goals of reducing water scarcity, protecting the environment and applying IWRM approaches through the implementation of integrated watershed management plans (Activity 2.1.1), as well as Activities 2.1.2, and 2.1.3. Furthermore, these activities contribute to the implementation of the Climate Change Policy for a Resilient Water Sector (2016), which focuses on IWRM as a guiding tool in building the resilience of the water sector to the impacts of climate change and prioritises climate-resilient solutions for the water sector. Jordan's NBSAP (2015) goals are contributed to by Activities 2.1.1 and 2.1.2. Relevant goals include reducing the impacts of habitat destruction on biodiversity and conserving and protecting priority ecosystems. In terms of climate change, Component 2 contributes to the realisation of the following National Climate Change policy (2013) goals: i) achieve a proactive, climate-resilient Jordan — Activities 2.1.1 to 2.1.3; ii) maintain healthy, sustainable, resilient communities — Activities 2.1.1 to

2.1.3; iii) maintain sustainable water and agricultural resources — Activities 2.1.1 to 2.1.3; and iv) conserve thriving and productive ecosystems — Activities 2.1.1 and 2.1.2. Under the NDC Action Plan (2019), Component 2 aligns with the objectives of strengthening adaptation in the water and agricultural sectors (Activity 2.1.3) and enhancing adaptation in ecosystems (Activities 2.1.1 and 2.1.2). The identification and introduction of alternative fuel sources, as well as renewable and energy-efficient technologies for use by communities within the vicinity of restoration sites (Activity 2.1.3), contributes to the Energy Efficiency and Renewable Energy in the Water Sector Policy's (2016) priority of introducing renewable energy technologies to protect the environment.

Component 3 contributes to the Jordan National Vision and Strategy 2025's measures for climate change adaptation in the water sector through: i) the implementation of measures to improve ground and surface water supplies — Activity 3.1.1; ii) reducing water loss from evaporation — Activity 3.1.2; iii) promoting small-scale water harvesting interventions in local communities — Activity 3.1.3; and iv) empowering local communities to monitor and manage local water supplies more effectively — Activity 3.4. These activities also contribute to the National Water Strategy's Vision that, by 2022, Jordan will have an adequate, safe and secure drinking water supply, a greater understanding and more effective management of groundwater and surface water and sustainable use of water resources. All four of Component 3's activities contribute to the Water Substitution Policy's goal of reducing water scarcity the Climate Change Policy for resilient Water Sector's prioritisation of climate-resilient solutions. Reducing the evaporative loss of water through the establishment of suspended solar panels over the King Abdullah Canal (Activity 3.1.2), contributes to the Energy Efficiency and Renewable Energy in the Water Sector Policy's priority of introducing renewable energy technologies to protect the environment. Activity 3.1.2 also contributes to the Master Strategy in the Energy Sector (2015–2025) and the Renewable Energy and Energy Efficiency Law (REEEL)(2012), which promote the development of domestic renewable energy sources. Regarding climate change, Component 3's activities align with National Climate Change Policy's goals of climate resilience in Jordan and the maintenance of sustainable water resources, as well as the NDC Action Plan's objective of strengthened adaptation in the water sector.

Adaptation knowledge management and awareness activities (4.1.1 and 4.1.2) under Component 4 contribute to the National Water Strategy's goals of: i) shifting to higher value and water efficient crop mixes, as well as a support system comprising agronomic as well as technological research; ii) discouraging the planting of crops with considerable water requirements; and iii) encouraging the uptake of on farm rainwater-harvesting technologies. The component also contributes to the Water Substitution Policy and Climate Change Policy for a Resilient Water Sector's aligned goals of applying IWRM approaches and best practices. In terms of the NBSAP, Activities 4.1.1 and 4.1.2 align with this policy's strategic goals of: i) on ecosystems services and climate change — enhancing the national understanding of dryland ecosystem benefits to national resilience, economic sustainability and local livelihoods; and ii) on knowledge management and monitoring — developing biodiversity knowledge as the main tool for cultural reform, informing policy and decision-making support. Under the National Climate Change Policy, Component 4 supports the objective of building the adaptive capacity of communities and institutions in Jordan to increase the climate resilience of natural ecosystems, as well as water and agricultural resources. In addition, the Component 4 contributes to the following TNC action items: i) public awareness; ii) knowledge management; iii) scientific research and innovation; and iv) technology transfer.

The maintenance and upscaling of restoration activities will be fostered by a Water Fund, as well as through participatory climate-resilient ILWRM plans which will be implemented in the target watersheds, namely the Jordan Valley, Yarmouk, Amman Zarqa and Jordan Rift Valley Side Wadis Basins. This will be complemented by facilitating the mainstreaming of climate-resilient ILWRM into Jordan's policy, planning and legal frameworks in agriculture, land, water and natural resource management to promote the replication and upscaling of project interventions across the country. Institutional and technical capacity for the mainstreaming of ILWRM will be built within government — for example, MoEnv and JVA — and non-government institutions responsible for land management in Jordan. Finally, the improvement of climate change adaptation knowledge management under the project will contribute to capacity building activities and promote informed decision-making by state and non-state actors related to climate-resilient ILWRM.

Climate-resilient ILWRM interventions at the northern Jordan Valley's three sites will amount to a total of 164,000 direct project beneficiaries (78,720 women and 85,280 men). Of this total: i) about 32,000

are from the Yarmouk site — under the Khaled Bin Al Waleed municipality (15,360 women and 16,640 men; 15% poverty rate); ii) 80,000 are from the King Talal Dam site — under the New Ardah and Deir Alla municipalities (38,400 women and 41,600 men; 18% poverty rate); and iii) 52,000 are from the Kafrain site — under the Shouna Alwasta municipality (24,960 women and 27,040 men; 13% poverty rate). At an output level, all beneficiaries are expected to benefit from the augmentation of water resources under Output 3.1. Of these beneficiaries, 1,200 smallholder farming households across the three sites (6,000 people at an average of five people per smallholder household) will benefit from in-farm interventions under Output 3.1, while 2,800 households across the sites (~14,000 people) will benefit directly from rainwater harvesting infrastructure implemented on their houses.

The indirect beneficiaries of improved watershed management across the northern Jordan Valley will include all the region's remaining municipalities, amounting to 756,000 people (355,320 women and 400,680 men). Indirect benefits will include: i) the enhancement of the quality and quantity of water resources across the northern Jordan Valley area; ii) strengthened local governance to implement climate-resilient ILWRM; iii) reduced rate at which water is lost from the King Abdullah Canal through evaporation; and iv) improved awareness on the impacts of climate changes and the adaptation options to address them. Interventions at the regulatory and institutional level will indirectly benefit the Jordanian population as a whole, amounting to ~10 million people.

Project interventions

An overview of the design of the proposed project's four components is provided below. Specific detail on the technical design of the activities under each component is presented in Section 10 of Annex 2: Feasibility Study.

Component 1: Climate change adaptation governance in Jordan
Outcome 1: Increased public budgets for adaptation
Output 1.1 Strengthened governance and capacity for climate-resilient integrated landscape and water resources management (ILWRM)
Output 1.1 will contribute to GCF Outcome A5.0 — Strengthened institutional and regulatory systems for climate-responsive planning and development — and A8.0 — Strengthened awareness of climate threats and risk reduction processes — by enhancing governance and capacity for climate-resilient ILWRM in Jordan. To achieve this, the mandates and capacities of governmental (such as MoEnv, JVA, MoA, WAJ and MWI[1]) and non-governmental (such as NGOs) stakeholders for landscape management across the Jordan Valley will be built through several interventions, including the development of land-use guidelines, standards and protocols for climate-resilient ILWRM in the Jordan Valley. This will include clarifying the roles and responsibilities of all relevant actors.

Output 1.1 will see the establishment of an enabling environment for the implementation of climate-resilient ILWRM at scale across Jordan through a combination of activities. These include strengthening the mandate and capacity of main government institutions and non-state actors for ILWRM; mainstreaming ILWRM as an adaptation adaption approach into regulatory frameworks for land, water, agriculture and natural resources; generating evidence of economic benefits of ILWRM (as an adaptation approach) for use by policy makers and planners; and establishing a Water Fund. Through its policy-related activities, the project will support budget reforms, increasing the allocation of public budgets to adaptation (ILWRM in particular), which, along with the Water Fund, would support scaling up of the proposed project's interventions in the medium to long term (see Component 2). This will support a long-term balance in the country's water resources in the face of climate change.

Activity 1.1.1 Strengthen the mandate and capacity of main government institutions — including MoEnv, MWI and their subsidiaries[2] — for climate-resilient ILWRM in Jordan.
Activity 1.1.1 includes two sub-activities aimed at strengthening the mandate and capacity of Jordan's government institutions involved in water resources management to incorporate climate-resilient ILWRM into national and sub-national policy- and decision-making processes, supporting the scaling up and replication of the project's interventions. These sub-activities include developing land use guidelines, standards and protocols for climate-resilient ILWRM and training national and sub-national

[1] Please see Section 1.3.1 Legal, institutional and policy context of the Feasibility Study for further information on the relevant governmental stakeholders.
[2] Institutions through which the ministries operate at the local level, such as the Jordan Valley Authority (JVA).

policy- and decision-makers on the use of climate-related data. Institutional strengthening under Activity 1.1.1 includes extending the mandate of the Jordan Valley Authority (JVA) — whose current mandate also includes oversight of water and irrigation policy implementation — to facilitate the uptake of ILWRM principles in the decision-making process for sustainable socioeconomic development.

- *Sub-activity 1.1.1.1 Develop land use guidelines, standards and protocols for climate-resilient ILWRM in the Jordan Valley.*
- *Sub-activity 1.1.1.2. Train staff from relevant national and subnational institutions to use climate data, and the results of climate analyses and risk assessments in policy- and decision-making processes, as well as planning and disaster risk management.*

Activity 1.1.2. Draft amendments to Jordan's policy, planning and legal frameworks for agriculture, land, water and natural resources, to mainstream climate-resilient ILWRM as a climate change adaptation approach.
Activity 1.1.2 will follow the development of ILWRM guidelines, standards and protocols (Sub-activity 1.1.1.1), as well as the training undertaken in Sub-activity 1.1.1.2 to mainstream climate-resilient ILWRM into policy, planning and legal frameworks relating to agriculture, land, water and natural resources. Sub-activities will involve: i) training of national and sub-national planning as well as policy- and decision-makers; ii) reviewing of policies, plans and legislation; iii) preparing of policy briefs; and iv) convening workshops to validate the policy briefs. The mainstreaming of ILWRM into agriculture, land, water and natural resources regulatory frameworks, contributes to the establishment of an enabling environment required to support the scaling up of the project's on-the-ground interventions aimed at improving the water resource balance in Jordan (through improved budget allocations, for example.

- *Sub-activity 1.1.2.1. Train policy- and decision-makers on the integration of climate-resilient ILWRM practices into policies, plans and strategies.*
- *Sub-activity 1.1.2.2. Train relevant national and sub-national planners on climate-resilient ILWRM planning.*
- *Sub-activity 1.1.2.3. Review Jordan's national land-management policies, plans and legislation to identify gaps and opportunities for the consideration of climate-resilient ILWRM (including EbA, climate analyses and risk assessments) as an adaptation approach.*
- *Sub-activity 1.1.2.4. Prepare policy briefs with recommendations for the integration of climate-resilient ILWRM practices, and the results of climate analyses and risk assessments into relevant national policies, plans and strategies.*
- *Sub-activity 1.1.2.5. Convene a workshop to present the policy briefs prepared under 1.1.2.4 to representatives from relevant ministries and departments (with at least 30% female participation) for validation.*

Activity 1.1.3. Generate evidence of the economic benefits of ILWRM to project beneficiaries for use by policymakers and planners.
To prioritise an ILWRM approach and ensure that it is implemented at scale, decision-makers are required to understand and appreciate the relevant interlinked ecological processes and how they directly produce economic benefits. The relevant information and evidence will be generated by the monitoring and analysis of ILWRM interventions implemented under the project. This analysis will consider: i) avoided costs — impacts or losses that would otherwise occur in the absence of ecosystem services, such as reduced water resource quantity and quality; and ii) replacement costs — the implication of implementing 'grey' artificial systems (as opposed to 'green' nature-based solutions) that would be required to deliver the same services as ecosystems. Where feasible, monitoring of the following sustainable development co-benefits will be included: flood attenuation, enhanced biodiversity, decreased pollution of water resources, improved access to clean water, strengthened food security, increased climate resilience of pastoral livelihoods and energy generation from floating solar.

The monitoring of the climate-resilient ILWRM investments will be guided by scientists, but conducted wherever feasible by community members via WMCs. The long-term data sets created will be used for adaptive management of project interventions throughout the duration of the project and to inform future climate-resilient ILWRM investments across Jordan, and a full impact study of the project will be conducted in the project's final two years. The full socioeconomic and environmental benefits of restoration investments are often maximised a decade or more after implementation. For this reason,

the long-term data sets from the project will be archived within Jordanian research institutions (including relevant NGOs and project Technical Partners) and the long-term monitoring of the GCF project's investments will also be institutionalised. Similarly, detailed, long-term Operations and Maintenance (O&M) plans will be developed for all ecological and physical infrastructure constructed by the project. Government funding for O&M will include: i) financing of ongoing restoration, conservation and management of those ecosystems restored by the project; and ii) maintaining the mechanisms and tools established by the project.

The GoJ will include the monitoring and analysis in their ongoing operations to contribute to the capacity building at the policy- and decision-making level and policy reform process under Activity 1.1.2 to integrate climate-resilient ILWRM into Jordan's planning, policy-making and budgeting process. This will facilitate the embedding of coordination and operation of these mechanisms and structures in budgets and mandates beyond the life of the project. These plans will also include long-term funding commitments for enhancing the ecological infrastructure and maintaining the physical infrastructure associated with livelihood interventions. By recognising ILWRM's positive environmental, economic and social co-benefits to communities, cross-sectoral cooperation and integrated planning to conserve and augment water resources will be fostered.

- *Sub-activity 1.1.3.1. Gather primary and secondary data from the project's ILWRM interventions.*
- *Sub-activity 1.1.3.2. Analyse monitoring data from ILWRM interventions implemented under the project to identify benefit streams for valuing ILWRM benefits.*
- *Sub-activity 1.1.3.3. Identify data streams and modelling methodology for valuing ILWRM benefits.*
- *Sub-activity 1.1.3.4. Carry out valuation modelling exercises of benefit streams identified under 1.1.3.1.*
- *Sub-activity 1.1.3.5. Prepare full and summary reports of the analysis and results, including briefing notes for decision-makers highlighting evidence of ILWRM as an adaptation approach and specific policy recommendations.*

Activity 1.1.4. Strengthen the mandate and capacity of non-state actors for climate-resilient ILWRM in the Jordan Valley.
Activity 1.1.4 complements the state actor capacity building under Activities 1.1.1 and 1.1.2 by strengthening the mandate and capacity of non-state actors for climate-resilient ILWRM. This will be done through the establishment and training of Watershed Management Committees (WMCs), training staff in relevant sub-national institutions, developing integrated watershed management plans and implementing ILWRM capacity building for NGOs. By improving local-level mandates and capacities for ILWRM, scaling up and replication of the project's interventions will be supported, contributing to an improvement in water resource supplies both locally and nationally under conditions of climate change.

- *Sub-activity 1.1.4.1. Establish WMCs, under the leadership of the JVA and local governors, at each of the three target watersheds to facilitate dialogue and participatory watershed management between upstream and downstream stakeholders. This will include working with MoEnv for the formal recognition of WMCs in relevant legislature — including defining their responsibility towards working with communities.*
- *Sub-activity 1.1.4.2. Develop a training programme on climate-resilient integrated watershed management, including EbA, targeting the WMC members.*
- *Sub-activity 1.1.4.3. Train relevant watershed stakeholders (WMC members) on climate-resilient ILWRM based on the programme developed under Sub-activity 1.1.4.2.*
- *Sub-activity 1.1.4.4. Train staff from relevant sub-national institutions to use climate data, and the results of climate analyses and risk assessments in policy- and decision-making processes, as well as planning and disaster risk management.*
- *Sub-activity 1.1.4.5. Develop participatory climate-resilient integrated watershed management plans for the three target watersheds.*
- *Sub-activity 1.1.4.6. Develop and implement an ILWRM capacity-building programme for relevant NGOs.*

Component 2: Integrated landscape and water resources management (ILWRM) under conditions of climate change
Outcome 2 Climate-resilient ILWRM practiced in three Jordan Valley watersheds
Output 2.1 Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley

Under Output 2.1 the project will implement adaptation measures such as active and passive restoration of forest ecosystems, to arrest degradation and secure the supply of ecosystem services under climate change conditions. Current watershed restoration activities in Jordan include both passive and active approaches that provide best practices for the proposed project, which will build on these activities. The project will also introduce climate-resilient livelihood options, including beekeeping and vegetable gardening (via hydroponics and permaculture). Numerous initiatives have been developed to improve the beekeeping sector in Jordan.

Output 2.1 will contribute to GCF Outcome A7.0 — strengthened adaptive capacity and reduced exposure to climate risks — by implementing an ILWRM approach and restoring ecosystems in a climate-resilient manner in the Yarmouk, King Talal Dam and Kafrain areas of the Jordan Valley. The three biogeographical zones and associated ecosystems, including unique species, plant assemblages and non-climatic threats, will be taken into account when developing site- and ecosystem-specific restoration protocols. Included in the protocols will be recommendations for climate-resilient plant species, water harvesting and conservation measures[3] as well as maintenance guidelines. Restoration protocols will be used to inform the restoration of ecosystems within watershed areas of the intervention sites and will subsequently allow for upscaling after project completion. Restoration activities will include: i) passive restoration through the traditional Hima system; and ii) active restoration through re-establishing vegetative cover in degraded areas and afforestation. The restoration of the target ecosystems will strengthen the supply of ecosystem services, such as water, fodder and NTFPs — such as fuelwood and edible and medicinal plants, to buffer the impacts of climate change on the lives and livelihoods of local communities. Current baseline demand for water in the project target areas is ~292 MCM/yr. Baseline demand for household fuelwood use is 71,000 CM and for fodder is ~790,000 tonnes/yr (~750,000 for barley and ~20,000 for wheat) across the entire country. Both contracted labourers and local communities surrounding the restoration sites, will be involved in the implementation of restoration activities under Output 2.1.

Active restoration activities will be led by the project's Technical Partners who will oversee local labourers (predominantly underprivileged community members). Restoration labourers will be trained on the relevant site- and ecosystem-specific protocols to ensure effective implementation. Selection of restoration labourers will occur via WMCs with oversight from relevant Technical Partners. The benefits of the project's restoration activities will be enhanced by the implementation of participatory climate-resilient integrated watershed management plans in the three target areas. This will include the implementation of forest, rangeland, wadi and riparian management interventions to enhance the climate resilience and conservation of these ecosystems in the target watersheds. The plans will include options for additional natural resource-based livelihoods that are climate resilient and appropriate for the local context, in addition to being complementary to the watershed restoration and management activities. In addition, climate-resilient agricultural techniques[4], including crop diversification, drought-tolerant crop varieties and permaculture, will be introduced on smallholder farms at project sites — supported by National Agricultural Research Centre (NARC).

Climate-resilient agricultural techniques will be implemented on smallholder farms to increase productivity under climate change conditions, providing immediate benefits for local communities, while at the same time reducing the pressure on degraded ecosystems undergoing restoration. Such techniques will include the installation of in-field rainwater harvesting systems. These interventions have been designed to build upon and scale up existing practices and technologies that have proven to be effective in Jordan. For example, rainwater harvesting being successfully used in Jordan, in-field rainwater harvesting structures have been used to improve soil structure and decrease soil erosion rates by increasing soil organic matter and intercepting runoff water at relatively short-distance intervals[5,6]. These structures have also successfully supported the re-establishment of drought-tolerant forage shrubs in degraded rangelands. An economic analysis undertaken for the Badia Benchmark Project, for example, demonstrated that planting of shrubs with harvested rainwater produced an

[3] Such as: contour bunds for trees; semi-circular bunds; triangular bunds; planting pits; negarim; vallerani micro basins; eyebrow terraces; Meskat runoff basins.

[4] Drawing from local and regional best practices.

[5] Critchley W, Siegert K, Chapman C, Finket M. 1991. *Water harvesting: A manual for the design and construction of water harvesting schemes for plant production*. Rome: Food and Agriculture Organization of the United Nations (FAO).

[6] Sprong C. 2019. Soil water dynamics affected by micro rainwater harvesting structures in Jordanian Badia restoration context. MSc thesis, Universiteit Utrecht, Utrecht.

economic internal rate of return (EIRR) estimated at ~17%, with the addition of numerous environmental benefits.

Activity 2.1.1 Support the implementation of participatory climate-resilient integrated watershed management plans (developed under Activity 1.1.4) in the Yarmouk, King Talal Dam and Kafrain areas of the Jordan Valley.
Under Activity 2.1.1, the climate-resilient integrated watershed management plans developed for each of the project intervention sites will be implemented by project Technical Partners (TPs) with support from WMCs. This will afford local communities management rights over their local ecosystems, incentivising the enforcement of land-management laws, resulting in reduced human-driven ecosystem degradation and increased support for restoration activities. To facilitate this activity, best practices and lessons learned will be drawn from previous and ongoing projects with a focus on community-based landscape management and restoration. These projects include: i) HERD; and ii) the Community-based Optimisation of the Management of Scarce Water Resources in Agriculture in the CWANA Project (Section 7.2 of Annex 2: Feasibility Study, provides further detail). The implementation of the plans will be divided across Sub-activities 2.1.1.1 and 2.1.1.2, which will be supported by Sub-activity 2.1.1.3 which involves the establishment of community-based mechanisms for monitoring and evaluation of the implemented measures.

- *Sub-activity 2.1.1.1 Implement climate-resilient watershed management (WSM) measures at relevant project sites.*
- *Sub-activity 2.1.1.2. Establish mechanisms required for the implementation of climate-resilient additional livelihoods and agricultural practices under Activity 2.1.4.*
- *Sub-activity 2.1.1.3. Establish and implement community-based participatory mechanisms for monitoring and evaluating change in community climate resilience and behavioural change, including community fora.*

Activity 2.1.2. Restore ecosystems in the watersheds of the Yarmouk, King Talal Dam and Kafrain areas of the Jordan Valley.
Activity 2.1.2 consists of four sub-activities aimed at supporting and implementing climate-resilient ecosystem restoration, including the development of protocols, establishment of nurseries and the implementation of small-scale rainwater harvesting interventions at the restoration sites. The activity will result in the climate-resilient restoration of forest, rangeland, riparian and wadi ecosystems across the project's three intervention areas. The extent of restoration measures will include: i) 3,178 ha within the Yarmouk site; ii) 2,309 ha within the King Talal Dam site; and iii) 2,512 ha within the Kafrain site. The ecosystem restoration interventions will prioritise increasing water resource supplies across an arid landscape under climate change conditions. Co-benefits will include the increased supply of other ecosystem services such as flood attenuation of the surrounding areas, as well as increased water and fodder supplies, to support the predominantly agricultural livelihoods of local communities.

- *Sub-activity 2.1.2.1. Develop protocols for the climate-resilient restoration approaches identified for each project site, based on baselines assessments.*
- *Sub-activity 2.1.2.2. Implement climate-resilient restoration of degraded watersheds at project sites, 3,178 ha within the Yarmouk site, 2,309 ha within the King Talal Site, and 2,512 ha within the Kafrain site.*
- *Sub-activity 2.1.2.3. Establish central nursery at the RGB and community-managed nurseries (including the provision of seed and seedlings of species identified under 2.2.1) at each intervention site to grow the seedlings required for climate-resilient restoration.*
- *Sub-activity 2.1.2.4. Implement small-scale rainwater harvesting interventions at restoration sites to enhance the success of restoration interventions.*

Activity 2.1.3. Introduce climate-resilient additional livelihoods and agricultural practices in the project's three intervention areas.
Under Activity 2.1.3, climate-resilient additional livelihoods and agricultural practices will be introduced through five sub-activities to reduce the dependency of beneficiary communities on climate-vulnerable livelihoods that are heavily reliant on water resources and responsible for ecosystem degradation. This approach will complement ecosystem restoration under Activity 2.1.2 by both reducing unsustainable degradative practices and promoting livelihoods that are reliant on healthy ecosystems. As a result, the conservation as well as ongoing restoration of the ecosystems in the target watersheds will be promoted. This activity will provide immediate tangible benefits to the target communities who will only

benefit from restored ecosystems in the long term. Additionally, strong support for the introduction of climate-resilient additional livelihoods was received from target communities during consultations, as current livelihoods are being negatively impacted by current climate changes (see Annex 7). Consequently, it will foster their continued support for the restoration activities, which is essential for their success. In addition, the introduced livelihoods will prevent the augmentation of water resources achieved via the project from being nullified by local communities who may interpret this as an opportunity to continue with practices that result in an over abstraction of water. The additional climate-resilient livelihoods will include vegetable gardening and beekeeping will be implemented under the guidance of project Technical Partners — with technical support provided by NARC.

- *Sub-activity 2.1.3.1. Technical partner site visits to promote and train local communities on beekeeping as a climate-resilient additional livelihood to incentivize ecosystem restoration.*
- *Sub-activity 2.1.3.2. Technical partner site visits to promote and train local communities on vegetable gardening through hydroponics and permaculture (wicking beds) as an additional livelihood.*
- *Sub-activity 2.1.3.3. Technical partner site visits to promote the uptake of climate-resilient agricultural practices on 1,200 smallholder farms across the three intervention areas to improve productivity under climate change conditions.*
- *Sub-activity 2.1.3.4. Train selected small-scale farmers within the three project sites on the use and maintenance of climate-resilient agriculture techniques, including in-field water conservation and harvesting measures.*
- *Sub-activity 2.1.3.5. Identify private sector champions in the agricultural sector to mentor the beneficiaries of climate-resilient additional livelihoods and agricultural practices to strengthen their capacity for post-harvest processing and marketing.*

Activity 2.1.4. Establish a Water Fund in the Jordan Valley to maintain landscape investment for enhanced water resources.

Under the proposed project, a Water Fund will be established as a model for the payment for ecosystem services (PES), in this case, water resources, serving as a mechanism for leveraging financial resources from private (industry and commercial agriculture) and public sector stakeholders (municipalities) for restoration (EbA) interventions in watersheds and to promote water conservation in the agriculture sector, which currently takes the largest share of water demand. This will ensure the ongoing availability of funding for the maintenance and restoration of ecosystems in the three target watersheds and as such promote a continued supply of ecosystem services — particularly those related to water resources and promoting innovation in the agriculture sector which is currently the largest consumer of water. Specifically, the PES rationale is to provide financial incentives to upstream communities to reduce practices that result in compromised water quality and quantity downstream, and thereby serve as custodians of the ecosystems in these areas.

Anchored in the JVA, the Water Fund will be governed by a multi-stakeholder public-private steering committee that includes representatives of WMCs (established under Sub-activity 1.1.4.1) from the target watersheds, project Technical Partners, governmental partners (such as MWI, MoEnv and MoA), water utilities (such as the Yarmouk Water Company[7]), as well as prominent private sector partners in the Jordan Valley. This will provide both political influence, accountability, transparency and societal trust. Direct governance and administrative support will be provided by project Technical Partners. The three primary organisational components of the fund will include: i) a funding mechanism housed within the JVA for the collection and provision of resources for watershed conservation with a focus on climate-resilient ILWRM; ii) a governance mechanism linked to the WMCs and abovementioned implementing partners for planning and decision-making; and iii) a mechanism for watershed management also linked to the WMCs and abovementioned implementing partners to undertake funded activities for conservation and management — this will include an on-granting facility. The design and establishment of the Water Fund will take place during project implementation. A climate finance expert will be procured as part of the PMU to oversee the financial aspects of the design and operationalisation of the Water Fund during its first two years, while an experienced fund manager will be engaged by the project to manage the fund.

During the establishment, operation and maturity phases of the Water Fund, capital provided by stakeholders, including through PES, can be invested in financial markets through a trust fund, with

[7] http://www.yw.com.jo/EN/yw_info.aspx

returns on investment used to provide a continual flow of funds for ongoing restoration and maintenance of watershed ecosystems, and as a result, the continued conservation and attenuation of water resources in the project's intervention areas[8]. The use of a trust fund as the foundation for the Water Fund has several benefits, including mitigating cash-flow risks, ensuring that water producers can be certain that the multi-annual commitments of the fund will be fulfilled, and ensuring the credibility of the Water Fund. Another benefit of a trust fund is that it facilitates investment by a variety of investors. Financing strategies to capitalise the Water Fund may include: i) voluntary private donations — including funding from individuals, philanthropic organisations or private corporations with a strategic interest in watershed protection; ii) direct domestic government resources — including financial resources obtained from the country's national budget for natural resources management; iii) multilateral organisations — particularly those with an interest in natural resources management and protection; iv) government fiscal mechanism — including taxes or levies (in the case of Jordan, a portion of existing water levies collected by the MWI/JVA could potentially be diverted to the Water Fund); and v) other sources such as water facilities, hydroelectric companies, or interested productive sector organisations.

Medium to long-term investment in the Water Fund will be stimulated via the Fund's long-term financing strategy, which will include securing agreements with major water users who are willing to pay for ongoing ecosystem management in return for the water resources generated — a PES model. Payers for ongoing ecosystem management would include major water users in downstream areas of the Jordan Valley who would benefit from and rely on increased water resources generated via the Fund's interventions in upstream ecosystems. These include large-scale agricultural producers such as commercial fruit and vegetable producers (the agriculture sector accounts for more than half of all water used in Jordan)[9], and the industrial sector (e.g., fertiliser producers, potash and phosphate mining, thermal power plants and cement factories)[10], which although only currently contributes ~3% to the country's overall water demand, continues to grow[11]. Potential payers may include agricultural producers such as the Alfaqih Group[12] and Haddadin Farms[13], large industry including the Manaseer Group[14] and Jordan Phosphate Mines Company[15], as well as water utilities such as the Yarmouk Water Company[16].

As the Water Fund will only be designed during the first two years of implementation of the proposed project, its scope remains flexible and will be refined during the design phase. Finance from the proposed GCF project will be used to design, operationalise and establish the Fund, while long-term funding will be secured through the implementation of the long-term financing strategy that will be developed (see list of potential financing strategies above for capitalising and maintaining the Fund). The Water Fund will not directly finance ILWRM measures implemented by the proposed project's (such as Component 2's ecosystem restoration — see below). However, it will contribute to the maintenance and scaling up of ecosystem management measures in the medium to long term.

- *Sub-activity 2.1.4.1. Design the Water Fund in a participatory manner, including workshops with local communities, institutions, private sector and NGOs.*
- *Sub-activity 2.1.4.2. Design an on-granting facility for the implementation of ILWRM sub-projects. This will include finalizing selection criteria for the evaluation of proposals submitted in response to RFPs.*
- *Sub-activity 2.1.4.3. Officially launch the Water Fund and formalise long-term legal mechanisms.*
- *Sub-activity 2.1.4.4. Operationalise the Water Fund through the development and implementation of a workplan.*
- *Sub-activity 2.1.4.5. Develop and disseminate demand-based RFPs for ILWRM sub-projects under the on-granting facility to WMCs and their members.*

[8] TNC. 2012. Water Funds Conserving Green Infrastructure. Available at: https://www.nature.org/media/freshwater/latin-america-water-funds.pdf
[9] Ministry of Water and Irrigation. 2017. Jordan water sector — Facts and figures. MWI, Amman.
[10] Government of Jordan. 2014. Jordan's Third National Communication on Climate Change.
[11] Ministry of Water and Irrigation. 2017. Jordan water sector — Facts and figures. MWI, Amman.
[12] https://alfaqihgroup.com
[13] http://haddadinfarms.com/#home
[14] https://www.manaseergroup.com/Home/
[15] http://www.jpmc.com.jo/Default/En
[16] http://www.yw.com.jo/EN/yw_info.aspx

- *Sub-activity 2.1.4.6. Evaluate proposals submitted in responses to the RFPs and select sub-projects to receive grant funding.*
- *Sub-activity 2.1.4.7. Sign sub-project agreements with beneficiaries of grant support.*
- *Sub-activity 2.1.4.8. Disburse sub-project grants and provide sub-project implementation oversight.*
- *Sub-activity 2.1.4.9. Develop and implement long-term financing and scaling up strategies for the Water Fund to leverage long-term financing and facilitate upscaling and replication in other areas of the Jordan Valley.*

On-granting facility design features

Type of Support	Qualifying Beneficiaries	Focus of Sub-projects
Financial resources to implement climate-resilient ILWRM activities in target watersheds	WMCs (established through Activity 1.1.4) and their community-level members, including Development Advisory Committees, Stakeholders Advisory Groups, agricultural cooperatives, women's cooperatives, youth groups and Water User Associations	Ecosystem management-related activities deemed appropriate for the target watersheds that contribute positively to water resource quantity and/or quality, such as: • Ecosystem rehabilitation, restoration and conservation; • Water efficiency and technologies in the agricultural sector; • Fuel sources alternative to biomass that promote a circular economy approach; • Climate-resilient additional livelihoods; • Sedimentation management to reduce the pollution of water resources through the revegetation of erosion-prone areas and management of downhill runoff conveyance; • Soil conservation adoption for rural infrastructure development; • Climate-resilient agriculture to support ecosystem management objectives; • Reduction of dry season water demand from rivers, streams, springs and wells by irrigators through encouraging water harvesting practices; • Measures identified in climate-resilient integrated watershed management plans (Activity 1.1.4); and • Measures identified in community-based water use monitoring and management plans (Activity 3.1.4).

Preliminary selection criteria for sub-projects under the on-granting facility.

Beneficiaries	Proposal Scope	Proposal Design
• WMCs or community-level members thereof based within the project's three target watershed (Yarmouk, King Talal Dam and Kafrain).	• ILWRM-related, such as: o Ecosystem rehabilitation, restoration and conservation; o Climate-resilient additional livelihoods; o Climate resilient agriculture; o Measures identified in climate-resilient integrated watershed management plans (Activity 1.1.4); and o Measures identified in community-based water use monitoring and management plans (Activity 3.1.4).	• Aligns with the scope of the RFP. • Has a ILWRM-related objective, clearly described and costed activities, and measurable indicators and targets. • Align with and are informed by guidelines, standards and protocols for climate-resilient ILWRM in the Jordan Valley developed through Activity 1.1.1. • An activity-level budget is presented and the resources requested are sufficient to implement the sub-project. • Intervention sites and beneficiaries are defined. • Stakeholder participation in the design and implementation of the project needs to be clearly described, showing clear ownership of the project.

	• Contributes to water resources attenuation. • Has climate change adaptation benefits. • Located within at least one of the three project's target watersheds • Focuses on vulnerable people in the target area (such as farmers or people reliant on natural resource-based livelihoods).	• Clearly described implementation arrangements, including capacity of proposal owners to implement and if any support will be provided by any partners (such as project Technical Partners, government departments, NGOs, etc. • Interventions have a clear scientific, technical, social, legal and/or economic basis. • Potential social and environmental safeguards risks related to the inventions have been screened and risk level and mitigation measures align with that presented in the proposed project's ESIA and ESMP (Annex 6). • Complementarity with any past or ongoing initiatives is clearly presented, and any co-financing sources described. • Identifies synergies with other sub-projects in the on-granting facility . • Exit strategy and sustainability approach is defined. • Proposals are gender sensitive, promoting the inclusion of women, considering their roles in society and have activities specifically tailored for women and align with the project's Gender Action Plan (GAP).

Component 3: Improved protection, supply and use of water resources under conditions of climate change

Outcome 3: Enhanced water security for households in target areas

Output 3.1 Improved protection, supply and use of water under climate change conditions.

Under Output 3.1, the quality and quantity of surface and groundwater will be enhanced through the rehabilitation of active freshwater springs, restoration of vegetation and building of natural check dams, as well as the establishment of rockfill dams to better capture rainwater runoff and contribute to aquifer recharge. This will be complemented by introducing rooftop harvesting interventions to communities designed to reduce their vulnerability to water scarcity. Rooftop rainwater harvesting has been identified as a preferred and viable option for meeting the country's increasing water demand, particularly in urban areas[17,18]. The potential harvested water from a 100 m^2 roof ranges from 4–29 CM in areas receiving an annual rainfall of 50–800 mm, which could equate to an average saving of 8% of the total domestic demand if rooftop rainwater harvesting if implemented across Jordan[19]. The ability of rooftop rainwater harvesting to save water is attributed to water storage in closed containers that are not subject to the high levels of evaporation that surface water sources are exposed to, thereby limiting water loss and reducing the demand for water within the wider landscape. Potential for rainwater harvesting in the Balqa and Irbid governates within the project area is estimated to be 1.7 and 3.3 MCM/year, respectively[20,21]. Under the proposed project, 3,000 rainwater harvesting tanks with a capacity of 32

[17] Al-Qawasmi O. 2021. Feasibility of rainwater harvesting from residential rooftops in Jordan. *Applied Water Science,* 11: 30.

[18] Saidan MN, Al-Weshah RA & Obada I. 2015. Potential rainwater harvesting: An Adaptation measure for urban areas in Jordan. *American Water Works Association*, DOI: http://dx.doi.org/10.5942/jawwa.2015.107.0154.

[19] Abdulla F. 2019. Rainwater harvesting in Jordan: potential water saving, optimal tank sizing and economic analysis. *Urban Water Journal*, DOI:10.1080/1573062X.2019.1648530.

[20] Abu-Zreig M, Hazaymeh A & Shatanawi M. 2013. Evaluation of residential rainfall harvesting systems in Jordan. *Urban Water Journal*, *10*: 105–111.

[21] Based on rainfall figures of 562 and 370 mm/yr, and potential rooftop area for rainfall harvesting of 3.8 million and 11 MCM, for Balqa and Irbid, respectively.

CM each will be installed, resulting in a minimum annual yield of 0.28 MCM/year. Rainwater harvesting interventions will therefore reduce the reliance of community members on groundwater and limit financial costs resulting from digging deeper wells to access lowering water tables.

Output 3.1 will contribute to GCF Outcome A7.0 (strengthened adaptive capacity and reduced exposure to climate risks) and Outcome A8.0 (strengthened awareness of climate threats and risk reduction processes) by improving local communities' access to and use of water for domestic and agricultural purposes. At the domestic level, small-scale rainwater harvesting interventions will be installed on community buildings — including mosques, churches and community centres — as well as homes and schools in project intervention areas[22]. This will supplement the increased supply of water from the restoration of upstream watershed areas, increasing the resilience of communities to the increased duration, frequency and intensity of droughts under climate change conditions.

To improve the community-level use and management of water under climate change conditions, community-based water monitoring and management plans will be developed for the target areas. These plans will ensure social accountability for water usage within beneficiary communities. The development and implementation of the plans will be overseen by the WMCs (established under Output 1.1), ensuring complementarity with the climate-resilient integrated watershed management plans developed for the three project target areas (Activity 2.1.1). WMCs will ensure that target communities' needs and concerns are considered in the development and implementation of water monitoring and management plans. Representatives of target communities will be members of the WMCs, providing them with direct inputs into decision-making processes and ensuring that relevant information is made available to them[23]. To promote the effective implementation of these plans, community members will be informed of their purpose and benefits and will be trained to implement them. Additional livelihoods related to the monitoring and management of water in target communities will also be promoted — including plumbing, rainwater harvesting infrastructure installation and maintenance, as well as the installation of solar pumps.

Activity 3.1.1 Implement measures to improve the quantity and quality of ground and surface water supplies within the project sites.
At each of the project's three sites, interventions will be implemented to enhance the quality and quantity of ground and surface water through Activity 3.1.1 This will be done through three sub-activities and will include the construction of rockfill dams, vegetation restoration and the rehabilitation of active freshwater springs.

- *Sub-activity 3.1.1.1 Establish rockfill dams at 12 sites in target area wadis (four per target area) to capture runoff and water from flash floods for managed aquifer recharge (MAR).*
- *Sub-activity 3.1.1.2. Implement small-scale measures, including restoration of vegetation and establishment of natural check dams, to capture silt upstream of rockfill dams.*
- *Sub-activity 3.1.1.3. Rehabilitate active freshwater springs across the project sites (Yarmouk and Kafrain).*

Activity 3.1.2. Install 1 MW of floating solar panels over the King Abdullah Canal to reduce water loss from evaporation.
Two sub-activities under Activity 3.1.2 will be aimed at reducing evaporation of surface water resources and increasing electricity supplies through floating solar panel arrays. Using suspended or floating covers has the potential to reduce evaporation from water bodies by ~77–91%[24]. In the lower-lying areas of the project intervention area (Jordan Valley floor), evaporation reduction measures will be implemented on the King Abdullah Canal — located on public land — to reduce surface water evaporation. The floating solar installation will be connected to the local grid (year 3 of the project) to supply additional, renewable power to the MWI's pumping stations located on the King Abdullah Canal. Floating or suspended solar panels have not been used in Jordan before the proposed project but has been used successfully in other countries, making this an innovative aspect of the project. In India, for example, 33,816 solar panels were installed over 7.5 ha of the Narmada irrigation canal, supplying 16.2

[22] Relevant interventions are detailed under Section 8.6 of the Feasibility Study, Annex 2.
[23] These community representatives will be members of community-based committees already present on the ground in the three project areas, such as Development Advisory Committees, Stakeholders Advisory Groups, agricultural cooperatives, women's cooperatives and Water User Associations.
[24] Helfer F, Zhang H & Lemckert C. 2009. Enhancing reservoir management through the use of mechanical evaporation reduction techniques. Society for Sustainability & Environmental Engineering, Melbourne, Australia.

million units of power and saving 0.1 MCM/yr of water by reducing evaporation[25]. A detailed analysis of alternative evaporation reduction methods for surface water sources is presented in Section 8.7 of Annex 2. This analysis includes a comparison of the costs and benefits, environmental impacts, etc., of floating solar with alternatives such as tree windbreaks, suspended covers, floating covers, destratification and chemical monolayers. The results of the analysis indicate that floating solar has the lowest potential environmental impact and provides the best cost-benefit ratio.

- *Sub-activity 3.1.2.1. Install 1 MW of floating solar panels over the King Abdullah Canal.*
- *Sub-activity 3.1.2.2. Connect the floating solar installation to the local grid to supply power to the MWI's pumping stations on the King Abdullah Canal.*

Activity 3.1.3. Introduce small-scale rainwater harvesting interventions in the project's three target areas to improve access to clean water under climate change conditions in a gender-responsive manner.

Under Activity 3.1.3 small-scale rooftop rainwater harvesting interventions will be installed at public and private buildings across the project's three intervention sites. Rooftop rainwater harvesting is a simple measure, standardized in the country under the Uniform Plumbing Code of Jordan[26]. This rainwater harvesting measure ensures that rainwater falling on rooftops is collected in a dedicated cistern/tank, instead of being lost. The activity aligns with Jordan's INDC (2015) and NAP (2020), in which GoJ has included rooftop rainwater harvesting as a priority intervention for climate change adaptation, as well as with Jordan's Water Substitution and Water Reuse Policy (2016).

A 32 CM cistern/tank will be installed at each of the selected 3,000 buildings to supplement and reduce the demand on domestic supplies during dry periods (i.e., serving as a complementary source) at the household level, as well as at community and institutional buildings across the project's three target areas, thereby increasing climate resilience through improved water access[27]. The water will be accessible from the tank as needed, via an outlet tap — i.e., it will not be piped into the building. At the household level, assuming that an average household (5 people) would require 500 litres of supplementary water per day for domestic purposes during the dry season, a full 32 CM cistern/tank, would provide water, without any recharge, for a minimum of 65 days. Overall, the activity will result in a minimum increase in annual water supplies of 0.28 MCM/yr in the target area (more information on rainwater harvesting is available in Section 8.6 of Annex 2). As much of the project's water resource benefits related to ecosystem restoration and MAR will only be realised in the medium to long term, the immediate tangible benefits provided by the introduction of small-scale rainwater harvesting interventions to vulnerable local communities, is critical to improving their resilience in the short term, and to fostering their support for the project's other interventions, such as ecosystem restoration. Support for the implementation of this activity will be provided by relevant project Technical Partners.

- *Sub-activity 3.1.3.1. Install small-scale water harvesting interventions at community centres, local institutions and schools at target sites in the Jordan Valley.*
- *Sub-activity 3.1.3.2. Install small-scale water harvesting interventions at homes at target sites in the Jordan Valley (100% of women trained in their operation and maintenance).*

Activity 3.1.4. Empower local communities, including women, to monitor and manage local water supplies more effectively.

Through three sub-activities under Activity 3.1.4, community-level management of water supply will be strengthened across the project's three target sites. This will include community-based water use monitoring plans, outreach campaigns and the promotion of additional livelihoods that are related to the monitoring and management of clean water. Community engagements under this activity will be facilitated by project TPs and the relevant WMCs, which will include local community members as representatives. During the project's inception period, the target communities (consulted during the preparatory phase) will be engaged to sensitise them to the project's scope, objectives, expected results, as well as their roles — such as under Activity 3.1.4. These early community engagements (Activity 4.1.1) will also be used to manage the expectations of communities by providing clear project

[25] Ibid.

[26] Approved by the Jordan National Building Council's technical committee in 2015.

[27] The use of water collected via rooftop rainwater harvesting systems will not be used for drinking purposes as per national law. Drinking water quality is governed by Jordanian Standard 286 (JS286), which is an adaption of the WHO's guidelines for drinking water quality.

timelines and ensuring a common understanding that the project will not be addressing baseline development challenges, but impacts related to climate change.

- *Sub-activity 3.1.4.1. Develop community-based water use monitoring and managing plans for project beneficiary communities.*
- *Sub-activity 3.1.4.2. Implement an outreach campaign to raise awareness on the plans developed under sub-activity 3.1.4.1 and train target community members to monitor and manage the use of clean water (100% women).*
- *Sub-activity 3.1.4.3. Promote additional livelihoods related to the monitoring and management on clean water in target communities (including at least 50% women) through a training course.*

Component 4: Knowledge management and awareness on climate change adaptation
Outcome 4: Household behavioural change achieved through improved information and outreach
Output 4.1 Improved knowledge and awareness of climate change adaptation for landscape and water resources management.
Strengthened mandates and capacity for climate-resilient ILWRM in Jordan (Output 1.1) will be complemented by the improvement of the country's climate change knowledge-management system. This will include the development of knowledge-management tools to facilitate sectoral and cross-sectoral learning and inform the related mainstreaming activities mentioned above. Lessons learned and best practices on adaptation will be made possible through the establishment of a national climate change adaptation knowledge repository. Consequently, Output 4.1 will contribute to GCF Outcome A8.0 — strengthened awareness of climate threats and risk-reduction processes.

The activities conducted under Output 4.1 will build upon baselines established by both government institutions and previous projects concerned with awareness raising and knowledge management. The MoEnv, in seeking to achieve its mission to "maintain and improve the quality of Jordan's environment, conserve natural resources, and contribute to sustainable development"[28], conducts activities concerned with, inter alia, public awareness and outreach and the support of decision-making through knowledge management. It leads the governance system — including other relevant governmental organisations — in initiating and driving policies, legislation, strategies and monitoring, as well as by mainstreaming environmental policies into all national development plans[29]. To achieve this the MoEnv has set five objectives for the environment sector, notably the development of capacity and institutionalisation of a culture of excellence and raising public awareness and promoting behavioural change for environmental protection[30].

Activity 4.1.1 Implement a climate change adaptation outreach programme across the Jordan Valley.
Through six sub-activities under Activity 4.1.1, awareness of climate change and adaptation responses — including climate-resilient ILWRM — among local communities in the Jordan Valley will be strengthened. This will improve the understanding of and foster support of those who will be directly affected by the mainstreaming of climate-resilient ILWRM into land-use and development-planning processes. Awareness will be raised through an outreach programme implemented by local NGOs and project TPs, working closely with community representatives in WMCs. The knowledge management tools developed under Sub-activity 2.1.4.1 (such as a content repository, a knowledge search tool, a communication tool, social software to facilitate the socialisation of knowledge and a knowledge visualisation tool) will be used to support the implementation of the outreach programme and ensure that the information is available post project for continued awareness raising and learning.

- *Sub-activity 4.1.1.1 Community engagements carried out during the project inception period in the project's three target areas to target communities to the project's scope, objectives and expected results.*
- *Sub-activity 4.1.1.2. Upgrade community centres and local institutions (including NGO centres) in the Jordan Valley, and train local staff so that the centres can serve as climate vulnerability and adaptation information hubs and learning centres.*

[28] The Hashemite Kingdom of Jordan. 2017. Jordan's First Biennial Update Report to the United Nations Framework Convention on Climate Change.
[29] Ibid
[30] The Hashemite Kingdom of Jordan. Nd. *Ministry of Environment Profile*. Available at: https://jordan.gov.jo/wps/portal/Home/GovernmentEntities/Ministries/Ministry/Ministry%20of%20Environment?nameEntity=Ministry%20of%20Environment&entityType=ministry

- *Sub-activity 4.1.1.3. Public figures identified and trained to champion the case of climate change adaptation in Jordan, including promoting awareness and stimulating local ownership of the project's climate-resilient ILWRM approach.*
- *Sub-activity 4.1.1.4. Site- and ecosystem-specific climate change adaptation outreach programmes developed for the Jordan Valley, including the usage of locally available media, and the inclusion of schools via the EcoSchools programme.*
- *Sub-activity 4.1.1.5. Outreach programme implemented to promote awareness of the benefits and implementation of climate change adaptation approaches (especially EbA) among targeted rural communities and relevant stakeholders in the Jordan Valley through locally available media.*
- *Sub-activity 4.1.1.6. Train relevant educational practitioners from the Ministry of Education and tertiary institutions on the integration of climate change adaptation into syllabi and curricula of Jordanian universities.*

Activity 4.1.2. Improve knowledge management for climate change adaptation in Jordan to support national and sub-national decision-making and build communities of practice.
Activity 4.1.2 will target the strengthening of climate change adaptation knowledge management in Jordan. This will be done through five sub-activities aimed at developing knowledge management tools, collecting lessons learned and best practices, long-term monitoring, the establishment of partnerships with academic institutions and the training of users of the knowledge management tools.

- *Sub-activity 4.1.2.1. Knowledge-management tools developed to facilitate sectoral, cross-sectoral and community learning and mainstreaming of climate change adaptation approaches (including EbA) by policymakers and planners.*
- *Sub-activity 4.1.2.2. Collect lessons and best practices across Jordan (including on the project's ILWRM investments) and between arid states in the Mediterranean region and Middle East, as well as those generated via the project on an annual basis using the knowledge management tools.*
- *Sub-activity 4.1.2.3. Design and implement a long-term monitoring plan for the generation of lessons learned on the project's climate-resilient ILWRM investments.*
- *Sub-activity 4.1.2.4. Establish partnerships (including the signing of MoUs) with Jordanian academic institutions and research agencies to participate in the implementation of the long-term monitoring plan (Sub-activity 4.1.2.3) and generate relevant research findings and publications to inform innovative landscape-centric approaches to climate change adaptation.*
- *Sub-activity 4.1.2.5. User groups trained to use knowledge management tools to increase their access to knowledge/information of climate-resilient ILWRM approaches.*

4. Environmental Assessment

Legal and Administrative Framework

Introduction

This section of the study focusses mainly on the policy, legal and administrative framework governing environmental management within which the ESMF is developed and carried out. This includes:

- Review of the institutions involved in the planning, management, conservation and monitoring of the environment in Jordan, as well as the institutions concerned with legislation and regulation of the sector, and the institutions tasked with enforcing these. This is with a view to determine the status of the legal and institutional context and to assess the environmental management and conservation capacity of the Kingdom, in particular those of relevance to the project.
- Highlight salient features of Jordan's environmental management capacity, in particular factors that affect the implementation of the project.

Regarding landscape and ecosystem management, Jordan faces challenges in institutional aspects and financial constraints when it comes to implementation of integrated management approaches.

5. Institutional Framework

5.1. Overview of Governmental Organisations

The Hashemite Kingdom of Jordan is a parliamentary constitutional monarchy headed by His Majesty, King Abdullah bin al-Hussein. Jordan became an independent state named “Trans Jordan Emirate” in 1923 and later in 1946 the Kingdom was formed. The constitution was promulgated in 1952 and since then has been amended several times. It outlines the King is the head of state and vested with independent powers: comprising legislative, executive and judicial authorities. There are two houses of National Assemblies: the Senate and the Deputies. The King appoints the members to the Senate on the basis of meritorious service or special qualification, while the members of the Deputies House are elected by national suffrage, with men and women over 18 allowed to vote. The King appoints the Prime Ministers and the Ministers upon recommendation of the Prime Minister. The country is divided into 12 governorates that are each subdivided into administrative regions.

The Legislative Power resides in the King and the National Assembly. A draft law is normally presented by the government or by at least 10 deputies. It is then initiated by the House of Deputies, debated and voted upon, after which it is approved in its final reading by both Houses and becomes a law if submitted to the King, who has the power to grant consent through a Royal Decree.

The Executive Power is in the hand of the cabinet which consists of the Prime Minister and the Ministers. The King appoints the Prime Minister who in turn recommends to the King the appointment of Ministers. The Cabinet, after being granted the confidence from the House of Deputies being the supreme executive body, presides over and controls the government.

The Juridical Power is independent from other powers — neither the King nor the government has the right to interfere in its duties. Its essential function is to apply justice by deciding on any dispute case filed by any person against an individual or a governmental body. Cases may go in sequence from a first instance court, to an appeal court and then to a cassation court upon the request of any party in the dispute.

The role of environmental protection is divided between various governmental institutions, such as the Ministry of Environment, Ministry of Public Health, Ministry of Water and Irrigation, Ministry of Agriculture, Ministry of Tourism, Ministry of Energy and Mineral Resources/the Natural Resources Authority, Ministry of Planning, and the Aqaba Special Economic Zone. Each of these institutions has articles in their respective laws granting them the responsibility to maintain and monitor some aspects of environmental quality.

As for the water sector in Jordan, there are three organisations directly related to it. These are the Ministry of Water and Irrigation (MWI), Water Authority of Jordan (WAJ) and Jordan Valley Authority (JVA). The Ministry of Water and Irrigation was established some years after the foundation of the Water Authority of Jordan and the Jordan Valley Authority. The Minister of MWI is the head of the Board of Directors of both organisations. Each of these organisations has its own mandates, organisational structure, responsibility area and mission and strategies.

The following is a description and outline of the main characteristics of each of the ministries and institutions most directly related to environmental and water issues in the Kingdom. Further, Annex 1 includes the stakeholders’ analysis matrixes for the project at the national level and at the three proposed project intervention localities; South Shounah Area, upper and middle King Talal Dam Watershed, and the Yarmouk Area.

5.1.1. Ministry of Environment (MoEnv)

The Ministry of Environment (MOE) was established pursuant to the Environmental Protection Law (EPL) No. (1) of 2003. Under the provision of article 3, the MoEnv is the considered the concerned authority in Jordan for environmental protection on national, regional and international levels. In addition, all sectors, whether governmental, non-governmental organisations or the public, have to implement the procedures, instructions, etc. issued by the MoEnv. Also, they have to coordinate with the MoEnv in relation to environmental issues when dealing with the donors.

Before January 2003, the General Corporation of Environment Protection (GCEP) in the Ministry of Municipal, Rural Affairs and Environment represented this ministry. Since 1996 and according to the

EPL No. (12) of 1995, the Ministry of Environment was formed as the major governmental agency responsible for environmental conservation and protection. This corporation included four major technical divisions. These are: Land Use, Environmental Impact Assessment (EIA), Water Quality and Air Quality Monitoring.

The environmental duties and authorities of the Ministry include but are not limited to:

- Establishing the general policy for protection of the environment, and putting forward, as required, essential plans and programs to implement them.
- Developing plans, projects, and programs to ensure sustainable development within the Kingdom.
- Establishing the specifications and standards for elements of the environment.
- Monitoring and verifying environmental elements in coordination with scientific research centres and in accordance to the specifications set by the MoEnv.
- Proposing draft laws and regulations related to the Environment.
- Inspecting and auditing private and public institutions to ensure compliance with environmental requirements (parameters and specifications).
- Conducting and sponsoring research and studies on environment related issues.
- Coordinating activities to develop national strategies on environmental awareness and information.
- Enhancing coordination between Jordan, and the Arab, regional and international organisations regarding environmental issues.
- Issuing instructions and resolutions for the execution of articles of the Law and the regulations issued in accordance with the Law.
- Issuing conditions and instructions, as required, for agricultural, development, commercial, industrial and housing projects.
- Setting basis (essentials) for handling dangerous substances, which are harmful to the environment, including its categorising, storage, disposal and transport.
- Setting a basis and conditions for the establishment and management of natural reserves and public parks.
- Preparing plans for environmental emergencies.

Throughout the Environment Protection Law, there are references to working in “co-ordination and co-operation of the relevant authorities.” A significant component of environmental management capacity in Jordan is dependent on the success the MoEnv has in working in cooperation with other ministries and the private sector that have technical capacity and experience to monitor and verify environmental performance in particular sectors. For example, the Ministry of Water and Irrigation and the Ministry of Health monitor water quality, with some of the data collected by private companies.

It is noteworthy here to mention that one minister is currently in charge of the Ministry of Environment and the Ministry of Agriculture (MOA).

5.1.2. Ministry of Water and Irrigation (MWI)

The Ministry of Water and Irrigation (MWI), created in 1988, is the only public sector agency at present in the region that integrates the management of different user sectors, thus allowing for a cross-sectoral perspective in water allocation and management. This integration provides MWI the chance to coordinate water resource allocation and management, taking a cross-sectoral perspective that accounts for irrigation, municipal and industrial needs.

In order to establish water resources management and integrate various policies under one entity, MWI’s main objective is to centralise the national management of the scarce water resources to one ministry in order to improve it. The MWI acquired the comprehensive function to distribute and regulate the water resources in Jordan and the responsible authority to settle any disputes between agriculturists and water supply authorities.

The establishment of the Ministry of Water and Irrigation was in response to Jordan’s recognition for the need of a more integrated approach to water management. Since its establishment, MWI has been supported by several donor organisation projects that have assisted in the development of water policy and water master planning as well as restructuring the water sector.

The role of the Ministry includes the provision of policy setting and formulating water sector master plans, centralised data collection, a geographic information system, monitoring and national water planning for the water sector of Jordan and water protection related to environmental issues and decision-making.

A comprehensive national water data bank has been established and kept at MWI and will be aided by a decision support unit. Additionally, this data bank will be supported by a program of monitoring and a system of data collection, entry, updating, processing and dissemination of information, and will be designed to become a terminal in a regional data bank set up.

The main responsibilities and tasks of MWI are:

- To design and enforce a national water strategy.
- To monitor all groundwater resources in the Kingdom.
- To establish and keep a database for water resources.
- To coordinate funding from international donor agencies.
- To develop water strategies and policies with the JVA and WAJ.

The government has carried some substantial reforms in the water sector. These reforms were mainly focused on resource management, financial management, and institutional and legislative aspects.

5.1.3. The Water Authority of Jordan (WAJ)

WAJ is responsible for the construction, operation and maintenance of water supply and sewage facilities and the national water resources management under the Ministry of Water and Irrigation in accordance with its establishment law No. 18/1988. It was established as an autonomous corporate body with financial and administrative independence. It formulates water supply and sewage policies and prepares water resources management plans. This organisation also has the responsibility of supervising the water supply and sewage services being implemented and water protection related environmental issues. In recent years, WAJ is moving from policy setting and formulating water sector master plans into services' provision.

The main responsibilities and tasks of the Authority are:

- Survey the different water resources, conserve them, and determine ways, means and priorities for their implementation and use.
- Develop the potential water resources in the Kingdom, increase their capacity and improve their quality, protect them from pollution, supervise them and administer their affairs and put forth programs and plans to meet future water needs by providing additional water resources from inside or outside the Kingdom and through the use of water treatment and desalination.
- Regulate, and advise on, the construction of public and private wells, investigate groundwater resources, drill exploratory, reconnaissance, and production wells, and license well drilling rigs and drillers.
- Study, design, construct, operate, maintain, and administer water and public sewerage projects including collecting, purifying, treating, disposing and the use of any other method dealing with water.
- Draw terms, specifications and special requirements in relation to the preservation of water and water basins, protecting them from pollution, and ascertain the safety of water and sewerage structures, public and private distribution and disposal networks, and take the necessary action to ensure technical control and supervision, including all necessary tests.
- Carry out theoretical and applied research and studies regarding water and public sewerage to achieve the Authority's objectives including the preparation of approved water quality standards for different uses and technical specifications concerning materials and construction in order to apply the findings to the Authority's projects in coordination with other concerned departments; and publish the final findings and standards so as to generalize their application by all means available to the Authority.
- Issue permits to engineers and licensed professionals to perform public water and sewerage works and participate in organising special training courses to qualify them in order to improve the standard of such works and to reduce water losses and pollution. All those involved in water and

sewerage works are requested to adjust their practice in accordance with the provisions of this Article and to obtain the specified permit accordingly.
- Regulate the use of water, prevent its waste and conserve its consumption.

There are many Directorates and Sections within the Water Authority of Jordan (WAJ) that undertake the implementation of WAJ objectives and roles. Perhaps two of the most important sections that work on the implementation of water policies are the Wells Directorate and the Laboratories Directorate. The Wells Directorate is in charge of licensing of private wells in addition to groundwater development and utilisation. Administratively, it is directly under the supervision of the Secretary General of Water Authority. The Directorate consists of two sections: i) the License of Wells Section; and ii) the Operations and Field Follow Up Section.

Although WAJ has a wide mandate that encompass regulatory function — in addition to its main mandate of providing water and wastewater services of high quality — it has been able to provide high quality services and achieve good coverage of water in Jordan. Therefore, water and wastewater services in Jordan should be acknowledged as outstanding in the region. Water supply covers more than 98 percent of the population and the target of full coverage is underway. Wastewater services have been improving in recent years and WAJ has managed to increase coverage to about 75 percent in urban areas in Jordan.

5.1.4. The Jordan Valley Authority (JVA)

JVA was founded in 1977 under the Law No. 18/1977, under which this agency acquired the prime authority to plan and implement water supply services in the Jordan Valley (all areas below 300 m above sea level in the kingdom). Subsequently, JVA strengthened the management for infrastructure development in the valley.

The territory mandated to the Jordan Valley Authority by its governing law, the Jordan Valley Development Law No. 30 of 2001, is extensive covering approximately 5,000 km^2, and is home to some 300,000 people. The main activity in the Jordan Valley is agriculture with about 360,000 *dunums* being cultivated. Tourism and industry are two other sectors with a significant presence in the Valley. The Valley, by virtue of the water resources it has, is a major source of domestic water for the Kingdom supplying the Water Authority with 45 million cubic metres (MCM) of potable water per year. This task is being made increasingly difficult by the drought conditions that have prevailed for the past 20 years as well as the rapidly increasing demand for water. The government has given priority to supplying domestic water over irrigation water, causing problems for the agricultural sector in terms of water quantity and quality.

A comprehensive master plan based on environmental considerations is necessary to give a holistic vision of the Valley and shall result in a better use of land for various purposes. It will also bring into close proximity compatible uses that affect each other positively. In addition, the lack of environmental assessments for land use would result in environmental degradation and further deterioration.

Laws and mechanisms have to be modified to protect the environment; however, they are inadequate both on the regulatory side and operational side.

There are two articles in the Jordan Valley Development Law, that address the issue of the environment. The relevant article of the above-mentioned law reads:

"The development, protection and improvement of the Environment in the Valley and to perform necessary works to achieve this objective, to implement the preparation of plans both Master and Detailed Plans for the lands outside the planning boundaries of the municipalities."

Specifically, the Jordan Valley Authority is in the forefront of protecting the Valley environment. The other institutions also mandated to do the same include the Water Authority of Jordan, the Ministry of Agriculture, the Ministry of Environment and the Ministry of Local Administration.

Examining the environmental protection status quo, it can be observed that there is no concrete system or mechanism for performing this function in the Jordan Valley. Several institutions, including JVA, are

mandated to protect the environment in the Valley, but ambiguity does exist as to who does what. The result is a failure to adequately safeguard the environment from abuse and deterioration.

5.1.5. Ministry of Local Administration (MoLA)

The Ministry of Local Administration which used to be called The Ministry of Municipal Affairs (MMA) until May 2019 is the umbrella for the municipalities and local councils in the country. It is responsible for urban planning, associating the municipalities in planning, budgeting, verification of financial reports, and for monitoring the activities and performance of municipality councils. Also, the Ministry is responsible for developing the capacities of the municipalities at the institutional and individual levels.

The municipalities are responsible for solid and liquid waste management, land use planning within their jurisdiction, licensing of economic and urban activities, construction and maintenance of roads and other infrastructures.

5.1.6. Ministry of Energy and Mineral Resources (MEMR)/The Natural Resources Authority

The Ministry of Energy and Mineral Resources (MEMR) is responsible for:

- Monitoring all mining activities, and planning and managing the energy sector.
- Regulating and managing the use of nuclear energy in all fields.
- Cooperating and coordinating with all concerned parties on the issue of prevention and protection against radiation.
- Putting forward national plans, conducting studies, and drafting laws in order to protect water and public health against dangerous nuclear waste.
- Issuing licenses for the production, storage, use and trade of radioactive materials in accordance to the relevant legislation, and possessing the right to revoke these licenses if the license holder contravenes the licensing conditions or the provisions of any relevant legislation.
- Monitoring and inspecting the licensed corporation to ensure that they have effective preventative and protective systems against radiation.
- Monitoring and inspecting corporations that work in the petroleum field. Monitoring and inspection include their transportation, storage and safety systems.

5.1.7. Ministry of Health (MOH)

The Ministry of Health (MOH) is responsible for the following:

- All health affairs in the Kingdom, including the supply of medication, medical services, vaccination programs against epidemics, public awareness campaigns with regards to health issues and health insurance for government personnel.
- Monitoring of sewerage systems.
- Issuing instructions, as required, to define rules for the purpose of the entry of food or medications into the Hashemite Kingdom of Jordan, and to ensure that they comply with national health standards and specifications.
- Issue licenses for the construction of hospitals, medical centres and all medical related practices in accordance with the Doctors' Association rules and regulations.
- Set the Ministry's policy, plans and future projects.
- Monitor and control drinking water to ensure its suitability for human use.

5.1.8. Ministry of Agriculture (MOA)

The responsibilities of the Ministry of Agriculture (MOA) include:

- Setting of agricultural policy and future plans and projects in the Kingdom.
- Management of public rangelands and forests.
- Protection of soil, pasture and flora.
- Permitting pesticide and fertiliser use.
- Protection and management of wildlife [delegated to Royal Society for Conservation of Nature (RSCN)].

- Issuance of fishing and hunting licenses and regulations, regulation of fishing and hunting, determining capacity and setting take limits (delegated to RSCN).

5.1.9. Ministry of Planning and International Cooperation (MOPIC)

The Ministry of Planning and International Cooperation (MOPIC) is responsible for:
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- Overviewing all development projects, from proposal to execution to ensure that environmental impact has been considered in the design and the implementation.
- Coordinating with donor agencies and facilitating grants for environmental projects.

The Environment Department within the MOP, that is not a technical department, coordinates general planning for environment related matters.

5.1.10. Ministry of Tourism/Department of Antiquities

The responsibilities of Ministry of Tourism/Department of Antiquities are to:

- Develop and implement the archaeological policy of the country with regards to identification, supervision, protection, maintenance, registration and restoration of archaeological sites.
- Promote archaeological sites on national and international levels.
- Conduct public awareness about archaeological sites in accordance with relevant laws and regulations.

5.1.11. Ministry of Public Works and Housing (MPWH)

The Ministry of Public Works and Housing (MPWH) was created in 1954. The MPWH is responsible for the construction and maintenance of infrastructure in Jordan including the major transportation infrastructure (highways, road, etc) that connect, *inter alia*, the main cities, towns, residential areas, industrial zones and tourist sites together. In addition, it is responsible for connecting Jordan to its neighbouring countries by major highways.

Furthermore, the MPWH is responsible for constructing and maintaining government buildings and the capacity development of the building sector in Jordan.

Specifically, MPWH responsibilities include:

- Setting transportation plans (construction and maintenance) for cities, towns, villages and rural areas.
- Designing and supervising the construction of government buildings.
- Conducting testing on construction material to ensure adherence to standards and specification.
- Conducting research and studies on roads and buildings.
- Drafting legislation and standards related to buildings and roads.
- Upgrading criteria and methods for construction design and maintenance.
- Coordinating with concerned parties on road and buildings related issues.

5.1.12. Ministry of Defence, Armed Forces, and General Security

Jordan's military consists of three branches namely, the Jordan Arab Army, the Royal Air Force and the Royal Coast Guard. Throughout the armed services, high training standards are the norm. Jordan has emphasised quality rather than quantity and does not expand its forces more rapidly than its training and organisational capabilities permit.

Jordan also has a highly efficient police force, border police and desert patrol that form the Public Security Force. The Royal Department for Environmental Protection (Rangers) represents the part of the police force in charge of environmental law enforcement throughout the country. The Rangers Force which was established in 2006 are considered one of the main executive arms of the Ministry of Environment in relation to the enforcement and monitoring of environmental laws and regulations.

It is important to note the importance of involving the armed forced, border guards and the Rangers as it is crucial for the facilitation of all development and environmental projects in the Jordan Valley. This is due to the proximity of the area to the national borders and high level of security sensitivity associated with development around it, especially during the last decade or so with the increasing levels of regional political instabilities and conflicts.

5.2. Universities and Research Institutes

There are several universities and research centres in Jordan that work in the environmental field. In this section we will outline two of the most important ones:

5.2.1. The Water and Environment Research and Study Centre (WERSC) at the University of Jordan

The centre was established in 1982 to help in developing and implementing the national plans for management of Jordan's scarce water resources. The centre has been and is still involved in several activities related to water and environment through projects funded by international and national agencies such as: i) long term studies for water conservation and management in the Azraq Oasis; ii) low-cost wastewater treatment and reuse; iii) the effect of wastewater treatment plants on water resources; iv) a decision support system for drought management; and v) capacity building in different aspects of water and environment.

The centre has held many workshops for strengthening the capabilities of personnel working in the area of water and environment. All aspects related to water were covered in an integrated approach. The centre has helped in establishing and strengthening an "Environmental Science and Management" graduate program through the different projects that the centre undertakes.

5.2.2. The Royal Scientific Society (RSS)

RSS was started in 1970 to provide the private sector and public agencies with information and technology support. RSS is a semi-governmental research institution with financial and administrative independence, largely funded by contracts for services to government and private sector and occasional international funding. JICA funded substantial information technology (IT) infrastructure in RSS. They have scientific centres in engineering, IT, chemistry, environment, and renewable energy among others. The latter is now an independent national program. The environment centre started with projects related to water pollution and later added air and water quality and environmental management. In 1989, the Environment Research Centre was created. Program areas expanded into Environmental Impact Assessment (EIA), solid waste management and noise pollution. In the water sector they test and evaluate water treatment plants, funded by an annual contract with the Ministry of Environment. The water data is continuous since 1986. For air quality they mostly test in industrial areas with fixed stations and two mobile labs. Air quality testing is sporadic but should be continuous. They also perform vehicle emissions testing.

5.3. Non-Governmental Organisations (NGOs)

Non-governmental organisations (NGOs) provide an important part of the environmental management infrastructure in Jordan. Their programs often complement the work of government, adding to the existing infrastructure or filling gaps in areas where the government is less active. NGOs sometimes advocate conservation of resources and protection of the environment in cases where the government focus on providing services fails to protect the resource base. The NGOs discussed below provide significant programs in environmental education and public awareness, complementing government services in areas such as solid waste collection and water conservation. Furthermore, the NGOs have been instrumental in drawing public attention to issues of air pollution and negative consequences of proposed development projects, and in some cases their efforts have forced changes resulting in improved environmental conditions. In this section we will outline the most active ones in Jordan.

5.3.1. The Royal Society for Conservation of Nature (RSCN)

RSCN is a project consortium member. It is a renowned national NGO with a very special legal mandate as it implements parts of environment and agriculture law on behalf of the government. RSCN was established in 1966 and has about 300 employees, 50 in Amman and the rest in the field distributed in

the various protected areas. Less than 10 percent of their funding comes from the government (to assist with protected area management), 35 percent of funding is from tourism, 35 percent from an endowment fund and the remainder from projects are funded by various donors and regional and international partners.

RSCN manages protected areas which are all established on government lands (they are Shaumari, Azraq, Mujib, Dana, Ajloun, Dibbin, Yarmouk, Fifa, and Burqu' and a small bird observatory in Aqaba) and has the mandate for enforcing hunting laws and issuing hunting licenses in Jordan. The RSCN promotes conservation of protected areas and helps local communities benefit from the protected areas through tourism and the sustainable use of local natural resources. Moreover, they have successfully used the EIA process to challenge government projects that would negatively impact nature reserves or other natural heritage areas of importance. RSCN has identified additional areas that are high priority for being added to the protected areas system in Jordan.

5.3.2. The Royal Botanic Garden (RBG)

RBG is a project consortium member. It was founded in 2005 by H.R.H Princess Basma Bint Ali, and it is not-for-profit and non-government foundation dedicated to the protection and conservation of plant life in Jordan, in addition to ecosystem restoration and rehabilitation.

RBG manages a special conservation area where most of its programs are implemented. With around 20 staff, RBG has been able in recent years to take an active role in the national biodiversity programs and contribute to regional and international platforms concerned with plant conservation and the sustainable use of associated resources.

5.3.3. The Jordan Hashemite Find for Human Development (JOHUD)

JOHUD is a project consortium member. It was stablished in 1977 under the auspices of H.R.H Princess Basma Bint Talal. It is the oldest and largest non-profit, non-governmental organisation dedicated to promoting rights-based, sustainable human development in Jordan. With a network of 51 Community Development Centres located throughout the country, JOHUD is at the forefront of building a brighter future for those living in under-served, poor, and remote communities. JOHUD provides sustainable support that empowers individuals to work with their neighbours, strengthen their communities and secure access to the resources they need to achieve healthy and fulfilled lives.

With more than 300 staff members distributed throughout the Kingdom, one of JOHUD's strategic programs of work is dedicated to the sustainable use of natural resources with a particular focus on areas with increased poverty and higher environmental sensitivity.

5.3.4. The Princess Alia Foundation (PAF)

PAF is a project consortium member. It was founded by H.R.H. Princess Alia Al Hussein and is a registered non-profit, non-governmental organisation, under the Ministry of Social Development in the Hashemite Kingdom of Jordan. Its aim is to promote compassion and respect for all creation, using a holistic approach and bringing all stakeholders together to work as a united front. PAF works on many different fronts to ensure the balance between humans, animals and the environment to provide a better future for generations to come.

PAF led the establishment of Al Ma'wa Wildlife sanctuary on 363 *donums* of land in Souf in Jerash Governorate, 37 km north of Amman. The land has been assigned by the Ministry of Agriculture, Jordan, for the sole purpose of the establishment of a wildlife sanctuary by the Princess Alia Foundation. Al Ma'wa wildlife sanctuary provides large enclosures for different species of wildlife from Jordan and the region, which will be adapted to their specific needs. The sanctuary will guarantee these animals lifelong care in a species appropriate habitat.

5.3.5. The International Union for the Conservation of Nature (IUCN)

IUCN represented by its Regional Office for West Asia (ROWA) is a project consortium member. The International Union for Conservation of Nature (IUCN) is a membership Union uniquely composed of both government and civil society organisations. It provides public, private and non-governmental

organisations with the knowledge and tools that enable human progress, economic development and nature conservation to take place together.

Created in 1948, IUCN has evolved into the world's largest and most diverse environmental networks. It harnesses the experience, resources and reach of its 1,300 member organisations and the input of 15,000 experts. IUCN is the global authority on the status of the natural world and the measures needed to safeguard it. Its experts are organised into six commissions dedicated to species survival, environmental law, protected areas, social and economic policy, ecosystem management, and education and communication.

The IUCN Regional Office for West Asia (ROWA) was established in October 2004 covering the region of West Asia, which comprises 13 countries including Iraq, Jordan, Lebanon, Palestine, the Syrian Arab Republic, Yemen and Iran in addition to the Gulf countries including Bahrain, Oman, Kuwait, Qatar, Kingdom of Saudi Arabia, and the United Arab Emirates. Table 1 below, summarises the aforementioned environmental activities and relevant organisations.

Table 1. **Environmental activities undertaken in Jordan and relevant organisations.**

Activity	Relevant organisation
1. Management of environmental resources	-Ministry of Environment
	-Ministry of Agriculture
	-Ministry of Health
	-Civil Defence
	-Ministry of Trade and Industry
	-Standards and Specification Corporation
	-Ministry of Tourism and Antiquities
	-Ministry of Labour
	-Ministry of Water and Irrigation
	-Royal Scientific Society
	-Royal Botanic Garden
	-Hashemite Fund for Human Development
	-Royal Society for Conservation of Nature
	-Jordan Valley Authority
	-Aqaba Special Economic Zone Authority
2. Environmental Impact Assessment	-Ministry of Environment
	-Water Authority
	-Royal Scientific Society
	- Aqaba Special Economic Zone Authority
	-Ministry of Energy and Natural Resources
	-Royal Society for Conservation of Nature
3. Environmental Standards	-Ministry of Environment
	-Standards and Specification Corporation
	-Ministry of Health
	-Water Authority
4. Monitoring and Control	-Ministry of Environment
	-Greater Amman Municipality
	-Ministry of Health
	-Ministry of Local Administration
	-Ministry of Labour
	-Civil Defence
	-Water Authority
	-Ports Corporation
	-Ministry of Agriculture
	-Royal Scientific Society
5. Laboratory Services	-Royal scientific Society
	-Ministry of Health
	-Ministry of Agriculture
	-Jordan University for Science and Technology
	-Jordan University

5.4. Relevant National Environmental Legislations

The legal framework for the environment in Jordan is primarily described in laws, by-laws (or regulations), instructions, standards and specifications. Laws and by-laws are the most general, describing, for example, the overall authorities of a ministry or perhaps one sector within a ministry. They are also the most difficult to pass or later change. Instructions, standards and specifications describe the details regarding how a law is implemented and enforced and the specific standards that must be met. Standards include for example, details such as permissible limits of specific chemicals that can be discharged into sewers or rivers.

A ministry or one of their subordinate agencies usually develops laws, by-laws, regulations, specifications and standards. For laws, by-laws and standards the ministry presents their case to the Legislative Bureau, which reviews the language and researches potential conflicts with existing laws. Negotiations between the ministry and the Legislative Bureau may take several months to resolve issues and agree on the exact language. The Council of Ministers next considers the bill. Laws approved by the Council of Ministers are sent to the Parliament, where both houses, before going to the King for ratification, must approve them. By-laws and regulations approved by the Council of Ministers go directly to the King for ratification. Instructions, standards and specifications are written and enforced by the ministry or individual departments according to the authority described in the laws and regulations. The approval process for new laws or modifications to laws are often time consuming. Therefore, in order to expedite this process, “Interim Laws” are occasionally passed from the Legislative Bureau directly to the King for ratification, skipping the Council of Ministers and both houses of Parliament. The practice of passing Interim Laws has increased in recent years.

To date, Jordan has issued a number of laws, regulations, instructions, and standards regarding environmental management, control, monitoring, and protection against pollution. The government has emphasised the importance of quality assurance, control and monitoring of environmental aspects. This activity is currently conducted in a well-coordinated manner by several bodies including within the public, private and NGO sectors. The Jordan Institute of Standards and Metrology (JISM), which has administrative and financial independence, is the issuer and depositary of all standards of Jordan. The concerned ministry will draft the standard in coordination with JISM.

5.4.1. Environmental legislation of relevance to water (surface and groundwater)

The following are lists of legislations relevant to the project scope and target area. The list is limited to law and regulations (by-laws) only.

Laws:
- Environment Law no (74), 2017
- Water Authority Law no (22), 2014
- Jordan Valley Authority Law no. 19 of 1988
- Agricultural Law no (50), 2015
- Law of organisation of cities, villages and buildings no 70 of 1966 and its amendments

Regulations (by-laws):
- Monitoring of ground water bylaw no. 26 of 1977
- Prevention of repulsive scents and fees for solid waste collection within municipality’s boundaries no 1 of 1978
- Mining bylaw no 131 of 1966

5.4.2. Environmental legislation of relevance to wastewater and sewerage

Laws:
- Water Authority Law no (22), 2014
- Law of organisation of cities, villages and buildings no 70 of 1966 and its amendments
- Public Health Law no (47), 2008

Regulations (by-laws):

- Prevention of repulsive scents and fees for solid waste collection within municipality's boundaries no 1 of 1978
- Sewerage bylaw no 66 of 1994

5.4.3. Environmental legislation of relevance to air

Laws:
- Environment Law no (74), 2017
- Public Health Law no (47), 2008
- Industrial zones corporation Law no.59 of 1985

Regulations (by-laws):
- Mining bylaw no 131 of 1966
- Prevention of repulsive scents and fees for solid waste collection within municipality's boundaries no 1 of 1978

5.4.4. Environmental legislation of relevance to fire

Laws:
- Agricultural Law no (50), 2015
- Municipalities Law no. 29 of 1955 and its amendments
- Civil Defence Law no. 12 of 1959 and its amendments

Regulations (by-laws):
- Organisation and Management of Ministry of Energy no 26 of 1985

5.4.5. Environmental legislation of relevance to land

Laws:
- Environment Law no (74), 2017
- Agricultural Law no (50), 2015
- Management of Natural Resources Law no. 12 of 1968
- Management and Administration of Government Properties Law no. 17 of 1984
- Jordan Valley Authority Law no. 19 of 1988
- Law of organisation of cities, villages and buildings no 70 of 1966 and its amendments

Regulations (by-laws):
- Mining bylaw no 131 of 1966

5.4.6. Environmental legislation of relevance to flora and fauna

Laws:
- Environment Law no (74), 2017
- Agricultural Law no (50), 2015
- Law of organisation of cities, villages and buildings no 70 of 1966 and its amendments

Regulations (by-laws):
- Protection of Birds and Wildlife bylaw no. 113 0f 1973

5.4.7. Environmental legislation of relevance to desertification

Laws:
- Environment Law no (74), 2017
- Agricultural Law no (50), 2015

5.4.8. Environmental legislation of relevance to pesticides and fertilisers

Laws:
- Environment Law no (74), 2017
- Agricultural Law no (50), 2015

5.4.9. Environmental Legislation of relevance to human settlement and habitat

Laws:
- Public Housing and Urban Development Law no.28 of 1992
- Management and Administration of Government Properties Law no. 17 of 1984

5.4.10. Environmental Legislation of relevance to Land Use

Laws:
- Law of organisation of cities, villages and buildings no 70 of 1966 and its amendments
- Public Housing & Urban Development Law no.28 of 1992
- Jordan Valley Law no.19 of 1988
- Management and Administration of Government Properties Law no. 17 of 1984

Regulations (by-laws):
- Building, cities and villages organisation bylaw no. 79 of 1966
- Building and organisation of the city Amman no. 79 of 1966.

5.4.11. Environmental legislation of relevance to public health

Laws:
- Public Health Law no (47), 2008

5.4.12. Environmental legislation of relevance to monuments and archaeological sites

Laws:
- Law of Antiquities no (23), 2004
- Law of organisation of cities, villages and buildings no 70 of 1966 and its amendments
- Management of Natural Resources Law no. 12 of 1968

Regulations (by-laws):
- Quarries bylaw no.8 of 1971 and its amendments

5.4.13. Environmental legislation of relevance to energy and natural resources

Laws:
- Law of nuclear energy no. 14 of 1987
- Management of Natural Resources Law no. 12 of 1968
- Public Electricity Law no.19 of 1988

5.4.14. Environmental legislation of relevance to solid waste

Laws:
- Environment Law no (74), 2017
- Public Health Law no (47), 2008
- Law of organisation of cities, villages and buildings no 70 of 1966 and its amendments

Regulations (by-laws):
- Prevention of repulsive scents and fees for solid waste collection within municipality's boundaries no 1 of 1978

5.4.15. Environmental legislation of relevance to chemicals

Laws:
- Environment Law no (74), 2017
- Agricultural Law no (50), 2015
- Public Health Law no (47), 2008
- Pharmacy Practice Law no. 43 of 1972

Laws

This section will discuss specific laws that are of high relevance to the proposed project.

5.4.16. Environment Protection Law

Under the provisions of the Environment Protection Law No. (6) for the year 2017, the MoE is entrusted with the responsibility of the protection and monitoring of all environmental elements, including water, in coordination with concerned government bodies and national, regional and international organisations. In addition, the law mandates the MoE to draft necessary by-laws, instructions, standards, etc. for environmental elements, which includes water, air, land and noise control. This may create confusion and overlap in responsibilities with other ministries and authorities. The law stipulates that the MoE must approve the establishment and management of natural reserves and parks and is entrusted with the task of monitoring their management. Moreover, the law stipulates that any organisation, company, establishment or authority must prepare an environmental impact assessment, as per the EIA Regulation No.37 of 2005, which is to be approved by the MoE prior to the establishment of any project.

According to the law, MoEnv may issue a number of bylaws, including:

1. Natural Reserves and national parks bylaw no.29 of 2005 in which RSCN is involved as an executing agency.
2. Management, handling and transport of dangerous and hazardous material bylaw no 24 of 2005.
3. Soil protection bylaw no.25 of 2005.
4. Environment protection during emergencies bylaw no.26 of 2005.
5. Solid waste management bylaw no.27 of 2005.
6. Air quality bylaw no.28 of 2005.
7. Environmental impact assessment bylaw no.37 of 2005.
8. Management, transport, storage, manufacture, use and trading in organic fertiliser of 2003.
9. Noise prevention and control of 2003.
10. Handling and discharge of used oil of 2003.
11. Management of ozone depleting substances of 2003.
12. Management and handling hazardous waste of 2003.

5.4.17. Agriculture Law

The Agriculture Law No. (50) of 2015 gives the Ministry of Agriculture the mandate to protect, conserve and manage the wildlife in Jordan in relation to manmade hazards. The law outlines the conditions regarding forestry and grazing land and states that it is prohibited to designate or sell or exchange forests or grazing land to any person or authority regardless of the reasoning behind it, and even if other legislation allow it.

In addition, the Environment Protection Law No. (6) of 2017, gives the MoEnv the mandate to protect all environmental elements including wildlife (flora and fauna), to issue by-laws, etc. as seen as necessary in coordination with concerned parties.

National strategies on biodiversity have been already prepared in Jordan. However, a legal framework for wildlife protection from development projects does not exist or is weak to state the least. The clear exception to this is the delegation of the enforcement of the wildlife hunting related articles and instructions to RSCN.

5.4.18. Water Authority Law No. (18) of 1988 and its Amendments

The WAJ Law was initially issued and enacted as an Interim Law in 1983. In 1988, the Water Authority Law No. (18) of 1983 status was made permanent. This law was recently amended in 2001 and enacted on 1 November 2001. This law sets the institutional framework for the creation of the WAJ within the MWI. It also defines the Authority's duties and responsibilities as outlined above.

The WAJ reports directly to the Ministry of Water and Irrigation. However, the Cabinet of Ministers can designate responsibilities related to water to any authority other than WAJ within the public or private sector, through proper legal contracting. The Board of Directors comprised of high government officials who manage the WAJ. The WAJ is financially and administratively independent.

All water resources in the Kingdom belong to the GoJ. The use of these resources must follow this law. The law defines possible violations and associated fines and penalties.

However, the law gives the Council of Ministers, in accordance with the recommendation set by the Minister of MWI, the authority to designate any of the responsibilities of WAJ, including the implementation of a project, wholly or partially, to any other organisation from the public or private sector, public shareholding company, and/or limited liability company that is partially or wholly owned by WAJ.

This may include the management, leasing, and transfer of ownership of projects to these organisations, in accordance with the conditions and duration specified in the contracts signed between the two parties for this purpose. All legal provisions related to leasing or transfer of ownership must be taken into consideration.

In the case of conclusion of contracts to transfer the management of the projects or the lease thereof; the decision of the Council of Ministers may include the authorisation, of the officials of the bodies' contracted therewith, to exercise the same powers bestowed on the authorities' officials in pursuance of legislations enforced relevant to the execution of the contracts.

5.4.19. Jordan Valley Development Law

Pursuant to Law No. (19) of 1988 and its Amendments in 2001, the JVA was created to develop and improve on the economic and social status of the Jordan Valley. The law gives JVA full authority over the valley area including control and protection of water resources, making decisions on the use and distribution of water for irrigation, household usage, etc. In addition, the JVA is expected to conduct and implement projects to improve on the quality of water and to combat and prevent water pollution.

Similar to the WAJ, the JVA is managed by a Board of Directors comprised of high government officials and is financially and administratively independent. Also, the Cabinet of Ministers can contract out or lease the management and operation of specific projects to the private sector. But the ownership of irrigation and development of water resources projects cannot be transferred to the private sector.

There are two articles in the Jordan Valley Development Law, as it was amended in 2001 that address the issue of the environment. Article 3-b of the above-mentioned law reads:

"The development, protection and improvement of the Environment in the Valley and to perform necessary works to achieve this objective, to implement the preparation of plans both Master and Detailed Plans for the lands outside the planning boundaries of the municipalities."

This should be read in the right context that the first paragraph in Article 3 sets, i.e. carrying out the above environmental function is in support of the "social and economic development of the Valley" and in "cooperation with any concerned entity".

In its broadness it allows JVA to do perform necessary measures to protect the environment, which presumably includes setting standards and enforcing them. The word 'environment' as it appears above is not defined, but it can be inferred that it refers to land, air, water and biodiversity at the very least. This point is highlighted because the law and the articles that follow make no explicit mention of land,

and air or biodiversity in an environmental context. In fact, the environment is not mentioned again in the law. The only reference to environmental issues arises in Article 38 of the law, which is concerned with the water pollution and the entry of polluting substances (as defined by the Secretary General) into the Valley, and only in the context of those pollutants contaminating water.

In speaking of environmental protection from a legal standpoint, three functions are considered: standards setting, monitoring and enforcement. Article 38 of the Jordan Valley Development law grants JVA the right to do all three. Sub-paragraph a-1 of Article 38 authorises the Secretary General to ban any substance from entry into the Valley if it is deemed a pollutant (standard setting). Sub-paragraph a-2 of the same article, mandates the JVA to conduct laboratory testing of water to ensure that it is not being polluted (monitoring); and paragraphs b and c describe the punitive measures to be taken against polluters and actions they must take to rectify the situation (enforcement).

The lack of specific reference to land, air pollution and biodiversity, while explicitly mentioning that of water, may be a detractor to the significance of the former three and so are afforded less attention.

5.4.20. Public Health Law

The Public Health Law no (47), 2008 contains a number of articles related to drinking water, sewerage and repugnant sites. It gives the Ministry of Health (MOH) the responsibility for:

Testing drinking water provided by WAJ or the private sector to ensure its compliance with the national standard JS No. 286/2002 for drinking water. In the case of failure to comply with the standard, the MoH has the authority to stop the distribution or sale of water. The MoH has the right to delegate the testing responsibility to other Governmental bodies, but the MoH will still be responsible for the final output of these tests. Furthermore, this law considers the release of dust and the dumping or throwing of wastes, whether solid, liquid, or otherwise, on the streets or public land as a nuisance and must be controlled and removed in the case of waste.

5.4.21. Antiquities Protection Law: Antiquities

Jordan has an all-encompassing law that sets and regulates policies and imposes penalties for dealing with archaeological sites, monuments and artefacts; this is the Antiquities Law No. (23) of the year 2004. The Department of Antiquities (DOA) was created by the Ministry of Tourism pursuant to this law. The DOA is responsible for administering, supervising, protecting and maintaining archaeological sites, monuments and artefacts in Jordan. However, more specific provisions are needed to enforce the intent of the law and the application of its penalties especially in the area of mixed natural and cultural heritage.

5.5. Regulations (by-laws)

5.5.1. Natural Reserves and national parks by-law no.29 of 2005

This by-law defines a natural reserve as an area of land or sea that contains an ecosystem and natural habitat.

Pursuant to article 3 of this by-law, an authority can submit an application to the MoE to establish or manage a natural reserve or national park. The application request must include the following:

13. Purpose of establishing the natural reserve or national park.
14. Definition of the area and boundaries of the natural reserve or national park.
15. Rights of the inhabitants in the natural reserve or national park, and its surroundings.
16. Map of the area of the natural reserve or national park, and its surroundings and define the land use within this area and the ownership status of the proposed land.
17. Initial study on the ecosystem and biodiversity of the natural reserve or national park.
18. Initial geological and hydrology study of the area for archaeological sites in the natural reserve or national park.
19. Geological and hydrology study of the site.
20. Define the impact of the establishment of the natural reserve or national park on surrounding land.
21. Socio-economic study for the area to be used as a natural reserve or national park.

22. Procedures for protection and methods of application of these procedures.
23. Any other studies or information requested by the Minister as deemed necessary.

Once a natural reserve or national park is approved, the concerned party must submit to the MoE a detailed management plan within a maximum of one year and a half after the approval date. The management plan must include the following:

24. Detailed description of the site of the natural reserve or national park.
25. Assessment of the composition of the natural reserve or national park.
26. Definition of objectives of the management of the site and procedures for implementation.
27. Preparation of an estimated budget for the management plan and sources of funding.
28. Land use of the area within the boundaries of the natural reserve or national park and its surroundings.
29. Grazing management.
30. Ecotourism management.
31. Define provisions and conditions for the use of the natural reserve or national park and set criteria for local community participation.

5.5.2. Environmental impact assessment by-law no.37 of 2005

Pursuant to article 4 of this by-law, it is prohibited for any industrial, agricultural, commercial, housing, tourist or construction activities that are included in Annex 2 or 3 of this by-law to start operation prior to obtaining an environmental license. And even if it is not included in the aforementioned Annexes, the Minister of MoE may request an EIA. Similarly, voluntary EIA's can be undertaken, following the identical process to required EIAs. The EIA process is undertaken as follows:

1. Through screening, the Ministry decides if a project needs a comprehensive EIA, an initial EIA or no EIA. The decision is publicly available.
2. At this stage a project developer may decide that a comprehensive ESIA is required to comply with their own internal requirements or those of their funder (as demonstrated my solar projects below the 6MW threshold undergoing comprehensive assessments). This voluntary process would follow the steps as described below.
3. If an initial EIA reveals that the project has potentially significant impact on the environment, a comprehensive EIA must be conducted.
4. A comprehensive EIA starts with a scoping phase. The Proponent prepares a draft ToR for the EIA study and submits this to the Ministry.
5. The Ministry organises stakeholder engagement on the basis of this draft.
6. The Proponent then submits an updated ToR to the Ministry for approval. The Technical Committee reviews this ToR.
7. Following the scoping phase, the assessment is carried out. The assessment must be undertaken by an recognised Advisory Body (consultancy). The assessment results come together in the EIA document.
8. The EIA document is submitted to the Ministry, to be reviewed by the Technical Committee.
9. The Technical Committee submits its findings to the Minister of the Environment to take a decision.
10. The Proponent is notified of the decision within 45 days. If the project is approved, the license is issued. This decision must be publicly announced.
11. The follow-up takes place on basis of the Environmental Mitigation and Monitoring Plans, and the approval conditions.

Notably, the legislation governing Environmental Impact Assessments does not define the contents of the ToR, which will guide the EIA process. The sufficiency of the ToR's would be decided on a case-by-case basis by the Ministry review under point 4 – 6. In the context of the project ToRs for voluntary or mandatory ESIA's can be aligned with UNEP's ESMS and GCF's ES Standards to ensure all assessments and management plans adequately cover relevant social and environmental risks.

5.5.3. Organisational structure of MWI by-law

The Ministry of Water and Irrigation (MWI) was established in 1988 pursuant to the by-law No. (54) of 1992: organisational structure of MWI of 1988. This law was amended in 1992. Under this law, the

Water Authority of Jordan (WAJ) and Jordan Valley Authority (JVA) will report to the MWI. As such, the Ministry is responsible for all related matters with respect to water, water treatment, public sewers, water policy and the economic and social development of the Jordan Valley.

5.5.4. Underground Water Control by-law

Underground Water Control By-law No. (85) of 2002 and its amendments was issued pursuant to the WAJ Law No. (18) of 1988. Under this law, all ground water is owned and controlled by the government, even if the land is privately owned.

Any exploration or exploitation must be authorised, and a permit obtained, in accordance with the provisions of this by-law, which specifies end use, quantity and other requirements. The first trial of pumping should be under the supervision of the WAJ, otherwise the WAJ has the right to annul the permit and close the well.

The MWI is the authority responsible for conducting research and technical studies, identifying ground water, and for monitoring the quality and quantity of water to be pumped annually, in coordination with concerned parties.

The Cabinet of Ministers can specify regions where it is disallowed to dig wells. These regions have to be announced in the daily official newspapers. There will be exceptions, but they need to be approved by the Board of WAJ.

5.5.5. Subscribers to Drinking Water Network

By-law No. (67) of 1994 gives the mandate and responsibility to WAJ to provide drinking water, including related activities. However, this right can be transferred to the private sector through an agreement as in the case of LEMA, where it operates mainly in Greater Amman under a management contract which began in 1999.

5.5.6. Mining By-Law

Article 39 of law No. (131) of 1966 stipulates that any dynamite used for mining purposes or digging wells must be manufactured for this purpose and free of toxic gas or vapours.

Strategies

The following is a brief description of the key strategies related to the project scope

The MoE Strategy

Since its outset, MoE has gone through some major organisational capacity building and development, being the prime institution responsible for the protection of the environment and the fulfilment of the national obligations towards international treaties and agreements.

MoE Vision of 2025: Foreseeing the Future

2017-2019 Strategic/Institutional Objectives:

- To protect and conserve the ecosystems.
- To prevent and reduce the negative impacts on the environment caused by pollution and climate change.
- To develop capacities and anchor a culture of excellence.
- To raise public awareness and behaviour change regarding environmental protection.
- To improve partnerships with the private sector in the management of priority sectors.

MoE vision: “A distinguished ministry in protecting the components of the environment and sustaining them for a better life”.

MoE mission: “Conserving the environment and its ecosystems through developing legal, strategic and policy frameworks in addition to spreading environmental culture and enhancing environmental monitoring and law enforcement and transition to a green economy within a participatory approach and a supporting institutional structure to contribute to achieving sustainable development”.

Four of the SDGs link directly with the MoE strategic activities and orientations:

- Goal 12: Responsible production and consumption. Ensure sustainable consumption and production patterns.
- Goal 13: Climate action. Taking urgent actions to combat climate change and its impacts.
- Goal 14: Marine resources. Conserve and sustainably use the oceans, seas and marine resources to achieve sustainable development.
- Goal 15: Life on land. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

MoE Key Strategic Programs: The ministry has developed a range of programs in order to ensure the achievement of its strategic objectives and to ensure management of the strategic plan and applying it in a proper way.

The programs include:
1. Natural Resource Management: The aim of this program is to develop and activate the frameworks for integrated environmental management of natural resources in order to conserve biodiversity, combat desertification and rehabilitate degraded lands.
2. Waste and Chemicals Management: The aim of this program is to come up with waste management frameworks and coordinate the application of these frameworks, as well as supporting pioneer initiatives for safe solid and dangerous waste disposal.
3. Climate Change: The ministry aims, from applying this program, to raise the environmental awareness about climate change impacts and respond to such impacts by adaptation and mitigation. That is through implementing the climate change policy as well as formulating and coordinating that national efforts to achieve sustainable development.
4. Ozone Layer Protection: The ministry, through this program, aims to manage the national strategic plan to phase out the use of ozone layer depleting substances.
5. Environmental Regulation of Developmental projects: The ministry aims through applying this program to regulate the developmental activities through granting environmental approvals for the industrial properties by strengthening inspections and environmental auditing.
6. Monitoring and protecting environmental components: The ministry aims through this program to contribute in law and policy implementation, support environmental inspections and audit processes

through improving environmental monitoring and evaluation in industrial areas and wastewater treatment plants, monitor water resources, study air quality, and preparing environmental state reports.
7. Administration and Institutional development: The ministry aims through this program to develop its institutional capacities and services, anchor an excellence culture, and provide the necessary financial and administrative services to conduct other programs, which makes this program significant to improve the ministry's performance and efficiency level and to enable it to carry out its tasks competently.
8. Legislation, policies and environmental strategies development: The ministry aims through this program to develop the national legislation, strategies and policies related to the environment, completely or partially, and to ensure it is consistent with national orientations aiming to preserve the environment and its components, as well as to protect them.
9. Environmental and educational awareness: The ministry aims to raise awareness surrounding environmental topics and the importance of preserving the environment and protecting its components on individual, institutional and community levels, and modifying behaviour about engaging with the environment, in order to achieve the institutional and national objectives.
10.Shifting to a Green economy: The ministry aims through this program, to steer the economy and development to adopt green development concepts in selected sectors, and that is by formulating national polices and plans which contribute in achieving sustainable and inclusive development, and the rationalisation of natural resource use.

The National Biodiversity Strategy and Action Plan (NBSAP)

Jordan ratified the Convention on Biodiversity (CBD) in 1993 and developed its first national CBD report in 2002, followed by finalisation and the official publishing of the NBSAP in May 2003. Jordan also submitted the 3rd national report in 2006, the 4th in 2009, the 5th in 2014, and the 6th in 2018.

In 2014, the MoE updated the NBSAP with the anticipation to have the revised NBSAP fully aligned with the Global Biodiversity Strategy 2011-2020. The 2003 NBSAP included over 70 priority projects related to the measures identified in Jordan's Convention on Biological Diversity implementation Strategy. In contrast, in the 2014 NBSAP Jordan adopted the following vision for its biodiversity: "by 2050, the biodiversity of Jordan is valued for its national heritage vitality, conserved for the wellbeing and enjoyment of people, and sustainably used for the benefits of current and future generations".

The 2020 Strategic Goals adopted in the NBSAP are:

Jordan has adopted the following strategic goals to achieve its 2050 vision:

1. On good governance and mainstreaming: enhance the national governance of biodiversity as a main mechanism for national mainstreaming, integration and participation.
2. On the response to human-induced pressures: reduce the impacts of pressures on biodiversity including habitat destruction, political conflicts, and tourism.
3. On protected areas, priority species and genetic resources: conserve and protect priority ecosystems, species and genetic resources of Jordan at the in-situ and ex-situ levels.
4. On ecosystem services and climate change: enhance the national understanding of dry-land ecosystem benefits to national resilience, economic sustainability and local livelihoods.
5. On knowledge management and monitoring: develop biodiversity knowledge as the main tool for cultural reform, informing policy and decision-making support.

The 2020 Action Plan

The action plan elaborated in the 2014 NBSAP included a total of 29 national targets, over 100 KPI's, and over 300 strategic actions, all due for implementation within the strategic period from the beginning of 2015 to the end of 2020.

Jordan National Climate Change Policy

The long-term goal of the Climate Change Policy and Sector Strategic Guidance Framework of the Hashemite Kingdom of Jordan (in short "Policy") is: to achieve a pro-active, climate risk-resilient Jordan; to remain with a low carbon but growing economy, with healthy, sustainable, resilient communities, sustainable water and agricultural resources, and thriving and productive ecosystems in the path towards sustainable development.

The objective of the Policy (2013-2020) is to build the adaptive capacity of communities and institutions in Jordan, with consideration for gender and addressing the needs of vulnerable groups, to increase the resilience of natural ecosystems and water as well as agricultural resources to climate change, and to optimise mitigation opportunities.

The national priorities and the pillars of the Climate Change Policy are adaptation to climate change and mitigation of greenhouse gas emissions, with an emphasis on adaptation as the imperative track.

Main short-term sub-objectives of the Policy include:

- Provide an overarching (umbrella/high level) guidance for GoJ to implement the climate change objectives advanced herewith related to adaptation to climate change and the mitigation of greenhouse gas (GHG) emissions.
- Work towards the integration of vulnerability and climate change impact assessment and adaptation measures into key relevant sectors' policies, strategies, and legal frameworks, namely in sectors related to water, agriculture/food security, health, biodiversity, combating desertification, and tourism.
- Encourage mitigation and adaptation strategies that maximise health co-benefits, and minimise unintended consequences (adverse health impacts).
- Work towards the integration of climate change mitigation objectives into key relevant sectors' policies, strategies and legal frameworks, in particular the sectors of energy, transport, and waste.
- Ensure that the interests of vulnerable groups (with emphasis on the poor, youth and women) are adequately addressed in mitigation and adaptation policies and strategies. Additionally, ensure the integration of climate change mitigation and adaptation aspects into national sustainable development and green growth policies, strategies, and legal frameworks considering gender mainstreaming and the role and needs of youth and elderly people.
- Mainstream climate change considerations in infrastructure planning and services as well as land-use planning.
- Provide a ground to secure sufficient financial support and strengthen institutional and human resource capacities to achieve the objectives advanced herewith, including providing access to regional and international financing resources and capacity-building initiatives and programs.

5.5.7. JVA Land Use Master Plan (LUMP)

The Land Use Master Plan for the Jordan Valley has been carried out in 2004. The study included a GIS-supported mapping component. JVA has its own GIS section for water resources management applications. The Land Use Master Plan provides the main source of comprehensive land use data for the present project.

The LUMP maps are used as a reference document for land designation, with a legal status in the sense that it has been approved by the Council of Ministers. With LUMP in place, JVA has a powerful tool for land development control at hand. For any investment or development proposal, even on private land, a license is required from JVA who checks whether the proposal is in compliance with the designated land use for this particular parcel registered in the LUMP maps. If necessary, JVA forwards the request to the Ministry concerned: MoTA for tourism development zones (JVA for tourism infrastructure, MOTA for tourism services), MoLA for urban development zones, MoA for agricultural land, and so forth. JVA and each Ministry concerned, reportedly, are monitoring violations of appropriate development in its zones of interest, but it is difficult to estimate whether all have sufficient capacity to conduct this adequately.

5.6. Water Strategy and Policies

Jordan's Water Strategy provides the foundation and initiative to formally develop policies addressing specific issues facing Jordan's water sector. To date, several policies have been developed and accepted by the Council of Ministers. These policies are:

- Groundwater Management;
- Irrigation Water;
- Water Utility; and
- Wastewater Management.

5.6.1. Ground Water Management policy

The Ground Water Management Policy (MWI, 1998a) was approved by the Council of Ministers in 1998. The Policy addresses the management of groundwater resources including development, protection, management, and reducing abstractions for each renewable aquifer to the sustainable rate (i.e., safe yield). Specific policy statements address:

- Resource Exploration.
- Monitoring.
- Resource Protection and Sustainability.
- Resource Development.
- Priority of Allocation.
- Regulation and Control.
- Private Sector Participation.

5.6.2. Irrigation Water policy

The Irrigation Water Policy (MWI, 1998b) was approved by the Council of Ministers in 1998. The policy addresses irrigation water including agricultural use, resource management, technology transfer, water quality, and efficiency, but does not address or extend to irrigated agriculture. Many provisions of this policy already are in practice. Specific policy statements address:

- Sustainability of Irrigated Agriculture.
- Resource Development and Use.
- Technology Transfer.
- Farm Water Management.
- Irrigation Water Quality.
- Management and Administration.
- Water Pricing.
- Regulation and Controls.

5.6.3. Water Utility policy

The Utility Water Policy (MWI, 1997b) was approved by the Council of Ministers in 1997. The Policy addresses issues related to water utilities. The policy, the first prepared after adopting Jordan's Water Strategy, attempts to address 10 major issues relating to both water utility services as well as the basic authorities, and direction of Jordan's Water agencies. Specific sections of the utility water policy are listed below, and a brief discussion of key provisions follows. Major topics of the Water Utility Policy are as follows:

- Institutional Development.
- Private Sector Participation.
- Water Pricing and Cost Recovery.
- Human Resources.
- Water Resources Management.
- Water Quality and the Environment.
- Service Levels.
- Public Awareness.
- Conservation and Efficiency Measures.
- Investment.

5.6.4. Wastewater Management policy

The Wastewater Management Policy (MWI, 1998c) was approved by the Council of Ministers in 1998. The policy addresses the management of wastewater as a water resource including development,

management, collection and treatment, reuse, and standards and regulations. Specific policy statements address:

- Resource Development.
- Resource Management.
- Wastewater Collection and Treatment.
- Reuse of Treated Effluent and Sludge.
- Pricing.

Other aspects of the policy address: Legislation and Institutional Arrangements, Standards, Regulations and Quality Assurance, Research and Development, Financing and Investment; Public Sector Participation, Human Resources Development, and Public Awareness.

5.7. Relevant Environmental International Conventions and Treaties

Jordan is a party to many international environmental agreements. Most of these agreements require Jordan to comply with specified parameters for environmental protection. The MoE is the main focal point for most of the international environmental conventions. Table 2 below lists the environmental international conventions relevant to the project.

Table 2. International conventions ratified by Jordan.

Title of Agreement	Ratified by Jordan
Convention on Biological Diversity Cartagena Protocol	1993 2004
Convention to Combat Desertification	1996
Convention on Protection of Migratory Species of Wild Animals	2001
Convention on Climate Change Kyoto Protocol Paris Agreement	 2003 2016

5.7.1. Convention on Biological Diversity (CBD)

Signed by 150 government leaders at the 1992 Rio Earth Summit, the Convention on Biological Diversity is dedicated to promoting sustainable development. Conceived as a practical tool for translating the principles of Agenda 21 into reality, the Convention recognises that biological diversity is about more than plants, animals and micro-organisms and their ecosystems – it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live.

Under the Convention on Biological Diversity, governments abide to conservation of biodiversity and sustainable use. They are required to develop national biodiversity and action plans, and to integrate these into broader national plans for environment and development. This is particularly important for sectors such as forestry, agriculture, fisheries, energy, transportation, construction work, and urban planning.

Other treaty commitments include:

- Identifying and monitoring the important components of biological diversity that need to be conserved and used in a sustainable manner.
- Establishing protected areas to conserve biological diversity while promoting environmentally sound development around these areas.
- Rehabilitating and restoring degraded ecosystems and promoting the recovery of threatened species in collaboration with local residents.
- Respecting, preserving and maintaining traditional knowledge of the sustainable use of biological diversity with the involvement of local communities.
- Preventing the introduction of, controlling, and eradicating alien species that could threaten ecosystems, habitats or species.

- Controlling the risks posed by organisms modified by biotechnology.
- Promoting public participation, particularly when it comes to assessing the environmental impacts of development projects that threaten biological diversity.
- Educating people and raising awareness about the importance of biological diversity and the need to conserve it.
- Reporting on how each country is meeting its biodiversity goals.

5.7.2. Cartagena Protocol on Biosafety

On 29 January 2000, pursuant to article 19 of the Convention on Biological Diversity, the Conference of the Parties to the Convention adopted a supplementary agreement to the Convention known as the Cartagena Protocol on Biosafety. The Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology. It establishes an advance informed agreement (AIA) procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory. The Protocol contains reference to a precautionary approach and reaffirms the precaution language in Principle 15 of the Rio Declaration on Environment and Development. The Protocol also establishes a Biosfatey Clearing House to facilitate the exchange of information on living modified organisms and to assist countries in the implementation of the Protocol.

In 2010, Parties to the CBD adopted the Strategic Plan for Biodiversity 2011–2020, a ten-year framework for action by all countries and stakeholders to safeguard biodiversity and the benefits it provides to people.

On 12 October 2014, The *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity* entered into force. It is an international agreement which aims at sharing the benefits arising from the utilisation of genetic resources in a fair and equitable way.

5.7.3. Global Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty adopted on 9 May 1992 and opened for signature at the Earth Summit in Rio de Janeiro from 3 to 14 June 1992. It then entered into force on 21 March 1994, after a sufficient number of countries had ratified it.

The UNFCCC objective is to "stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

The framework sets non-binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties (called "protocols" or "agreements") may be negotiated to specify further action towards the objective of the UNFCCC.

5.7.4. Jordan’s INDC (Intended National Determined Contribution) summary

- Jordan nationally determines to reduce its greenhouse gas emissions by a bulk of 14 % until 2030. This contribution of GHGs reduction will be unconditionally fulfilled at, maximally, 1.5% by the Country’s own means compared to a business-as-usual scenario level.
- However, Jordan, conditionally and subject to availability of international financial aid and support to means of implementation, commits to reduce its GHGs emissions by an additional, minimum 12.5 % by 2030.

5.7.5. Convention to Combat Desertification

The objective of the Convention to Combat Desertification is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa. This is to be achieved through effective action at all levels, supported by international cooperation and partnership arrangements, with a view to contributing to the achievement of sustainable development in affected areas.

Achieving this objective will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level. Under the provisions of this convention, Jordan should:

- Implement its obligations under this Convention, individually or jointly; either through existing or prospective bilateral and multilateral arrangements or a combination thereof, as appropriate, emphasising the need to coordinate efforts and develop a coherent long-term strategy at all levels.
- Pursue the objective of this Convention. To pursue the objectives, it shall:
    - adopt an integrated approach addressing the physical, biological and socio-economic aspects of the processes of desertification and drought;
    - give due attention, within the relevant international and regional bodies, to the situation of affected developing country Parties with regard to international trade, marketing arrangements and debt with a view to establishing an enabling international economic environment conducive to the promotion of sustainable development;
    - integrate strategies for poverty eradication into efforts to combat desertification and mitigate the effects of drought;
    - promote cooperation among affected country Parties in the fields of environmental protection and the conservation of land and water resources, as they relate to desertification and drought;
    - strengthen sub-regional, regional and international cooperation;
    - cooperate within relevant intergovernmental organisations;
    - determine institutional mechanisms, if appropriate, keeping in mind the need to avoid duplication; and
    - promote the use of existing bilateral and multilateral financial mechanisms and arrangements that mobilise and channel substantial financial resources to affected developing country Parties in combating desertification and mitigating the effects of drought.

5.7.6. Convention on the Conservation of Migratory Species of Wild Animals

The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention) aims to conserve terrestrial, marine and avian migratory species throughout their range. It is one of a small number of intergovernmental treaties concerned with the conservation of wildlife and wildlife habitats on a global scale.

Parties to CMS work together to conserve migratory species and their habitats by providing strict protection for the endangered migratory species listed in Appendix I of the Convention; by concluding multilateral agreements for the conservation and management of migratory species listed in Appendix II; and by undertaking co-operative research activities.

CMS has a unique role to play in focusing attention on and addressing the conservation needs of the 107 endangered species presently listed in Appendix I. The Parties acknowledge the need to take action to avoid any migratory species becoming endangered, and in particular, the parties:

- should promote, co-operate in and support research relating to migratory species;
- shall endeavour to provide immediate protection for migratory species included in Appendix I; and
- shall endeavour to conclude agreements covering the conservation and management of migratory species included in Appendix II.

5.7.7. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between Governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

Because the trade in wild animals and plants crosses borders between countries, the effort to regulate it requires international cooperation to safeguard certain species from over-exploitation. CITES was conceived in the spirit of such cooperation. Today, it accords varying degrees of protection to more than 30,000 species of animals and plants (listed in the three CITES Appendices), whether they are traded

as live specimens, fur coats or dried herbs. In other words, it covers trade in plants and animals that are alive or dead, and even products that derive from them.

CITES is an international agreement to which States (countries) adhere voluntarily. States that have agreed to be bound by the Convention (States that have 'joined' CITES) are known as Parties. Although CITES is legally binding for the Parties — in other words they must implement the Convention — it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which must adopt its own domestic legislation to make sure, that CITES is implemented at the national level.

6. Environmental Profile of Target Area: The Jordan Valley

6.1. Physical Environment

The Jordan Rift Valley (JRV) forms part of the Great Rift Valley of Africa, that extends from southern Turkey through Lebanon and Syria to the salty depression of the Dead Sea, where it continues south through Aqaba and the Red Sea to eastern Africa.

The JRV is a low-lying strip that extends along the western flank of Jordan representing its western borders, as it extends from Lake Tiberius in the north (at an altitude of -210 m above mean sea level (AMSL)) to the Red Sea at Aqaba. About 120 km south of Lake Tiberius, and within the central parts of this valley, the Dead Sea lies at an altitude of -418 m AMSL, at present. The Southern Ghores and Wadi Araba, south of the Dead Sea, form the southern part of the JRV.

Hence, regionally the JRV extends from Lake Tiberius in the north to the Red Sea at Aqaba. Nationally, the JRV extends from Baqoura in the north to the Red Sea at Aqaba. However, for the purpose of this project the Jordan Valley as the target area (Area of Direct Impact) extends from the Yarmouk Basin in the north to the northernmost edge of the Dead Sea. The east-west boundaries of the target area follow the JVA area of jurisdiction which includes all lands under 300 m above sea level (ASL).

6.2. Topographic Zone

The Jordan Valley extends from Baqoura area in the north to the northern coast of the Dead Sea. It is characterised by the Jordan River that ends at the Dead Sea's northern tip. Several major wadis drain from the adjacent eastern highlands towards this zone. These are (listed from north to south): Wadi Al Arab, Wadi Waqqas, Wadi Ziqlab, Wadi Al Yabis, Wadi Kufranja, Wadi Rajib, and Wadi Um Al-Dananir. The Yarmouk area is located within the north-eastern corner of this zone.

6.3. Climate

Jordan is located within the eastern margins of the Mediterranean climatic zone of the eastern Mediterranean. Much of Jordan can be classified as semi-desert, with only the western highlands enjoying a Mediterranean climate. Climatologically, Jordan can be divided into four major zones. These are described below.

- The Mediterranean zone: this region is restricted to the highlands of Jordan.
- The Irano-Turanean zone: this zone is transitional between the Mediterranean zone and the other zones. It is represented by a narrow strip of variable width surrounding the entire Mediterranean zone, except in the north of Jordan.
- The Saharo-Arabian zone: this zone forms most of the territory of Jordan.
- Sudanian-penetration zone: This zone extends from the Dead Sea area and continues to the south covering Wadi Araba area, the most southerly parts of Jordan and ends at the tip of the Gulf of Aqaba.

The Jordan Valley area is characterised by the presence of the three of the four zones, the Irano-Turanean, the Saharo-Arabian, and the Sudanian-penetration zones.

6.4. Temperature

The Jordan Valley has a mainly sub-tropical climate, mild winters and very hot summers. Annual average temperatures vary around the mid-twenties and can exceed 48ºC in summer, while during the

winter night-time temperatures might go below 15ºC. Table 3 below presents the mean minimum, absolute yearly maximum and the mean yearly temperature for selected climatological stations along the Jordan Valley.

Table 3. Temperature measurements at two climatological stations in the Jordan Valley.

Temperatures	**Baqoura Station**	**Deir Alla Station**
Mean Minimum Yearly Temperature (ºC)	15.7	17.4
Absolute Yearly Maximum Temperature (ºC)	47.0	48.5
Mean Yearly Temperature (ºC)	22.2	23.6

6.5. Rainfall and Humidity

The rainy season occurs between October and March in a discontinuing form. Over 95% of the land area in Jordan has an annual rainfall of less than 200 mm, while only about 2% has more than 350 mm/year rainfall. Snowfall occurs occasionally in all parts of Jordan with the exception of Wadi Araba in the Jordan Valley rift, and most frequently occurs on the higher hills.

Rainfall within the Jordan valley area varies with a general decreasing trend from the north to the south. The long-term average annual rain fall within the Dead Sea area varies between 230 mm and 280 mm. Table 4 below shows the average monthly rainfall.

Table 4. Average monthly rainfall at two climatological stations in the Jordan Valley.

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly
Baqoura	93.2	71.9	59.9	22.9	5.2	0.3	0	0.0	0.4	11.4	46.5	82.1	394
Deir Alla	61.5	53.9	46.1	15.1	3	0.1	0	0	0.3	8.1	36.5	53.7	281.9

Potential evaporation in the Jordan Valley is ~1,600 mm/year and the mean yearly relative humidity is ~65%.

6.6. Geological Setting

6.6.1. Geological Overview

Due to the tectonic activities that formulated the Jordan Rift Valley and continued to occur over millions of years — and in association with erosion activities especially during the most recent geological period — the geological strata that dominate the geology of Jordan are outcrops and can be easily identified along the Jordan Valley area. Table 5 below summarises the geo-lithological succession of Jordan.

Table 5. Summary of the geo-lithological succession of Jordan.

Period	Epoch	Group	Formation		Symbol	Lithology	Thickness
Quaternary	Holocene (recent)		Fan, talus, terrace, river	BASALT	Qal	Sand, clay, gravel	
	Pleistocene	Jordan valley	Lisan		J3	Marl, clay, gypsum, sand, gravel and evaporates	>300m
Tertiary	Pliocene		Samra & Neogen		JV1-2		100-350
	Miocene						
	Oligocene						
	Eocene	Balqa	Shallala	B5		Chalky and marly limestone	0-555
			Rijam	B4		Chert limestone	0-311
	Palaeocene						
Upper cretaceous	Maestrichtion		Muwaqqar	B3		Chalk marl	80-320
	Companion		Amman	B2		Silicified limestone, chert	20-140

Period	Epoch	Group	Formation	Symbol	Lithology	Thickness
	Santonian		Wadi Ghudran	B1	Chalk, chalky marl	20-90
	Turonian	Ajlun	Wadi Sir	A7	Limestone	60-340
	Cenomanian		Shuaib	A5-6	Marly limestone	40-120
			Hummar	A4	Limestone	30-100
			Fuheis	A3	Marl	30-90
			Naur	A1-2	Marl, limestone	90-220
Lower cretaceous		Kurnub	Subehi	K1		120-350
			Arada	K2		
Jurassic		Zarqa	Azab	Z2	Limestone, marl, dolomite, sandstone, shale	0->600
Triassic			Main	Z1	Sandstone, calcareous sandstone, limestone, shale, gypsum	
Silurian						
Silurian		Khreim	Aina		Siltstone, sandstone, shale	0->1000
			Batra		Mudstone, siltstone	0->1600
			Trebeel		sandstone	0-130
			Umm Tarif		Sandstone, siltstone, shale	0->1200
Ordovician			Sahl as-sawan		Mudstone, siltstone, sandstone	0-200
		Ram	Amud		Sandstone	0->1500
Cambrian			Ajram		Sandstone	0-500
			Burj		Siltstone, dolomite, limestone, sandstone	120
			salib		Arkosic sandstone, conglomerate	750
Precambrian		Ingenious and Metamorphic Rocks				

Cambrian, Triassic and Cretaceous systems are outcrops mainly distributed throughout the foothills and the escarpments along the Valley, while the Tertiary and Quaternary deposits cover most of the Jordan Valley floor and Wadi Araba areas. Igneous rocks are of limited occurrence and concentrated in the southern parts of the valley within Wadi Araba and Aqaba areas.

Furthermore, the geology and structure in Jordan in general indicates that most of Jordan is subject to earthquake risk, with the Dead Sea and Jordan rift, the most likely principal sources of future events. Historical records show earthquakes with magnitude range of 4-5 have occurred in Amman area and earthquakes with magnitude 5-6.5 have occurred within the JRV area.

6.7. Lithological Setting

The following sub-sections present the lithological description of the major geological units within the Jordan Valley area.

6.7.1. The Precambrian Basement Rocks

These oldest igneous and metamorphic rocks of the Nubian-Arabian shield are exposed in the southern and south-eastern parts of the country, occupying about 1,400 km^2, and extending northwards as far as the south-eastern shore of the Dead Sea.

6.7.2. The Triassic – Jurassic/Lower Cretaceous Sedimentary Rocks

This zone is known also by the term “the sandstone of South Jordan” zone. It starts from the southern Araba basin in the southwestern corner of Jordan, occupying an area of about 8,000 km^2 of a thick sequence of sandstone, and lies unconformably over the Pre-Cambrian basement complex. This area is characterised by the extensive outcropping of Sandstone geological groups. Starting with the oldest, these groups are: Rum, Kherim, Zarqa and Kurnub. It is represented by thick, bedded, massive and friable sandstone varying in colour, with some with intercalated beds of carbonate rocks.

The oldest Rum Group underlies the entire area of the country and crops out only in the southern part of Jordan and along Wadi Araba – Dead Sea Rift Valley. It consists mainly of sandstone with few intercalations of siltstone, mudstone, limestone and dolomite.

The Kherim group overlies the Ram Group, and consists of sandstone with intercalations of mudstone, shale and siltstone.

The Zarqa Group is exposed at very limited areas, mainly in the eastern Jordan Valley escarpment as a narrow belt, and it locally outcrops in the study area near Ghore Kabid. It is mainly composed of alternating calcareous sandstones, oolitic marls, blue-gray shales, gray and yellow limestones, crystalline limestones, marly limestones and partly dolomitic limestones with sandy limestone and sandy marl beds.

The youngest Kurnub Group consists mainly of white, multi-coloured and grey sandstone, mostly medium- to coarse-grained, with thin beds of grey and brownish siltstone. In northern Jordan, very fine- to coarse-grained, partly carbonaceous sandstone with intercalations of sandy dolomite, dolomitic limestone, siltstone and shale are common.

The “Triassic – Jurassic/Lower Cretaceous” sandstones outcrop widely within Jabal Mas'uda area in the form of hills and mountains, reflecting its different formations as friable sandstone and massive sandstone. Furthermore, the different colours of the sandstone such as white, pink in addition to dark grey, yellowish and brown, reflects the different oxides deposited within these rocks.

6.7.3. “Upper cretaceous – Lower Tertiary” System

This system consists of a thick sequence of carbonate rocks and is represented by two geological groups: the Balqa and Ajloun Groups. The Balqa Group includes five formations (B 1-5) that overly with conformity the Ajloun group that includes seven formations (A1-7). The formations of this system are the dominant outcrops within the areas of Yarmouk and Wadi Ibn Hammad in the northern and southern parts of the JRV area, respectively.

6.7.4. The Lower Ajloun Group

This system is present in most of the country excluding the southern Desert, south of Ras en Naqb escarpment and the southern part of Wadi Sirhan. The Lower Ajloun Group lies unconformably over the Kurnub Group. It comprises a Late Cretaceous sequence of carbonate rocks dominated by marl, limestone, dolomite and shale. The system is characterised by large variations in lithology and thickness. It mainly outcrops on the slopes of the rift escarpment and the side wadis. The lower Ajloun group include the following formations: the Na'ur Formation (A1/2); the Fuhaies Formation (A3); the Hummar Formation (A4); the Shuayb Formation (A5/6) and; the Wadi Sir Formation (A7).

6.7.5. The Balqa Group

This group consists of a thick sequence of carbonate rocks that consist mainly of limestone and dolomitic limestone, and were divided into the following formations: Wadi Umm Ghudran Formation (B1); Amman Silicified Formation (B2); Muwaqqar Chalk - Marl Formation (B3); Umm Rijam Chert-Limestone Formation (B4) and; Wadi Shallala (B5) formation.

6.8. Quaternary and Recent Deposits

6.8.1. Jordan Valley Alluvium System

This system comprises Lisan formation and Holocene/recent deposits (gravel and boulders, fan deposits, talus deposits, terrace deposits and river deposits).

Its eastern part lies between the Jordan River in the west and the eastern escarpment of the rift in the east. Furthermore, it extends from the northern shore of the Dead Sea in the south to the downstream part of the Yarmouk River in the north. The total length from north to south is about 100 km. The width ranges from a minimum of 4.5 km in the area of Karamah to a maximum of 13 km in Wadi Hisban area. The average width is about 8 km. The western and southern boundaries of the system are the recharge zone of the Jordan River and the Dead Sea.

The thickness of the alluvium in the Jordan Valley varies from zero along the eastern boundary to about 750 m in the deepest part of the basin near the Jordan River. An average thickness of 400 m may be reasonable for the purpose of geo-hydrological considerations.

6.8.2. Wadi Araba Alluvial System (Upper Tertiary - Quaternary)

This system extends from the southern parts of the Dead Sea area and extends along Wadi Araba area to the Gulf of Aqaba. The materials of this system are very heterogeneous, with conglomerates, gravels, sands, silts and clays; in some places mixed together, interbedded and/or intercalated.

Sand dunes are a major geomorphologic feature that occur frequently in Wadi Araba area. Several types of dunes can be identified such as the star dunes and the sief dunes in addition to the micro scale dunes. Furthermore, sand dunes are a major geomorphologic feature that characterizes Qatar's proposed reserve.

Figure 1 below demonstrates the main geological map of the project target area.

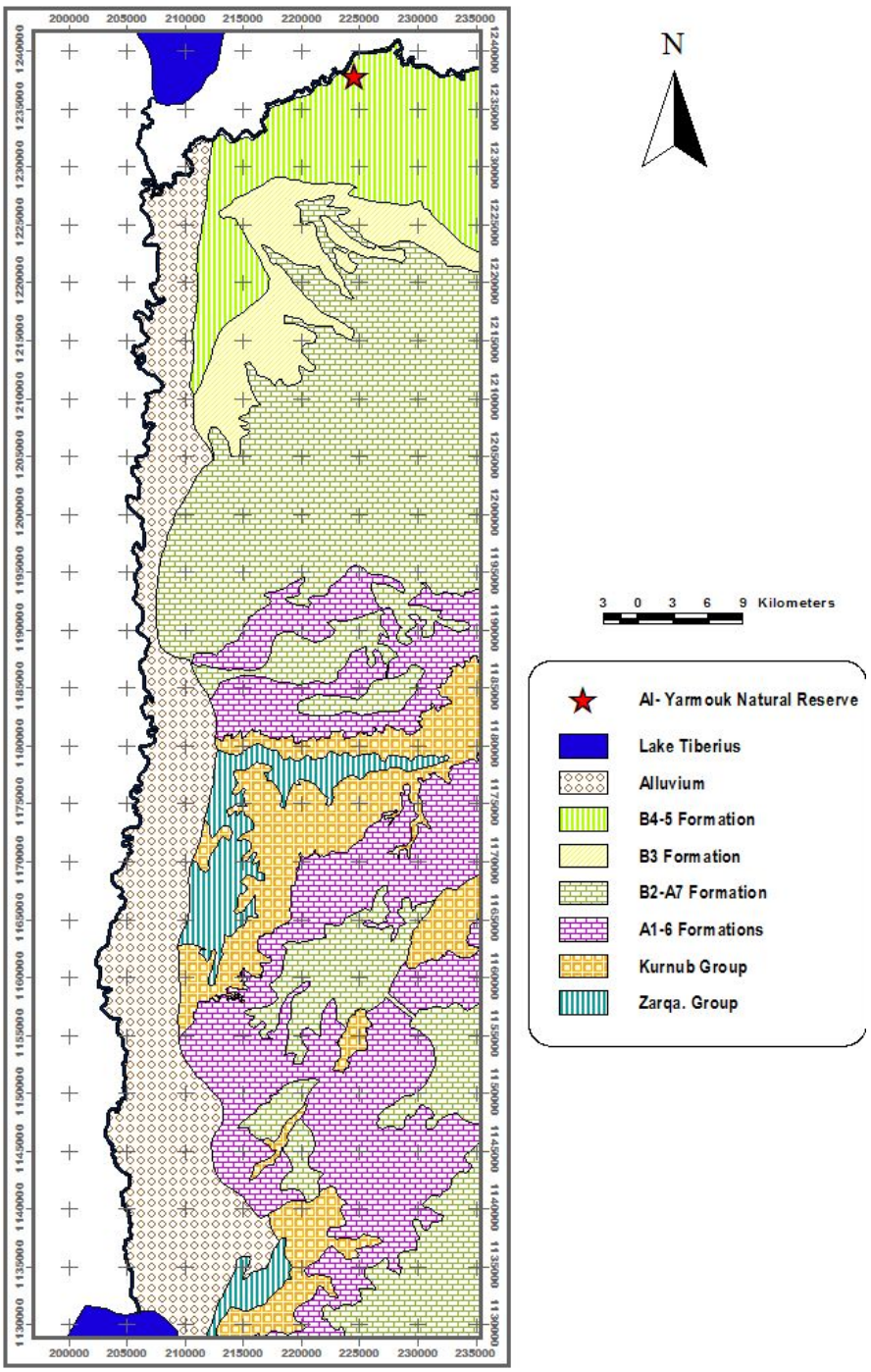


Figure 1. Geological map of project target area.

6.9. Soil

In general, the origin of the Jordan Valley soils are lacustrine sediments, in addition to fluviatile and colluvial sediments, originating from the bordering uplands. A detailed field survey conducted in 1993 in Jordan shows the following soil groups within the Jordan Valley area:

- Jordan Valley: CAMBORTHID
- Jordan Valley Escarpment: XEROCHREPT; TORRIORTHENT and CAMBORTHID.

Furthermore, the soils of the Jordan Valley are classified for agricultural purposes into four major classes. These are:

- Class-A soil which is deep, level and has good permeability, low salinity, and no clay (marl). This type of soil is suitable for all types of crop.
- Class-B soil which is similar to Class A but is shallower, less permeable, and slightly more saline.
- Class-C and class-D soils are shallow and have high salinity and low permeability, as a result of the impediment offered by its clay layers.

Table 6 below shows the main features of agricultural zones in the Jordan Valley.

Table 6. Features of agricultural zones in the Jordan Valley.

Administrative centre	North Shounah	Deir Alla	South Shounah
Total degree of aridity	Semi-arid	Semi-arid-arid	Arid-severely arid
Class-A soil area (%)	43	29	18
Class-B soil area (%)	41	27	17
Class-C soil area (%)	13	12	7
Class-D soil area (%)	3	32	58

6.10. Water Resources

This part of the report presents the current status of the water resources within the Jordan Valley area, and the current trends of water usage in it. Water Resources in the target area are variable and include surface water and groundwater.

Surface water resources include: the Yarmouk River; the Jordan River, the originated base and flood flows from the eastern side wadis, dams and weirs (on most wadis that capture all the base flows and most of the flood flow) and King Abdullah canal — which is the spine of the Jordan Valley surface water distribution system — while groundwater sources include water wells and natural springs.

The Jordan crosses three major water basins within the Jordanian territories. These are from the north to the south: (1) the Yarmouk, (2) the Jordan valley rift side wadis (north and south), and (3) the Jordan Valley. Figure 2 below shows the locations of these basins as part of the national map.

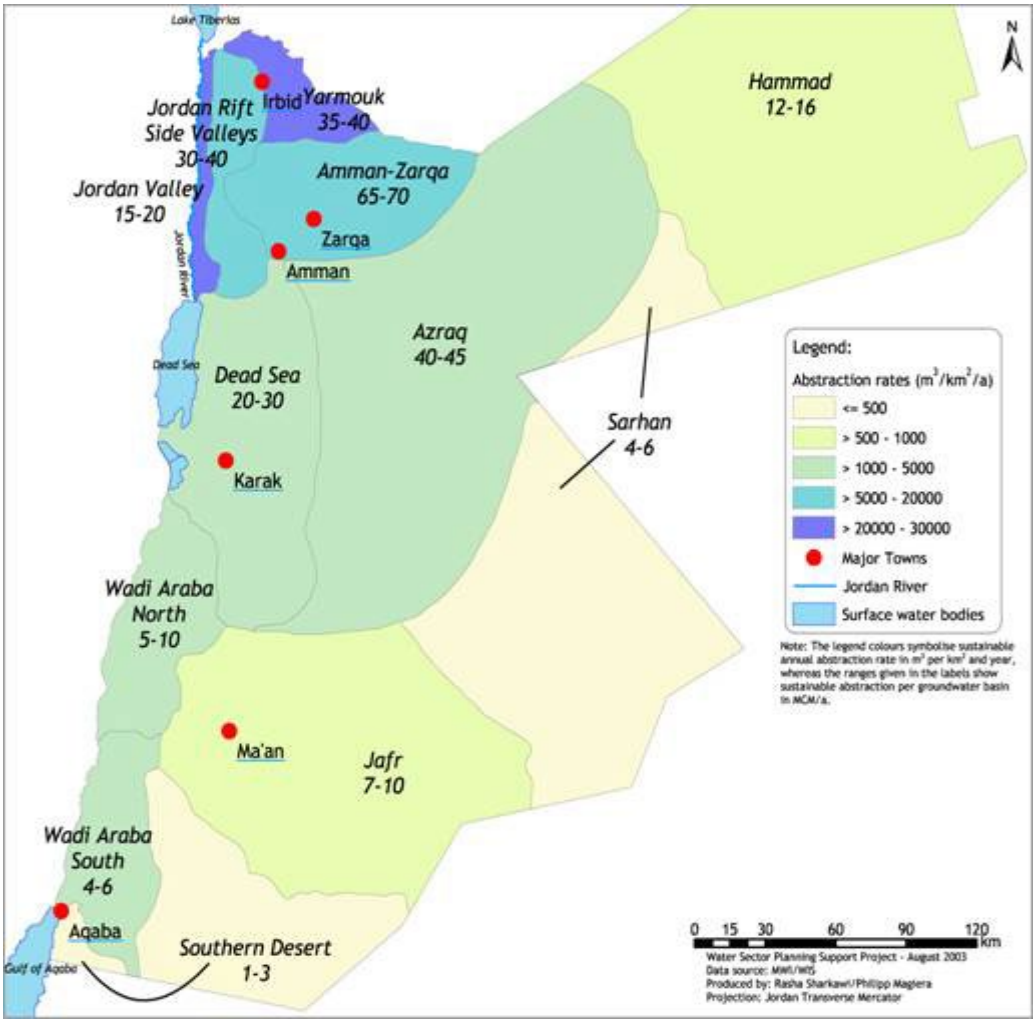


Figure 2. Map of water basins in Jordanian territories.

The following is a detailed description of each of the three basins.

6.10.1. Yarmouk River Basin

The western extensions of this basin are located within the Jordan Valley area, where the proposed El-Eshah natural reserve is located in the north within its north-western parts. The total catchment area of the Yarmouk river basin is about 7,250 km^2. The major part of this catchment is in Syria as only 1,426 km^2 lies within the Jordanian territory. Most of the wadis in the Yarmouk basin are ephemeral. Major wadis draining in the Jordanian side of this basin are Wadi Al-Shallalah and Wadi Al Mahasi. During the last decades, large numbers of reservoirs have been built on the Syrian part of the Yarmouk catchment. This resulted in a significant reduction of base flows and flood flows in the lower part of the river along the Jordanian/Syrian border. The total flow of the Yarmouk River along the Jordanian territories was 68.61 million cubic metres (MCM) for the year 2004.

Regarding groundwater, recharge into this basin in Jordanian territories is primarily from the northern highlands of Jordan and from Jabal Al Arab in southern Syria.

The major aquifers within this basin are: (i) the alluvial deposits and the B4 of the shallow aquifer system, (ii) the A4 and the B2/A7 of the Middle aquifer system and (iii) the Kurnub of the Deep aquifer system. It receives direct groundwater recharge (from infiltration of rainfall over the unconfined section of the aquifers occurring in the upland areas) and as subsurface inflow (from the adjacent aquifers, mainly from the eastern and northern boundaries). Other inflows originate from Kurnub aquifer in the western part of the basin. Groundwater discharge from the aquifer system takes place mainly through spring and base flow in the side wadis and as subsurface outflows towards the Jordan Valley.

The depth of the groundwater wells varies between 25-400 m while the depth of the groundwater surface varies between 100-280 m. Groundwater levels in this basin are dropping due to the over pumping from this basin wells. Water level records for this basin's wells (year 2004) show that the maximum recorded drop in water level was 2.45 m.

6.10.2. Jordan Valley Rift Side Wadis Basins

The Jordan rift side wadis basin represents the area between the eastern highland basins and the Jordan Valley basin. The total catchment area of this basin is 1,682 km^2. Major wadis located within this basin from the north to the south are: Wadis El Arab, Ziglab, Jurum, Yabis, Koufranja, Rajib, Shu'eib, Hisban and Kafrein.

The average annual rainfall over the basin ranges from about 100 mm/year on the northern end of the Dead Sea to about 400 mm/year near Lake Tiberius, with 600 mm/year around Ajloun and Salt. The Rift Side Valleys receive the highest amount of rainfall in the whole country.

The major aquifers within this basin are: (i) the alluvial deposits of the shallow aquifer system, (ii) the A4 and the B2/A7 of the Middle aquifer system and (iii) the Kurnub of the Deep aquifer system. Most of it is developed. Carbonate aquifers of the Middle Aquifer System that belong to Balqa and Ajloun series are trapped in the area between Wadi Arab to Deir Alla. Kurnub Sandstone aquifer (K) becomes renewable and relatively fresh in this area.

Some wells were drilled in this basin to explore the groundwater potential in a deep sandy aquifer (Zarqa Group aquifer of the Lower Aquifer System). In the area south of Deir Alla to Karamah, sandy face aquifers are tapped but of poor-quality water (brackish groundwater, 3,000 mg/lit to 5,000 mg/lit in TDS). The brackish groundwater in this area has not been exploited yet.

6.10.3. The Jordan Valley Basin

The catchment area of the Jordan Valley basin is 775 km^2, representing the area between Lake Tiberius in the north and the Dead Sea in the south. It stretches over 110 km in length and is about 8 km wide on average.

Groundwater in the Valley Floor is presently utilised for irrigation and domestic supplies. The resources are well developed, particularly in the area between Deir Alla to Sweimeh. Groundwater level in this basin is declining as a result of overexploitation for different purposes.

The major aquifers within this basin are: (i) the alluvial deposits of the shallow aquifer system, (ii) the A4 and the B2/A7 of the Middle aquifer system and (iii) the Kurnub and Rum of the Deep aquifer system. The depth of the groundwater wells varies between 100-300 m while the depth to the groundwater surface varies between 20-80 m.

6.10.4. Surface Water Resources Potential and Management

The preliminary surface water potentials within the Jordan Valley depend on the base flow and the flood flow. These resources are characterised by scarcity, variability, and uncertainty. This issue can be related to the high annual variation in precipitation between dry and wet years. Table 7 below presents the annual flow volumes within the JRV surface water basins, which supports the above statement.

Table 7. Annual flow volumes within the JRV surface water basins.

Basin	Code	Rainfall		Flood flow (MCM)				Base Flow (MCM)
		Average Annual Rainfall (mm)	Long Term Rainfall Average 61 Years (MCM)	Dry Year	Median	Wet Year	Average	Average

Yarmouk (Jordan)	AD	293	439	5.3	15.7	40.8	22.4	18.8
North Rift Valley Side Wadis	AE, AF, AG, AH	599	584	5.1	13.5	28.8	18	31.8
South Rift Valley Side Wadis	AM, AN, AP	404	293	7.7	17.5	40.6	25.1	29.4
Jordan Valley	AB	300	233	1.6	4.4	12.1	8.3	-NA

6.10.5. Storage Dams

Several dams were and are being established on the downstream portion of the major wadis draining towards and within the Jordan Valley area. The purpose of constructing these dams is one or more of the following:

- To control the flood flow that originates from the side wadis in order to protect the different human establishments and the agricultural lands within the Jordan valley area.
- To implement best management practices with the base and flood flows that run in the side wadis along the Jordan valley. This will be through using part of this water for irrigation purposes and covering part of the domestic usage for settlements in the Jordan Valley and the highlands.
- To participate in recharging the groundwater aquifers and springs down stream of these dams.

Summary information about the dams within the Jordan Valley area, and the dams providing water to the surface water system in the Jordan Valley area are presented in Table 8 below.

Table 8. Summary of dams within the JVA.

Basin Code	Name of Dam	Completion Year & Type	Catchment Area (km^2)	Live Storage (MCM)	Purposes	Water Resource
A	Wadi El-Arab	1986- Earth fill	262	16.9	Irrigation of 12,500 dunum in the northern JV, domestic water supply, power generation	From KAC in winter and the floods of Wadi El-Arab
A	Wadi Ziglab	1967- Earth fill	106	3.9	Irrigation of 12,500 dunum in the northern JV	Flood and base flows of Wadi Ziglab
AL	King Talal	1977 /1987- Earth fill	3,700	75	Irrigation of 82,000 dunum in the middle JV, power generation	Zarqa River and As-Samra TP wastewater
A	Kafrein	1996- Earth fill	163	8.5	Irrigation of 1,274 dunum upstream of KAC	Flood and base flows of Wadi Kafrein
A	Wadi Shueib	1969- Earth fill	178	2.1	Irrigation of 2,500 dunum and artificial recharge	Base and flood flows of Wadi Shueib
A	Al Karamah	1997- Earth fill	61	55	Irrigation of 40,000 dunum in the southern JV	Surplus water from KAC in winter

6.10.6. King Abdulla Canal

The backbone of the water distribution system (mainly for irrigation) in the Jordan Valley is the King Abdullah Canal, which was built in several stages from 1959 to 1989 and considered as the main national carrier in Jordan. The canal now stretches over a total length of 110 km from Yarmouk River at Adasiyeh to close to the shores of the Dead Sea.

The King Abdullah Canal is a transport open canal, with a maximum width of 11.30 m, a maximum (water) depth of 2.80 m and a maximum conveyance capacity of approximately 20 m^3/s. The water resources for the canal come from the Yarmouk River, the conveyer from Lake Tiberius, King Talal Dam, Mukhaibeh wells, the side wadis in the northern part of the Valley and the side wadis in the southern part of the Valley.

King Abdullah surface water delivering system includes 6 retention reservoirs, with a total storage capacity of 165 million m^3. Five of these reservoirs (with a storage capacity of 110 million m^3) are normal retention reservoirs that hold the surplus discharge of their respective rivers. The sixth, Karamah Dam, is an intermediate reservoir that is filled with surplus water from other water sources, conveyed by the King Abdullah Canal in winter. The stored water is used in summer for irrigation.

6.10.7. Ground Water Usage

Groundwater resources in the Jordan Valley are used to cover: (i) the different water demands for the concentrated population in the valley area (domestic and agriculture), (ii), the water demands for the industrial establishments ,(iii) and the water demands from touristic establishments located in the valley. Furthermore, a major part of these resources is used to cover part of the increasing water demands for major cities located on the eastern highlands — especially in the northern and central parts of Jordan where the majority of Jordan's population (>65%) is concentrated. A summary of groundwater usage in the Jordan Valley ground water basins (based on the available data from the Jordan rift side wadis basin in the Jordan Valley basin) is presented in Table 9 below. The Jordan Valley basin is dominant in the Jordan Rift Valley and comprises relatively large settlements and intensive agricultural, large industrial and touristic activities.

Table 9. Groundwater usage in the Jordan Valley.

Ground Water Basins		Yarmouk	Jordan Rift side Wadis	Jordan Valley
Safe Yield MCM/year		40	15	21
Private Drinking water	Number of wells	4	1	0
	Amount MCM	1.17	0.076	0.021
Public Drinking water	Number of wells	27	21	41
	Amount MCM	8.978	17.036	7.427
Industrial	Number of wells	3	0	2
	Amount MCM	0.291	0	0.035
Irrigation	Number of wells	114	52	213
	Amount MCM	36.535	4.644	27.388
Livestock	Number of wells	0	0	0
	Amount MCM	0	0	0
Total Extraction MCM/2001	Amount MCM	46.974	21.756	34.871
Balance MCM/ year		-6.974	-6.756	-13.871
Total number of wells used		148	74	256

It should be noted that a major portion of the water used for irrigation purposes is sourced from the surface water resources within the Jordan Valley area, while the water used for drinking purposes is sourced from groundwater wells.

6.10.8. Natural Water Springs

The Jordan Valley area is characterised by the presence of a large number of natural water springs (close to 400 springs). The discharge rate of these springs varies between <1m^3/hr to more than 100 m^3/hr. These springs emerge from the foothills surrounding the Jordan Valley area, or from the alluvial bed of the bottom Jordan valley. The springs can be defined within three groups. These are:

6.10.9. Fresh water springs

Such springs, with a high discharge rate, are used to cover part of the national domestic water demands in Jordan. Examples of these types of spring are the Mukheiba spring flow and Tabaqat Fahl "spring/well" located in the northern parts of the JRV area.

6.10.10. Brackish water springs

These are usually desalinised and pumped to cities to contribute to an increasing demand for fresh water.

6.10.11. Thermal springs

Thermal springs are generally restricted to the rift zone between the southern end of the Dead Sea and Lake Tiberius. These springs range in temperature between 31-60 °C. Table 10 presents a review of some of the major thermal springs in the Jordan Valley Area.

Table 10. Summary of major thermal springs in the JVA.

Name of the Geothermal field	Temp. (°C)	Flow Rate (m^3/hr)	TDS (ppm)	Remarks
Himmeh springs	38-44	300-3000	650-885	Two major springs, high H_2S concentration.
Mukhaibeh wells/springs	30-41	200-6000	600-800	Seven artesian wells, high H_2S concentration.
North Shounah well	57	700	775	Artesian well, high H_2S concentration.

6.10.12. Water Quality

The water quality of the wadis flowing within the JRV has been good. This is particularly valid for flood flows. Some of the wadi base flows have higher salinities as they are fed from saline springs. Of the international rivers, Yarmouk has excellent water quality, while Jordan River water is rather saline and not useable without treatment.

Today, three different sources of pollution of surface water bodies can be distinguished:
- Natural elevated salinity levels originating from saline springs.
- Increased salinity levels due to drainage from agricultural areas.
- General pollution (also organic and bacteriological) from the release of insufficiently treated wastewaters.

The overall quality of groundwater resources in the Jordan Valley area can be considered good. Nevertheless, the ground water quality problems that can be distinguished within the Valley are:
- Increases in groundwater salinity of many shallow groundwater wells in the past years due to over pumping.
- Chemical and biological contamination (specifically noticed in some shallow groundwater wells and springs) as a result of over usage of fertilisers and the unwise disposal of fluid wastes.

6.11. Liquid and Solid Waste Management

Two fluid waste treatment stations are located in the Jordan Valley area. These are Wadi Al-Arab Station in the northern parts of the Jordan Valley and Tal-Al- Mantah station to the west of Deir Alla. Thus, the usage of permeable and impermeable cesspits is the dominant method for disposing of fluid waste in the majority of the settlements within the Jordan Valley area.

Two solid waste dumping sites are serving the Jordan Valley area (see Table 11 below). Further, some of the northern parts of the Valley depend on the Al Ekaider site for solid waste disposal. Generally speaking, liquid and solid waste management represent a major challenge for human health and the environment in the Jordan Valley Area.

Table 11. Solid waste dumping sites in the JVA.

Name	Governorate	Area (Dunum)*	Operation Year	Received Quantities (tons/day)	Notes
Deir Alla	Balqa	300	1998	250	Receives about 80 tons from Kufranja area
South Shounah	Balqa	NA	1988	45	-

6.12. *Air Quality and Noise Level Status*

Based on the geographic extension of the project area, the overall noise levels can be considered low. For more specific discussion, the noise level status within the Jordan Valley area is as follows:

- Within the northern parts of the Valley, there is no major source for noise or severe noise. The noise levels are regular and reflect normal human activities.
- Within the central parts of the Jordan Valley, especially within the northern parts of the Dead Sea area, the sources of noise are the touristic establishments. In general, the noise in this zone can be considered higher than the northern parts.

With the regard to air quality, the overall status of air can be considered good. Localised sources of air quality deterioration are the quarries especially in the central and southern parts of the Jordan Valley area.

7. Biological Environment

7.1. *Biogeography of the Jordan Rift Valley*

Being a bridge connecting three continents, Asia, Africa, and Europe, it supports a wide variety of habitat types such as riparian, marsh, grassland, scrub and arid desert. A wide variety of habitats can be found along the Valley, due to its complex geology and large altitudinal range, ranging from Mediterranean, to non-forest Mediterranean (along the margins which are considered transitional zones), to Irano-Turanean and to Afro tropical habitats.

The Jordan Rift Valley is a very important unit for the ecology of Jordan due to the wide diversity of faunal species, its importance as a major migration route for birds in the Middle East ,and the presence of several bottlenecks for soaring birds that are in the Jordan Rift Valley.

The Jordan Rift Valley encompasses a series of distinctive geographic sections: the Jordan River Valley, the Yarmouk River valley, the Dead Sea and its eastern escarpments, the southern Ghores south of Dead Sea and the arid Wadi Araba.

Therefore, the Jordan Rift Valley with its great topographical and climatic variations hosts a large variety of arid ecosystems in a relatively small area. Population distribution is directly related to the availability of water resources within the valley, being concentrated in the area north of Dead Sea where domestic and irrigation water are available.

The Jordan Rift Valley itself (the northern extension of the Great Rift Valley of east Africa) consists of the subtropical Jordan Valley and the Dead Sea and Wadi Araba — each with its typical flora and fauna, showing manifest affinities to the Sudanian-penetration region. Parallel to the rift valley run the rift margins and adjacent highlands, which can be subdivided into many faunal regions, varying eminently along longitudinal and altitudinal gradients.

Habitats range here from deep rocky gorges to flat slopes and plateaus covered by steppe vegetation and dense hydrophyte vegetation along water streams, farmland and Mediterranean woodlands.

These areas are home to a variety of resident and breeding birds, in addition to lying on one of the main routes of birds migrating between Eurasia and Africa. These migrants include several globally endangered species, which depend on the natural habitats of the rift and adjacent mountains for resting and feeding.

In conclusion the Jordan Rift Valley consists of the following Bio-geographic zones:

- The Mediterranean Biogeographic Zone.
- The Irano-terranean Biogeographic Zone.
- The Saharo Arabian Biogeographic Zone.
- The Sudanian penetration Biogeographic Zone.

Figure 3 below demonstrates the four biogeographic zones and their relevance to the project target area.

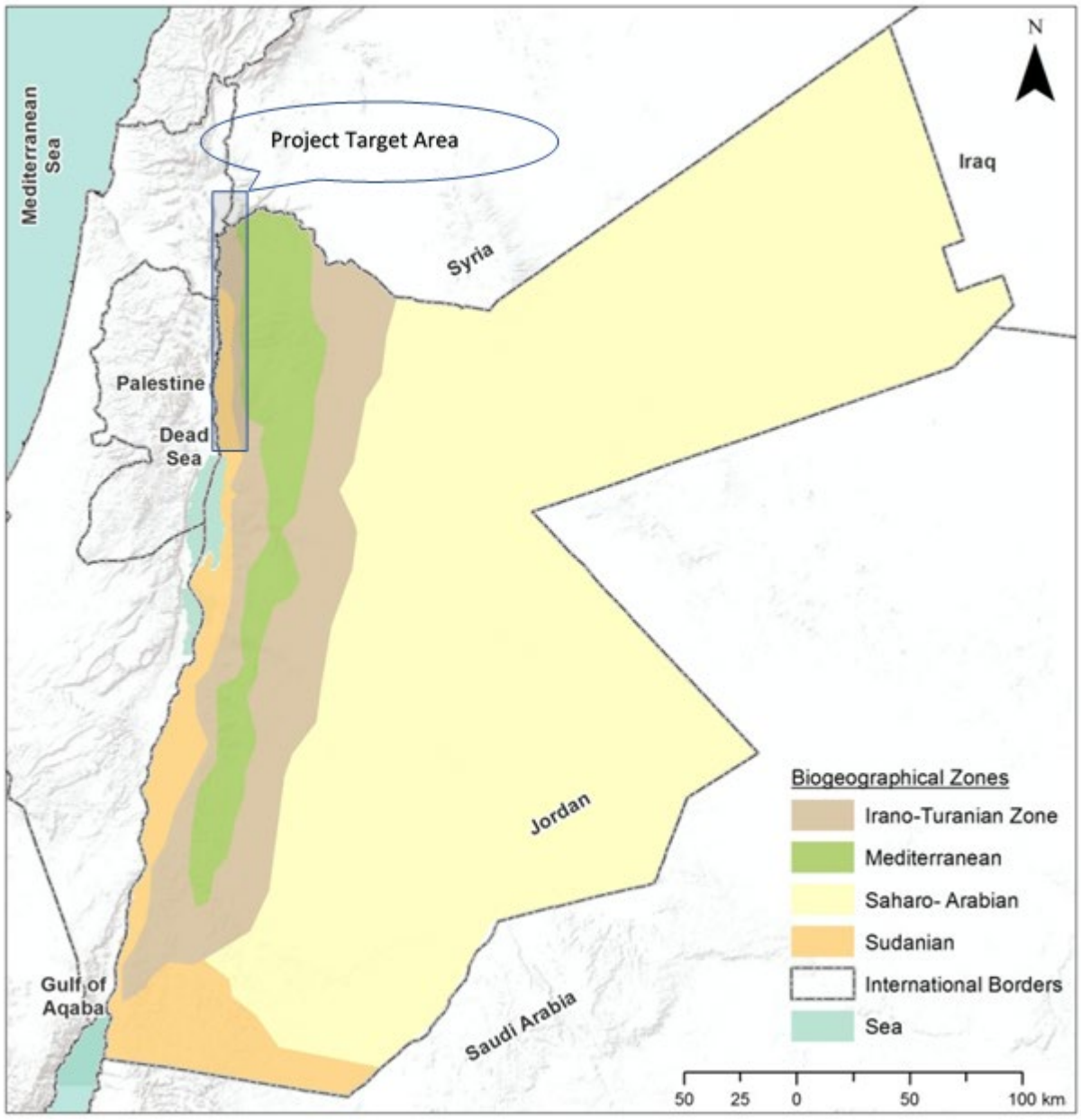


Figure 3. Map of the four biogeographic zones and their relevance to the project target area.

7.2. Biological Habitat

The Jordan Rift Valley holds many large and internationally important ecosystems, including desert, mountains, wetlands, sea and forest; e.g. the Dead Sea, the Gulf of Aqaba and the Jordan and Yarmouk river systems, as well as numerous specialized habitats of regional importance ranging from deep rocky gorges to flat slopes and plateau covered by steppe vegetation, dense hydrophytic vegetation along water streams, farmland and Mediterranean woodlands.

7.2.1. Terrestrial Habitats

Biological habitats in general can be classified according dominant vegetation communities, which in turn corresponds to the physical-geographical location, local altitude, climatic conditions, and dominant soil types. Terrestrial habitats identified within the Jordan Rift Valley include 26 different types.

7.2.2. Wetland Habitats

Jordan lies on the major migrating route of North Pole arctic waterfowl. Although in the past few years the majority of migrating waterfowl has shifted from Azraq area to the Jordan Valley, due to the dryness of Azraq qaa caused by over extraction of underground water, migrating waterfowl nowadays disperse to different water bodies all over the Jordan Valley (see Error! Reference source not found.) which gives it a vital importance.

Based on the above, the project target area, the Jordan Valley, represents an integral component of the wider Jordan Rift Valley Landscape and consequently comprises representation from three of the four biogeographic zones, namely, the Mediterranean, the Irano-terranean, and the Sudanian-penetration zones.

7.3. *Vegetation Communities and Key Flora Species*

There are thirteen vegetation community types identified in Jordan. Out of which five are represented in the project target area. These are the Deciduous Oak Forest, Water Vegetation, the Steppe Vegetation, the Saline Vegetation, and the Tropical Vegetation.

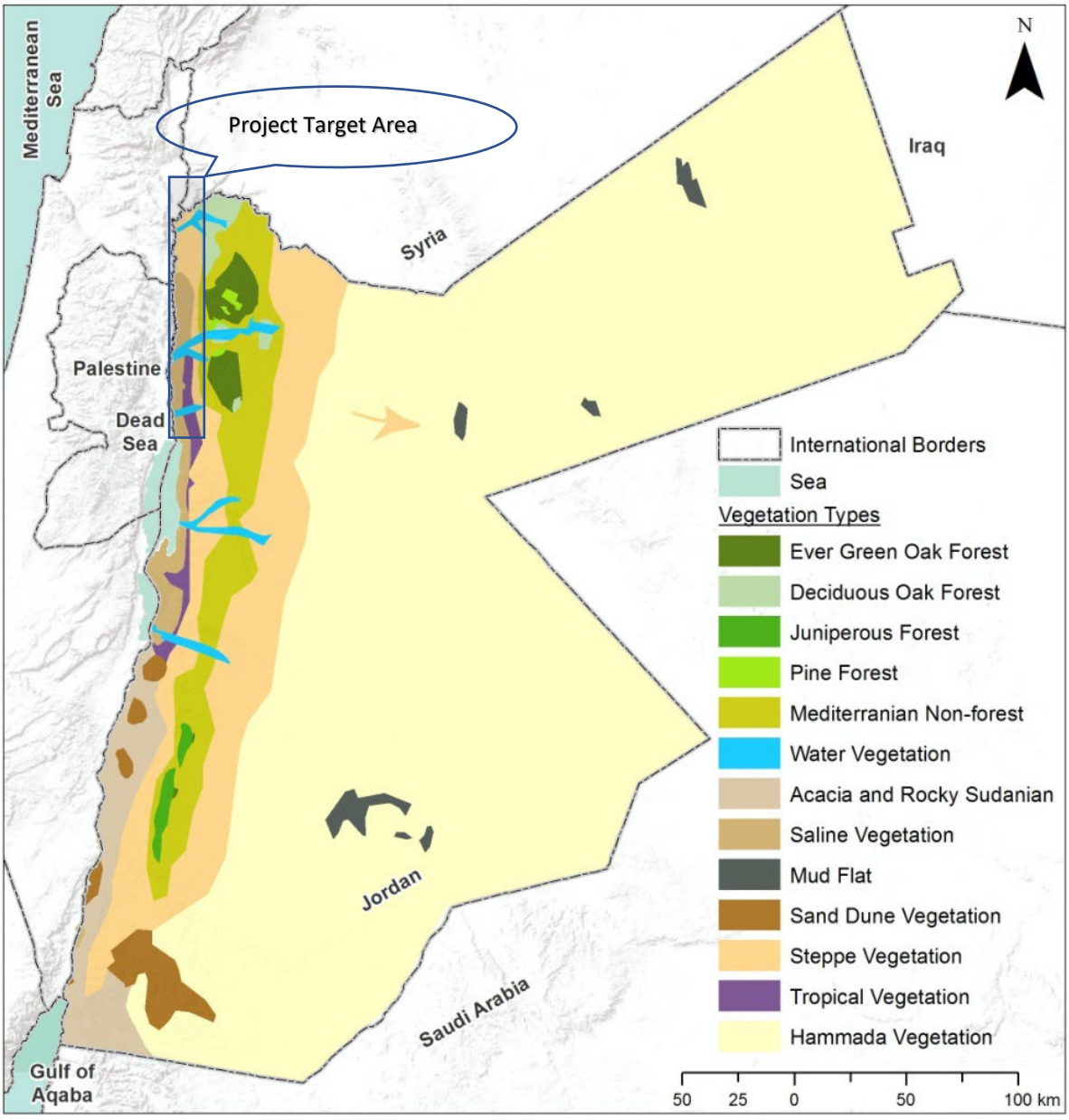


Figure 4. Map of vegetation types in project target area.

Table 12 below summarises the key characteristics of the vegetation types present in the Jordan Valley and their attributes.

Table 12. Vegetation types and their respective attributes in the Jordan Valley.

No	Name of vegetation type	Size (sq km) In Jordan	Key attributes
1	Deciduous oak forest vegetation	433	The deciduous oak forests in Jordan occur at a lower altitude than all other forest and mostly grow on red or brown soil of hard limestone parental rock.
2	Steppe vegetation	9,641	This vegetation is confined to the Irano-Turanian region and may intrude either into the Mediterranean or the Saharo-Arabian region. The composition of the vegetation varies according to the soil and other climatic differences depending on its location with respect to the Mediterranean region. For example the steppe vegetation in the Northern Ghor which links with the Northern mountains is dominated by *Retama raetam, Ziziphus lotus, Z. nummularia* and *Ferula communis* with almost no *Artemisia herba-alba*, while the steppe vegetation in the North, East and South Mediterranean borders shows other elements like *Pistacia atlantica*, *Anabasis syriaca* and *Artemisia herba-alba* which are not found in the Western steppes
3	Saline vegetation	1,150	This occurs in the desert (Saharo-Arabian) region around Azraq Oasis, in the Rift Valley around the Dead Sea, in Wadi Araba, and around the shoulders of the River Jordan on what is known locally as Katarat. The leading species vary, depending on their ability to tolerate the degree of salinity For *example Nitraria retusa* is a saline tolerant species but it does not grow if the salinity exceeds certain limits and will be replaced by other species such as *Arthrocnemum fruticosum*, *Suaeda spp. Juncus sp.* and *Tamarix spp*
4	Tropical vegetation	424.16	It occurs in the Sudanian region which extends from Dair 'Alla in the North down to Aqaba Gulf in the South but it is concentrated more in the regions close to the Dead Sea, lower Jordan Valley, as in Southern Ghor, Ghor Safi and Ghor Faifa. The vegetation is confined to the alluvial soils of the Rift Valley most of which have been destroyed and used for vegetable agriculture.
5	Water vegetation	642.1	This occurs around the streams and river banks and around the water pools in Azraq. The vegetation does not occur much in Jordan but still it is clear around Jordan river; Yarmuk river; Zarka river; Wadi Shuaib, Wadi Mujeb; Wadi AL-Hasa and in Azraq Oasis.

7.3.1. Key Fauna Species

The Jordan Valley includes the Jordan River which is considered — along with its tributaries flowing east-west — ecologically important. In this area, endemic forms have evolved over the millennia to create many special habitats and communities. In dry and arid areas, wetlands become important ecosystems for the survival of species thus creating the chance for diversity of species and habitats. The Jordan River is also an important wetland area in the Middle East because it maintains many globally valuable species such as the Brown Fish Owl, the Common Otter, Rock Hyrax, Freshwater Turtle, endemic freshwater fish, freshwater snakes and many other species of conservation significance.

7.3.2. Invertebrates

Several studies have been conducted on the Invertebrates of the Jordan Valley; however much information needs to be confirmed and documented.

Molluscs - *Class Gastropoda*

17 freshwater snails belonging to three families, and another 40 species of land snails belonging to nine families, have been recorded in Jordan and the Jordan Valley.

7.3.3. Fish and Aquatic resources

The fauna of freshwater in the project target area includes 24 species native to the Jordan-Dead Sea catchment basin and 28 species from outside. The Jordan Valley and the Yarmouk River, and some dams, still host indigenous species of fish and aquatic fauna, but due to the overuse of chemicals and shortage of water the densities of these species have declined sharply. Fish species include Ictheofauna: *Tillapia galilae, Barbus canis, Barbus longiceps, Copoeta damascena, Aeanthobrama essneri, Gara rufa, Hemigrammacopoeta nana, Claris lazera, Aphanius cypris*.

The status of many of the above-mentioned fish species is not known and further studies should be initiated. Several exotic species of fish were introduced to the surface water bodies of the rivers and dams such as: *Tilapia spp., Blennis fluviatilis, Mugil cephalus, Cyprinus carpio*.

7.3.4. Reptiles and Amphibians

Reptilian and Amphibian species are confined to dense vegetation areas rich with water such as running wadis, riverbanks and some dams. Such species are discussed below.

7.3.5. Amphibians

Four amphibian species have been confirmed in the Jordan valley and mainly they inhabit riparian, semi wet areas, mudflats and artificial water bodies such as dams and reservoirs. These species are:

Common Tritotius	*Triturus vittatus*
Green Tree Frog	*Hyla savignyi*
March Frog	*Rana ridibunda*
Green Toad	*Bufo virdis*

7.3.6. Reptiles

It is estimated that more than 60% of Jordan's Herpetefauna exists in the Jordan Valley and the below is some of the recorded species in the Valley (Table 13).

Table 13. Reptile species in the Jordan Valley.

Mediterranean Tortoise	*Testudo graeca*
Fresh water Turtle	*Mauremys rivulata*
Chameleon	*Chamaeleo chameleon recticrista*
Pale Agama	*Trapelus pallidus pallidus*
Horny-scaled Agama	*Trapelus ruderatus*
Bridled Skink	*Mabuya vittatta*
Spur-thighed Mediteranian Tortoise	*Testudo graeca terretris*
Lobe Footed Gecko	*Ptyodactylus hasselquistii hasselquistii*
Elegant Lizzard	*Ophisops elegans*
Simon's Worm Snake	*Rhinotyphlops simoni*
Hookbilled Blind Snake	*Leptotyphlops macrohrynchus*
Greek blind snake	*Typhlops vermicularis*
Egyptian Sand Boa	*Eryx jaculus*
Syrian Black Snake (Arbeed)	*Coluber jugularis asianus*
The Most Beautiful Snake	*Coluber elegantissimus*
Sinai Banded Snake	*Coluber sinai*

Tessellated Water Snake	*Natrix tessellate tessellata*
Palestine Mole Viper	*Atractaspis engaddensis*
Sand Non-Horend Snake	*Cerastes gasperettii mendelssohnii*
Snub-nosed viber	*Macrovipera lebetina*
Palestine Viper	*Vipera palaestinae*
Scaled Viper	*Echis coloratus*

7.3.7. Avifauna

Avifaunal diversity in the Jordan Valley is considered outstanding. Recorded bird species include resident and migratory species, some of which are considered of global significance and were recorded in the defined Important Bird Areas (IBAs). These are:

- Globally threatened: Lesser Kestrel *Falco naumanni;* Houbara Bustard *Chlamydotis undulata* possibly winters in the area in low numbers; and significant numbers of the threatened Corncrake *Crex crex* occurs in this area.
- Globally significant numbers of migratory birds pass through the area including: White Stork *Ciconia Ciconia;* Black Stork *Ciconia nigra;* and a wide variety of raptors.
- Regionally threatened: Egyptian Vulture *Neophron percnopterus*; and Griffon Vulture *Gyps fulvus.*
- Restricted range species: Hooded Wheatear *Oenanthe monacha*; Sand Partridge *Ammoperdix heyi*; Arabian babbler *Tudoides squamiceps*; Tristram's Starling *Onychognathus tristramii*; and Sinai Rosefinch *Carpodacus synoicus.*

The map below (Figure 5) shows the Important Bird Area occurring in the project target area and as compared to the ones that exist in the whole of the Jordan Rift Valley.

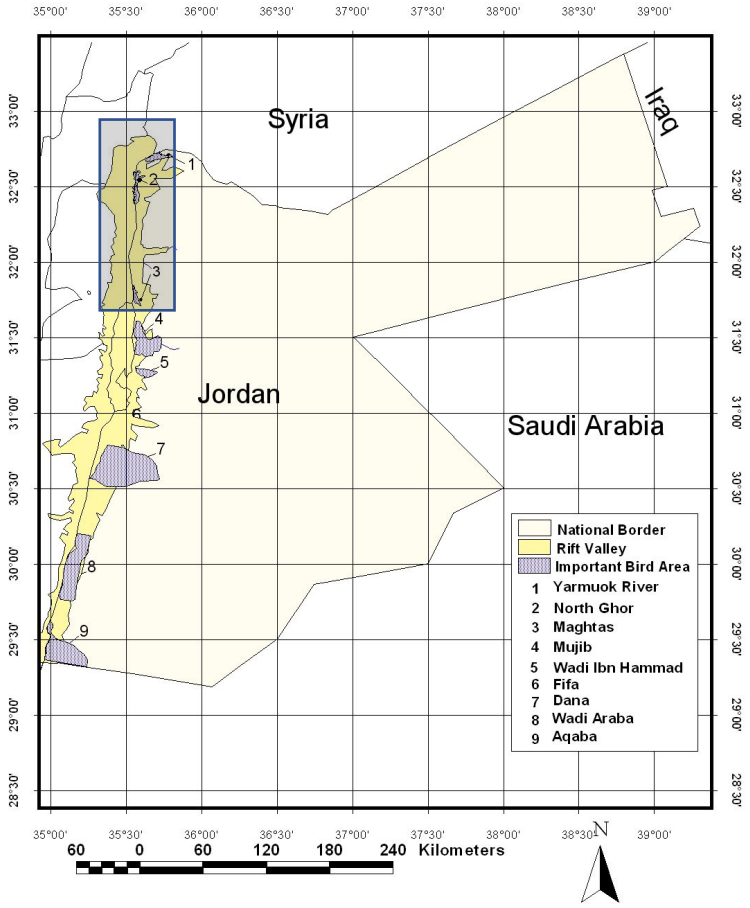


Figure 5. Map highlighting the important bird area occurring within the project target area.

7.3.8. Mammals

The Jordan Valley still hosts many mammals around the vicinities of the rivers' banks. Many carnivores and other mammalian species managed to survive human impacts simply due to military restrictions.

Many mammalian species of the Jordan Valley are threatened or regionally threatened species such as the Syrian wolf, Blandford Fox, Common otter, Persian squirrel and others. Key mammal species potentially occurring in the Jordan Valley are shown below.

Table 14. Mammal species in the Jordan Valley.

European Hedgehog	*Erinaceus europaeaus*
Lesser White-toothed Shrew	*Crocidura monacha*
Egyptian Fruit Bat	*Rousettus aegypticus*
Greeater Rat-tailed Bat	*Rhinopoma microphylum*
Greater Horseshoe Bat	*Rhinolopus ferrumequinum*
Common Mouse	*Mus musculus*
Golden Spiny Mouse	*Acomys russatus*
Common Rat	*Rattus rattus*
Palestine Mole Rat	*Spalax leucodon*
Indian Crested Porcupine	*Histryx indica*
Egyptian Mangoose	*Herpestes ichneumon*
Marbeld Pole-cat	*Vormela peregusna syriaca*
European Badger	*Meles meles*
Stone Marten	*Martes Foina*
Honey Badger	*Millivora capensis*
Red fox	*Vulpes vulpes*
Branford's Fox	*V. Cana*
Jungle Cat	*Felis chaus*
Caracal	*Caracala caracal*
Striped Hyena	*Hyaena hyaena*
Grey wolf	*Canis Lupus*
Wild Cat	*Felis silvestris*
Common Otter	*Lutra lutra*
Wild Boar	*Sus scrofa*
Rock Hyrex	*Procavia capensis*
Nubian Ibex	*Capra ibex nubiana*
Persian Squirrel	*Scirusus anomalus*
Eurasian Badger	*Meles meles*
Sinai Spiny Mouse	*Acomys dimidiatus*
Golden Spiny Mouse	*A. russatus lewisi*
Wagner's Gerbil	*Gerbillus dasyurus*
Baluchistan Gerbil	*G. nanus arabium*
Egyptian Gerbil	*G. gerbillus*
Bushy-tailed Jird	*Sekeetamys calurus*
Fat Sand Rat	*Psammomys obesus*

7.4. *Ecological Hotspots*

Several hotspots of threatened biodiversity can be identified within the eco-zones, and these areas should receive conservation priority due to their importance and sensitivity. For the sake of this study, the identified hotspots are presented below in terms of their valued ecosystem components; specifically, significant yet sensitive vegetation habitats, and Important Bird Areas (IBAs).

7.4.1. Yarmouk Forest Reserve

Yarmouk was proposed as a protected area by Clarke (1979) and again by RSCN (1999). Access to much of the area is restricted for security reasons (it lies opposite the occupied Golan Heights), and this provided some indirect protection before its official establishment as a protected area in 2010. The Yarmouk Forest Reserve represents the deciduous oak forest vegetation type (*Quercus aegilops*) of 20 square kilometres, forming almost the best pure stand and is restricted to the eastern part of the Mediterranean geographical region.

The Forest varies in altitude from 200 meters below sea level to 500 meters above sea level. The local climate is characterised by humid, cool winters with temperatures reaching a minimum of 6.9 degrees Celsius and hot dry summers with maximum temperatures of 44.8 degrees Celsius. The average rainfall in the area is around 400 millimetres per year. The physical age and structure of the forest as a whole is remarkably varied with trees of widely different ages and sizes and a distinct under-canopy in many areas. This variety is aided by the presence of wadis, which provide different aspects, such as moisture levels and soil conditions throughout the forest.

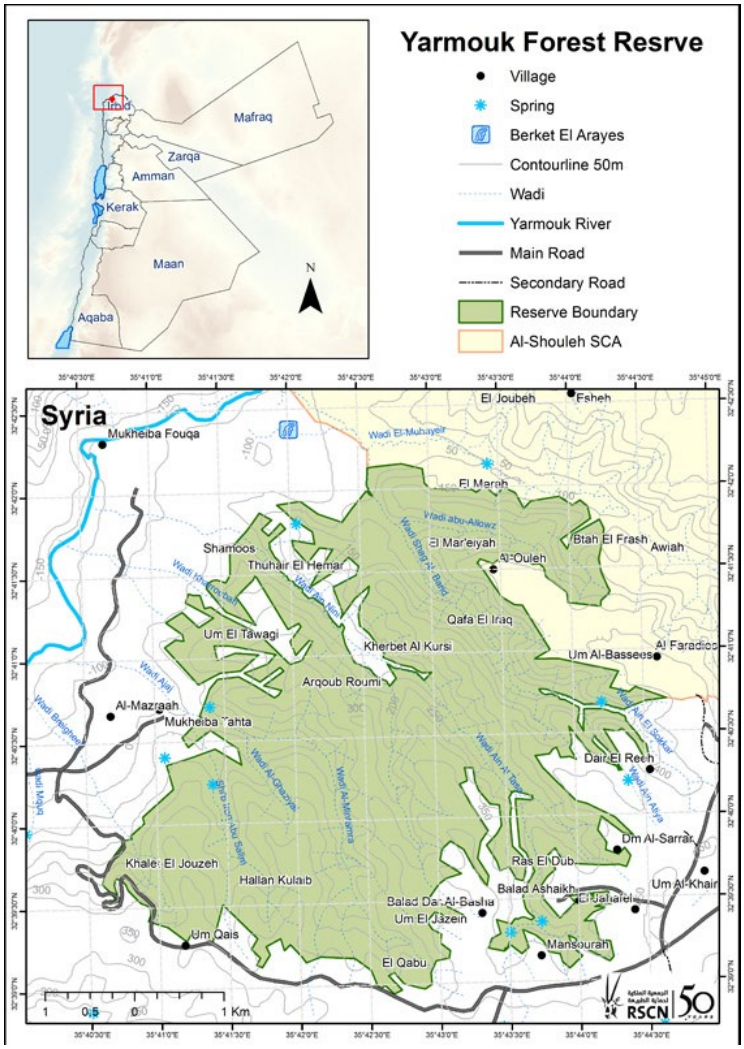


Figure 6. Map of Yarmouk Forest Reserve.

7.5. *Plant Areas of Conservation Significance*

7.5.1. *Quercus aegilops* Stands at Yarmouk, Um Qais and Pella

The site belongs to the Mediterranean bio-climate. The Yarmouk River, which is said to be the least polluted of Jordan's rivers, flows through a steep-sided valley running along the international border with Syria, and eventually enters the Jordan River a few kilometres south of Lake Tiberius. This type of oak is protected by law and much of its area is now within the Yarmouk Forest Reserve boundaries.

Furthermore, the Yarmouk River banks support lush stands of common reed *Phragmites communis*, bullrush *Typha angustata*, oleander *Nerium oleander*, sea rush *Juncus maritimus*, willow *Salix acmophylla* and other wetland plants typical of the region. The northern hill slopes support remnants of native Aleppo pine *Pinus halepensis* woodland. Other species include *Amygdalus communis*, *Platanus oreientalis*, *Salix alba*, *Styrax officinalis* and *Ziziphus lotus*.

7.6. Important Bird Areas (IBAs): Bottleneck Sites

Many sites are exceptionally important for the habitats and ecosystems that they encompass and for the survival of bird species dependent upon them. Birdlife International, using globally agreed criteria, rigorously applied to the bird species and numbers they hold, has carefully identified these sites. Qualifying sites are termed Important Bird Areas (IBAs).

The rift valley lies on a globally important migratory route for birds. A huge number of birds migrate annually through this narrow corridor, thus making the basin an important migration route of global avifauna, such as the Black and White Stork, Dalmatian and Common Pelican, Kingfisher, Herons, Shovlers, Sandpipers, Shanks, Francolin and other globally threatened waterfowl.

Three of the Jordanian IBAs are located within the project target area, the Jordan Valley. The sections below detail these sites in terms of their ecological features, avifaunal significance, and protection status.

7.6.1. Yarmouk River and Al Arayes Pond

Table 15. Yarmouk River site information**.**

Importance:	IBA (Criteria: 1, 2III, 3, 4, 5II), RSCN Proposed Protected Area, Biological Corridor
Protection Status:	Significant portion of the IBA is a Proposed Protected Area
Sensitivity:	High
Rarity:	High

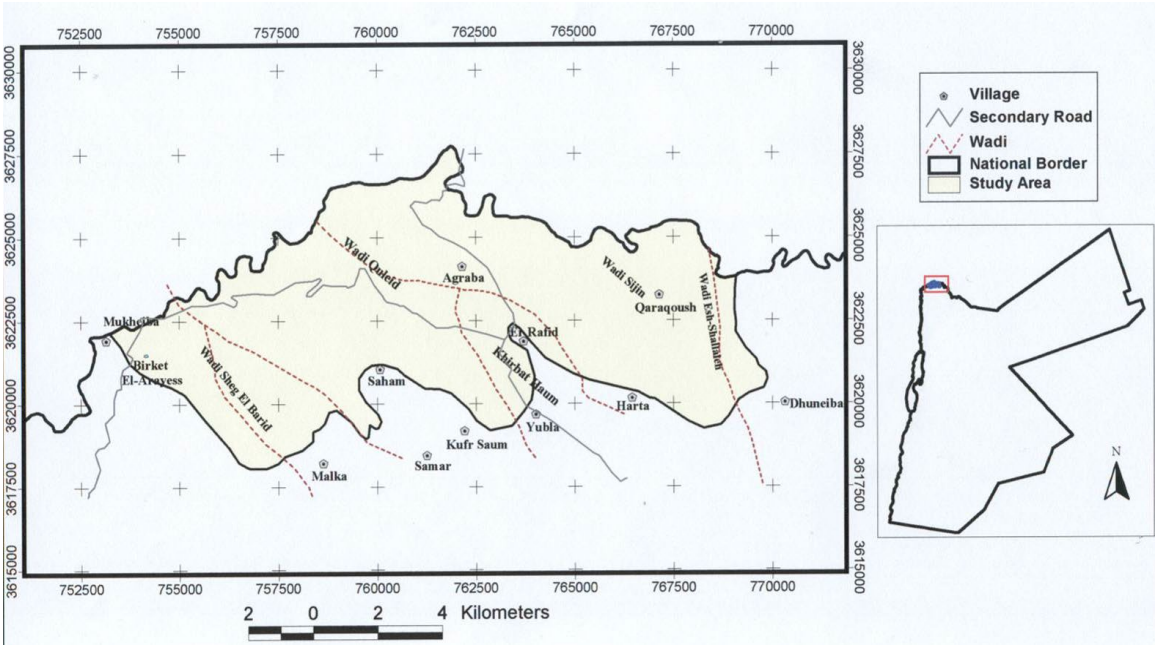


Figure 7. Yarmouk River location in Jordan.

This area comprises a steep-sided valley with a small river surrounded by Nerium and Salix thickets. There are remnant stands of deciduous oak on the slopes which are generally covered by low shrubs and used as farmland. Located on the Syrian border, the Yarmouk River was one of the least disturbed valley systems in Jordan, but water pumping and agricultural expansion are increasingly threatening wildlife and habitats.

Yarmouk is considered of very high importance in the flyways of large numbers of migratory species, including waterfowl and raptors. The site also has a high diversity of habitats and species.

Resident and breeding birds include: Marbeled Teal *Marmaronetta angustirostris* (possible), Griffon Vulture *Gyps fulvus* (non-breeding resident), Brown Fish Owl *Ketupa zeylonenesis* (possibly extinct), Sand Partridge *Ammoperdix heyi* (rare), Smyrna Kingfisher *Halcyon smyrnensis* and Pied Kingfisher *Ceryle rudis*, Syrian Woodpecker *Dendrocopos syriacus*, Hoopoe *Upupa epops*, Palestine Sunbird *Nectarinia osea*, Rufous Bush Robin *Cercotrichas galactotes*, Olivacuous Warbler *Hippolais pallida* and Sardinian Warblers *Sylvia melanocephala*, Little Swift *Apus affinis* and Spanish Sparrow *Passer hispaniolensis*.

Migrating raptors include: Honey Buzzard *Pernis apivorus* and Steppe Buzzard *Buteo buteo vulpinus* and Lesser Spotted Eagle *Aquila pomarina*. Cormorant *Phalacrocorax carbo*, Pygmy Cormorant *Phalacrocorax pygmeus*, Finsch's Wheatear *Oenanthe finschii*, Stonechat *Saxicola torquata* and European Serin *Serinus serinus* are winter visitors to the site.

Brown Fish Owl *Ketupa zeylonensis* is known to have occurred in the area as recently as of 1986.

Globally threatened species in the site include: Pygmy Cormorant *Phalacrocorax pygmaeus,* Marbled Teal *Marmaronetta angustirostris*, and Lesser Spotted Eagle *Aquila pomarina.*

Birket Al Arayes is a small pond located south-west of Yarmouk River and considered an endemic area for multiple species and home to the only freshwater turtle of Jordan. This site attracts many waterfowl and is subject to many impacts and pressures.

Birket el Araies is not included in the Yarmouk Forest Reserve, therefore, it is suggested to include this site to this reserve or at least to its buffer zone.

7.6.2. Northern Jordan Valley

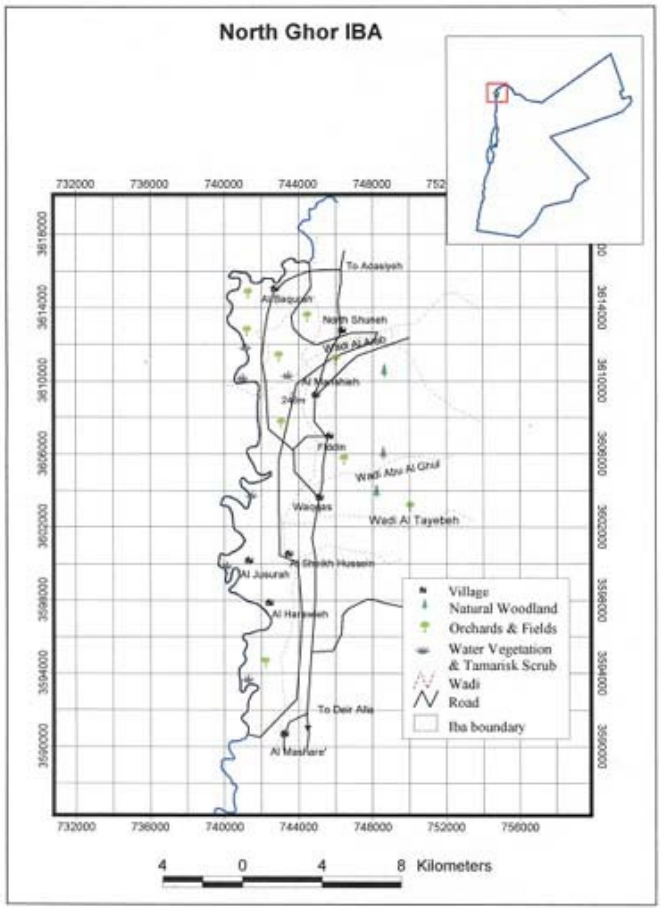
Table 16. North Jordan Valley site information**.**

Importance:	IBA (Criteria: 1, 2I, 2III, 3, 4, 5II), the stretch close to Jordan River is a biological corridor
Protection Status:	Not Protected
Sensitivity:	Medium
Rarity:	Low

This area is a flat, open agricultural plain that borders the Jordan River. Tamarisk thickets and reed beds can be found along the river. Scattered poplar and eucalyptus trees attract several species of Herons. Other birds of this site include the breeding Marbled Teal *Marmaronetta angustirostris*, Black Francolin *Francolinus francolinus*, Pied Kingfisher *Ceryle rudis* and Clamorous Reed Warbler *Acrocephalus stentoreus*. Cattle Egret *Bubulcus ibis*, Masked Shrike *Lanius nubicus* and Indian Silver bill (introduced) are usually present in neighbouring farms.

Pygmy Cormorant *Phalacrocorax pygmeus* and Egyptian Vulture *Neophron percnopterus* are non-breeding residents, while Corncrake *Crex crex*, Bittern *Botaurus stellaris*, White Stork *Ciconia ciconia* and Black Storks *Ciconia nigra*, Honey Buzzard *Pernis apivorus*, Levant Sparrowhawk *Accipiter brevipes*, Great Snipe *Gallinago media* and Syrian Serin *Serinus syriacus* have been recorded as migrants or winter visitors.

Figure 8. North Ghor location in Jordan.



7.6.3. Baptism Site – Sweimeh

Table 17. Baptism site information.

Importance:	IBA (Criteria: 1, 2I, 2III, 3, 4, 6), the stretch close to the Jordan River is a biological corridor
Protection Status:	Partially protected
Sensitivity:	High
Rarity:	High

This area is on the southern part of the Jordan River, including Wadi Al-Kharar (Baptism site) and the northern shores of the Dead Sea (c. 390 m below sea-level). Silt plains adjacent to the river are subject to occasional flooding.

The water level of the river has become very low in recent years due to over pumping for agriculture and the water itself has become rather saline. Tamarix thickets, reeds and other, subtropical vegetation dominate along the river, in side wadis and on the northern edge of the Dead Sea.

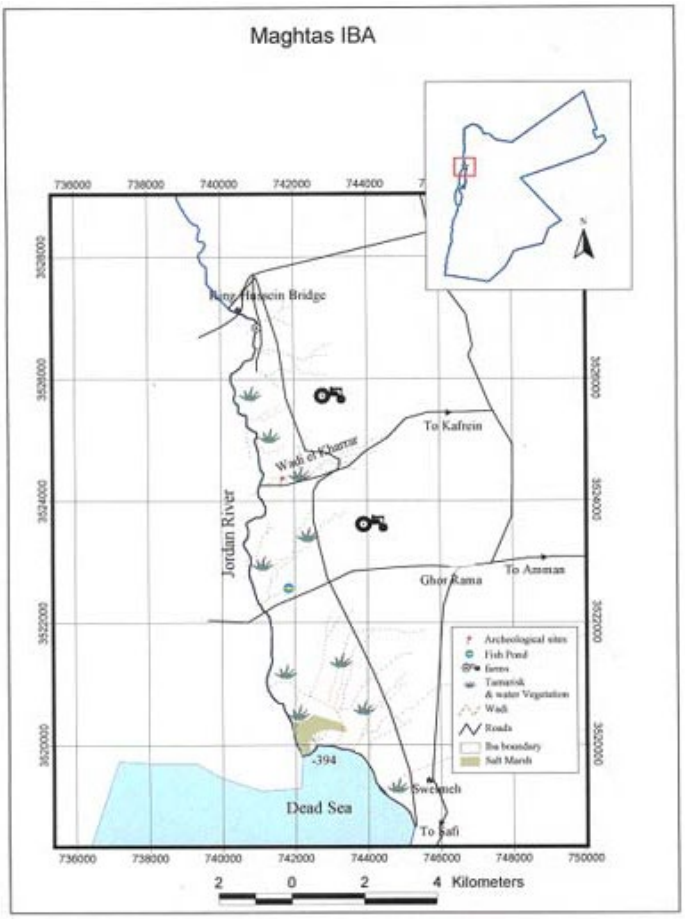


Figure 9. Location of baptism site in Jordan.

Breeding birds of the site include, Sand Partridge *Ammoperdix heyi*, Collared Dove *Streptopelia decaocto*, Turtle Dove *Streptopelia turtur*, Blue-cheecked Bee-eater *Merops superciliosus* (possibly), Hoopoe *Upupa epops*, Crested Lark *Galerida cristata*, Nightingale *Luscinia megarhynchos*, Rufous Bush Robin *Cercotrichas galactotes*, Graceful Warbler *Prinia gracilis*, Cetti's Warbler *Cettia cetti*, Sardinian Warbler *Sylvia melanocephala*, Yellow-Vented or White-spectacled Bulbul *Pycnonotus xanthopygos*, Arabian Babbler *Turdoides squamiceps*, Palestine Sunbird *Nectarinia osea*, Great Grey Shrike *Lanius excubitor*, Indian Silverbill (introduced), House Sparrow *Passer domesticus*, Spanish Sparrow *Passer hispaniolensis*, and Dead Sea Sparrow *Passer moabiticus*.

Other non-breeding residents or visitors include Marsh Harrier *Circus aeruginosus*, Egyptian Vulture *Neophron percnopterus* and Cattle Egret *Bubulcus ibis*, while the White Stork *Ciconia ciconi* and Corncrake *Crex crex* have been recorded as spring migrants.

The area is close to Jordan River with very limited access, which is an advantage for such an important area in terms of biodiversity. The Site is known as part of the Sudanian-penetration ecozones occurring in the rift valley and characterised by aridity and high temperatures, and a salty soil type forming the marshes.

The serenity and naturality of the site could fade due to pollution problems from the accumulation of solid and liquid wastes in different parts of the site by tourists and others. Fires and direct destruction of vegetation by campers and vehicles adds to the problem of uncontrolled tourism.

Grazing is seen as one of the major problems affecting the site. Irregular grazing and movement of animals have badly affected the status of the ecosystem in various aspects causing disturbance to wildlife.

Development of tourist infrastructure might lead to the introduction of exotic and invasive species and this could affect the naturality, rarity and diversity of species in the site.

The natural primary vegetation should remain untouched, as this wood of tamarisk is an endemic plant of Jordan.

Due to the global, regional and local importance of the site, it was declared a Cultural World Heritage Site by UNESCO in 2015. Although a great achievement for Jordan, the natural heritage importance of the site is yet not well recognised by management authorities.

8. Social assessment

9. Socioeconomic Profile of Target Area

9.1. Geography and demography

The Jordan Valley forms part of the larger Jordan Rift Valley. The internationally-recognized World Heritage value of the Jordan Valley is strongly related to its unique historic, religious, cultural, economic, and environmental context. The lower part of the Jordan River (LJR) originates at the Sea of Galilee and meanders along 200 km down to the Dead Sea through the Jordan Valley. Climatically, the Jordan Valley is characterized by hot dry summers and mild wet winters, becoming progressively drier moving southward through the valley towards the Dead Sea. Climate change impacts are likely to intensify the water supply-related problems in the Jordan Valley. The northern part of the East Bank of the Jordan Valley will be most adversely impacted by climate change, with a foreseen substantial reduction of annual and winter rainfall, although summer rainfall will increase slightly.

The study area is home to a population of ~539,100, with the total number of households in the Jordan Valley estimated at ~108,960. The population growth rate for the Jordanian section of the study is estimated at 2.2%. These population statistics have been obtained through the Jordanian Department of Statistics (DOS) 2018.

Table 18. Estimated population in the study area (2018).

District	Male	Female	Total
Al Arda sub district	**9,100**	**7,790**	**16,890**
Ain Al Basha	**100,390**	**90,450**	**190,840**
AL showneh al janobeyeh	**31,600**	**25,330**	**79,350**
Al Aghwar al shamaleyeh	**70,720**	**61,380**	**132,100**
Bani kinana	**72,160**	**70,170**	**142,330**
Total	**283,970**	**255,120**	**539,090**

The country is host to a large population of refugees from neighbouring countries, of which 48% are children and 4% are elderly. In Jordan, 85% of the population lives below the poverty line (US$96 per individual per month), which is similar to that of Syria. The gender percentage in the Jordan Valley is (57.6%) and the average illiteracy rate is 12.6%. Labor force participation for males is 63.4% in Jordan — significantly higher than the female population (17.8%). Consequently, it is critical to develop a gender-sensitive selection criteria for beneficiaries, which takes into account aspects of diversity in capacity building and awareness.

About the Jordan Rift Valley (Area of Indirect Impact (AII))

The Great Rift Valley is a globally important ecological corridor and the Jordanian section represents a strategically crucial component, since it is a major flyway between Africa and northern Europe used by millions of migrating birds each year. The sharp physical boundaries of the Jordan Rift Valley, clearly visible from the air, provide a navigational guiding system for these birds and the habitats it contains provide vital resting and refueling stations, without which they would be unable to complete their long journeys. Not surprisingly, Birdlife International's document on Important Bird Areas in the Hashemite Kingdom of Jordan (2000), suggests 27 sites for Jordan of which 17 are located in the Jordan Rift Valley.

The Jordan Rift Valley is an integral part of the Great Rift Valley and provides a globally critical land bridge between Africa, Europe, and Asia. This area supports a large variety of ecologically diverse habitats of international importance, and funnels millions of migrating birds between these continents each year.

The Jordan Rift Valley is of strategic, economic importance, linking several countries which share many of its natural resources which include the Jordan River, Dead Sea, and Gulf of Aqaba. Its critical geographical location and great scenic interest combined with the most productive agricultural land resources in Jordan has made it a focal area for land conversion and infrastructure and touristic development. These activities and climate change threaten its unique landscapes and their associated ecological and cultural values, as well as their economic potential and role in national development.

The Government of Jordan (GOJ) has long recognised this dilemma and is seeking ways to secure the Valley's economic and ecological integrity for the benefit of its people.

About the Jordan Valley (Area of Direct Impact (ADI))

This area is located within the jurisdiction of the Jordan Valley Authority as defined in its special law (number 18) for the year 1977. As defined in the JVA law, the target area covers all areas lying under 300 meters above sea level and starts from the northernmost tip of the Dead Sea up to Yarmouk in the north.

The Jordan Valley is located over two major water basins which are the Zarqa and Yarmouk basins. In terms of bio-geographical zones, it is shared between the Sudanian-penetration zone and the Irano-turanean zone. The vegetation is represented by freshwater, saline and Mediterranean non-forest vegetation types. However, a considerable habitat alteration has happened in the western parts where it has been largely transformed into intensive agricultural fields.

Selection of the Target Area (ADI)

The starting point for the project formulation was to look at the broader geographic context of the proposed intervention. To this aim, the project formulation team identified and examined the entire Jordan Rift Valley (JRV) as the landscape to be targeted as the Area of Indirect Impact (AII). The JRV runs for ~370 km from Yarmouk in the north to the Gulf of Aqaba in the south of Jordan. The next step was to select the specific intervention area (the Area of Direct Impact) within the Jordan Rift Valley for project implementation.

Potential implementation sites were evaluated for suitability using the criteria presented below. Each criterion had several sub-criteria against which each potential site was scored. The final selection of implementation sites was reliant on the scores awarded to each site, as well as on consultations between the Ministry of Environment, UN Environment and the project development consortium, with support from C4 EcoSolutions. Site visits were then organised to validate the selection and collect information which would be used to inform the design of site-specific interventions.

A simple multi-criteria analysis was used to rank and prioritise potential intervention sites within the Jordan Rift Valley. A selection of potential sites was identified within this landscape. A separate analysis was completed for each potential site, allowing for the objective comparison and selection of sites for each ecosystem. The analysis adopted five main criteria, as follows:

1. Community vulnerability to climate change — it was given a weight of 40% and included the following sub-criteria:
    a. Current climatic threats.
    b. Predicted climatic threats.
    c. Non-climatic threats.
    d. Dependence on local ecosystems.
    e. Availability of alternative livelihoods.
    f. Access to basic services and infrastructure.
    g. Recipients of previous and ongoing external assistance.

2. Ecosystems — it was given a weight of 20% and included the following sub-criteria:
    a. Presence of vulnerable or unique ecosystems.
    b. Ecosystem health.
    c. Essential ecosystem services.
    d. Climatic threats.
    e. Non-climatic threats.

f. Ecosystem prioritised in government policies, plans and strategies.

3. Number of potential beneficiaries — it was given a weight of 15% and included the following sub-criteria:
   a. Population size of local communities.
   b. Population size of neighbouring communities.

4. Potential to build on past or ongoing project — it was given a weight of 15% and included the following sub-criteria:
   a. Project and initiatives being implemented in the same area.
   b. Project not conflicting with the objectives of other past or ongoing projects.

5. Potential for stakeholders' support and/or buy-in — it was given a weight of 10% and included the following sub-criteria:
   a. Local government.
   b. Private sector.
   c. Local communities in general.
   d. Traditional authorities.
   e. Community based organisations (CBOs).

A four-step process was used to objectively rank sites for selection, including assigning weights to individual selection criteria, the initial selection of potential sites, prioritisation of potential sites against the criteria and the finalisation of the selection of appropriate sites.

Based on the above the project development consortium with support from the NDA, UNEP, and C4 EcoSolutions decided that the Area of Direct Impact under the project will be the Jordan Valley Landscape and the Area of Indirect Impact will be the wider Jordan Rift Valley Landscape. See Annex 1 for details on the site selection process. Figure 10 below shows the location of the target area with the possible project intervention localities.

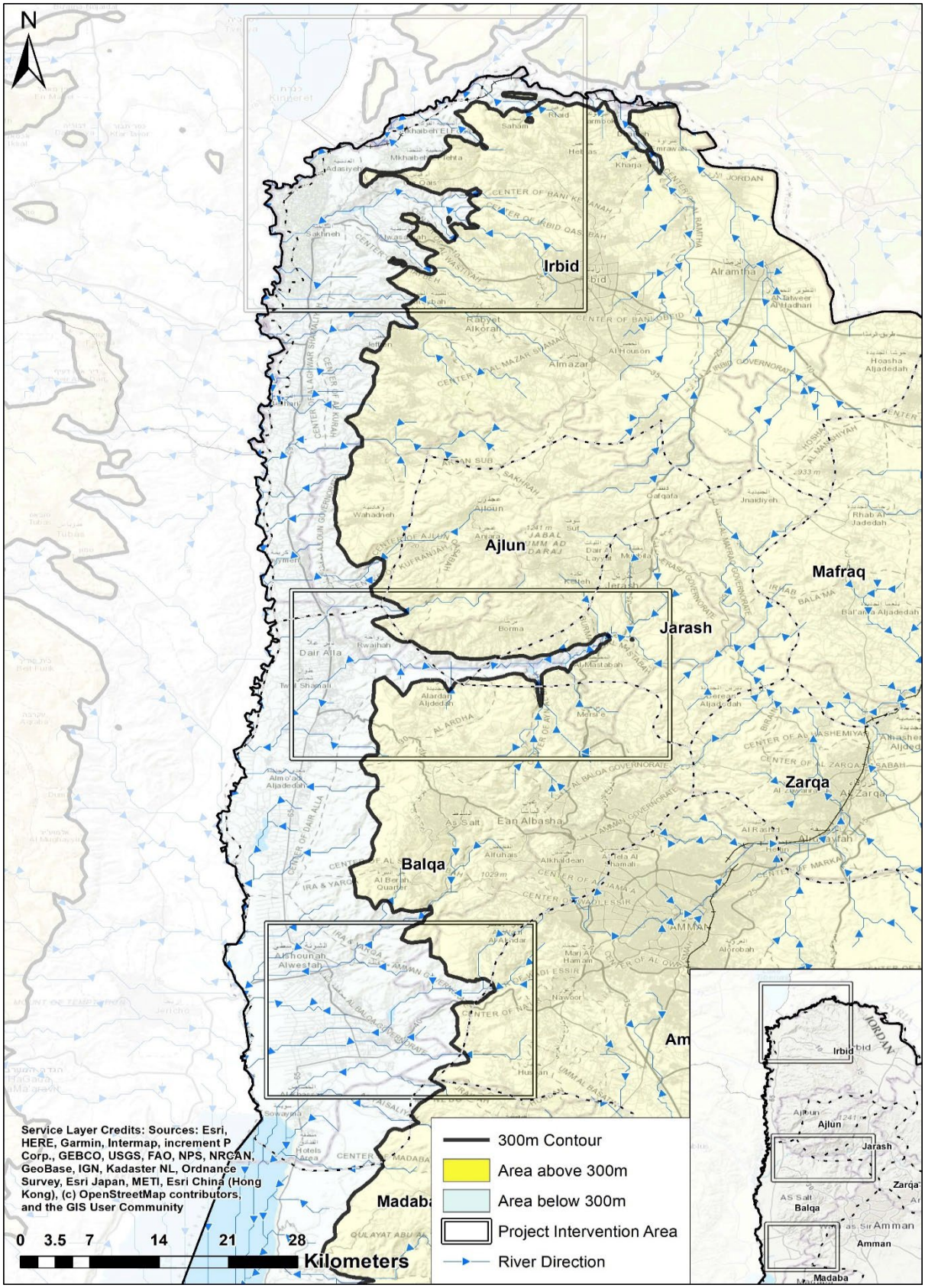


Figure 10. Project intervention areas: Yarmouk (north), King Talal Dam (centre) and Kafrain (south).

9.2. Unemployment and labour force

In the second quarter of 2019, the labor force participation rate in Jordan decreased to 34.60% from 35.10% in the first quarter of the same year. The labor force participation rate in the country averaged 37.13% from 2017 to 2019, reaching an all-time maximum of 40.60% in the first quarter of 2017 and a record low of 34.60% in the second quarter of 2019[31]

Table 19. Labour force participation 2019[32]

Labour Force	**2019**
Unemployment Rate (%)	19.2
Population (Million)	10.31
Employment Rate (%)	28
Labor Force Participation Rate (%)	34.6

Table 20. Unemployment rate disaggregated by male and female[33]

Sex ,Nationality	**Unemployment Rate**
	%
Grand Total	17.8
Male	16.5
Female	24
Jordanian	19.2
Male	17.1
Female	27.2
Non-Jordanian	15.2
Male	15.6
Female	11.2

Employment in the public sector allows greater flexibility, enabling the balancing of demands, which attract women for employment. Many employers are looking to fill manual labor-related posts that require lower qualifications, which do not match those of the growing educated female population. However, private sector employers — mainly men who value traditional gender roles — tend to see women's domestic responsibilities as a constraint in hiring. Not only do they assume that female employees will be less reliable, taking time off for household-related priorities, but labor laws also require them to bear additional costs related to child care when they employ several women.

This has contributed to gender discrimination in hiring practices and salaries in the private sector, which include non-hiring of married female employees, lower wages and shorter contracts, to avoid costs related to social and medical benefits.[34]

9.3. Labour and Migrant Labor

The Jordan Valley accommodates a large number of informal foreign workers mainly from Egypt and Iraq, and some refugees from Syria. A major constraint for these workers is working permits. While some do have working permits in different sector such as construction, employment in other sectors (such as agriculture) violates Jordanian Labor laws. Others (particularly Syrians) don't have any working permits.

[31] https://tradingeconomics.com/jordan/indicators
[32] Source DOS 2019
[33] Source DOS 2019

[34] https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_622766.pdf

The government of Jordan started issuing limited numbers of working permits to Syrians, but the majority of these people working in agriculture are not doing so legally. This can result in exploitation of these workers, as they are sometimes deprived of their wages after finishing their work or they are only given a part of the salary that was initially agreed upon. Impacts of increased workforce employment are assessed as having positive impacts. Risks of Trafficking in Persons (TIP) as a result of forced labor and/or child labor is assessed as having medium significance.

9.4. Education

Despite many achievements, the Government of Jordan (GOJ) recognizes that the quality of education remains unevenly distributed and not competitive by international standards, particularly in poorer urban and rural areas. Low early-grade reading and math literacy rates impair later academic success and completion. Poor learning environments, particularly in boys' schools, exacerbate an already underperforming school system. Pressures of a growing, young population, migration from private to public schools, and an increasing Syrian refugee population put additional stress on the public system's facilities, particularly in disadvantaged areas.

The number of students in the target area reached 126,104, of which 118,406 are Jordanians and 7,698 are non-Jordanians — representing 6.1% of the total enrolled students. On the other hand, the targeted area schools reached to 461 schools, 113 male/boys schools and only 40 female/girls representing 9.4% of the total schools. Most of the schools in the study area are mix schools; boys and girls for the 6th grade as shown below:

Number of Schools in the targeted area

The average illiteracy rate for the governorates in which the study areas are located is 6%, where the highest rate is in Balqa (Ain Al Basha, Al Ardda, Al shouneh al janobeyeh), at 7.2% and particularly among women, as shown in Table 21 below.

Table 21. Illiteracy rate in the target area.

Governorate	*Male*	*Female*	*Ratio*
Balqa	4.2	10.2	7.2
Irbid	2.3	7.2	4.75
Jarash	3.1	8.8	5.95
Average	3.2	8.7	6.00

One of the proposed project interventions involves improved access to and use of clean water for domestic use at the project's three target sites (including homes, schools and community centers). Social impacts such as physical and psychological strain to women resulting from concerns on mobility, workers, during construction works is assessed as having medium significance.

In addition, social impacts such as potential increases in noise levels when construction takes place in the schools or household — which may cause stress for students by affecting their ability to concentrate — is assessed as having medium significance. In addition, impacts to residents, CBOs and schools caused by the duration of construction activities and timing of these activities during certain times of the day are assessed as having medium significance.

Regarding gender aspects, a gender-sensitive selection criteria should be developed for the project beneficiaries taking into account women-headed households, women CBOs and girls' schools. Although the gender action plan recommended actions to ensure gender equality, some factors will be not within the control of those responsible for the projects implementation.

9.5. Agriculture

Approximately 90% of Jordan's land is arid, with annual rainfall of less than 200 mm. Jordan has limited forest resources, at approximately 1% of the country's surface area. The agricultural sector is

concentrated in the northern and western highlands, and the most productive areas are in the Jordan Valley.

Jordan's agricultural sector comprises arable crops (45%) — the main agricultural products being wheat, barley, olives, grapes, and almonds — and livestock (55%), with sheep and goats being the most important livestock breeds.

The agricultural sector in Jordan strongly relies on migrant labor. 28% of the migrant labor force — totaling approximately 300,000 workers — are engaged in agriculture. The majority of these workers are from Egypt. Paid labor accounts for 77% of all labor in rain-fed areas, but only 22% of labor in irrigated areas.

The traditional socio-cultural values prevalent within the country have resulted low levels of participation of women in agricultural activities. Although there has been a trend toward greater participation of communities in natural resources management in Jordan, women have largely been excluded from decision-making. This may result in economic benefits from the proposed project accruing unequally to men.

The agricultural sector in Jordan has the highest proportion of informal workers compared to other sectors. 16% percent of women who work in the agricultural sector are informally employed — significantly higher than the proportion of men (5%). Women in Jordan are also actively involved in home-based agricultural activities, typically managing small homestead gardens and looking after the family plot[35].

While agriculture remains a critical livelihood for farmers in rural areas, their overall dependence on it has declined. This is partly the result of chronic water shortages and, with the drop in subsidies and deteriorating natural resources, fewer livestock holdings remaining. In addition, poor rural households may rely on their children for temporary assistance on farms rather than hiring outside labor. Poor women may also find casual daily work on large farms, while some households rely on domestic gardens for family consumption.

Women who engaged in agricultural activities in the past 12 months were found to be relatively young (56% aged 18-40 years), usually married with children (79% married and 73% reportedly have children), and with low levels of education (31% completed only up to primary education, 35% are illiterate)[36]. In addition, home-based agriculture was found to be the most common type of agricultural activity for women 73%. Agriculture is more common among Jordanian women (at 97%, compared to 3% of Syrians), because of their family's ability to own land. However, most Syrian women (68%) also reported having engaged in home-based agriculture prior to their displacement, which indicates that they have a background in these activities and therefore could benefit from the project activities.

While some social factors that are not under the project control may affect the GAP implementation, it was developed to ensure equal participation in the project activities. However, it is very important not to exclude women working in the agriculture sector from the benefits of the project activities.

9.6. Poverty Profile

Despite the national efforts towards combating poverty in Jordan, the number of poor Jordanian continues to rise and poverty rates remain high[37]. According to DOS statistics the poverty rate reached 14.4% in 2010[38]. Moreover, marginalized groups and minorities in Jordan are more likely to experience poverty and gaps in services.

The poverty line stood at JD 56.7 per month (~US$80) per capita or JD 323/month (~US$455) for an average sized family of 5.7 members. This means that a household needs to spend at least JD 3,876

[35] https://www2.unwomen.org/-/media
[36] https://www2.unwomen.org/-/media
[37] http://www.labor-watch.net/uploads/en_labor-watch.net_636391762891727913.pdf
[38] The most resent official numbers and ratios of poverty were in 2010 , the government didn't publish any updated figures , therefore , the study used these figures as it is the only updated official numbers that we can get .

(~US$5460) per year or JD 323 (~US$455) per month to meet its assumed basic needs. Because of differences in food and living costs in the different governorates, the national poverty line is broken down to governorate level, where it varies. It is highest in Amman, at JD 703 (~US$990) and lowest in Mafraq and Jerash, at JD 656 (US$925)[39] as shown in Table 22 below.

Table 22. Poverty Rate by Governorate 2010.

Governorate	Poverty Rate %
Amman	11.4
Balqa	20.9
Zarqa	14.1
Madaba	15.1
Irbid	15
Mafraq	19.2
Jerash	20.3
Ajloun	25.6
Kerak	13.4
Tafileh	17.2
Maan	26.6
Aqaba	19.2
Kingdom	14.4

One third of Jordanian women and children suffer from various forms of anaemia, the figure reaches over 40% in the poorest governorates of Kerak, Ma'an and Tafila and in the Jordan Valley. Anaemia in women reaches alarming levels in the Jordan Valley and Wadi Araba.

Jordan faces a reverse inequality gap between men- and women-headed households. The bottom quintiles of the income distribution have the largest share of male-headed households (90 percent). Education and income display the typical relationship where poorer quintiles have less educated heads of households[40].

Concurrently, 86% of registered Syrian refugees live below Jordan's poverty line, and many refugee families rely on international assistance to meet their needs.

Poverty is likely to have been rising in Jordan as a result of rising inflation, unemployment and sluggish growth. Jordan has not released poverty estimates since 2010 because of issues with data quality for the 2013-14 Household Expenditure and Income Survey (HEIS).

9.7. Social structure and gender norms

The status of Jordanian women has improved in recent years, particularly when it comes to access to education and health care, as well as legislation intended to protect women's rights both inside the home and at the workplace. Jordan has invested heavily in health and education which benefits all citizens. Women's enrollment in school rose across all income groups, child health Indicators — such as immunization and infant mortality rates — have improved, and fertility rates have declined. These factors indicate an improved health status of women. In addition, the representation of women in decision making and leadership positions in political life is greater today, largely because of the increased quota for females in parliament (from 6 to 15). Women have also been appointed to various leadership positions in public and private sectors.

In the 2020 Global Gender Gap Index report launched by the World Economic Forum (WEF), Jordan was ranked 138th out of 153 countries. While Jordan's overall position on this index has stayed the

[39] DOS statistics 2010
[40] https://www.undp.org/content/dam/jordan/docs/Poverty/UNDP

same, the country's overall score has improved by 0.012 points since 2006 and by 0.018 points since 2018. Positive improvements were noted in two of the four categories, namely "Educational Attainment" and "Political empowerment", by 0.012 and 0.073 points, respectively. However, the country's ranking for both categories has declined, with "Educational Attainment" decreasing from 70th to 81st position and "Political empowerment" from 100th to 113th. Despite recent advances, women's economic and social opportunities are still fewer than those of men. This inequality stems from discriminatory legislation and entrenched patriarchal norms that curtail women's freedom and autonomy. The second area was the "Health and Survival" index, rising 11 ranks to reach the 102nd placement. country's score for "Health and survival" has decreased to 0.971, from a score of 0.975 in 2006, with a significant drop in ranking from 62 to 103rd. Moreover, "Economic participation and opportunity" also decreased, from 0.442 in 2006 (105th position) to 0.408 (145th position).

Data for 2018 also showed a significant finding, which is that the proportion of women married by the age of 25 was 30%, while it was 7% for men (updated data for 2020 are not available for this indicator)[41]. The economic situation and the perceived shortage of job opportunities, particularly for youth, has a critical chain of social impacts. Young men cannot consider marriage until they are in a position to provide for a family, and unemployment or insecure employment contribute to the rising mean age of marriage.

In Jordan, Gender-based violence (GBV) and sexual exploitation and abuse (SEAH) are additional pressing concerns for women in particular. Jordan, like many countries, grapples with traditional gender norms that can perpetuate unequal power dynamics, contributing to the justification and normalization of violence against women. Discrimination in access to education and employment opportunities and participation in decision-making processes as described above can leave women economically vulnerable, limiting their ability to break free from abusive situations. Cultural attitudes and practices may, at times, tolerate or overlook such violence. Additionally, in Jordan, the impact of the Syrian refugee crisis has heightened the risks, with displaced populations facing increased vulnerabilities. Insufficient legal frameworks and challenges in enforcement contribute to the persistence of GBV and SEAH. Concerted efforts have been made to address gender-based violence (GBV). Legal reforms have been enacted to enhance the protection of survivors, complemented by the development and implementation of national action plans targeting violence against women. The country boasts shelters and support services provided by both governmental and non-governmental entities, offering survivors counseling, legal aid, and vocational training and Initiatives to raise awareness and promote gender equality have been integrated into educational programs and community outreach. Despite these efforts, GBV and SEAH remain a significant problem within the country with as many as 75% of women reporting harassment in the workplace[42].

The dominant and largest type of social grouping in Jordanian society is the tribe, which plays a large role in society control and power — particularly in rural areas. This also applies to the study area localities and this structure may influence local communities towards specific actions. Women within the tribal communities face some cultural and social constrains such as limited mobility and access to resources, in addition to limited decision-making power[43].

Women tend to use and manage land and other natural resources, while meeting water, food, and energy needs in households and communities. However, more efforts are needed to remediate restrictive social norms and implement measures such as awareness campaigns, to promote joint-ownership of land for married couples and ensure women's legal rights are realized. Implementation of new measures to protect women's inheritance — both in terms of movable and immovable property — can also be in combination with education and awareness campaigns relating to these new measures. Additionally, empowering women as leaders in the agricultural sector and climate smart agricultural techniques, acquiring business skills and market connections, and ensuring access to credit can help to increase household food security and enhance economic participation in their communities[44]. It is

[41] World Economic Forum. 2019. Global Gender Gap Report 2020. Available at: http://www3.weforum.org/docs/WEF_GGGR_2020.pdf

[42] Plan International & Solidarity is Global Institute – Jordan. (2021). *The Protection of Women and Girls in Jordan: A Women's Rights Assessment Report.* Available at: https://plan-international.org/uploads/sites/19/2022/02/a_report_assessing_the_rights_of_girls_and_young_women_in_jordan.pdf

[43] https://www.bau.edu.jo/UserPortal/UserProfile/PostsAttach/75796_1588_1.pdf

[44] https://www.land-links.org/wp-content/uploads/2018/06/USAID_Land_Tenure_Profile_Jordan.pdf

therefore of critical importance for gender-sensitive engagement strategies that takes into consideration the cultural norms to be identified and developed to respond to their needs and priorities, which enables them to actively engage in the environmental and humanitarian challenges caused by climate change.

Another concern in relation to GBV and SEAH in Jordan is the relative dearth of institutions that routinely work to protect women's rights and survivors of SEAH and GBV. Despite the legislative changes that have been implemented, which have included laws preventing domestic violence, and the ratification of international conventions, (such as CEDAW) the implementation of such practices remains limited.

There are, however, a number of relevant organizations that are actively working towards addressing GBV in Jordan. These include:

i) **The PSEA Network in Jordan** is the primary body for promoting awareness, prevention and oversight on SEA by international and national personnel of the entities providing humanitarian services to refugees in Jordan.

ii) **Arab Women Organization of Jordan** which is Aa ordanian local women's rights organization for gender equality, and the empowerment of women and girls. AWO advances women leadership and solutions towards political, social and economic empowerment that promote women status.

iii) **Jordanian's Women Union:** The Jordanian Women's Union (JWU) is a prominent non-governmental organization (NGO) in Jordan dedicated to promoting women's rights and gender equality. It was founded in 1945, making it one of the oldest women's organizations in the country. The JWU works on various fronts, including advocacy, awareness-raising, and providing services to support women's empowerment and combat gender-based discrimination and violence.

iv) **ActionAid Arab Region** ActionAid is an international non-governmental organization (NGO) that operates in various countries around the world, including Jordan. It focuses on addressing poverty and injustice by supporting marginalized and vulnerable communities, particularly women and girls. ActionAid's work encompasses a wide range of issues, including women's rights, education, economic empowerment, governance, and humanitarian assistance.

v) **The Housewife Association (HSF)**HSF is ActionAid's women-led partner active in Jordan that is leading the Women Safe Space in Zarqa and Mafraq as a part of an ActionAid Initiative.

vi) **Karama or El Karama**: An NGO based in Cairo, with an office in Amman, Jordan, and operating throughout the Arab region. The organization aims to end all types of violence against women in the Arab region and South Sudan, and to ensure that women are able to participate fully in the decision-making processes that affect them.

In addition to the organizations listed above, there are also several active survivor-centered support networks, that focus specifically on supporting survivors of GBV and SEAH. These organizations/networks include:

i. **Jordanian Women's Union:** This association works to provide protection services to abused women and women exposed to violence through the development of a set of programs that established specialized protection services. These programs came in response to women's needs and to fill the gap in this type of services, especially in areas outside the capital. They have multiple programs of support for survivors. They have an Abused Women's Guest House (Women's shelter) & a Child Guest House. They offer a reproductive health clinic and family counseling. They importantly have a legal, psychological and social (Hot Line) program through which many of the women using their services seem to find them.

ii. **The Family Protection and Juvenile Department:** Focuses more on arresting the perpetrators of sexual exploitation and providing technical support to the judiciary. They also focus more on cases of sexual exploitation on the internet. Strengthening the protection system by providing specialized security and sectoral services based on the needs of the abused without discrimination, in cases of domestic violence, violence against children, gender-based violence, sexual assault and juvenile delinquency, in a way that achieves the best interest of the family and the child through qualified and specialized cadres using the latest technologies and within the highest standards Privacy and confidentiality.

iii. **UNFPA Jordan:** UNFPA supports comprehensive, survivor-centered responses in humanitarian and development settings through quality health, social and justice services. At the core of UNFPA's approach are the right to safety, confidentiality, non-discrimination and self-determination for all survivors. UNFPA Jordan works in partnership with international, national and community-based partner organizations to support women and girls safe spaces across the Kingdom. In the Women and Girls Safe Spaces (WGSSs), women and girls can access non-stigmatizing GBV response and prevention services including access to case management services (virtual and in-person), referrals, psychosocial support, awareness raising, counseling, life skills and empowerment activities. UNFPA extends support to women and girls and communities with 17 WGSSs with 5 centers in Syrian Refugee Camps (Zaatari Camp and Azraq Camp), and 11 centers in host communities in Amman, Zarqa, Irbid, Mafraq, Balqa, Madaba, Karak and Tafilah.

9.8. Marginalized and vulnerable groups

Jordan as a country has a high degree of homogeneity, especially in terms of language, religion and descent, with ~97% of the population subscribing to Islam, and 94% defined as Arabs almost half of whom are estimated to be descended from local Bedouin tribal groups. The country is, however, also home to several marginal groups. These groups include a number of Indigenous Tribal Bedouin still practicing traditional semi-nomadic livelihoods, several minority groups and a large population of refugees and stateless persons.

The huge refugee population in the country is largely as a result of Jordans geographic position, geopolitical instability across its neighboring countries and it's generally accommodating stance towards refugees in the past. Jordan's location at the crossroads of the Middle East makes it a refuge for those fleeing conflicts, yet it also intensifies the socio-economic disparities and contributes to an environment in which other social risks become more common, such as trafficking in persons (TIP), child labour, forced labour and an increased incidence of SGBV.

As a result of this recent geopolitical instability, Jordan has become home to around 750,000 refugees, although these numbers may be greater in reality and UNHCR estimates suggest the number could be in excess of 1,3 million, which is more than 10% of Jordans population. This influx has strained resources and posed challenges in providing essential services and support to the displaced population. Most of these refugees are from Syria, but there are additionally sizeable populations of Iraqis, Yemenis, Sudanese and Somalis. These groups routinely face discrimination, including tenure insecurity, economic exclusion, travel restrictions, poverty and a lack of basic services. For example, according to UNHCR 83% of Syrian refugees who don't reside in camps live below the poverty line and approximately 30% were threatened with eviction in 2022. These groups are often forced to resort to negative coping strategies (including cutting meals and engaging in child labour) to meet their basic needs, which exacerbates their vulnerability and puts them at severe risk of exploitation. These groups, are largely concentrated in the north-west, and data from 2020 suggests that many members of these groups reside within the project footprint (Figure 11).

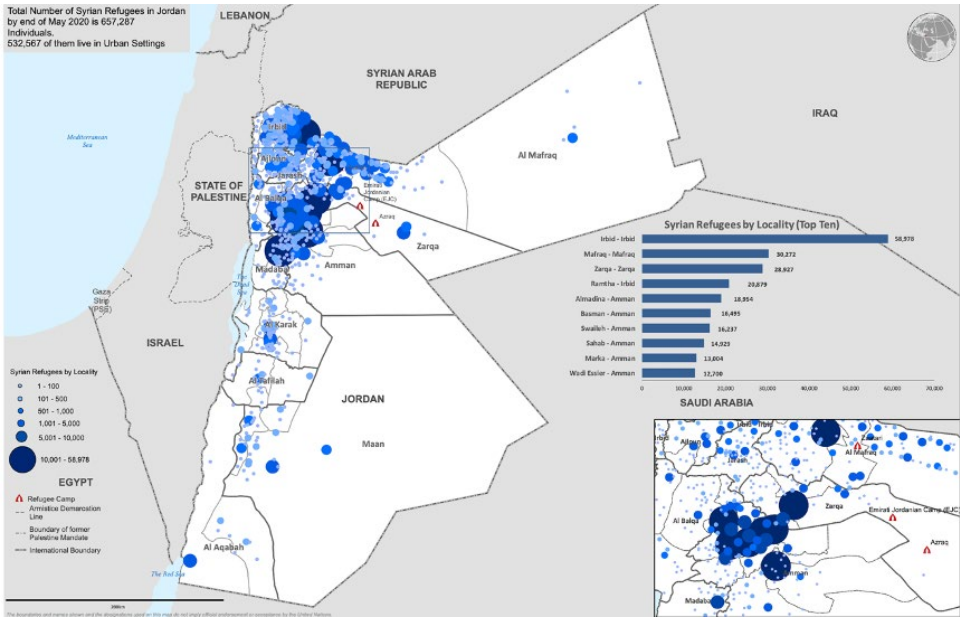


Figure 11: 2020 Syrian Refugee Distribution according to UNHCR

In addition to the refugees described above there are large populations of naturalised and stateless Palestinians residing in Jordan. They number excess of 2.2 million according to UNRWA registration data, most of whom were displaced following the establishment of Israel in 1948 and again following the 6-day war in 1967 — although migration has continued up into the present day. While Palestinians were automatically granted citizenship up until the late 1980s, this privilege has since been revoked and while the majority of Palestinians have been naturalised and incorporated into the economy, more than 350,000 reside in discrete refugee camps. Despite the large proportion of Jordanian citizens claiming direct Palestinian descent (as much as 50%) they are still under-represented in government and experience discrimination in various aspects of their lives, most notably through economic and political exclusion. Palestinians are also overwhelming located in the north-west of the country, with large populations in both the Jordan Valley and Amman, which are two of the three proposed sites for the project.

Amidst challenges relating to refugees and displaced persons, the indigenous, and traditionally nomadic Bedouin communities confront issues linked to urbanization and modernization, threatening the preservation of their unique cultural heritage and their intrinsic connection to the desert landscapes. Almost half of the Arab population is Jordan is described as having local Bedouin tribal origins, but it is estimated that only 1-2% of the Bedouins still practice traditional nomadic lifestyles, with most choosing to follow a hybrid lifestyle. This means that most Bedouins are semi-nomadic (I.e., practice agriculture in addition to pastoralism) and engage in economic activities outside of their traditional practices. There are, however, a small population of pastoral Bedouins who claim a tribal identity, live as true nomads and adhere exclusively to tribal customary practices and law. As a result of the broad flexibility and identity afforded this group and given the large number of Bedouins no longer adhering to traditional livelihoods, estimating the population of 'indigenous' or traditional Bedouin is not feasible beyond the broad estimate of 1-2% of the total Bedouin population. Similarly identifying the locality and distribution of these groups is not possible via desktop analysis, given that they are in many cases nomadic and not differentiated in any current census data

Rural populations in the country are also highly vulnerable, as poverty is more prevalent in these often-arid areas and living conditions are extremely challenging. Women-headed households, as well as large households with low levels of literacy, sick or elderly persons and limited or uncertain tenure rights are amongst the most vulnerable in the country. The intersection of these various marginalized groups creates complex dynamics, which justify the need for an inclusive approach that acknowledge the distinct challenges faced by different stakeholder and communities while fostering social and economic integration. For example, security of land tenure and labour rights are two of the most prominent challenges facing these marginalized groups in Jordan. Both of these challenges generally have the greatest impact on those who are most vulnerable and occupy positions on the periphery of society, limiting their capacity to seek formal acknowledgement or restitution.

Inclusion of these groups in the proposed project is a priority covered under GCF's commitment to giving due consideration to vulnerable populations, groups, and individuals (including women, children, and people with disabilities, and people marginalised by virtue of their sexual orientation or gender identity), local communities, indigenous peoples, and other marginalised groups of people and individuals. This is additionally a priority for the project AE, as evidenced by 2 of UNEP's Guiding Principles (GP) and one of their ESS Standards under their ESSF, including GP2 relating to engagement with underrepresented and marginalized groups and GP10 relating to inclusion of underrepresented and marginalized groups in project benefits as well as Standard 7 relating to Indigenous Peoples. Therefore, discrete actions targeting the inclusion of refugees and other minorities in project activities is of a high priority. These groups are usually the most vulnerable, lacking the protections and rights afforded to Jordanian Citizens. As a result of this, incorporating their needs into the project via accurate mapping and engagement is the most effective manner in which to ensure that the proposed project is implemented in accordance with both GCF's Environmental and Social Standards and UNEP's ESSF.

The project had developed a dedicated Indigenous Peoples Planning Framework (IPPF), to ensure adequate engagement and inclusion of indigenous Bedouin groups. This is of particular importance given the nomadic lifestyle of Bedouins, and the likely overlap between their large rangelands and the landscapes in which the project seeks to implement rehabilitation. Ensuring inclusion of other marginalized and underrepresented groups will be operationalized via this ESMF (Annex 6) and the SEP (Annex 7). This approach will entail increased focus and reporting requirements on identification and engagement with vulnerable, marginalized or underrepresented groups via the SEP to ensure their inclusion in decision making regarding project-related processes. The outcomes of these focused engagements will be utilized for the implementation of specific actions to include these groups as project beneficiaries, which are detailed in Table 18.2 of this ESMF.

9.9. Land Tenure

In Jordan, land ownership is categorized into three types: privately owned (Miri and Mulk) land, tribal land (Wajehat El-Ashayeria), and state land (Al mawat), which allow for free access to all resources on lands owned by the State and notably includes most of the rangelands of the country. The Agricultural Law, established in 2015, nullified tribal lands, transferring management authority to the Ministry of Agriculture. However, despite this shift tribal groups continue to make *de-facto* claims and/or claim use rights on their traditional areas, despite these groups not having formal tenure arrangements. These former tribal lands are often transferred via informal sales. However, because all land transactions must be registered within the Department of Land and Survey to be considered valid, these transactions are not considered valid (even though a party or group may possess a customary title called a "hiija"). State intervention in land management, especially in rangelands, has eliminated customary rights and incentives for resource conservation. The incomplete registration of state lands, constituting 80% of the country's total, adds to the problem, leaving tenure unclear, particularly in rural areas. Foreign nationals can own urban property for residential purposes should they meet certain conditions, but refugees (Syrian refugees in particular), face significant tenure insecurity. Efforts to improve their situation include programs providing rent-free accommodation through negotiated agreements with landowners as well as initiatives geared towards upgrading sub-standard housing, increasing the quantity of affordable housing, providing financial assistance for rental costs, ensuring security of tenure and raising awareness of tenure rights and obligations. However, refugees have remained vulnerable to forced eviction.

Jordan's legal framework addresses expropriation with regard to land with secure tenure, and Article 11 of the Constitution emphasizing just compensation for public utility purposes. The Investment Law and Land Acquisition Law provide detailed provisions on expropriation, ensuring fair compensation. However, the law governing compulsory acquisition lacks clarity on public benefit and does not mandate alternative livelihood restoration strategies as a prerequisite.

In the Jordan valley tenure insecurity is much like the rest of the country, and characterised by a complex interplay of the factors described above. Challenges brought about by the Agricultural Law and a shift of tribal lands into the hands of the state, as. Well as requirements for land tenure to be registered with the Department of Land and Survey has led to uncertainties and disputes over land rights.

Incomplete land registration further exacerbates the problem, particularly in the Jordan Valley where land plays a crucial role in agriculture and livelihoods.

State ownership of considerable portions of land in the valley, coupled with the gradual withdrawal of the state from traditional land management, has left many areas with unclear ownership and management structures. The shift from customary tribal tenure systems to state-controlled mechanisms has contributed to tenure insecurity, impacting the ability of local communities to manage and sustainably use their land. Additionally, the strategic importance of the Jordan Valley in terms of agriculture and water resources adds complexity to tenure dynamics. The need for water management and agricultural development sometimes conflicts with the interests of local communities, further contributing to uncertainties regarding land tenure. This is an important consideration for the project and activities that on affecting land management practices should seek to secure tenure rights and/or respect traditional use-cases, as these can help ensure improved land management of rangelands and other utilised areas.

9.10. Tourism

The Jordan Valley and its surroundings can provide authentic, natural, and cultural experiences for tourism demands. Its unique natural and cultural history is not only a resource for tourism development, but it is also an important site to understand and appreciate for the preservation of its natural and cultural resources. Responsible tourism can play an important role to raise the level of awareness on a local, regional, and international scale about the value of Jordan Valley and its conservation and protection measures. Therefore, the development of tourism in the Jordan Valley should consider the area's vulnerability to intensive exploitation of its resources. Competition between the countries within the Jordan Valley to maximize their exploitation of its resources will reduce the valley's value and will create more regional conflicts that will make the conservation of the Jordan Valley an international responsibility.

10. Legal framework and applicable social safeguards policies

The following chapter provides an overview of the existing national legislation and nationally signed and ratified international treaties, along with the applicable GCF safeguards required for the project. The most stringent policy and/or law will be followed in any instances of discrepancy between national legislation and GCF requirements. In practice, this means that the project will follow national policy and/or law to the extent that it is applicable/relevant, while ensuring that supplementary actions and/or measures are taken in the event that the application of the relevant national policy and/or law is not sufficient to follow to GCF requirements. In so doing, the project will ensure that the most stringent standards are consistently followed, while still applying the relevant national policies and/or laws.

10.1. Relevant International Conventions and Treaties

10.1.1. Jordan's International Commitments

Jordan is signatory to all major international instruments pertaining to women's rights and gender equality. According to Freedom House, Jordan is ranked as "partly free" in the Freedom in the World 2019 report scoring 37/100. However, according to the Human Rights Watch report 2019, Jordan was not fully complying with the human rights commitments, such as freedom of expression, where authorities continued to curtail freedom of expression, sometimes violate the freedom of association and assembly.

The report also highlighted gender discrimination against women by not allowing them to pass Jordanian citizenship to their children. The main International conventions and commitments are listed below.

Table 23. International Conventions and Treaties

Human Rights Instrument : (Date into force)	Ratification Status
International Covenant on Civil and Political Rights 1976	Signature: 1972, Ratification/Accession: 1975

International Covenant on Economic, Social and Cultural Rights 1976	Signature: 1972, Ratification/Accession: 1975
Convention on the Elimination of All Forms of Discrimination against Women 1981	Signature: 1980, Ratification/Accession: 1992
Convention on the Rights of the Child 1990	Signature: 1990, Ratification/Accession: 1991
Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict 2002	Signature: 2000, Ratification/Accession: 2007
Optional Protocol to the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography 2002	Signature: 2000, Ratification/Accession: 2006
Convention on the Rights of Persons with Disabilities :2008	Signature: 2007, Ratification/Accession: 2008

10.2. National Laws and polices

10.2.1. Jordan's 2025 National Vision and Strategy (NVS)

In 2015, the government launched Jordan's 2025 National Vision and Strategy (NVS). This is the reference for all development pathways in the country, "and sets a holistic economic and social framework based on equal opportunities for all". It contains over 400 policies, including ones on environment and climate, alongside socio-economic policies, such as the 2013 Jordan Poverty Reduction Strategy. The NVS included a list of measures for adaptation regarding environment, food, agriculture, water, and energy. It also identified as a priority the development of a legislative framework on climate change to maximize any benefits, minimize the negative impacts, and build up national capacity.[45]

10.2.2. Climate strategies, communications to the UNFCCC, and action plans

In addition to its Nationally Determined Contributions (NDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC), Jordan has adopted and updated a set of relevant environmental policies over the past 15 years, including:

1. Initial National Communication (1999)
2. Second National Communication (2009)
3. Third National Communication (2014)
4. National Strategy and Action Plan to Combat Desertification (2015-2020)
5. National Climate Change Policy and Sector Strategic Guidance Framework (2013-2020)
6. Climate Change Adaptation and Low Emission Development Strategy (2013)
7. Water for Life: Jordan's Water Strategy (2008-2022)
8. Climate Change Policy for a Resilient Water Sector (2016)
9. Intended Nationally Determined Contribution (INDC) 2015, submitted as its First NDC in November 2016.
10. A National Green Growth Plan for Jordan (2017)

The National Climate Change Policy (2013–2020) was the first Arab country to include gender considerations in its national climate change policies, it gave attention to the "vulnerable groups" that stand to disproportionately suffer from the negative effects of climate change, as well as strategies to address gender imbalances between men and women.

Third National Communication (TNC) (2014) builds on the objectives and proposed actions of the Climate Policy addressing "vulnerable groups". It stated that, climate change impacts to enhance the adaptive capacity in communities should include the actions outlined below.

[45] http://www.nationalplanningcycles.org/

- Increase women's skills-development and capacity-building opportunities through training in community and political participation and link them to general literacy and education initiatives.
- Take measures to increase the labor productivity of rural women through improved access to training, extension services and technology.
- Mainstream the role of media in climate change and support NGOs and community-based organizations (CBOs) which are well placed to spearhead awareness raising efforts in different community segments, and in their climate change media-targeting activities[46].

10.2.3. National Strategy for Jordanian Women

The key policy that guides the implementation of gender equality and women's rights in Jordan is the National Strategy for Jordanian Women (2006-2010), which focuses on gender mainstreaming in the formulation of public policies.

The new updated strategy outlined an implementation mechanism, which described roles for official institutions, community-based organizations (CBOs), women's society organizations and the Jordanian National Commission for Women (JNCW).

The domains covered by the strategy included legislative, economic empowerment, women participation in public life, human security and social protection (education, health, poverty, female headed families, violence, the elderly, people with special needs, food security, the environment, shelter and housing fields) and media and mass communications.

10.2.4. Labor Law (No. 8), 1996 (as amended);

Act No. 43 provides the basic principles of employment rules and rights; all persons have the right to initiate employment contracts, provided they have the legal capacity to do so and unless this right is revoked or restricted by law.

The provisions of the Labor Law were amended in July 2008. It applies to all employees, employers, works, work contracts and wages. It defines an "employee" as a male or female who performs a job for wages, and is a subordinate to the employer and at his/her service. Under the last amendment of Article 3, farm workers and house servants are now also subject to Labor Law provisions. The Labour Law encompasses various facets of the employer-employee relationship. Covering elements such as employment contracts, wages, working hours, and rest periods, the law establishes standards for leaves, social insurance, and occupational safety and health to ensure a secure working environment. Addressing termination procedures, trade unions, and collective bargaining, the law also upholds principles of non-discrimination and equal opportunity. Provisions specifically regulate the employment of minors to safeguard their welfare. Children under the age of 16 cannot be employed, and 29 occupations are restricted for all children under the age of 18.

The labor law amendment made in 2008 condemning sexual harassment in work place and the new Civil Services Statute 2007[47] that considers sexual harassment in public service was a positive step, however activation of these two provisions is limited and no procedures are put in place to raise women's awareness on the importance of these laws. Also, cultural norms constrains women from reporting on sexual harassment incidents so not to be shamed and humiliated. Furthermore, Many firms discriminate against hiring women due to the perceived higher additional costs they occur for maternity leave. Several reforms have been introduced in recent years to address this discrimination, but they still do not go far enough to close the gender gap in labor legislation.

10.2.5. Social Security Law

According to Article 73 of the Social Security Law, the obligations of the employee with regard to insurance against old age, disability and death. The employer is obligated to pay 9% as a contribution and to deduct 5.5% from the monthly wage of the employee, to be delivered to the corporation of social security.

[46] https://www.undp.org/content/dam/jordan

[47] The UPR Report on Women's Rights in Jordan submitted by the AWO Coalition-Feb. 2013

At present, new amendments to the Social Security Law are under revision, with the objective of encouraging more workers to join the corporation of social security. The Lower House endorsed the 2019 amendments to the Social Security Law, raising the age of early retirement for men to 55 from 50, provided that each member has rendered at least 21 years of service, while the earliest age women can get their benefits is 52, with at least 19 years of service. In the current law, women can retire at any age as long as they have subscribed to social security for 19 years.

In addition, the law stipulates labor rights including: i) health insurance; ii) maternity leave and parental leave; iii) prohibition of abusive dismissal; iv) end of service compensation; v) eight working hours per day; vii) Friday of each week shall be considered the weekend for the labor unless the nature of the work shall require otherwise; and viii) banning the hiring of children in which the law states that "Without prejudice to the provisions related to the vocational training, under no circumstance shall the juvenile who has not reached the sixteen years old may be caused to work in any manner whatever[48].

10.3. Applicable Environmental and Social Safeguard Policies

The proposed project investments are designed to have positive social and environmental benefits. The project risk has been classified as moderate (Category "B") and it is expected that the project activities will trigger the following Environmental and Social Safeguard Policies: ESS3, ESS4, ESS6, and ESS8. To comply with these policies, given that not all the sub-activities can be identified during appraisal, specific safeguard instruments were identified in Table 24 below.

Table 24. List of safeguard policies triggered for the Project

Safeguard Standard Triggered by the Project	Triggered	Safeguard Instruments & Mitigation Measures
SS 1: Biodiversity, natural habitat and Sustainable Management of Living Resources.	Yes	While positive impacts on water quality, quantity and management capacities are envisioned, caution will be needed due to the increasing scarcity of water in Jordan. The project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: - Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley - Empower local communities to monitor and manage local water supplies more effectively. - Improved protection, supply and use of water under climate change conditions.
SS 2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes	Maybe	Not anticipated, on the contrary the project will improve a sustainable water management approach with a positive impact on water quality, quantity and management capacities. The project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include:

[48] https://www.ssc.gov.jo

Safeguard Standard Triggered by the Project	Triggered	Safeguard Instruments & Mitigation Measures
		- Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley - Empower local communities to monitor and manage local water supplies more effectively. - Improved protection, supply and use of water under climate change conditions. Furthermore, knowledge and awareness of climate change adaptation for landscape and water resources management. will be improved.
SS 3: Safety of Dams	Yes	The project will involve the construction of 12 Rockfill dams to contribute to Managed Aquifer Recharge. These are likely to be relatively small, with surface areas of no greater than 20m^2. However the volume of the dams cannot be estimated at this time, as the final specifications for these dams, including construction modality and siting will be developed via detailed feasibility studies undertaken during the project implementation. The management of risks associated with the construction and operations of these dams will be ensured by comprehensive ESIA's undertaken to address any identified risks.
SS 4: Involuntary resettlement	Maybe	The project might involve the temporarily restriction of the use of degraded land through rotational land-use practices to allow land restoration and rehabilitation. Extensive consultation with the concerned local communities took place to explore options to avoid or minimize any negative impact on their livelihoods. Such assessment has been followed closely through the stakeholder consultation plan. The indicative project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: - Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley - Empower local communities to monitor and manage local water supplies more effectively. - Improved protection, supply and use of water under climate change conditions.

Safeguard Standard Triggered by the Project	Triggered	Safeguard Instruments & Mitigation Measures
SS 5: Indigenous peoples	Maybe	Although some baseline studies have shown limited presence of indigenous people in the project sites, the centrality of tribal Bedoiun to Jordanian society is a critical consideration. The project additionally seeks to incorporate traditional land management approaches into certain activities, implying that Indigenous groups may be present or involved with the project. To safeguard against this risk, the project has developed and IPPF, which will be operationalised in the development of an IPP to ensure any indigenous groups are adequetely included in project activities and engaged via an appropriate FPIC process.
SS 6: Labor and working conditions	No	The project will have small scale work activities and creating a temporary employment, always there is a potential of child labor and it was raised by one of the FGD, also hiring non Jordanian labor will be a cause for TIP cases specially with the working permits. However , this will be mitigated by the project's procurement plan which will strictly adhere to UNEP and the GCF's procurement principles, and national laws.
SS 7: Cultural Heritage	Maybe	Jordan is known as country rich historical and cultural heritage sites. However, the nature of the project and its approach is as such that it is unlikely to influence or impact positively or negative on the cultural heritage site. However, the project will ensure that forest, land uses and co-management areas are identified and agreed upon by main users and governance systems including for cultural, artistic, traditional, religious values and archeological sites. The indicative project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: 1. Climate resilient ecosystem based WSM and agricultural opportunities developed; 2. restoring ecosystems in the watersheds of the target sites/ 3. Reducing the impacts of habitat destruction on biodiversity and conserving and protecting priority ecosystems.
SS 8: Gender equity (Analyze and develop the Gender Action Plan)	Yes	Gender issue will be handled with caution and sensitivity. The project will approach gender

Safeguard Standard Triggered by the Project	Triggered	Safeguard Instruments & Mitigation Measures
		issue in culturally, socially and religiously respected manner. Gender needs and roles within the diverse socio-economic context will be respected and reflected in the gender action plan. However, during the project period: a) Gender Assessment and Gender Action Plan (which has been developed) will be implemented b) Participatory land use mapping and planning will be strengthened, taking gender dimensions into account.
SS 9: Economic Sustainability	No	Non-Eligible activities

SS1: Biodiversity, natural habitat and sustainable management of natural resources

While positive impacts on water quality, quantity, and management capacities are envisioned, caution will be needed due to the increasing scarcity of water in Jordan. The project outputs that are expected to trigger mild adverse impacts related to SS1, and can be addressed through mitigation measures include:

Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley: This aspect of the project involves ecosystem restoration efforts within the watersheds. While these activities may result in mild adverse impacts on biodiversity and natural habitats, such as temporary disruptions to local flora and fauna during restoration activities, these impacts are likely to be temporary, limited in scope and mitigatable through the implementation of good practice. Additionally, in the long term, the project is expected to result in net benefits to biodiversity and the effective management of natural resources.

Improved protection, supply, and use of water under climate change conditions: This part of the project aims to enhance water supply systems and improve water use efficiency, potentially affecting natural habitats and biodiversity. This risk is largely addressed under SS3.

SS3: Safety of Dams

This policy is triggered as a result of the construction of 12 Rockfill dams to contribute to Managed Aquifer Refill (MAR). While these dams will be small in size and are generally considered to be lower risk as a result of their design and function, ensuring their safety is a priority. While the dams won't be providing direct water resources for humans consumption, there are a number of health and safety risks that are relevant to dams in general. Considering that the final design specifications and siting of the dams is to be determined during implementation, the mitigation of risks will necessarily need to be determined during this process.

The implementation of Managed Aquifer Recharge (MAR) and Rockfill dams comes with various social risks during both the planning and construction phases. These include the potential disturbance of archaeological and heritage sites, such as graveyards, necessitating mitigation measures like specialist advice and preservation strategies. Additionally, an influx of people during construction may result in other social impacts, such as an uptick in GBV. Mitigation strategies involve prioritizing local employment opportunities and ensuring the behavior of construction workers does not pose threats to women and children.

In the operational phase, risks involve the lack of suitable infrastructure, land acquisition challenges, and public acceptance. The conveyance of wastewater effluents to MAR facilities may require

significant infrastructure, impacting nearby communities and facing resistance due to public acceptance issues. Vandalism and conflicts of interest within communities may arise, emphasizing the importance of stakeholder involvement in maintenance. Health and safety concerns, including potential groundwater contamination and infrastructure failure, necessitate stringent regulations and hazard control measures.

Environmental risks during the planning and construction phases include the removal of vegetation cover, disturbance to wildlife, and the introduction of invasive species. Landscape deformation and air and noise pollution from heavy machinery are also potential issues. In the operational phase, risks involve rapid siltation/clogging, groundwater contamination, water logging near agricultural sites, and potential damage to aquifers. Mitigation strategies encompass proper site investigation, regular monitoring, adherence to noise and pollution regulations, and the implementation of drainage systems to address waterlogging. Regular monitoring of water quality and quantity is recommended to offset negative effects on aquifers.

Site feasibility assessments and design studies for the 12 rockfill dams will be undertaken during year 2 of project implementation by a hydrological engineer, with construction taking place between years 3 and 4. The feasibility process will include the selection of sites using multiple criteria, such as hydrogeology/soil types, climate, land use, land cover, flow availability and rate in streams, water source, water quality, and site suitability for technical design (these criteria are elaborated on in Section 8.12 of Annex 2).

Environmental and social risk assessments will also be undertaken as part of feasibility assessments to ensure that negative impacts are avoided with the outcomes of these assessments informing the development of comprehensive Environmental and Social Management Plans. Basic ToRs for these ESIAs are included as an Appendix to this ESMF (Appendix 2). This will ensure that the ESIAs are conducted in accordance with UNEP and GCF requirements and address the relevant social and environmental risks associated with the establishment of rockfill dams. However, in the context of the rockfill dams to be established by the project, impacts are expected to be few, limited in their impact, site-specific, largely reversible and readily addressed by mitigation measures, thereby aligning with the ESS categorization of the project (Category B). Additional details on the construction of rockfill dams and their associated risks are presented in Section 8.12 of Annex 2. Furthermore, an operations and maintenance budget has been allocated to the rockfill dams during the project's implementation period (see Annexes 4 and 21).

SS 4: Involuntary resettlement

This policy will be triggered. Output 2.1 of the project will include temporary restriction of local communities' use of degraded forests and rangelands. The restriction will be gradually removed as the restoration and rehabilitation of target ecosystem and habitats progress.

The above will be undertaken in two forms:

1. The first will be applied to areas already legally designated as protected areas or protected habitats and ecologically sensitive areas under various levels of protection. The project interventions are expected to build on existing land- and natural resource-use plans and systems (e.g. grazing schemes in RBG and Shuleh SCAs and Yarmouk PA). As a result, the project will not cause any additional restrictions in addition to those already in force or planned and agreed with local users.

2. The second will be applied to new areas not yet targeted by land-use management systems and plans. These include degraded rangelands and forests in upstream areas of the Jordan Valley.

In both cases, the project will adopt the maximum level of local users' engagement and participation in the development of land-use plans/schemes on the basis of mutual and reconsent using formally recognized agreements signed under the supervision of relevant governance structures (e.g. governorate and municipality). These agreements will seek to retain or strengthen the current use-rights (both formal and informal), as this will inevitably contribute to more sustainable management of these resources.

In addition, the climate-resilient restoration and management of watershed under the project will be participatory, ensuring that communities play a leading role and are not unfairly disadvantaged by temporary restrictions on land- and natural resource-use.

While these access restrictions will only be temporary, the project will identify and promote alternative climate change-resilient livelihoods and alternative fuel sources as a form of restitution (Activity 2.1.3 and Activity 2.1.4). These alternatives will be finalized and provided to affected communities and users as part of the agreed upon trade-offs. The distribution of alternative livelihoods — or cash for work schemes — supported by the project will be coherent with the level of restrictions that are enforced in the case of each household or community. The project will implement fair restitution using a balanced and consultative win-win approach that prioritizes the most vulnerable or affected communities and community members. The alternative climate-resilient livelihoods will also enable communities to sustainably use natural resources at project intervention sites. Adequate baselines and monitoring will inform the sought balance between the restrictions the alternatives supported.

The project will additionally only implement interventions on communal and/or government owned-land and will not result in any changes to land tenure arrangements. This includes land earmarked for infrastructure (such as sub-stations under Activity 3.1.2). Considering the sensitivity of the issue in national and local context, as well as the significance of such impacts, the project will refrain from affecting official and clearly recognized land tenure arrangements as well as the traditional use-rights of nomadic groups such as the Bedouin. Proper grievance mechanisms adopted for the project will ensure local users' ability to express their concerns and complaint in regard to any violation of their perceived access and use rights which were not recognized upfront by the project.

SS5: Indigenous Peoples

This policy is triggered. The proposed project will be implemented in areas where indigenous and marginal groups may be present. These groups have not been categorically identified within the project footprint, however, stakeholder engagement which has been undertaken to data has not included a specific focus on identifying, mapping or engaging with Indigenous Groups. Furthermore, as the government does not provide census data on Indigenous Groups and Minorities in Jordan, there is a dearth of information on the population numbers and location of these indigenous groups, other than numerous references alluding to their existence and centrality in the Jordanian national identity. To address SS5 and comply with the policies of both UNEP and the GCF, an Indigenous Peoples Planning Framework (IPPF) has been developed (Annex 6B). The implementation of this IPPF will enable the identification, mapping and engagement of all Indigenous Groups within the project footprint. The IPPF furthermore includes a roadmap to develop an Indigenous Peoples Plan (IPP), which will be informed by the outcomes of the IPPF and will govern the effective and participatory engagement of identified indigenous Groups throughout the project lifecycle.

SS 6: Labor and working conditions

This policy is triggered. The proposed project will conform to all national and international guidelines and conventions regarding forced and child labor. In addition, all required labor at project intervention sites — which will consist of short-term work to meet specific project objectives — will be remunerated in accordance with national law.

While Jordanian labour laws broadly align with the GCF standards on Labor and Working Conditions potential gaps exist in certain areas. While the right to form trade unions is recognized, practical limitations on freedom of association and collective bargaining may be present in some cases and particularly for workers working without formal contracts or work permits, such as refugees. These groups are also at risk of forced labour, unsafe working conditions and TIP. Often such workers undertake work without a formal contract and are thus not afforded any protections should they undergo mistreatment or unfair dismissal. Similarly, while there are a number of regulations that prevent child labour and great progress has been made, child labour continues to be a challenge in Jordan and is driven by high levels of poverty within the country.

In the context of the project, a notable consideration is the presence of migrant laborers (particularly Syrians) in the project areas. In 2018, Jordan started to regularize the status of many Syrian refugees who had been living in towns and cities without permits, offering thousands of vulnerable people

protection from arrest for being outside refugee camps illegally and increasing their access to jobs. However, many Syrians are still working illegally. Moreover, during the public consultation, the child labor practice was highlighted, as well as the status of some workers regarding the nature of the work permits they have. Some migrants who do have permits are working in jobs that are different from the work type stipulated in their working permits, which can trigger the labor law policy.

Managing the shortfalls in Jordanian legislation and ensuring that working conditions under the project adhere to GCF requirements, all contracting, and labour-related activities will comply with the projects procurement plan. This plan will strictly adhere to UNEP and the GCF's procurement principles, as well as national laws. This will include requiring contractors to sign contracts that include provisions prevent them from utilizing forced labour and child labour, as well as a requirement that they adhere to safety standards that will secure the health and safety of both their employees and contracted labour force. The project will also implement monitoring and reporting systems to ensure the contractors compliance with these provisions as well as the national laws. In addition, the GAP recommended some measures to ensure compliance with the labor national law, equal opportunities and human rights.

SS 8: Gender equity

The proposed project is designed to empower women and ensure that there are no inequitable negative impacts on gender equality and the situation of women and girls. There is, however, a risk that by empowering women, the project may cause resistance in a male-dominated society. The project will conduct gender awareness and sensitization workshops with local communities at project intervention sites to prevent such adverse social impacts.

The gender issue will be handled with caution and sensitivity. The project will approach gender in a culturally, socially and religiously considerate manner. Gender needs and roles within the diverse socio-economic context will be respected and reflected, as presented in the gender action plan.

Gender equality will be promoted under the proposed project through the inclusion of women in project design and implementation and will strengthen the access of women to related opportunities and benefits. In addition, at least 50% of project beneficiaries will be women. The project's targets are gender disaggregated where applicable, to enable monitoring and evaluation of performance on gender equity.

The development and protection of natural resources by both men and women will be supported under the proposed project. Moreover, both men and women will be given equal access to benefits provided by project interventions. A gender-sensitive stakeholder analysis and gender action plan were developed to ensure that women's and men's different interests, roles and responsibilities are assessed in project planning and implementation (See Section 12 below).

GCF ESS1: Risk Assessment and Management Procedure

The bulk of the interventions under the proposed project have been assessed in terms of their risk potential, and the design of the project adapted to reduce and/or mitigate these risks, thereby resulting in the assigned moderate risk category (Category B). However, a central theme behind effective ESS practices is to not assume away risk. To ensure that the proposed project does not generate additional adverse outcomes beyond that already identified ESS risk screening of the project interventions will be undertaken during implementation. The ESS Officer will assess all interventions against UNEP's 8 safeguards standards as well as the criteria detailed in table 15.10, 15.11 and 16.2 on a continuous basis and will be responsible for drafting appropriate mitigation strategies to address identified risks. They will have further responsibility for monitoring the implementation of mitigation strategies with the support of the PMU. The ESS Officer will also be responsible for facilitating any capacity building that may be required to ensure that implementing partners have the required skills and knowledge to adhere to the established mitigation measures. This will include training on the identification and mitigation of risks related to SEAH and GBV.

If in any instance the ESS officer requires additional support, either in the form of specialized capacity, or identifies specific risks that cannot be mitigated via measures included under this ESMF they will escalate this to the PMU and PSC, who will make a determination as to what actions can be taken to reduce and/or mitigate the risk to appropriate levels.

In addition to continuous screening described above, the proposed project includes several interventions which could not undergo complete assessment during the project design period. These are sub-projects are either being developed during the implementation of the project (such as the Water Fund under Activity 2.1.4) or intervention whose design finalization requires site-level details and subsequent ESS assessments to be undertaken based on these final plans (such as the Activity 3.1.1 which concerns the establishment of Rockfill dams; and Activity 3.1.2, which concerns the establishment of a 1MW floating Solar installation).

As per the GCF's ESS Standards (ESS1) these activities will require the application of specific safeguards instruments to ensure appropriate screening, identification and management of ideentified risks are in a manner that is coherent and in line with the ESS requirements of the GCF and UNEP.

Water fund

For the Water Fund, this will require the development of a standalone Environmental and Social Management System (ESMS). It is critical that the ESMS is standalone as the fund will continue to function beyond the lifespan of the proposed project. This situates the management of the Fund operations — with respect to safeguards — outside of scope of this ESMF.

The standalone ESMS will be developed alongside the development of the Fund itself and will integrate with the operational aspects of the fund, including the beneficiary selection process. This will enable on-granting applications to be assessed for environmental and social risks in a manner that is consistent with the standards of the GCF, while balancing equal opportunity in terms of acces with the prioritization of the most vulnerable and/or marginalized populations. A set of criteria to guide the development of the ESMS are included as an appendix to this ESMF (Appendix 3)

Rockfill Dams

For the 12 Rockfill Dams (under Activity 3.1.1) and the 1MW Floating Solar plant (under Activity 3.1.2) Environmental and Social Impact Assessments (ESIAs) will be undertaken. The purpose and scope of the ESIAs for the Rockfill dams are detailed under SS3 which deals with Dam Safety and will be required as per Jordans own regulations related to environmental and social impact management. These will be comprehensive ESIA's, the scope of which will be informed in part by the final design specifications as determined during the project implementation and in part by the ToRs provided as an appendix to this ESMF (Appendix 2). Defining the minimum scope of the ESIA's under the ESMF will guarantee that the ESIA's are conducted in accordance with GCF's policies and requirements, thus ensuring that all relevant social and environmental impacts are adequately considered and addressed.

Floating Solar Plant

While the 1MW floating Solar Plant does not require an ESIA as per Jordans regulations (only Solar Plants producing an excess of 5MW requires an ESIA) it is good practice to undertake a scoped ESIA (i.e., limited and considering only particular concerns) given that the floating solar plant is somewhat novel and to be established on a publicly accessible recreational resource. For example, there are potential environmental and social impacts that may be associated with these infrastructure — while the King Abdullah Canal, on which the plant is to be established is not a natural water body, impacts on water quality, potential contamination and the overall safety of the infrastructure should be better quantified prior to installation. Additionally, the canal is a publicly accessible local resource and is utilized by populations for recreational purposes. As a result, due consideration should be given to ensuring access is maintained, or if restricted, that appropriate measures are put in place to limit access restrictions.

GCF Policy on SEAH

The GCF is dedicated to advancing climate action and sustainable development, recognizing the interconnectedness of environmental and social issues. Within the GCF, there is a steadfast commitment to safeguarding the well-being of all individuals, with a specific focus on addressing vulnerabilities, including those faced by women. While men, boys and those claiming different gender identities can also be impacted by Sexual Exploitation, Abuse, and Harassment (SEAH) and Gender-Based Violence (GBV) it is important to acknowledge that women are often disproportionately affected by climate change and its impacts, which also situates them as more susceptible to risks such as SEAH

and GBV. In alignment with this commitment, the GCF has established stringent SEAH and GBV policies, and incorporated these policies into their E&S standards.

These standards adhere to a mitigation hierarchy that emphasizes proactive measures for prevention, early detection, and swift, effective responses to incidents. the GCF requires AEs to ensure that activities financed by the GCF align with SEAH provisions, identifying and addressing risks and adverse impacts on women, men, girls, and boys as early as possible. This includes incorporating measures in relevant safeguards instruments to enhance gender equality and prevent, address, and eliminate SEAH. In cases where SEAH incidents occur, the GCF requires AEs to establish survivor-centered and gender-responsive grievance redress mechanisms. These mechanisms should include specific procedures for SEAH, confidential reporting, safe and ethical documentation, and clear protocols for follow-up actions. Additionally, the GCF mandates modalities to provide timely services and redress to survivors, such as medical care, psychosocial support, legal support, community-driven protection measures, and reintegration.

In the context of the project, risks relating to GBV and SEAH are of notable concern. This is as a result of a complex interplay of a number of factors. Jordan is a patriarchal society and cultural and social norms have limited the advancement of policies that would address gender-related risks. Similarly, while Jordan is a signatory to a range of international conventions related to the reduction of GBV and SEAH, implementation of such conventions is not uniform or comprehensive. Additional contributors to this risk include Jordan's high baseline rate of SEAH and GBV, particularly amongst women[49]. For example, 76% of women in Jordan have been the victim of harassment in the workplace, but less than 1% of these women considered legal recourse, as Jordan's laws only applies to physical assault of a specific degree (e.g., touching of intimate areas). GBV also has a relatively high incidence rate, and amongst married women 25% reported having been a victim of violence. Under-reporting of such violence is also notable, with less than 19% of victims (1 in 5) reporting to anyone and less than 3% (1 in 30) reporting via official channels — largely out of fear of reprisal[50]. A final consideration in relation to this risk is the focus of the project in areas where there may be vulnerable groups, which would be at heightened risk of GBV or SEAH, especially in the context of a potential influx of labour during the implementation of certain activities.

Addressing these risks in the context of the project interventions will require integration of SEAH consideration across all project activities. Firstly, the project will be implemented in accordance with the policies and protocols of UNEP[51] and IUCN[52] that govern SEAH and GBV. While UNEP does not have a specific policy covering SEAH, they have numerous guidelines for project staff and implementing partners[53], which will govern the implementation of the project in accordance with GCF requirements. Adherence to these policies and protocols will ensure that provisions relating to SEAH and GBV will be included in all contracts for project staff and for services providers delivering on discrete interventions under the project (such as contractors establishing infrastructure). Secondly, the project will mainstream SEAH across all project-funded interventions through awareness raising and training as described in the Gender Action Plan (Annex 8). To enable this mainstreaming all training activities that are implemented under the project will incorporate a component of awareness-raising regarding GBV and SEAH. As these trainings will be conducted at both the local level and institutional level, knowledge regarding SEAH/GBV as it relates to the local context and the project implementation approach will be embedded within all project stakeholders. The material that will be used to facilitate this awareness raising will be developed by the ESS Officer and Gender Officer in the first year of implementation, with support provided by technical partners as required.

The training will cover a range of topics including:

[49] Bouhlila, D. S. (2019). Sexual harassment and domestic violence in the Middle East and North Africa. *Arab Barometer. December*, *2*

[50] Plan International & Solidarity is Global Institute – Jordan. (2021). *The Protection of Women and Girls in Jordan: A Women's Rights Assessment Report.* Available at: https://plan-international.org/uploads/sites/19/2022/02/a_report_assessing_the_rights_of_girls_and_young_women_in_jordan.pdf

[51] https://www.unep.org/about-un-environment-programme/policies-and-strategies/prevention-and-response-sexual-misconduct#:~:text=UNEP%20has%20a%20zero%2Dtolerance,to%20account%20for%20their%20actions.

[52] https://www.iucn.org/sites/default/files/2022-05/iucn-policy-on-the-protection-from-sexual-exploitation-sexual-abuse-and-sexual-harassment-seah.pdf

[53] https://wedocs.unep.org/handle/20.500.11822/40734;jsessionid=383C539BF95BD789ADBD188506458E32

i) General overview of GBV and SEAH, including in its different forms it can take and the different impacts it can generate;
ii) Risk factors and vulnerabilities, as well as how to identify factors that increase the risk of SEAH and how to recognize signs of SEAH;
iii) Coverage of the different laws and conventions that are relevant as well as judicial and/or legal recourse with a specific focus on those of the implementing entities, the AE and the GCF to ensure project staff understand their obligations in identifying, preventing and reporting instances of SEAH, as well as the repercussions for participating or enabling such activities;
iv) Rights of project stakeholders, including the rights of people under local legislation and under the institutional framework that governs the GCF, IUCN and UNEP;
v) Reporting and support, including the structure and function of the GRM, how support can be accessed via the GRM and information on NGOs and CBOs working in the area.

Training material to be included with each training will be aligned with the specific needs of the specific stakeholder groups. For example training for the PMU will focus on their responsibilities to prevent and address SEAH/GBV in the project context, and the UNEP/IUCN policies governing project employees, while the trainings at a community level will focus more closely on rights in relation to SEAH, how to access the GRM, how different risks and vulnerabilities contribute to SEAH/GBV and what mechanisms are available for support.

11. Summary of Objectives and Principles for Implementation of the Gender Action Plan

Gender Action Plan. To safeguard against issues of gender equality (ESS8), contribute to a reduction of GBV and to ensure mainstreaming of gender throughout the project design, a gender assessment and Gender Action Plan were prepared for the project.
The plan ensures adequate inclusion and ensure tangible benefits to women; throughout the project's activities based on the different roles and needs of women in the targeted areas.
Gender Action Plan Objective. The objective of the Gender Action Plan is to highlight the gender entry points with clear targets, and measurable performance indicators to ensure women's participation and benefits, complying with the GCF Gender Policy. GCF-funded project will efficiently contribute to gender equality and achieve greater and more sustainable climate change results, outcomes and impacts.
Gender Action Plan priority areas and key entry points identified are:

- strengthened governance for climate-resilient watershed management
- operational guidelines;
- capacity building on gender equality, SEAH and GBV;
- outputs, outcomes, and impact indicators for monitoring and reporting purposes;
- resource allocation and budgeting; and
- knowledge generation and communications.

The Gender Analysis and Gender Action Plan for this project are provided as separate, stand-alone documents, submitted in complement to this ESMF. The Executing Entity will be responsible for implementation, compliance, and reporting against targets and indicators.

12. ESMF Implementation Arrangements

The proposed project will be implemented over an eight-year period, with the UNEP serving as the Accredited Entity. The Executing Entities (EEs) responsible for different project components will be Jordan's Ministry of Environment (MoEnv) for Component 1 and the International Union for Conservation of Nature (IUCN) for Components 2, 3 and 4. UNEP's role involves managing finances, conducting evaluations, and coordinating with the national-level Project Steering Committee (PSC) and Project Management Unit (PMU). The roles of the PSC and PMU as described below. Project Cooperation Agreements (PCAs) will be signed with MoEnv and IUCN to ensure compliance with Green Climate Fund (GCF) and UNEP policies. UNEP will supervise the on-granting facility in its role as AE, actively participate in co-chairing the PSC, and align project activities with future national priorities.

A Task Manager (TM) will support UNEP in maintaining consistency with GCF and UNEP policies, enhancing the project's effectiveness. The TM will be responsible for project supervision, ensuring

consistency with GCF and UNEP policies. This includes participation in PSC meetings, facilitating evaluations, preparing Annual Performance Reports, and conducting technical reviews of project outputs.

The project will source technical expertise (where required) from a consortium of NGO's and technical partners. As these technical partners will be required to support Components 2 – 4 they will be contracted and managed by IUCN.

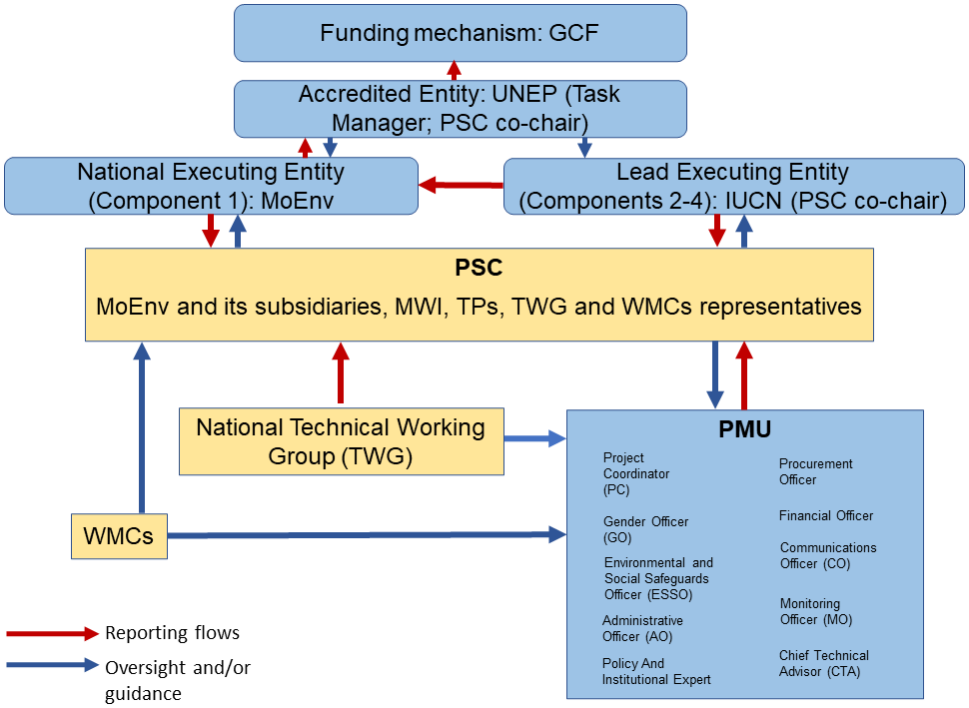


Figure 11: Implementation Arrangements

Functional implementation and management of the project will be actioned via the PSC and PMU, which will be established in the first year of the project. The PSC will oversee project implementation, review workplans and reports, and approve changes. It will serve as a focal point for stakeholder engagement and interaction. A National TWG will provide advice to MoEnv on cross-cutting interventions, collaborating with local specialists and academics.

The PMU will comprise a Project Coordinator (PC), Financial Officer, Procurement Officer, Environmental and Social Safeguards Officer (ESO), Communications Officer (CO), Monitoring Officer, Gender Officer, Policy and Institutional expert, Administrative Officer (AO), and Chief Technical Advisor (CTA). The PC, as a full-time staff member, will oversee daily project implementation, reporting directly to the PSC. Reporting to the PC, the Financial Officer, Procurement Officer, and AO will provide administrative and financial support. The CTA, to be recruited by IUCN, will focus on providing future technical support for climate-proofing interventions, coordinating with future consultants, and evaluating proposals for the on-granting facility. The CTA will also supervise future sub-projects under the on-granting facility in collaboration with Technical Partners (TPs) and Water Management Committees (WMCs)

The implementation all Safeguard Actions will be the responsibility of the ESS Officer. They will be a full-time staff member located in the PMU and their role will entail effecting the implementation of the ESMF and oversight of safeguards across the project components. This will include *inter alia*:

vi) Directly implementing or overseeing the implementation of specific mitigation actions as described in section 16 and 17 of this ESMF;

vii) Coordinating the finalisation and implementation of additional safeguards assessments and safeguards instruments, including the ESIA's and associated ESMPS, the development of the ESMS, the IPPF and the resultant IPP;
viii) Coordinating M&E for the ESMF and associated safeguards instruments and ensuring ongoing reporting on the state of safeguards under the project;
ix) Liaising with the CTA, PC and TM regarding safeguards considerations and any required technical assistance required to effectively implement safeguards;
x) Assessing capacity to ensure safeguards amongst executing entities and/or implementing partners and developing appropriate capacity building support to ensure effective implementation and reporting of safeguard actions, including on specific SEAH and GBV considerations; and
xi) Management and operationalisation of the GRM.

The ESS Officer will report directly to the PC regarding the implementation of the ESMF and will coordinate with the CTA regarding the need for specific technical assistance and for producing biannual reports. The ESS Officer will also coordinate with other members of the PMU, such as the M&E officer and the Gender Officer where required.

13. Stakeholder Engagement

13.1. Stakeholder Identification

The stakeholder engagement was viewed as crucial for the development of a strong project which would directly benefit local communities — particularly in rural areas. Stakeholders were initially determined through discussions between the consortium teams, during the design of the preliminary project concept. These discussions identified the initial ministries, departments, and line agencies that would likely be involved. During subsequent field visits, connections were made with relevant Civil Society Organizations (CSOs), Non-Governmental Organizations (NGOs), to further determine areas for collaboration in relation to the project activities. Meetings with farmers, women (including women farmers), and Syrians living and working in the project areas were also held in the three selected to best understand the needs of the populations, including differentiated needs based on gender roles and cultural norms.

Given that the exact project areas for the project implementation have not yet been determined, more specific stakeholder identification will occur during the first phase of project implementation to ensure that direct beneficiaries are consulted, once the exact project locations are determined.

Stakeholders consultation is a powerful tool to ensure the involvement of potentially affected groups and national capacities in the decision-making process with regard to the environmental and social aspects of their concern.

Such consultation will positively limit ignorance of environmental and social concerns relevant to the effect of the proposed development, accidental or otherwise. Also, it is considered as an important tool for informing and educating the public in order to enhance their understanding and appreciation of the following:

- the need and nature of the proposed development;
- the need to protect and properly manage the environment;
- the potential impacts of the project on the environmental, socio-economic and archaeological settings; and
- the public role in protecting their local environment.

Among the objectives of the ESMF is complying with relevant GCF policies and national Jordanian regulations. Category B (I2) projects to be appraised by the GCF require consultation with project-affected groups and local NGOs about the project's environmental and social aspects and take their views into account.

As for Jordanian Regulations, the results of screening meetings with the Ministry of Environment (MOE) has classified the environmental assessment for this project as a requiring a preliminary environmental impact assessment, and accordingly, a consultation session is not obligatory but would be of added value if conducted.

Given that a consultation session is required for GCF Category B (I2) projects — and is of added value for preliminary ESA carried out according to Jordanian Regulations — three stakeholder consultation sessions were organised in three proposed project localities. These were South Shounah Area in Balqa Governorate (southern Jordan Valley), Tal Arrumman Area in Balqa and Jerash Governorate (middle Jordan Valley), and Yarmouk Area in Irbid Governorate in northern Jordan Valley.

The objective of these consultations was to ensure that the stakeholders' views, issues of concern, foreseen impacts and worries are taken into consideration while assessing the project related impacts. Such consultations are expected to limit accidental or purposeful ignorance of environmental and social concerns relevant to the proposed project. A detailed overview of the stakeholder identification and consultation process during project formaulation is presented in Annex 7 of the Funding Proposal.

13.2. Stakeholder Engagement during Project Preparation/Formulation

Under the auspices of the Ministry of Environment (MoEnv) and members of the project development consortium, the stakeholder consultation sessions were held in: i) South Shounah Area on 18 September 2019 and hosted by the Jordan Hashemite Fund for Human Development (JOHUD); ii) Tal Arrumman Area on 24 September 2019 and hosted by the Royal Botanic Garden (RBG); and iii) Yarmouk Area on 25 September 2019 and hosted by the Royal Society for the Conservation of Nature (RSCN).

The sessions were attended by a wide spectrum of government, national, NGO and municipality representatives, as well as local community representatives with significant participation of women. The one-day workshop included three working sessions. The first session included an introduction followed by discussion on the project scope including the anticipated outputs and main activities. The second session was allocated to the presentation and discussion of the environmental and social safeguards which could be triggered by the project. The third session was devoted to the gender policy and to plan aspects related to the project. In one case during the Tal Arrumman workshop, the gender specialist facilitated a women-only gender discussion. The table below summarises basic information on the three workshops.

Table 25. Stakeholder consultation workshop summaries.

No	Workshop locality	Workshop date	Total Number of participants	Women	Men	Government	Local Community
1	South Shounah	18/9/2019	24	12	12	12	12
2	Tal Arrumman	24/9/2019	21	14	7	3	18
3	Yarmouk	25/9/2019	20	7	13	6	14

Annex 2 includes the scope and proceedings of the consultation workshops including pictures and attendance lists.

In addition to the public consultations, the project development group conducted a one-day field investigation with representatives from the MoEnv, consortium members, UNEP, C4 EcoSolutions and the ESMF experts. The field trip took the shape of a rapid round visit to the main areas of the Jordan Valley and included discussions with local stakeholders, discussions among the project development group and discussions with the specialist experts of the ESMF. The field excursion provided a clearer insight on the characteristics of the selected locations and their surrounding areas. For a record of the field visit and stopping locations, refer to Annex 7.

The environmental and social issues that need to be assessed were identified from the results of the consultation activities. This was mainly through the field trip, the consultation workshops, consortium

meeting discussions, expert meetings, and the bilateral communications which were conducted with project partners by the specialist experts within their respective mandates.

The consultations were focused on meetings with local communities, especially potential project-affected peoples, and other relevant stakeholders. The consultations were undertaken to provide information on the: i) purposes of the project; ii) overview of potential impacts; and iii) grievance redress mechanism. During these consultations, the consultants ensured that vulnerable communities (specifically women, youth and Syrians) are invited to determine their unique needs, sensitivities, and potential risks.

Both this ESMF and the related Gender Action Plan are outcomes of the fieldwork, and the consultations were used to inform the safeguards documents as well as overall project design.

13.2.1. Public Consultation Results

In order to identify the potential impacts of the project, a FGD guide was developed informed by the GA guidelines. The FGD questions where structured to capture the main impacts of the project, listed below.

- General project impacts
- Grievance mechanisms
- Ways of participation in the project interventions
- Gender norms
- Community support of the project

On the basis of potential project impacts, the consultations with community members provided feedback on the factors listed below.

Potential Project Impact(s): Participants agreed that the project would have largely positive impacts and concurred with the positive social and environmental impacts described, especially for women and farmers. Women expressed willingness to participate and engage in the project activities, since the actual role of women in their communities was expressed as educators, and factors influencing change, where women can learn and implement actions and strategies related to water management, energy, and agriculture. Therefore, empowering women in rural communities at multiple levels will support the development of a new generation, which will enable them to participate and lead increasingly to learn and respond to climate change.

However, some negative aspects were defined such as local disturbance during the implementation phase that may be caused by workers and vehicles. These aspects are addressed in the GAP and the ESMP mitigation measures to reduce such temporary negative impacts and ensure women are included in the project activities.

13.2.2. Conflict sensitivity assessment

During project development, local community members indicated that the project – if not well implemented – could trigger local conflict between resource users and gender groups. Community members also mentioned that while the establishment of participatory mechanisms for water resources management and monitoring is ideal, a high level of caution would be required in the planning of such mechanisms to avoid stakeholder conflict and grassroots-level corruption. Regarding income generation, a few women expressed concern over the matter as they see it as potentially causing conflict with their spouses, who would want to maintain economic superiority and relative success in front of the community. Limiting access to ecosystems could trigger conflict between key resource users (including livestock owners) and the project, as well as between the local communities themselves. Others felt sceptical about community involvement in watershed management due to the risk of triggering local conflict and contributing to resource management corruption as a result of social bias and pressures.

Conflicts such as those mentioned will be addressed by the mitigation measures presented in the Social Management Plan (Section 17.2).

Grievances Redress Mechanism (GRM): As part of the FGD discussions, the main issues found regarding the grievance mechanisms in the three communities visited are described below.

- No reliable grievance mechanisms were found within the government departments/line agencies, 50% of the FGD participants said that these mechanisms are not transparent and effectively managed. In order to avoid concerns with grievance redress established within the government departments/line agencies themselves, preferred that the project use a GRM that is managed directly by the project.
- Using hotlines and complains desk were welcomed by the participants, while they do prefer using the social media platforms, they didn't welcome the idea of using mobile applications for complains.

Therefore the SA recommended establishing a project grievance mechanism to address complains that may emerge as a result of the project activities, taking into consideration the preferred channels to be used by the local community especially for women.

Participation: Consultations helped to determine ways in which women and minorities could be encouraged to participate in project activities, based on activities that were/are appropriate to them in terms of culture, context and practices. It was found that women prefer public meetings, especially in morning, to be conducted in one of the CBOs as they are the most trusted and safe venues for women accessibility. However, most of the participants prefer using social media platforms as means of knowledge-sharing and public engagement.

Gender: when discussing norms around mobility, it was found that women's mobility was not entirely restricted by all husbands, it is dependent on the purpose such as going to the doctor, or taking care of sick children, but there are constrains for women intermingling with men, so they do prefer having separate meetings where women can express their ideas. Women raised the issue of having specialized training in plumbing since it is not acceptable to call men plumbers in the absence of men (husbands, brothers or sons) and they have to wait men to fix any water problem inside the house.
Participants mentioned that a significant percentage of youth are still unemployed and still actively looking for suitable jobs. Those who are employed mainly work in different unsustainable jobs, in the military sector, or in daily-paid fluctuating jobs.

Community Support: Given the potential positive social and environmental impacts, and that the project benefits outweigh the limited adverse impacts, all participants consulted, including minority groups, indicated their support for project implementation.

Stakeholders Analysis Matrix – National							
Stakeholders Matrix – National							
No	Stakeholder name	Stakeholder Type	Development Role in target area	Level of interest	Level of influence	Possible impacts on the project scope	Potential for role(s) development in the project context
1	Jordan Valley Authority Headquarters	Gov	Land and water resources planning and management	High 5	High 5	Land and water policies and projects	Core project planning and implementation partner Outreach and advocacy target
2	Jordan Valley Authority Dams Department	Gov	Dams construction and management	High 4	High 4	Water quantity, quality, distribution and flow	Core implementation partner Outreach and advocacy target
3	Jordan Valley Authority Water User Associations Department	Gov	Down-stream water resource planning and management	High 5	High 5	Water governance aspects	Core implementation partner Outreach and advocacy target
4	Ministry of Environment Secretary General	Gov	Environmental policy and monitoring	High 5	Medium 3	Mainstreaming environmental policies in other sectors	Project national umbrella
5	Ministry of Environment Climate Change Department	Gov	Climate change policy, initiatives and monitoring	High 5	Medium 3	Mainstreaming climate related policies and safeguards	Lead project planning and implementation Capacity building target
6	Ministry of Environment Nature Conservation Department	Gov	National oversight on biodiversity conservation	High 5	Low 2	National reporting and capacity building	Support project implementation Capacity building target
	Ministry of Agriculture Forestry Department	Gov	Management and monitoring of forestry areas	High 5	High 4	Rehabilitation and restoration policies and approaches	Core partner in project planning and implementation Capacity building target

7	Ministry of Agriculture Rangeland Department	Gov	Management and monitoring of rangeland areas	High 5	Low 2	Rehabilitation and restoration policies and approaches	Core partner in project plan implementation and capacity building target Capacity building target
8	Ministry of Agriculture National Agriculture Research Centre	Gov	Agriculture research and monitoring	High 4	Medium 3	Alignment of research priorities and approaches	Project implementation partner Capacity building target
9	Ministry of Water and Irrigation Water Authority	Gov	Domestic water planning and management	High 5	High 5	Water quality, quantity and distribution	Core project planning and implementation partner Advocacy target
10	Ministry of Interior Deputy Minister for Governorates Affairs	Gov	Oversight over national decentralisation program	Low 2	High 5	Local development policies, governance systems and initiatives priorities	Capacity building target and implementation partners
11	Ministry of Interior Rangers	Gov	Law enforcement – environment and water resources	High 4	High 4	Effective law enforcement and monitoring	Capacity building target and project implementation partner
12	Ministry of Defense Border Guard	Gov	Border control and security monitoring	Low 2	High 5	Access control policies and procedures	Outreach target
13	Ministry of Local Administration	Gov	Land use planning and management	High 4	High 5	Land use policies and governance	Core project planning and implementation partners Capacity building target
14	Ministry of Finance Land and Survey Department	Gov	Land governance and monitoring	Low 2	High 4	Land tenure related policies and procedures	Outreach target

15	Ministry of Defense Royal Geographic Centre	Gov	Spatial planning and information systems	High 4	Medium 3	Information management and dissemination	Outreach target Project implementation partner
16	The Royal Society for the Conservation of Nature	NGO	Consortium Member Protected areas planning and management Hunting law enforcement Biodiversity research and conservation Local livelihoods and socioeconomic development	Medium 3	High 5	Site specific involvement vs landscape approach	Core project planning and implementation partner
17	The Royal Botanic Garden	NGO Not-for-profit	Consortium Member Ecosystem restoration and rehabilitation Plant conservation and research Plant genetic resources management	High 5	Medium 3	Site specific initiatives vs landscape approach	Core project planning and implementation partner
18	Princess Foundation	NGO Not-for-profit	Consortium Member Animal rescue and conservation Local development (water security, renewable energy)	High 4	High 4	Site specific initiatives vs landscape approach	Project implementation partner Capacity building target
19	The Hashemite Fund for Human Development	NGO Semi-gov	Consortium Member Socioeconomic development Rural communities support Natural resources management	High 4	High 4	Integrated approaches on site and landscape levels	Core project planning and implementation partner
20	The Royal Society for the Protection of the Marine Environment	NGO	Consortium Member Marine environment planning and management Integrated management initiatives beyond Marine sector	High 4	Medium 3	Strategic positioning into project scope	Project implementation partners on specific components

21	Future Pioneers – Horizon	Not-for-profit	Consortium Members Integrated local development Partnerships with national institutions	High 5	Low 2	Partnerships modalities with national institutions	Project implementation partners
22	Multilateral donors	International Agencies	Provision of technical and financial support	High 4	High 5	Synergies between initiatives and proper targeting	Project planning partners
23	Bilateral donor	Foreign Agencies	Provision of technical and financial support	High 4	High 4	Synergies between initiatives and proper targeting	Project implementation partners
24	Universities	Academia	Research and monitoring	Medium 3	Low 2	Targeted research and impacts-driven partnerships	Capacity building partners implementation partners

South Shounah Stakeholders Analysis Matrix							
No	Stakeholder name	Stakeholder Type	Development role in target area	Level of interest	Level of influence	Possible impacts on the project scope	Potential for role(s) development in the project context
1	JVA Kafrain dam management	Gov	Water resources harvesting and monitoring	Medium 3	High 4	Water quantity and quality for agriculture use	Project implementation partner Capacity building target
2	JVA Karamah dam management	Gov	Water resources harvesting and monitoring	Medium 3	High 4	Water quantity and quality for agriculture use	Project implementation partner Capacity building target
3	JVA Shounah dam management	Gov	Water resources harvesting and monitoring	Medium 3	High 4	Water quantity and quality for agriculture use	Project implementation partner

							Capacity building target
4	JVA King Talal canal	Gov	Water conveyance and monitoring	Low 2	High 4	Water quality and safety system	Capacity building target
5	Water authority South Shounah department	Gov	Domestic water distribution	Low 2	High 5	Drinking water security	Project implementation partner
6	Water user associations Kafrain/Karamah	NGOs	Agriculture water distribution and governance	High 5	High 4	Water governance issues	Project implementation partner Capacity building target
7	Agriculture department South Shounah	Gov	Agriculture extension	High 4	Low 2	Alignment with JVA program	Capacity building partner
8	JOHUD Kafrain Centre	NGO	Local development Natural resources management Women empowerment	Hight 5	High 4	Integrated approaches and environmental focus	Project planning and implementation partner Capacity building target
9	JOHUD Environmental farm	NGO	Local development Natural resources management Women empowerment	Hight 5	High 4	Case studies development and scaling-up	Project planning and implementation partner Capacity building target
10	South Shounah municipality	Gov/Semi-Gov	Local development and land use planning	Medium 3	High 4	Adoption of integrated approaches and ecological flows and open spaces	Project implementation partner Capacity building target
11	Sweimah municipality	Gov/Semi-Gov	Local development and land use planning	Medium 3	Low 2	Adoption of integrated approaches and ecological flows and open spaces	Project implementation partner Capacity building target
12	Social development department	Gov	Local socioeconomic development	Low 2	Medium 3	Mainstreaming sustainable	Capacity building target

						development in local planning	
13	Local charities	CBOs (not-for-profit)	Local philanthropy	Low 2	Medium 3	Adopting sustainable development approaches	Project outreach and advocacy Capacity building target
14	Local water user associations	CBOs	Agriculture water distribution	High 4	High 5	Adoption of integrated resource management and good governance approaches	Project implementation partners Capacity building targets
15	South Shounah governorate	Gov	Local governance and community development	High 4	High 5	Adoption of sustainable development and good governance approaches	Outreach and capacity building target
16	Local women associations	CBOs	Women empowerment and development	High 4	High 4	Adoption of gender good practices	Capacity building target
17	Local cooperatives	CBOs (for profit)	Members profit and sector development	High 4	High 4	Adoption of sustainable development and good governance approaches	Outreach and capacity building target
18	Financing/credit companies	For profit companies	Local lending and small projects financing	Low 1	High 4	Attention to project feasibility and beneficiary repayment capacity	Project outreach and advocacy
19	Education department	Gov	School education	Low 2	Medium 3	Integration of sustainable development tools	Capacity building target Project implementation partners
20	Local schools	Gov	School education	High 4	Low 2	Integration of sustainable development tools	Capacity building target Project implementation partners

21	Health department	Gov	Community health and safety	Medium 3	Medium 3	Water and agriculture safety issues	Project implementation partner Capacity building target
22	NARC station	Gov	Agriculture research and monitoring	High 4	Medium 3	Adoption of ecosystem-based approaches and tools	Capacity building target Project implementation partner
23	Public works department	Gov	Infrastructure development	Low 2	Medium 3	Adoption of integrated resource planning approaches and tools	Project outreach target
24	Civil defense department	Gov	Public safety	Medium 3	Medium 3	Supporting preventive approaches and improved law enforcement	Project outreach and capacity building target
25	Youth sports clubs (Rawdhah, Karamah, Sweimah)	CBOs	Youth, sport and cultural development	Low 2	Low 1	Adopting creative roles in local sustainable development	Project outreach and capacity building target
26	Dir Alla vocational training center	Gov	Local vocational training and employment support	Low 1	Low 2	Adopting project related topics and tools	Project implementation partner Capacity building target
27	Bair Salim foundation	Not-for-profit Private Foundation	Disabled citizens support	Medium 3	Low 2	Design and implementation of special needs solutions and tools	Project outreach target Implementation partner
28	Dead sea area hotels	For-profit companies	Visitors and tourism promotion and management	Low 1	Low 2	Tourism water share and quality	Project outreach target

29	Jordan bird watch Gharba SCA	NGO	Special Conservation Areas management	High 5	Medium 3	Site level focus vs landscape approach	Project implementation partner
30	Baptism site	Gov	Cultural heritage conservation	Low 2	Low 1	Integration of cultural values and attributes into landscape level planning and management	Project outreach target
31	Prince Hussein picnic site	Gov	Recreational tourism	Low 2	Low 1	Adoption of ecosystem approach and sustainable recreation standards	Project outreach Implementation partner
32	Manaseer quarry stations	For-profit companies	Construction materials production	Low 1	High 5	Adoption of integrated natural resource management approaches and landscape rehabilitation approaches	Project outreach
33	Ministry of Awqaf	Gov	Religious extension and awareness raising	Low 2	High 4	Adoption of sustainable development discourse and tools	Project implementation partner (mosques) Project outreach target
34	Local farm owner – small farmers	Local community	Local livelihoods and agriculture development	High 5	High 4	Marginalization issues and capacity and awareness limitations	Project interventions targets Capacity building targets
35	Large farm owners	Private sector	Profitable agriculture	Low 2	High 4	Adoption of sustainable resource use methods and environmental and social safeguards	Project outreach targets

36	Livestock owners	Local community	Local livelihoods	High 4	Medium 3	Marginalization issues and capacity and awareness limitations	Project interventions targets Capacity building targets
37	Women collaboration institute society	CBO	Women development and empowerment	High 5	Low 2	Gender integration and safeguards	Project implementation partner Capacity building target
38	Syrian refugees' representatives	Local users International Agencies	Refugees support and programs	Low 2	Low 2	Refugees integration approach in line with local environmental and social specification	Project outreach target

Upper KTD Stakeholders Analysis Matrix							
A: Tal Arrumman Area – Ain Al Basha District, Balqa Governorate							
No	Stakeholder name	Stakeholder Type	Development Role in target area	Level of interest	Level of influence	Possible impacts on the project scope	Potential for role(s) development in the project context
1	Royal Botanic Garden (SCA)	Not-for-profit NGO	Consortium member SCA management Ecosystem restoration Plant conservation Genetic resources Local community development	High 5	High 5	Site based focus vs landscape approach	Core project partner
2	King Talal dam management	Gov	Water harvesting and monitoring	High 5	High 5	Water quality and quantity Ecological flows aspects	Project implementation partner Capacity building target
3	Agriculture department – Ain Al Basha	Gov	Forest conservation and rehabilitation	High 5	High 5	Afforestation approaches	Capacity building target
4	Governorate – Ain Al Basha District	Gov	Local development and security	Medium 3	High 5	Local development priorities vs sustainable development approaches	Local dialogue umbrella Project outreach target
5	Tal Arrumman area (municipality - Ain Al Basha)	Gov	Land use management and local development	Medium 3	Medium 3	Integration of sustainable development approaches in land use management	Outreach and capacity building target
6	Decentralisation council – Tal Arrumman representative(s)	Gov	Local development and community representation	Low 2	High 4	Adoption of sustainable development approaches and tools	Project outreach target
7	Department of public works – Ain Al Basha	Gov	Infrastructure development	Low 2	Medium 3	Adoption of integrated landscape	Project outreach target

						management approaches	
8	Ministry of interior – Rangers	Gov	Environmental law enforcement	High 4	High 4	Installation of adequate capacities and human resources	Project implementation partner Capacity building target
9	Social leaders	Local community	Local development and community representation	Low 2	Medium 3	Engagement in the project scope through formal platforms	Project outreach and awareness raising target
10	Tal Arrumman women cooperative	CBO	Women development and empowerment	High 5	Low 2	Response to capacity needs and integration into governance structures	Project interventions target
11	Tal Arrumman livestock owners' cooperative	CBO	Local development and members profit from sector development	High 4	Medium 3	Adoption of alternative solution for rangeland management	Project interventions target
12	Local schools	Gov	Local education	Medium 3	Medium 3	Adoption of new resource management approaches at school level	Project interventions target Capacity building target
13	Jordan Rally foundation	NGO	Rally sport promotion and organisation	Low 1	High 5	Adoption of environmental and social safeguards	Project outreach and advocacy target
14	Local entrepreneurs (private farms owners)	Private citizens	Development of tourism-based business	High 5	Medium 3	Adherence to environmental and social safeguards in development projects	Project outreach target Project implementation partners
15	Hussein 99 initiative	NGO	Local business development with cultural linkages	High 4	Low 2	Adherence to environmental and social safeguards in development projects	Project outreach target Project implementation partners

16	Wildlife hunters	Private citizens	Illegal wildlife hunting	Low 1	High 5	Adherence to legal requirements and environmental and social safeguards	Project outreach and advocacy target
17	Fishermen – KTD	Private citizens	Illegal fishing in KTD	Low 1	High 5	Adherence to legal requirements and environmental and social safeguards	Project outreach and advocacy target
18	Tourism service providers (guesthouses and restaurants)	For-profit companies	Tourism business development	Medium 3	High 4	Adoption of sustainable development standards	Project outreach target Project implementation partners
19	Picnickers	Private citizens	Recreational tourism (low cost)	Low 1	High 5	Adherence to legal requirements and environmental and social safeguards	Project outreach, awareness raising Project interventions target
20	Fuelwood collectors	Private citizens	Subsistence and for-profit wood collection	Low 1	High 5	Adherence to legal requirements and environmental and social safeguards	Project outreach, awareness raising Project interventions target
21	Local households	Private citizens	Subsistence and livelihoods	Medium 3	Low 2	Integration in the project scope through organized platforms (equity, gender balance, ES-safeguards)	Project outreach, awareness raising Project interventions target

Yarmouk Stakeholders Analysis Matrix							
No	Stakeholder name	Stakeholder Type	Development Role in target area	Level of interest	Level of influence	Possible impacts on the project scope	Potential for role(s) development in the project context
1	Governorate – Bani Kenanah	Gov	Local governance and community development	High 4	High 5	Adoption of sustainable development and good governance approaches	Outreach and capacity building target

2	JVA – north Ghor station	Gov	Water resources management and monitoring	High 5	High 5	Water quantity and quality for agriculture and tourism use	Project implementation partner Capacity building target
3	Health department Bani Kenanah	Gov	Community and visitors' health and safety	Medium 3	Medium 3	Water and agriculture/tourism safety issues	Project implementation partner Capacity building target
4	Khalid Bin Al Walid municipality	Gov/Semi-Gov	Local development and land use planning	Medium 3	High 4	Adoption of integrated approaches and open spaces	Project implementation partner Capacity building target
5	AL Shuleh municipality	Gov/Semi-Gov	Local development and land use planning	Medium 3	High 4	Adoption of integrated approaches and open spaces	Project implementation partner Capacity building target
6	Education department Bani Kenanah	Gov	Public education	Medium 3	Medium 3	Adoption of relevant education curricula	Project implementation partners Capacity building target
7	Local schools	Gov	Local education	Medium 3	Medium 3	Adoption of new resource management approaches at school level	Project interventions target Capacity building target
8	Al Yarmouk forest reserve	NGO	Consortium member Biodiversity conservation Forest rehabilitation initiatives Local community development	High 5	High 4	Site based focus vs landscape approaches	Project implementation partner Capacity building target

9	Al Shuleh SCA	CBO (currently inactive)	Integrated natural resource management	Low 1	Low 1	Potential for biodiversity centered initiatives	Project interventions target Capacity building target
10	Jubail tourism association – Shuleh	Not-for-profit company	Sustainable tourism development, cultural programs	High 5	Low 2	Issues of social inclusion and land governance	Project interventions target Capacity building target
11	Shuleh women cooperative	For-profit cooperative	Local women development (rural agriculture)	High	Low 1	Issues related to sustainable marketing and capacity for community mobilisation	Project interventions target
12	Jadara society for the friends of heritage and archaeology	Charity society	Cultural protection programs and local development initiatives	High 5	High 4	Nature-culture linkages and social inclusion challenges	Project interventions target Project implementation partner
13	Al Yarmouk livestock owners' cooperative	CBO	Local development and members profit from sector development	High 4	Medium 3	Adoption of alternative solution for rangeland management	Project interventions target
14	IRADA program	Gov-MOPIC	Local business development and capacity building	High 4	Medium 3	Effectiveness challenges and adoption of sustainable development standards	Project outreach Project implementation partner
15	Al Shuleh tourism society	CBO	Sustainable tourism development, cultural programs	Medium 3	Low 2	Issues of social inclusion and land governance	Project interventions target Capacity building target
16	Border guard	Gov	Border security and control	Low 1	High 5	Access control issues and logistic limitations	Project outreach target

17	Agriculture department – Bani Kenanah	Gov	Forest and rangeland conservation and rehabilitation	High 5	High 5	Afforestation and rangeland rehabilitation approaches	Capacity building target
18	Tourism department – Um Qais	Gov	Tourism control and promotion	High 5	Medium 3	Strategic approach to tourism planning and development beyond site specific focus	Project outreach target Project implementation partner
19	Department if Antiquities – Um Qais	Gov	Cultural heritage protection	Medium 3	Medium 3	Nature-culture linkages	Project outreach target
20	Rangers	Gov	Environmental law enforcement	High 4	High 4	Installation of adequate capacities and human resources	Project implementation partner Capacity building target
21	Tourism police – Um Qais	Gov	Tourism security and monitoring	Low 1	Medium 3	Integration into the law enforcement on the wider landscape level	Project outreach Capacity building
22	Al Baraka for tourism company	Not-for-profit	Sustainable tourism development	High 5	Medium	Social inclusion and benefit sharing	Project implementation partner
23	Local farmers (Shuleh-Um Qais)	Private citizens	Agriculture -based business	High 5	High 4	Adherence to agriculture water use restrictions and safeguards	Project interventions targets
24	Local farmers (Mukhaibat)	Private citizens	Agriculture-based business	High 5	High 4	Adherence to agriculture water use restrictions and safeguards	Project interventions targets
25	Tourism service providers (Shuleh-Um Qais)	For-profit companies	Tourism business development	Medium 3	High 4	Adoption of sustainable development standards	Project outreach target Project implementation partners

26	Mukhaibat local rest-houses	For-profit companies	Tourism business development	Medium 3	High 4	Adoption of sustainable development standards	Project outreach target Project implementation partners
27	Zara project (Mukhaibeh)	For-profit companies	Tourism business development	High 4	High 4	Adoption of sustainable development standards and social inclusion	Project outreach target
28	Visitors (Shuleh-Um Qais)	Private citizens	Recreational activities (forests)	Medium 3	High 5	Adherence to legal restrictions and adoption of alternative approaches to site visitation	Project outreach and awareness raising target
29	Visitors (Mukhaibat)	Private citizens	Recreational activities (hot springs)	Medium 3	High 5	Adherence to legal restrictions and adoption of alternative approaches to site visitation	Project outreach and awareness raising target
30	Public works department – Bani Kenanah	Gov	Infrastructure development	Low 2	Medium 3	Adoption of integrated landscape management approaches	Project outreach target
31	Wildlife hunters	Private citizens	Illegal wildlife hunting	Low 1	High 5	Adherence to legal requirements and environmental and social safeguards	Project outreach and advocacy target
32	Fuelwood collectors	Private citizens	Subsistence and for-profit wood collection	Low 1	High 5	Adherence to legal requirements and environmental and social safeguards	Project outreach, awareness raising Project interventions target
33	Treasure hunters	Private citizens	Illegal treasure hunting	Low 1	High 4	Adherence to legal requirements and environmental and	Project outreach and advocacy target

						social/cultural safeguards	

14. Grievance Redress Mechanism

The grievance redress mechanism (GRM) is an integral project management element that intends to seek feedback from beneficiaries and resolve of complaints on project activities and performance. The mechanism will leverage on existing, community-specific grievance redress mechanisms preferred by the local beneficiaries.

As a proactive action, the project implementers should continue the consultation process, by engaging different stakeholders and beneficiaries during the implementation phase, as to avoid any complaints received as a result of the project activities.

The proposed grievance redress process for the Project should be based on the following principles:

- **Transparency and fairness**: The process for grievance resolution shall be transparent, in harmony with the local culture, and in the appropriate language. It should explicitly assure potential users that the mechanism will not impede their access to other judicial or administrative remedies.

- **Accessibility and cultural appropriateness**: Every member of the community or groups especially women and marginalized groups should have access to the grievance procedure. Any individual or group that is directly or indirectly affected by the project's and its contractors' activities, as well as those who may have an interest in the project or the Ability to influence its outcome, either positively or negatively, can raise a grievance.

- **Meaningful Information**: As part of the engagement process, meaningful information should be disclosed to the stakeholders to allow for active and informed engagement.

- **Openness and communication regularity**: There are multiple channels available for individuals and groups to choose their preferred method of lodging grievances.

- **Written records**: All grievances are registered on a Grievance Form and tracked through to resolution.

The diagram below shows typical steps in a grievance resolution mechanism, which can be tailored to the project context and concerns.

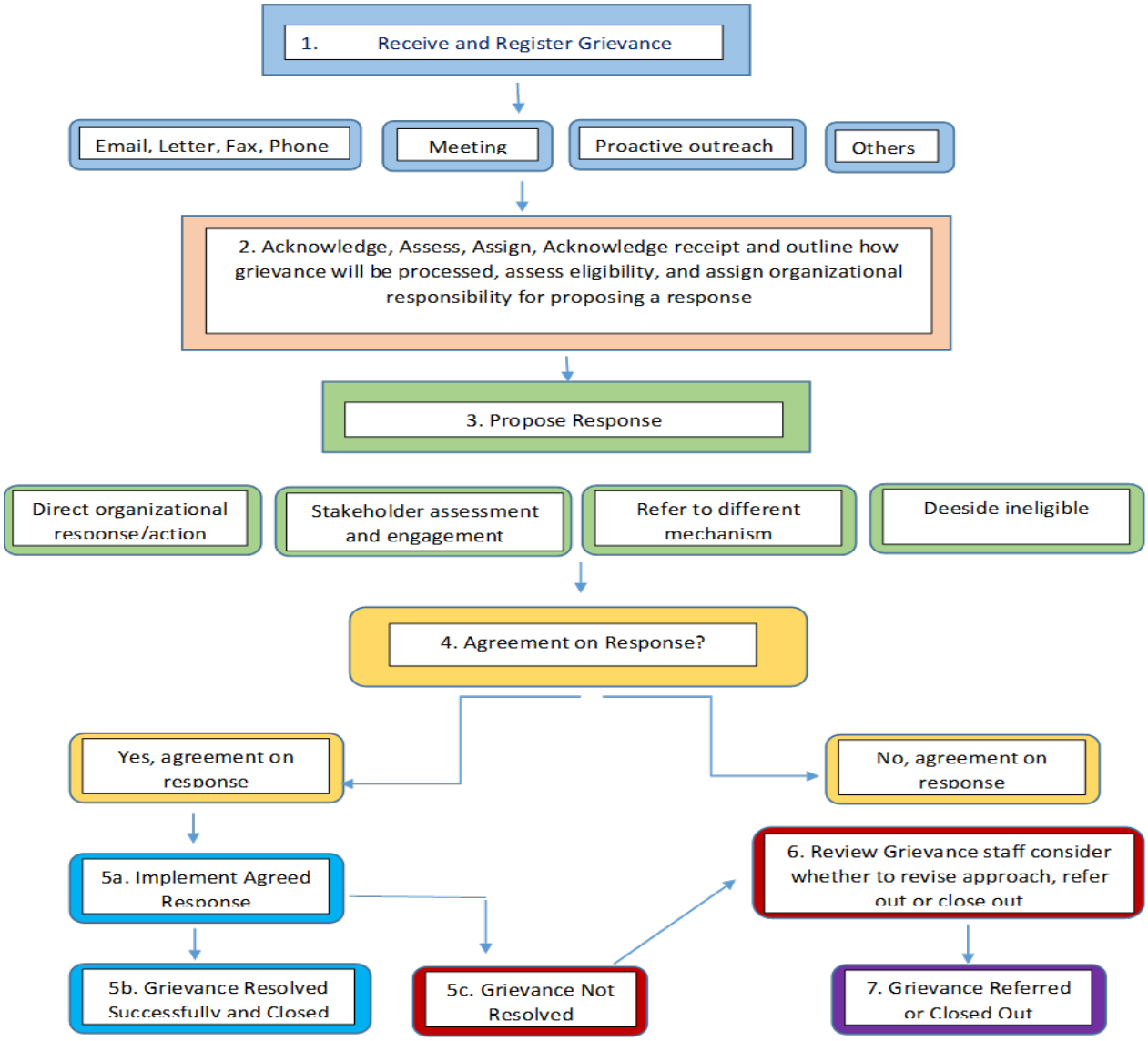


Figure 12. Proposed project Grievance Redress Mechanism.

14.1. Project-level Grievance Redress Mechanism

In line with the GCF's Independent Redress Mechanism[54], UNEP, in close collaboration with the Executing Entities (Ministry of Environment and IUCN-ROWA) is committed to ensuring that the proposed project is implemented in accordance with its environmental and social obligations. In order to better achieve these goals, and to ensure that beneficiaries of the proposed project have access to an effective and timely mechanism to address their concerns about non-compliance with these obligations, UNEP in order to supplement measures for receiving, reviewing and acting as appropriate on these concerns at the program management level, has entrusted IUCN-ROWA (co-Executing Entity) with the mandate to independently review the complaints that cannot be resolved at that level.

IUCN-ROWA will facilitate the resolution of concerns of beneficiaries of the proposed project regarding alleged or potential violations of GCF's and/or IUCN's social and environmental commitments. For this purpose, concerns may be communicated in accordance with the eligibility criteria of the IUCN's

[54] https://irm.greenclimate.fund

Environmental and Social Management System (ESMS) Grievance Mechanism[55], which applies to all IUCN's programs and projects.

Concerns must be addressed at the closest appropriate level, i.e. at the project management/technical level, and if necessary, at the Regional Office level. If a concern or grievance cannot be resolved through consultations and measures at the project management level, a complaint requesting a Compliance Review may be filed with IUCN Head of Oversight. with the Guidelines. The project manager will have the responsibility to address concerns brought to the attention of the focal point.

The project will establish a grievance mechanism at field level to file complaints. Contact information and information on the process to file a complaint will be disclosed in all meetings, workshops and other related events throughout the life of the project. In addition, it is expected that awareness raising material be distributed to include the necessary information regarding the contacts and the process for filing grievances.

The Project Management Unit (PMU) will be responsible for addressing incoming grievances regarding environmental and social standards; as part of the safeguards performance monitoring, the Project Manager of the PMU will be responsible for documenting and reporting on any grievances received and how they were addressed.

Grievance Redress Mechanism Structure:

1. The complainant files a complaint through one of the channels of the grievance mechanism, which will be set up (email address, telephone number(s), contact person or physical address) before project implementation.
2. This will be sent to the PMU, where the Safeguards Specialist, who also acts as the GRM Focal Person, will assess whether or not the complaint is eligible. *The confidentiality of the complaint will be ensured throughout the process.*
3. Eligible complaints will be addressed by the PMU Safeguards Specialist together with the Project Manager of the PMU. The Project Manager will be responsible for recording the grievance and how it has been addressed if a resolution was agreed upon.
4. If the situation is exceptionally complex, or the complainer does not accept the resolution, the complaint must be escalated to a higher level (IUCN-ROWA Executing Entity Representative), until a solution or acceptance is reached.
5. If the situation is still not resolved, the grievance will be escalated to the head of IUCN-ROWA.
6. If the situation is still not resolved, the grievance will be escalated to the IUCN Head of Oversight — Gland, Switzerland.
7. For every complaint received, written proof of receipt will be sent within five (5) working days; afterwards, a resolution proposal will be made within twenty (20) working days.
8. In compliance with the resolution, the person in charge of dealing with the complaint may interact with the complainant, or may call for interviews and meetings, to better understand the situation.
9. All complaints received, their response and resolutions, must be duly registered.

Internal process

1. *Project Management Unit*. The complaint can directly contact the PMU either in writing, or orally. At this level, received complaints will be registered, investigated and solved by the PMU.

2. *IUCN-ROWA Executing Entity Representative*. The assistance of the IUCN-ROWA representative is requested if a resolution was not reached and agreed upon in level 1.

3. *Head of IUCN-ROWA*. If necessary, the IUCN-ROWA Representative will request the advice of his/her head of office to resolve a grievance, or will transfer the resolution of the grievance entirely to the office, if the problem is highly complex.

[55] https://www.iucn.org/sites/dev/files/iucn_esms_grievance_mechanism_guidance_note-v2.1.pdf

4. *IUCN Head of Oversight*. Only on very specific situations or complex problems, the IUCN-ROWA representative will request the assistance on the IUCN Head of Oversight who pursues its own procedures to resolve the problem.

Resolution

Upon acceptance a solution by the complainant, a document with the agreement should be signed, clearly indicating the terms of the resolution.

Level of Redress Mechanism	Details
PMU	Must respond within 5 working days. Contact details to be confirmed before project implementation.
IUCN-ROWA Executing Entity Representative	In consultation with the PMU, must respond within 5 working days. Abdel Latif Salah Street, building # 29, Sweifiyeh P. O. Box 942230 Amman 11194 JORDAN Tel: +962 (6) 5546912/3/4 Fax: +962 (6) 5546915 E-mail: westasia@iucn.org
Head of IUCN-ROWA	In consultation with the IUCN-ROWA Executing Entity Representative, must respond with in 5 working days. Abdel Latif Salah Street, building # 29, Sweifiyeh P. O. Box 942230 Amman 11194 JORDAN Tel: +962 (6) 5546912/3/4 Fax: +962 (6) 5546915 E-mail: westasia@iucn.org
IUCN Head of Oversight	A complaint can be submitted to the Project Complaints Management System in several ways: • by post to IUCN Head of Oversight, Rue Mauverney 28, CH-1196 Gland, Switzerland; • by email to projectcomplaints@iucn.org; • by fax to +41 22 999 00 02 (indicating IUCN Head of Oversight as addressee); or • by telephone to + 41 22 999 02 59. A written complaint sent by post, fax or email should include the following information (in any language): • complainant's name, address, telephone number, fax number and email address and valid proof of representation if the complaint is filled by the representative of a legal person/entity; • description of the project or programme concerned; • the harm that is, or may result from IUCN's and/or the project executing entity's failures to respect IUCN's ESMS principles, standards, or procedures;

	• the principle, standard, or procedure (if known) allegedly breached; • actions taken to solve the issue, including previous contacts with the PMU, executing entity and the nearest IUCN office (levels 1, 2 and 3) and reasonably detailed explanations why these stages have not provided a satisfactory solution; and • list of supporting documents and attachments, as appropriate. A template for the complaint is available on the IUCN website[56].

The draft GRM will be further refined during the inception phase (please refer to budget note D1 in Annex 4) to ensure robustness and acceptability by local communities. The further refinement of the due diligence methodology and the GRM will consider how in-country mechanism could be brought in to address the complaints.

SEAH and GBV related Grievances

As a result of the sensitivity regarding grievances related to GBV or SEAH, all reported grievances of this nature will be managed through a specific process. While grievances related to SEAH/GBV will still follow the 9 step procedure described above, an additional parallel process will be instituted to ensure the safety of the survivor and prioritize access to support services. The core considerations of this process are:

i) automatic eligibility of grievances;
ii) anonymisation and/or prioritization of protection and privacy of victim in all official documentation and processes;
iii) prioritization of support services for victim through referral to local active specialist NGO/CBO. Support will be provided for as long as required, and at the expense of the project if so required;
iv) investigation of root cause of grievance and appropriate disciplinary action undertaken;
v) Monitoring and reporting of all SEAH/GBV grievances in a separate and anonymised register for inclusion in biannual project reports; and
vi) Adequate restitution and/or reporting of event and perpetrator to appropriate legal bodies/institutions (as required by law and/or policies of the AE/IP).

As per the considerations outlined above, the parallel process in the GRM will operate in a survivor-centred structure. This will ensure that the safety of the victim/survivor and the need to provide support to them is prioritised above all other considerations. All processes beyond the initial report will be anonymised and access to support services will provided alongside the receipt of grievance as described in step 2 of Figure 12. Support services will be provided by a specialist NGO that operates in the vicinity of the project site, the existence of which is evidence by the developed network of GBV and SEAH survivor support organisations that are active in the Jordan Valley and as described in Section 9.7. These specialist NGO's will be identified by the ESS Officer in collaboration with the CTA, the consortium of technical partners and in consultation with the larger active network of survivor-centred support organisations described in section 9.7 and during the first year of implementation. Any NGO's supporting the project will need to have a history of working in the region and proven specialised expertise in supporting survivors of GBV and SEAH (at a minimum).

15. PROJECT IMPACTS

[56] www.iucn.org/esms

15.1. No Action/Without Project

This alternative indicates that “without project” means that all defined, potential adverse impact sources (during the construction, implementation and operation phases) do not occur. The “No Action/Without Project” alternative can be judged to cause the acceleration of negative change to the environmental and social settings within and out of the proposed project area. This anticipation should take into consideration that, at present, environmental conditions are deteriorating in the Jordan Valley and that the adverse potential environmental impacts identified as part of the "With Project" alternative are limited — as compared to the positive impacts anticipated with the Integrated Landscape Management in the project target area.

Without the project it is inevitable that the current environmental and social challenges in the Jordan Valley will keep on building and threatening the physical, biological and archaeological and cultural heritage conditions in the area.

15.2. With Project

The "With Project" alternative aims at encouraging climate-resilient watershed and landscape management in the Jordan Valley. This will be done through enhancing upstream watershed restoration and supporting community-based natural resource management and sustainable use of ecosystem services for community-based adaption. It will also be achieved through the improvement of access to clean water and its proper utilisation for domestic use through small scale water harvesting at the local level including selected localities of the Jordan Valley, public centres and at the household level. Both of the two main intervention approaches will be supported under the “With Project” alternative with efforts to strengthen governance for climate-resilient watershed management in the target area.

The above would lead to the enhancement of the overall landscape, watershed and ecosystem integrity, conservation and sustainable use. There are some adverse environmental impacts associated with the intended construction activities under the project activities. However, these will be temporary and not significant especially when compared to the long-term positive impacts associated with the implementation of the ILWRM interventions.

16. Expected Project Environmental Impacts

16.1. Project Alternatives

This section analyses the alternatives of "No Action/Without Project" and "With Project". The main issues of concern identified to analyse within the project alternatives are as follows:

Physical Environment:

- Landscape damage and change of natural drainage system and local geomorphology.
- Watershed damage upstream, affecting the quantity and quality of water reaching downstream.
- The deterioration of water-related ecosystem (provisioning) services upstream.
- The deterioration of soil-related ecosystem services (regulating) upstream and downstream.
- Quality and quantity of water for drinking and agriculture.
- Groundwater recharge and conserving groundwater quality.
- Solid and liquid waste generation.

Biological Environment:

- Ecosystem and natural habitat fragmentation and increased edge and island effects.
- Deterioration of ecosystem support services related to habitat maintenance.
- Loss of biodiversity – local flora and fauna.
- Disturbance to bird migration.
- Conservation of threatened species.
- Conservation of genetic resources.
- Invasive species introduction and spread.

Agricultural Productivity:

- Adoption of sustainable agriculture.
- Deterioration of agriculture-related ecosystem services (provisioning).
- Alternative energy solutions for agricultural development.
- Land productivity and resource efficiency.

Cultural Heritage and Resources:

- Conservation of tangible cultural values and attributes (archaeology and heritage sites).
- Conservation of intangible and living heritage.
- Loss of local knowledge and traditional landscape management practices.

The main concerns are the continuation of environmental deterioration (due to climate change driven and anthropogenic factors if no action were to be taken) and the potential environmental impacts and consequences associated with the project intervention. Table 26 below summarises the analysis of the project alternatives against the factors identified above.

Table 26. Analysis of project alternatives.

Issue of Concern (Components)	Alternatives	
	No Action/Without Project	With Project
Physical Environment		
Landscape damage, change of natural drainage system and local geomorphology.	-3	+3
Watershed damage upstream affecting the quantity and quality of water reaching downstream areas.	-3	+2
The deterioration of water-related ecosystem (provisioning) services upstream.	-2	+2
The deterioration of soil-related ecosystem services (regulating) upstream and downstream.	-2	+1
Quality and quantity of water for drinking and agriculture.	-3	+2
Groundwater recharge and conserving groundwater quality.	-1	+1
Solid and liquid waste generation.	-2	+1
Biological Environment		
Ecosystem and natural habitat fragmentation and increased edge and island effects.	-3	+2
Deterioration of ecosystem support services related to habitat maintenance.	-2	+2
Loss of biodiversity – local flora and fauna.	-2	+1
Disturbance to bird migration.	-2	+1
Conservation of threatened species.	-1	+1
Conservation of genetic resources.	-3	+3
Invasive species introduction and spread.	-3	+2
Agricultural Productivity		
Adoption of sustainable agriculture.	-3	+3
Deterioration of agriculture-related ecosystem services (provisioning).	-2	+1
Alternative energy solutions for agricultural development.	-3	+2
Land productivity and resource efficiency.	-2	+1
Cultural Heritage and Resources		

Conservation of tangible cultural values and attributes (archaeology and heritage sites).	0	0
Conservation of intangible and living heritage.	-2	+2
Loss of local knowledge and traditional landscape management practices.	-1	+2

Ranking
(+3): High Positive Effect
(+2): Medium Positive Effect
(+1): Low Positive Effect
(0): No Effect
(-1): Low Negative Effect
(-2): Medium Negative Effect
(-3): High Negative Effect

It should be noted that the detailed on-the-ground interventions of the project are not yet identified as those will be developed during the course of project implementation, hence, the approach adopted here for the identification and analysis of environmental and social impacts remain rather general and based on the detail level achieved in the current project log-frame and theory of change.

16.2. Impacts on the Physical Environment

This section of the report presents and discusses the expected environmental impacts of the proposed project. As mentioned previously, the project consists of three major groups of activities within the Jordan Valley area. These are: (i) climate-resilient watershed restoration and ILWRM activities (mostly upstream), (ii) access and use of clean water at the local level (mostly downstream), and (iii) improvement of governance for climate resilient watershed management.

The implementation of such an “environmental” project is expected to have major positive impacts on the regional level within the Jordan Valley area. These impacts can be summarised as follows:

- Contribution to safeguarding landscape integrity.
- Contribution to watershed maintenance and productivity.
- Contribution to the maintenance of water-related ecosystem services.
- Contribution to soil conservation and maintenance.
- Contribution to the improvement of water quality and quantity reaching downstream.
- Contribution to the reduction of solid and liquid waste from the various land-use patterns.

Nevertheless, negative impacts can be generated as a result of mismanagement practices in some of the project activities. Such practices include:

- Temporary changes to land and watersheds during the watershed related interventions.
- Generation of solid and liquid waste during the watershed restoration activities.
- Temporary impacts on water availability during the watershed related interventions.

16.3. Enhancing Watershed and Landscape Integrity and Productivity

Implementing integrated watershed and landscape management approaches in the Jordan Valley provides a unique opportunity for enhancing landscape and ecosystem integrity, where all landscape and ecosystem-valued components are recognised as a precedence for action.

The intended project is expected to enhance watershed and landscape health and integrity **directly** by:
- Integrating watershed-based thinking into resource planning and management practices.
- Restoring watersheds’ and landscapes’ capacities to provide and maintain ecosystem functions and services.
- Enhancing and promoting nature-based alternative livelihoods in the Jordan Valley.

and **indirectly** by:

- Promoting appropriate policies, regulations and incentive structures that support ILWRM.
- Securing sustainable financing for watershed planning, landscape management and community development.
- Developing capacities of multi-sectoral organisations carrying out land use planning and management in the valley, and/or implementing large developmental projects with influence on watershed and landscape components and land use patterns.
- Implementing public awareness programs targeting the enhancement of stakeholders and local communities understanding and appreciation of the need to maintain watersheds and improve landscape management in the Jordan Valley.

The magnitude of this cumulative impact is highly dependable on the success of implementing the project activities, and certainly on the level of attention and involvement given by all related stakeholders, especially key governmental organisations and directly related communities.

Some challenges, if not mitigated, are expected to reduce the magnitude of this positive impact. These key challenges include:

- Availability of information necessary for the overall environmental management within the Jordan Valley.
- Sufficient involvement by related stakeholders and, in particular, local communities.
- Adopting centralised decision-making processes rather than bottom-up approaches.
- Adequate selection of sites and localities for the implementation of the project ILWRM interventions.
- Enforcement of appropriate policies, regulations and incentive structures that support ILWRM; and resolving ambiguity of responsibilities and/or lack of well-equipped law enforcement tools.
- Adequate coordination and cooperation among relevant government institutions.

16.4. Conservation of Natural Resources by ILWRM

Conserving natural resources is the foundation for integrated watershed and landscape management in the Jordan Valley. Implementing the ILWRM approach is expected to yield many positive impacts on conserving natural resources, as follows:

16.4.1. Water Resources

ILWRM practices have a direct and positive impact on water resources. While measures taken under ILWRM for conserving water resources can be reversed easily without any implications, the proper management of water application systems and cropping practices related to irrigation has a permanent influence on conserving water, for both surface and underground resources. This is accomplished:

directly by:

- Improving the operation of existing irrigation and drainage infrastructures through ILWRM which will reduce water losses.
- ILWRM promotion for farmers' involvement in management and maintenance of irrigation and drainage facilities (water storage, water transport, irrigation systems, and irrigation patterns), which creates conditions for best conserving irrigation water. This higher public awareness will minimise water losses off- and on-farm.
- Selecting crops adapted to lower water use and higher water use efficiency.
- Reuse of treated water (grey and black water) at a larger scale is expected to directly conserve water resources. Considerable efforts should be employed to take all necessary precautions to avoid environmental disturbances.

and indirectly by:

- Lower use of agrochemicals which will be reflected in fewer water contaminations that eventually enhance water quality.
- Maintaining sustainability of irrigated agriculture as the wise use of water resources will have a cumulative impact of abundant water quantities of a high quality for future generations.

16.4.2. Soil Resources

Conserving soil resources is very essential to maintain functioning watersheds and ecosystems. Many activities within the ILWRM in the Jordan Valley will conserve and further enhance the physical, biological, and chemical properties of soils. These activities have, nearly always, an **indirect positive influence** as follows:

- Justified use of irrigation water will reduce nutrient depletion otherwise encountered when over-irrigation is practiced.
- Increasing water utilisation and efficiency will have a considerable impact on minimising sediment concentrations in runoff water, a factor that causes the deterioration of soil quality.
- Proper crop selection, such as selecting salt-tolerant crops will facilitate practicing more efficient and sustainable land-use schemes.
- Adopting proper crop rotation and intercropping practices will improve soil physical properties, due to the presence of various rooting systems that explore different soil layers. This will prevent compaction, will improve soils' infiltration rates (reduce water run-off losses), and reduce soil erosion.
- Improving the chemical properties of arable soils by balancing nutrient depletion and enrichment processes that takes place in well-planned crop rotations.
- Improving soil quality and nutrient management within farming systems. This is a significant process which involves reducing the amounts of chemical fertilisers and associated pollutants.
- Practicing IPM reduces the presence of soil-applied pesticides, therefore maintaining a functioning soil fauna capable of performing decompositions to recycle nutrients within ecosystems.
- Reducing off-farm inputs will reduce soil pollution, especially when plastic mulches that have detrimental pollution effects are replaced by cover crops.
- Recycling agricultural by-products and supplied materials will reduce pollutants in soils, as an increase in the economic value of such material will encourage farmers to participate more in the recycling process.
- Promoting organic farming across the Jordan Valley, known to have less of an impact on soils, will definitely conserve soil structures and fertility levels.
- Establishing plants for proper treatment of wastewater will maintain soils in good tilth.
  Continuous monitoring will prevent accumulation of heavy metals in cultivated and surrounded lands.

16.5. Impacts on Biological Environment

This section of the document assesses known, potential, and reasonably foreseeable environmental consequences related to implementing climate-resilient watershed and Integrated Landscape Management in the Jordan Valley. The project is assessed against the current level of details in regard to project components and activities.

Generally, the project is designed to address Jordan Valley watershed and landscape improvement and maintenance through adopting climate-resilient approaches and interventions using ecosystem-based approaches and methodologies. Thus, the anticipated impacts of the project are mostly positive with little negative consequences.

These impacts are cumulative in most areas, and are of a complex multi-level, cause and effect relationship between the project and the environment. The following section details the anticipated impacts of the project on the biological environment.

16.6. Maintenance of Ecosystem Services related to Natural Habitats

A wide variety of habitats can be found along the Jordan Valley, due to its complex geology and altitudinal range, ranging from Irano-turanean to Sudanian-penetration habitats. Habitats range here from deep rocky gorges to flat slopes and plateaus covered by steppe vegetation, dense hydrophyte vegetation along water streams, and farmlands. These habitats are of national and often global importance since they support significant biological diversity fostering, harbouring and supporting species of flora and fauna (including avifauna), and genetic resources. Many of these habitats are considered fragile and sensitive to environmental stressors. Prevailing environmental stressors and threats to these habitats include:

- Unsustainable agricultural practices including intensive agricultural farming and monoculture practices;
- Urbanisation and increased population densities;
- Over exploitation of water resources including surface and ground water;
- Water and soil contamination by agrochemical, industrial and urban sources;
- Over grazing and unsustainable woodcutting;
- Degradation of special habitat types such as wetlands, Salinas, and riparian vegetation.

The project is expected to contribute to the conservation of a significant representative portion of the identified fragile habitats, **directly** by:

- Adopting ecosystem-based approaches to restoration efforts;
- Encouraging the maintenance and effective management of existing protected areas and other natural heritage hotspots.
- Promoting the use of traditional knowledge and experience in natural habitat management and maintenance.

And **indirectly** by:

- Enhancing and promoting nature-based alternative livelihoods in the Jordan Valley.
- Enforcing appropriate policies, regulations and incentive structures that support ILWRM.
- Securing sustainable financing for ecosystem planning, community development and nature conservation activities.
- Developing capacities of multi-sectoral organisations carrying out land use planning and management in the valley, and/or implementing large developmental projects with an influence on ecosystem components and land use patterns.
- Implementing public awareness programs targeting the enhancement of stakeholders and local communities understanding an appreciation of the need to conserve ecosystem components in the Valley.

The magnitude of this impact is difficult to measure during this phase of the project, however, it can be measured in the future as areas of natural habitat benefiting from the various project interventions.

On the other hand, the project might have negative impacts to natural habitat as a consequence of:
- Constructing management and maintenance facilities within the project intervention sites;
- Increasing access to remote natural habitats primarily by workers, staff, researchers and possibly visitors.

The anticipated construction activities including land preparation, accumulation of generated waste and land works, and later during operation and maintenance activities will deteriorate the physical and ecological characteristics of natural habitats, as well as biodiversity in general, within the construction sites' direct zones of effect. The magnitude of this impact is dependent on the selection criteria of facilities' locations, the scale of construction to be applied and the measures taken to limit construction zones to a minimum. The impacts include:
- Direct removal of vegetation;
- Alteration of surface morphology and natural water runoff schemes;
- Wildlife disturbance during construction; and
- Wildlife persecution and/or vegetation cover removal mainly during the construction phase.

Further, any increased access to natural sites will include vehicle movement, direct and indirect removal of vegetation cover, and littering. The magnitude of this impact relates to the nature of allowed access patterns (allowed activities and the number and frequency of use).

16.7. Enhancing Biodiversity

Positive changes anticipated in the biodiversity conditions, consequent to the implementation of environmentally-sound ILWRM interventions, are expected logically to go beyond improving the overall conditions of natural habitats, to encouraging the revival and spread of native species that used to exist in these habitats before. This indicates that species diversity is expected to increase.

Also, the application of ecosystem-based approaches in the project will result in improving our knowledge of species diversity and might introduce us to new records in Jordan and the region.

In general, the project will improve the conservation status of threatened and endangered flora and fauna species distributed throughout the project area. Many threatened plant species which occur solely in the project area, or forming a stand, will benefit from the project.

Further, the improved conditions introduced by the project might be of value for migratory birds crossing the valley in huge numbers twice a year — through the improvement and maintenance of water bodies, in terms of quantity and quality, which are essential for the survival of the migrating birds.

16.8. Conservation of Genetic Resources

Many activities are expected to enhance the conservation of genetic resources **directly by:**

- Lower pesticide use by IPM practices which will allow an increase in populations of wild plants, insects, and soil fauna. Biodiversity enrichment will be achieved as the natural biological balance is restored by applying fewer pesticides. Many beneficial organisms will thrive within the agro-ecological systems, that otherwise would be subjected to extinction.
- Well-planned crop rotation will allow the soils' micro-organisms to flourish in a balanced fashion, thus, preventing the build-up of soil-borne diseases.
- Lower fertiliser use (chemical and organic) will reduce phytotoxic substances in agricultural as well as natural surrounding areas, which grants better growing conditions for natural vegetation.
- Diversity of vegetation will encourage various birds and mammals to flourish as a greater diversity of feed and shelter sources are present.

16.9. Impacts on Cultural Heritage Resources

The intended project is not expected to cause negative impacts to the cultural heritage resources existing in the study area. Also, according to the project analysis, the project does not have specific activities targeting the protection and conservation of these resources.

Nevertheless, the intended project is thought to benefit the existence of these sites through promoting nature-culture linkages in implemented initiatives. Therefore, the project could be an opportunity to integrate the conservation of these resources side by side with the conservation of landscape as they form part of the unique Jordan Valley identity.

Mainstreaming the conservation of cultural heritage resources (both tangible and intangible) into land use planning and ILWRM initiatives would certainly enhance the joint conservation of natural and cultural heritage.

Also, capacity building of relevant stakeholders related to cultural heritage – and in particular local community members – may be considered by the project since the Ministry of Tourism and the Department of Antiquities are considered part of the ILWRM project stakeholders.

Relevant governmental, private sector and civil society organisations may benefit through the success of the intended ILWRM initiatives as success stories for future environmentally and cultural sound management in the Jordan Valley.

Enhancing the establishment of site support groups to salient archaeological and cultural heritage sites would be of great value to the conservation of these sites, especially if similar groups are linked with supporting biological hotspots where these sites are located.

16.10. Environmental Impacts Inventory Matrix

Table 27. Environmental impacts inventory matrix

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
On Physical Environment (P)								
Climate-resilient watershed restoration and rehabilitation (upstream)								
A. Planning and Construction Phase								
P.1	Changes to landscape and natural drainage systems	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.2	Construction solid waste	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.3	Construction liquid waste	Negative	Direct	Not cumulative	Footprint extended zone	Temporary	Low-Medium	Reversible
P.4	Domestic solid waste	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.5	Domestic liquid waste	Negative	Direct	Not cumulative	Footprint extended zone	Temporary	Low-Medium	Reversible
P.6	Air pollution	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.7	Noise generation	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B. Implementation, Operation and Adaptation Phase								
P.8	Conserving watershed system and landscape integrity	Positive	Direct	Cumulative	Footprint extended zone	Permanent	High	-
P.9	Increasing groundwater recharge rates	Positive	Direct	Cumulative	Footprint extended zone	Permanent	High	-
P.10	Improving groundwater quality	Positive	Direct	Cumulative	Footprint extended zone	Permanent	Medium	-
P.11	Improving surface water quality	Positive	Direct	Cumulative	Footprint extended zone	Permanent	High	-

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
P.12	Increasing surface water quantity	Positive	Direct	Cumulative	Footprint extended zone	Permanent	High	-
P.13	Reducing soil contamination and erosion	Positive	Direct	Cumulative	Foot print extended zone	Permanent	Medium	-
P.14	Increasing soil stability and fertility	Positive	Direct	Cumulative	Footprint extended zone	Permanent	Medium	-
P.15	Reducing flood risk	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Medium	-
P.16	Reducing air pollution	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Low	-
P.17	Inappropriate disposal of fluid and solid waste	Negative	Direct	Cumulative	Footprint extended zone	Permanent	Low	Reversible
Access and use of clean water (downstream)								
I.	Planning and Construction Phase							
P.18	Changes to landscape and natural drainage systems	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.19	Construction solid waste	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.20	Construction liquid waste	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.21	Domestic solid waste	Negative	Direct	Not cumulative	Localized	Temporary	Low-medium	Reversible
P.22	Domestic liquid waste	Negative	Direct	Not cumulative	Localized	Temporary	Low-medium	Reversible
P.23	Air pollution	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
P.24	Noise generation	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
II.	Implementation, Operation and Adaptation Phase							
P.25	Conserving watershed system and landscape integrity	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Low	-

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
P.26	Increasing groundwater recharge rates	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Low	-
P.27	Improving groundwater quality	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Low	-
P.28	Improving surface water quality	Positive	Direct	Cumulative	Footprint extended zone	Permanent	High	-
P.29	Increasing surface water quantity	Positive	Direct	Cumulative	Footprint extended zone	Permanent	High	-
P.30	Reducing soil contamination and erosion	Positive	Direct	Cumulative	Footprint extended zone	Permanent	Medium	-
P.31	Increasing soil stability and fertility	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Low	-
P.32	Reducing flood risk	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Low	-
P.33	Reducing air pollution	Positive	Indirect	Cumulative	Footprint extended zone	Permanent	Low	-
P.34	Inappropriate disposal of fluid and solid waste	Negative	Direct	Cumulative	Footprint extended zone	Permanent	Low-medium	Reversible
On Biological Environment (B)								
Climate-resilient watershed restoration and rehabilitation (upstream)								
I. Planning and Construction Phase								
B.1	Deterioration and fragmentation of natural ecosystems	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.2	Changes to natural ecosystems' configuration and composition	Negative	Direct	Not cumulative	Localized	Temporary	Low-medium	Reversible
B.3	Disturbance to ecological corridors	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.4	Removal of vegetation cover	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.5	Persecution of wildlife	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
B.6	Disturbance to breeding and migratory birds	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.7	Deterioration of genetic resources	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.8	Introduction of invasive species	Negative	Direct	Not cumulative	Localized	Temporary	Low-medium	Reversible
II.	Implementation, Operation and Adaptation Phase							
B.9	Improving ecosystem resilience to climate change impacts	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-
B.10	Improving ecosystem integrity and functions	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-
B.11	Enhancing ecosystem services	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-
B.12	Improving protected areas' effectiveness	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-
B.13	Conserving and restoring wildlife populations	Positive	Indirect	Cumulative	Localized and extended zones	Permanent	Low-medium	-
B.14	Protecting plant genetic resources	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-
B.15	Eliminating invasive species (plants and animals)	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-
B.16	Encouraging ecosystem friendly alternative livelihoods	Positive	Direct	Cumulative	Localized and extended zones	Permanent	High	-

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
B.17	Encouraging ecosystem-based research and monitoring	Positive	Direct	Cumulative	Localized and extended zones	Permanent	Medium	-
B.18	Raising community awareness on environmental sustainability	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	Medium	-
Access and use of clean water (downstream)								
I.	Planning and Construction Phase							
B.19	Deterioration and fragmentation of natural ecosystems	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.20	Changes to natural ecosystems' configuration and composition	Negative	Direct	Not cumulative	Localized	Temporary	Low-medium	Reversible
B.21	Disturbance to ecological corridors	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.22	Removal of vegetation cover	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.23	Persecution of wildlife	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.24	Disturbance to breeding and migratory birds	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.25	Deterioration of genetic resources	Negative	Direct	Not cumulative	Localized	Temporary	Low	Reversible
B.26	Introduction of invasive species	Negative	Direct	Not cumulative	Localized	Temporary	Low-medium	Reversible
II.	Implementation, Operation and Adaptation Phase							
B.27	Improving ecosystem resilience to climate change impacts	Positive	Indirect	Cumulative	Localized	Permanent	Low	-
B.28	Improving ecosystem integrity and functions	Positive	Indirect	Cumulative	Localized	Permanent	Low	-
B.29	Enhancing ecosystem services	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
B.30	Improving protected areas effectiveness	Positive	Indirect	Cumulative	Localized and extended zones	Permanent	Low	-
B.31	Conserving and restoring wildlife populations	Positive	Indirect	Cumulative	Localized and extended zones	Permanent	Low	-
B.32	Protecting plant genetic resources	Positive	Indirect	Cumulative	Localized and extended zones	Permanent	Low	-
B.33	Eliminating invasive species (plants and animals)	Positive	Indirect	Cumulative	Localized and extended zones	Permanent	Low	-
B.34	Encouraging ecosystem friendly alternative livelihoods	Positive	Direct	Cumulative	Localized and extended zones	Permanent	High	-
B.35	Encouraging ecosystem-based research and monitoring	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Medium	-
B.36	Raising community awareness on environmental sustainability	Positive	Direct and Indirect	Cumulative	Localized and extended zones	Permanent	High	-
On Cultural Values and Attributes (tangible, intangible, living heritage) (C)								
Climate-resilient watershed restoration and rehabilitation (upstream)								
I. Planning and Construction Phase								
C.1	Damage to known archeological sites	Negative	Direct	Cumulative	Localized	Temporary	Low	Irreversible
C.2	Damage to unknown archeological sites	Negative	Direct	Cumulative	Localized	Permanent	Medium	Irreversible
C.3	Disturbance to local traditions and customs	Negative	Direct and indirect	Cumulative	Localized	Permanent	Low	Reversible
C.4	Looting of artifacts	Negative	Direct	Cumulative	Localized	Permanent	High	Irreversible
II. Implementation, Operation and Adaptation Phase								

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
C.5	Encourage nature-culture linkages in ILWRM	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Medium	-
C.6	Promote local knowledge and experience in ILWRM	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	High	-
C.7	Conserve archeological findings and sites	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	High	-
C.8	Promote cultural research and monitoring	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Low	-
C.9	Document and disseminate intangible heritage	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Low	-
Access and use of clean water (downstream)								
I.	Planning and Construction Phase							
C.10	Damage to known archeological sites	Negative	Direct	Cumulative	Localized	Temporary	Low	Irreversible
C.11	Damage to unknown archeological sites	Negative	Direct	Cumulative	Localized	Permanent	Low	Irreversible
C.12	Disturbance to local traditions and customs	Negative	Direct and indirect	Cumulative	Localized	Permanent	Low	Reversible
C.13	Looting of artifacts	Negative	Direct	Cumulative	Localized	Permanent	Low	Irreversible
II.	Implementation, Operation and Adaptation Phase							
C.14	Encourage nature-culture linkages in ILWRM	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Low	-
C.15	Promote local knowledge and experience in ILWRM	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	High	-

No	Impact	Type	Nature	Cumulatively	Impact Dispersal	Impact Duration	Impact Significance	Reversibility
		(Positive, Negative)	(Direct, Indirect)	(Cumulative, Not Cumulative)	(Localized/Footprint, extended zone, highly dispersal)	(Permanent, Temporary)	(low, medium, high)	(Reversible, Irreversible)
C.16	Conserve archeological findings and sites	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Low	-
C.17	Promote cultural research and monitoring	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Low	-
C.18	Document and disseminate intangible heritage	Positive	Direct and indirect	Cumulative	Localized and extended zones	Permanent	Low	-

16.11. Environmental Management Plan

Table 28. Environmental management plan

Project activity: Climate-resilient watershed restoration and rehabilitation (upstream)					
	No	Potential Negative Environmental Impacts	Mitigation Measures	Responsibility (Implementation)	Cost (USD)
(P) on physical environment	1	Changes to landscape and natural drainage systems	-All construction activities should avoid changing local morphology, and wherever unavoidable, it should be kept to an absolute minimum. This can be ensured through proper selection of construction sites and proper delineation of construction zones. -Adopt proper schematic plans before the start of the intervention. -No raw material quarries should be allowed in project sites. -Review and adopt international best practices for watershed and landscape restoration and rehabilitation. -Train planning and implementation team on best practice guidelines and techniques.	Environmental and Social Safeguards Officer	*The cost of implementing the EMP will be covered by the full-time Environmental and Social Safeguards Officer (USD 60,000 salary per year + USD 10,000 per annum for the implementation of the ESMP.)*
	2	Construction solid waste	-Install a solid management system and monitor workers' compliance. -Establish cooperation with solid waste management entities (local municipalities or contractors). -Reduce to a minimum the use of high waste materials and techniques. -Separate solid waste into recyclable and reusable forms. -Recycle and reuse as much solid waste as possible. -Avoid solid waste burning and accumulation. -Any temporary solid waste dumping sites need to be rehabilitated after construction is finished.	Environmental and Social Safeguards Officer	
	3	Construction liquid waste	-Collect and properly dispose all construction liquid waste. -Apply liquid waste efficient production techniques. -Ensure efficient performance of excavation machinery and ensure their mechanical condition is excellent to avoid leakage of liquid waste from construction machineries. -Periodic maintenance of machines is prohibited within the project sites and, in particular, at sensitive biological habitats either located within, or outside, the project boundaries. Those machines and vehicles should be maintained at appropriate and specialised maintenance stations.	Environmental and Social Safeguards Officer	
	4	Domestic solid waste	-Install proper solid waste containers at workplaces. -Arrange with local solid waste management entities to collect solid waste in a timely manner.	Environmental and Social	

			-Put in place procedures for the minimisation of solid waste production. - Separate solid waste into reusable, recyclable and compostable forms. - Induct onsite staff/contractors/workers on solid waste disposal procedures. - Limit the use of plastic bags and bottles and replace with more environmentally friendly packaging.	Safeguards Officer	
	5	Domestic liquid waste	-Install completely sealed liquid waste systems especially for toilet use. -Install water-efficient appliances for toilets, kitchens and showers. -Consider wastewater separation systems in facilities (grey water system).	Environmental and Social Safeguards Officer	
	6	Air pollution	-Avoid transportation of excavated material over long distances. -Avoid the accumulation of excavated material by synchronising excavation and filling processes. -Spraying water on service roads to avoid accumulation of debris and dust. -Ensure efficient performance of excavation machinery.	Environmental and Social Safeguards Officer	
	7	Noise generation	-Working night shifts should be prohibited or at least reduced as much as possible. -Apply the Jordanian Regulation for ambient noise levels during this phase, especially in designing the construction activities schedule.	Environmental and Social Safeguards Officer	
(B) on biological environment	8	Deterioration and fragmentation of natural ecosystems	-Apply government approved procedures for screening and assessing project impacts. -Limit the area used for management and support facilities for restoration interventions. -Apply rigorous site selection criterion for the interventions' management and support facilities. -Ensure that facilities needed for the restoration interventions are located as far as possible from ecologically sensitive areas.	Environmental and Social Safeguards Officer	
	9	Changes to natural ecosystems' configuration and composition	-Ensure that detailed baseline assessments of the target watersheds are conducted prior to intervention implementations and are used as the basis for decisions related to intervention design and plans of work. -Set clear monitoring of changes related to ecosystems with a set of specific ecological indicators. -Train staff and workers on ecosystems monitoring and assessments.	Environmental and Social Safeguards Officer	
	10	Disturbance to ecological corridors	-Map key ecological corridors before the implementation of project interventions. -Induct staff, workers and contractors on the locations and sensitivities of ecological corridors. -Put up signs on ecologically sensitive areas around the project intervention site(s).	Environmental and Social Safeguards Officer	

	11	Removal of vegetation cover	-Removal of native vegetation should be prohibited or kept to an absolute minimum. -Include specific instructions and safeguards for natural vegetation in all contracts and work orders.	Environmental and Social Safeguards Officer	
	12	Persecution of wildlife	-Put up signs on the prohibition of all types of wildlife killing in project sites. -Induct workers, contractors and staff on the importance of wildlife and the way to deal with sightings. -Establish cooperation with law enforcement agencies for temporary protection schemes at project sites.	Environmental and Social Safeguards Officer	
	13	Disturbance to breeding and migratory birds	-Put up signs on the prohibition of all types of bird killing in project sites. -Induct workers, contractors and staff on the importance of birds and the way to deal with sightings. -Establish cooperation with law enforcement agencies for temporary protection schemes at project sites.	Environmental and Social Safeguards Officer	
	14	Deterioration of genetic resources	-Identify areas of importance for genetic resources as part of the baseline assessments. -Erect posts and signs in areas of special importance for genetic resources. -Induct workers, contractors and staff on the importance of genetic resources (mainly plants).	Environmental and Social Safeguards Officer	
	15	Introduction of invasive species	-Selection criteria for intervention sites should include special provisions for exotic and invasive species. -No planting of any exotic species should be allowed in project intervention sites. -A plan to eradicate all exotic and invasive species from intervention sites must be part of the intervention plans.	Environmental and Social Safeguards Officer	
(C) on culture	16	Damage to known archaeological sites	-No removal or change to cultural sites or artefacts should be permitted in project intervention sites. -A special protection scheme with strong law enforcement arrangements must be applied for all cultural sites associated with the project interventions.	Environmental and Social Safeguards Officer	
	17	Damage to unknown archaeological sites	-Proper archaeological assessments should be conducted for all proposed interventions sites. -A special protection scheme with strong law enforcement arrangements must applied for all cultural sites associated with project interventions.	Environmental and Social Safeguards Officer	
	18	Disturbance to local traditions and customs	-A special induction should be given to all contractors, workers and staff on the respect of local traditions and customs. -A clear and easy mechanism should be set up for local communities' complaints and reporting of any intrusion on their local customs and norms.	Environmental and Social Safeguards Officer	

	19	Looting of artefacts	-A clear policy needs to be adopted in all contracts and work orders on the collection and excavation of archaeological artefacts. -Cooperation with law enforcement agencies to implement regular inspection missions in project sites.	Environmental and Social Safeguards Officer	

No	Mitigation Measures	Indicators	Method of Measurement	Sampling Location	Frequency of Monitoring
1.a	All construction activities should avoid changing local morphology, and wherever unavoidable, it should be kept to an absolute minimum.	Changes in target area morphology	Photos before and after interventions.	Restoration intervention areas, Construction sites	Annually Before start and after completion
1.b	Adopt proper schematic plans before the start of the intervention.	Changes in target area morphology	Approval of schematic plans. Photos before and after.	Restoration intervention areas, Construction sites	Once at start Quarterly
1.c	No raw material quarries should be allowed in project sites.	Number and location of quarrying sites	Before and after photos. Maps of sites with exact coordinates.	Designated quarrying sites.	Biweekly
1.d	Review and adopt international best practices for watershed and landscape restoration and rehabilitation.	Approved guideline document	Consortium meeting minutes	NA	At approval, then quarterly
1.e	Train planning and implementation team on best practice guidelines and techniques.	Number of violations of adopted guidelines.	Project performance report	Restoration project sites	Quarterly
2.a	Install a solid waste management system and monitor workers compliance.	Number of violations of solid waste system rules	Monthly performance reports	Restoration sites, construction sites	Monthly
2.b	Establish cooperation with solid waste management entities (local municipalities or contractors).	Amount of solid waste collected regularly	Cooperation agreements	Restoration and construction sites, Undesignated disposal locations	Weekly
2.c	Reduce to a minimum the use of high waste materials and techniques.	Amount of waste generated by the project	Materials and material specifications. Monthly progress reports	Restoration and construction sites	Monthly

No	Mitigation Measures	Indicators	Method of Measurement	Sampling Location	Frequency of Monitoring
2.d	Separate solid waste into recyclable and reusable forms.	Comparative amounts of separated solid waste	Weekly collection amounts	Restoration and construction sites	Weekly and monthly
2.e	Avoid solid waste burning and accumulation.	Number of incidents of burning and excess accumulation	Incident reports and photos	Restoration and construction sites	Weekly and monthly
2.f	Recycle and reuse as much solid waste as possible.	Amount of solid waste recycled or reused	Periodic site reports and photos	Restoration and construction sites	Monthly
2.g	Any temporary solid waste dumping sites need to be rehabilitated after the construction is finished.	Size of rehabilitated areas	Before and after photos and reports	Designated dumping sites	Once before and after
3.a	Collect and properly dispose of all construction liquid waste.	Amount of liquid waste properly disposed of	Site production capacity numbers. Monthly waste disposal reports.	Restoration and construction sites	Weekly and monthly
3.b	Apply liquid waste efficient production techniques.	Amount of liquid waste generated by the project interventions	Water consumption amounts	Restoration and construction sites	Weekly and monthly
3.c	Ensure efficient performance of excavation machinery and ensure their mechanical condition is excellent to avoid leakage of liquid waste from construction machineries.	Number of work stoppages due to maintenance needs	Maintenance reports	Restoration and construction sites	Weekly
3.d	Periodic maintenance of the machines is prohibited within the project sites and, in particular, at sensitive biological habitats either located within or outside the project boundaries.	Number of on-site maintenance incidents	Maintenance reports and photos	Restoration and construction sites	Weekly
4.a	Install proper solid waste containers at workplaces.	Number and location of containers	Project operations reports	Project facilities	Monthly

No	Mitigation Measures	Indicators	Method of Measurement	Sampling Location	Frequency of Monitoring
4.b	Arrange with local solid waste management entities to collect solid waste in a timely manner.	Amount of solid waste collected through local systems	Project operations reports	Project facilities	Monthly
4.c	Put in place procedures for the minimisation of solid waste production.	Amount of solid waste collected through local systems	Project operations reports	Project facilities	Monthly
4.d	Separate solid waste into reusable, recyclable and compostable forms.	Amount of solid waste separated	Project operations reports	Project facilities	Monthly
4.e	Induct onsite staff/contractors/workers on solid waste disposal procedures.	Number of training sessions and trainees in attendance	Training reports	NA	Quarterly
4.f	Limit the use of plastic bags and bottles and replace with more environmentally friendly packaging.	Plastic policy adopted	Project operations reports	Project facilities	Monthly
5.a	Install completely sealed liquid waste systems especially for toilet use.	Liquid waste disposal protocols approved	System design documents	Project facilities	Quarterly
5.b	Install water efficient appliances for toilets, kitchens and showers.	Amount of water consumed in project facilities	Project operations reports	Project facilities	Monthly
5.c	Consider wastewater separation systems in facilities (grey water system).	Facilities design protocols approved	Amount of grey water produced	Project facilities	Monthly
6.a	Avoid transportation of excavated material over long distances.	Total distances travelled for transport of materials	Project operations reports	Various	Weekly
6.b	Avoid accumulation of excavated material by synchronising excavation and filling processes.	Size and location of accumulated materials	Field photos and operations reports	Construction sites	Monthly
6.c	Spraying water on service roads to avoid accumulation of debris and dust.	Amount of dust generated by roads	Field photos and operations reports	Construction sites	Weekly

No	Mitigation Measures	Indicators	Method of Measurement	Sampling Location	Frequency of Monitoring
6.d	Ensure efficient performance of excavation machinery.	Machinery standards adopted	Field operations reports	Construction sites	Monthly
7.a	Working night shifts should be prohibited or at least reduced as much as possible.	Number of night shifts conducted	Project operational schedule	Construction sites	Monthly
7.b	Apply the Jordanian Regulation for ambient noise levels during this phase, especially in designing the construction activities schedule.	Number of violations reports for national regulations	Project monitoring reports	Various	Quarterly
8.a	Apply government approved procedures for screening and assessing project impacts.	Number of projects subjected to screening	Project assessment reports	NA	Quarterly
8.b	Limit the area used for management and support facilities for restoration interventions.	Location of support and management facilities	Facilities design concepts and guidelines	NA	Annually
8.c	Apply rigorous site selection criterion for the interventions' management and support facilities.	Criteria developed and approved	Project progress reports	NA	Annually
8.d	Ensure that facilities needed for the restoration interventions are located as far as possible from ecologically sensitive areas.	Location of support and management facilities	Project GIS database	Restoration and construction sites	Annually
9.a	Ensure that detailed baseline assessments of the target watersheds are conducted prior to intervention implementations and are used as the basis for decisions related to intervention designs and plans of work. The baseline assessments should include consultations with local resource users to ensure a participatory approach and FPIC before the implementation of interventions.	Number of baseline assessments conducted	Assessments' scopes of work and terms of reference	NA	Annually
9.b	Set clear monitoring for changes related to ecosystems with a set of specific ecological indicators.	Number of ecosystem changes records	Project monitoring reports	Various	Annually
9.c	Train staff and workers on ecosystem monitoring and assessments.	Number of training sessions and participants	Project progress reports	NA	Quarterly

No	Mitigation Measures	Indicators	Method of Measurement	Sampling Location	Frequency of Monitoring
10.a	Map key ecological corridors before the implementation of project interventions.	Number of maps developed	Project GIS database	NA	Annually
10.b	Induct staff, workers and contractors on the locations and sensitivities of ecological corridors.	Number of training sessions and participants	Project progress reports	NA	Quarterly
10.c	Put up signs on ecologically sensitive areas around the project intervention site(s).	Number and location of signs erected	Field photos and texts	NA	Annually
11.a	Removal of native vegetation should be prohibited or kept to an absolute minimum.	Removal incidents of natural vegetation from project interventions sites	Field photos and texts	Restoration and construction sites	Annually
11.b	Include specific instructions and safeguards for natural vegetation in all contracts and work orders.	Number of natural vegetation specific protocols	Contracts scope of work and terms of reference	NA	Quarterly
12.a	Put up signs on the prohibition of all types of wildlife killing in project sites.	Number and location of signs and alert panels	Field photos and texts	NA	Annually
12.b	Induct workers, contractors and staff on the importance of wildlife and the way to deal with sightings.	Number of training sessions and participants	Project progress reports	NA	Quarterly
12.c	Establish cooperation with law enforcement agencies for temporary protection schemes at project sites.	Number of violations reports organised	Project progress reports	Various	Quarterly
13.a	Put up signs on the prohibition of all types of bird killing in project sites.	Number and location of signs	Field photos and texts	NA	Annually
13.b	Induct workers, contractors and staff on the importance of birds and the way to deal with sightings.	Number of training sessions and participants	Project progress reports	NA	Quarterly
13.c	Establish cooperation with law enforcement agencies for temporary protection schemes at project sites.	Number of violations reports organised	Project progress reports	Various	Quarterly
14.a	Identify areas of importance for genetic resources as part of the baseline assessments.	Number and location of genetic resource areas	Baseline assessment reports	NA	Annually

No	Mitigation Measures	Indicators	Method of Measurement	Sampling Location	Frequency of Monitoring
14.b	Erect posts and signs in areas of special importance for genetic resources.	Number and distribution of signs	Field photos and texts	Project restoration sites	Quarterly
14.c	Induct workers, contractors and staff on the importance of genetic resources (mainly plants).	Number of training protocols developed	Training session reports	NA	Quarterly
15.a	Selection criteria for intervention sites should include special provisions for exotic and invasive species.	Number of protocols developed	Project progress reports	NA	Annually
15.b	No planting of any exotic species should be allowed in project interventions sites.	Number of records of alien and invasive species in project sites	Periodic monitoring reports	Random sampling	Quarterly
15.c	A plan to eradicate all exotic invasive species from interventions sites needs to be part of the intervention plans.	Number of eradication campaigns conducted	Periodic monitoring reporting	NA	Quarterly
16.a	No removal or change to cultural sites or artefacts should be permitted in project intervention sites.	Number of assessment contracts activated	Assessment reports	Various with a focus on restoration and construction sites	At start up, then after assessment completion
16.b	A special protection scheme with strong law enforcement arrangements must be applied for all cultural sites associated with the project interventions.	Number of violations reports. Number of unreported violations	Field inspection reports	Various	Monthly
17.a	Proper archaeological assessments should be conducted for all proposed intervention sites.	Number of assessment contracts activated	Assessment reports	Various with a focus on restoration and construction sites	At start up, then after assessment completion
17.b	A special protection scheme with strong law enforcement arrangements must applied for all cultural sites associated with the project interventions.	Number of violations reports. Number of unreported violations	Field inspection reports	Various	Monthly
18.a	A special induction should be given to all contractors, workers and staff on the respect of local traditions and customs.	Number of positive reports received	Periodic RRA reports	Various with a focus on adjacent settlements	Quarterly

No	Mitigation Measures	Indicators	Method of Measurement	Sampling Location	Frequency of Monitoring
		from local communities			
18.b	A clear and easy mechanism should be set up for local communities' complaints and reporting of any intrusion on their local customs and norms.	Number of formal and informal complaints received	Complaints reports	Various with a focus on adjacent settlements	Weekly
19.a	A clear policy needs to be adopted in all contracts and work orders on the collection and excavation of archaeological artefacts.	Number of archaeological artefacts reported	Hand over reports	Various	Monthly
19.b	Cooperation with law enforcement agencies to implement regular inspection missions in project sites.	Number of policy violations	Violation reports	Various	Quarterly

17. Expected Project Social Impacts

Project Impacts mitigation framework

A. Summary of the Safeguard Risks Triggered

Safeguard Standard Triggered by the Project	Impact of Risk (1-5)	Probability of Risk (1-5)	Significance of Risk (L, M,
SS 1: Biodiversity, natural habitat and Sustainable Management of Living Resources.	3	2	M
SS 2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes	3	2	M
SS 3: Safety of Dams	4	2	M
SS 4: Involuntary resettlement	2	1	L
SS 5: Indigenous peoples	1	1	L
SS 6: Labor and working conditions	2	2	M
SS 7: Cultural Heritage	2	2	L
SS 8: Gender equity (Analyze and develop the Gender Action Plan)	3	2	M
SS 9: Economic Sustainability	2	1	L
Additional Safeguard questions for projects seeking GCF-funding (Section IV) on emergency and security issues.	2	1	L

B. ESE Screening Decision

Low Risk	Moderate Risk **X**	High Risk	Additional information Required

17.1. Social Mitigation Measures

Risks associated with employment, occupational health, local residence health and safety, child labor participation and grievance mechanisms were addressed and ongoing consultations/participatory M&E will continue throughout the project as a means of providing a feedback loop. The established grievance redress mechanism (GRM) will be conducted in line with the requests from community consultations and will be sensitive to the needs of minorities following the IUCN ESMS Grievance Mechanism guidelines 2016.

17.2. Social Management Plan

Table 29. Social management plan

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
Local disturbance; health and safety	• Contractor shall restrict work activities between 8am to 5pm on weekdays and shall avoid work on Fridays (weekend) in residential areas • Coordinate with schools in case of water harvesting at small scales to be implemented in schools to avoid any distraction during the study day • The contractor shall maintain all work areas in a clean and organized. • Solid wastes shall be disposed of in a secured area.	Site manager Project coordinator Weekly supervision reports	Daily	Environmental and Social Safeguards Officer	Project Coordinator	Explain to workers how to dispose of wastes in a safe manner	Number of complaints Number of violations reported	*The cost of implementing the SMP will be covered by the full-time Environmental and Social Safeguards Officer (USD 60,000 salary per year + USD 15,000 annual amount for the implementation of the ESMP)*
Accidents from dangerous species might occur as a result of direct interaction while planting	• Safety training should be provided to workers on how to avoid hazardous species • Safe equipment (gloves, masks, mosquito repellent) should be provided	Site manager Project coordinator Weekly supervision reports	Twice a day at least	Environmental and Social Safeguards Officer	Project management unit	Explain to workers how to avoid hazardous species	Number of workers using safety equipment's Number of complaints	

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
trees or establishing small-scale harvesting interventions	to workers ahead of initiating the work						Number of violations reported	
Traffic and transportation could have negative effects on workers' health, since accidents could happen	• Ensure workers are insured • Ensure safety measures during the transportation by applying rules and regulations	Site manager Project coordinator Weekly supervision reports	Twice a day at least	Environmental and Social Safeguards Officer	Project management unit	Explain policies and regulations of transportation to all workers	Number of insurance contracts signed Regulation and transportation policy paper	
Possibility of child labor or / and TIP incidents	• Maintain efficient inspection of TIP occurrence and cases, including recording and reporting procedures to document and report the occurrence of such cases. • Monitoring the labor status, and whether the contractor is complying with the national labor law.	Site manager Project coordinator Weekly supervision reports	Daily	Environmental and Social Safeguards Officer	Project management unit	Explain to workers their rights and the grievance mechanism process	Number of complains Number of violations reported	
Gender issues especially that the created jobs might not be tailored for women especially	• Contractor shall develop and implement a community engagement plan. This shall ensure stakeholders engagement and that area residents,	Site manager Project coordinator Weekly supervision reports	Daily	Environmental and Social Safeguards Officer	Project management unit	Explain to workers traditions and behaviors that is not acceptable Gender awareness	Number of complains Number of violations reported	

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
with cultural values. Therefore, women's participation should be enhanced to overcome any barriers and avoid any gender issues	land users, government agencies and NGOs are aware of the Project activities • The Contractor shall ensure that the consultations involve poor households, women, persons with disabilities, or any marginalized groups to ensure the information reaches them and they are aware of the project's specifics during the preparation and implementation • Necessary measures shall be taken to ensure that presence and behavior of construction workers is not sexually or physically threatening to women and children under any circumstance • The contractor should comply to the Gender action plan measures							

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
Gender issues especially that the created jobs might not be tailored for women especially with cultural values. Therefore, women participation should be enhanced to overcome any barriers and avoid any gender issue	• During project design, all gender issues will be handled carefully, and they will be treated in depth • All job advertisements will have a sentence to encourage all genders to participate, especially women. Also, to ensure no discrimination during recruitment process and interviews • Local employments will be encouraged • Promote full understanding of all available positions to ensure equality and equity	HR manager Project manager	At each stage of the action plan	Environmental and Social Safeguards Officer	Project management unit	Orientation will be conducted	Number of women participated and applied for the jobs Employees retention rate disaggregated by sex	
Potential for SEAH and/or GBV as a result of project financed interventions , particularly as a result of increased presence of contracted labour, and/or	• GRM includes specific parallel process to support victims and address GBV and SEAH • Capacity building will be undertaken to mainstream knowledge regarding gender equity and SEAH/GBV. • Zero tolerance policy for any employees or implementing	GRM reports, training reports Community consultations,	Ongoing	Environmental and Social Safeguards Officer, Gender Officer	Project Management Unit	Capacity building/training on GBV and SEAH to be incorporated into all trainings	Number of trainings with GBV/SEAH training included (% of total) Number of SEAH complaints via the GRM (change over time,	

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
security personnel.	partners regarding SEAH/GBV.						satisfaction with outcome)	
Grievance due to the project activities	• The Contractor shall participate and positively respond to the grievance mechanism established • The project implementers shall establish grievance mechanisms for damages accidentally done to property or assets that are both promoted and accessible to community members. The mechanism should take into account the possibility of damage which construction works could cause	Site manager Project coordinator Weekly supervision reports	Daily	Environmental and Social Safeguards Officer	Project management unit	Explain the grievance mechanism process Inform local citizens about the GM via social media plat forms	Number of complaints Number of violations reported	
Inappropriate treatment of target communities (including vulnerable and marginalized groups) during implementation	• The development of standard operating procedures (SOPs) by the project's Executing Entities (EEs) — MoEnv and IUCN — and the PMU that guide the project's approach to working with target communities (including vulnerable and marginalized	Community consultations	Ongoing	Environmental and Social Safeguards Officer	Project Management Unit	NA	Preparation of SOPs Adherence to SOPs/lack of related complaints	

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
	groups). The SOPs will be included in the contracts of all Technical Partners, Contractors, Consultants, etc., engaged under the project.							
Communities (including vulnerable and marginalized groups) do not support project interventions	• The development and signing of agreements between target communities (including vulnerable and marginalized groups) and project EEs related to implementation. Any Technical Partners, Contractors, Consultants, etc., will also be bound by these agreements	Community consultations	Ongoing	Environmental and Social Safeguards Officer	Project Management Unit	NA	Signed agreements	
Selection of beneficiaries across the three intervention areas is biased, not reflecting the situation on the ground, and not disaggregated by gender	• WMCs, with representatives from various stakeholder groups at the intervention areas, will oversee the selection of beneficiaries, ensuring that they are representative of the population on the ground • A clear set of criteria for the selection of beneficiaries should be developed by	WMCs Beneficiary selection lists	Ongoing	Environmental and Social Safeguards Officer Gender Officer	Project Management Unit	Inform beneficiaries of selection process and gender targets	Beneficiary selection criteria Gender and stakeholder group disaggregated beneficiary lists	

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
	WMCs with support from project Technical Partners • Selection of beneficiaries should be based on gender targets presented in the project's logical framework and gender action plan							
Lack of compensation and alternative sources of resources if access of communities (including vulnerable and marginalized groups) to restoration areas is limited, especially water resources used by livestock owners	• Communities (including vulnerable and marginalized groups) to be consulted during baseline assessments of restoration areas to ensure concerns are considered and site-specific mitigation measures identified • Communities, through WMCs, to be involved in the development of restoration protocols for the sites, including agreeing on approaches to restriction to certain resources and compensation measures • Development of restoration protocols should includes systems of improved	WMC meeting reports Technical Partners	Daily	Environmental and Social Safeguards Officer	Project management unit	NA	Baseline assessments including considerations of local resource users and mitigation measures Restoration protocols including inputs from local resource users Introduction of alternative fuel sources, renewable and energy-efficient technologies, and climate-resilient additional livelihoods around	

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
	grazing practices, which promote restoration, but do not indefinitely restrict access to grazing areas. These practices should be developed with and agreed to by livestock owners • Communities (including vulnerable and marginalized groups) reliant on resources in restoration areas to be targeted by activities introducing alternative fuel sources, renewable and energy-efficient technologies, and climate-resilient additional livelihoods • Access to water sources, by livestock owners in particular, should not be restricted at the restoration sites • Facilitation of agreements between government and communities (including vulnerable and marginalized						restoration sites	

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
	groups) around restoration areas allowing the communities (including vulnerable and marginalized groups) access to the restored areas in exchange for their support of and participation in restoration work.							
Stakeholder conflict and corruption within stakeholder consultative mechanisms (such as WMCs) and participatory monitoring processes	• Ongoing monitoring by the project's safeguards officer • Access to the project's grievance redress mechanism by all stakeholders • Community-based monitoring of climate resilience and behavioural change (led by WMCs and LDCs)	Safeguards officer	Daily	Environmental and Social Safeguards Officer	Project management unit	NA	Number of complaints Number of conflicts and instances of corruption reported	
Lack of representation of local communities (including vulnerable and marginalized groups) in project decision-making processes	• Establishment of Watershed Management Committees (WMCs), under the leadership of the JVA and local governors, at each of the three target watersheds to facilitate dialogue and participatory watershed	Safeguards officer M&E officer WMC meeting reports	Quarterly	Environmental and Social Safeguards Officer	Project management unit	Capacity building of WMCs is included under Activity 1.1.4	Legal establishment of WMCs Representation of relevant community groups in WMCs	$87,000 allocated to the establishment of WMCs during project inceptions (including stakeholder mapping analysis) and quarterly meetings during project implementation. $66,500 for the development of a capacity-

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
resulting in their needs and concerns being overlooked (particularly vulnerable or marginalized groups such as women, youth and small farmers).	management between upstream and downstream stakeholders (Activity 1.1.4). • Detailed stakeholder mapping analysis to ensure that all relevant stakeholders (including community groups are represented in WMCs). • Recognition of WMCs as formal bodies by MoEnv by including them in the relevant legislation. • Including community representation and engagement in the ToR/mandate of WMCs.							building/training programme for WMCs. $96,863 for the implementation of the capacity-building/training programme.
Lack of effective benefit sharing amongst beneficiaries, with powerful groups, such are large commercial farmers, gaining	• Monitoring of benefit sharing under project activities by WMCs, ensuring that no stakeholder group, such as large commercial farmers, gains control over certain project interventions, excluding others such as local communities	Beneficiary lists WMC meeting reports	Quarterly	WMCs and Environmental and Social Safeguards Officer	Project management unit	Capacity building of WMCs is included under Activity 1.1.4	Number of complaints regarding benefit sharing Beneficiaries remain the most vulnerable and marginalized groups	*The cost of implementing the SMP will be covered by the full-time Environmental and Social Safeguards Officer (USD 60,000 salary per year + USD 15,000 annual amount for the implementation of the ESMP)*

Potential Impact	Proposed mitigation\ management measures	Monitoring\ Method of Measurement	Frequency	Responsibility	Reporting to	Capacity building	Performance indicators	Cost
control of certain interventions , resulting in the exclusion of others such as local communities (including vulnerable and marginalized groups)	(including vulnerable and marginalized groups).							
Lack of market access for beneficiaries of climate-resilient additional livelihoods and agricultural practices.	• Identification of private sector champions to support with capacity building for post-harvest processing and marketing. • Development and implementation of a mentorship programme for beneficiaries of additional livelihoods and climate-resilient agriculture interventions to strengthen their capacity for post-harvest processing and marketing.	Agreements/MoUs with private sector Training/mentorship programme reports Produce sales reports from local beneficiaries	Annually	M&E officer	Project management unit	Yes, as included under sub-activity 2.1.4.5.	Identification of private sector champions Signing of agreements/MoUs Implementation of mentorship programme	$10,000 for the engagement and identification of private sector champions $105,000 ($15,000 per year from years 2 to 8) for the implementation of the mentorship programme.

18. Appendix 1: Jordan Integrated Landscape Management Initiative (JIMLI): Environmental, Social and Economic Review Note (ESERN)

18.1. Project preview

Table 30. Project preview

Identification	UNEPFP0010
Project title	Jordan Integrated Landscape Management Initiative (JILMI)
Managing division	Ecosystems Division/TEU
Type/location	National — Jordan
Region	Middle East and North Africa (MENA)
List countries	Jordan
Project description	The objective of the proposed project is to reduce the negative impacts of climate change on water resources in Jordan through a landscape-level approach — specifically Integrated Landscape and Water Resources Management (ILWRM) — including improved ecosystem management, managed aquifer recharge, rainwater harvesting, evaporation reduction, improved agricultural practices and strengthened governance. Through the project, the management of water resources at a landscape level in Jordan will shift away from a business-as-usual model that is uncoordinated and compartmentalised to one that is integrated across economic sectors, government ministries, government departments, municipalities, non-government institutions and civil society, as well as into water resources and land-management policy. This proactive and transformative approach will include direct investments into the restoration of ecosystems in watersheds of the Jordan Valley to strengthen their resilience to climate change, as well as increase their capacity to supply ecosystem services. Such services — including increased water resources and flood attenuation — will buffer the impacts of climate change on the lives and livelihoods of local people. Increased water supply under climate change conditions via watershed restoration in the Jordan Valley will be supplemented by the implementation of: i) rockfill dams to promote managed aquifer recharge; ii) suspended solar panels over the King Abdullah Canal to reduce evaporation and supplement local electricity supplies; iii) small-scale water harvesting interventions in vulnerable communities; iv) water harvesting and conservation practices on smallholder farms; and v) community-based water monitoring and management. This project's focus on land, agriculture and water is well aligned with — and seeks to build upon and complement — major GoJ development and adaptation planning priorities.

	Established policy priorities will be implemented through the proposed project as outlined below.
Estimated duration of project	8 years
Estimated cost of the project	*GCF Grant:* 38,491,114 *US$* *Co-finance: to be confirmed US$*

18.2. Environmental, social and economic screening determination

C. Summary of the safeguard risks triggered

Safeguard standard triggered by the project	Impact of risk[57] (1-5)	Probability of risk (1-5)	Significance of risk (L, M, H)
SS 1: Biodiversity, natural habitat and sustainable management of living resources	3	2	M
SS 2: Resource efficiency, pollution prevention and management of chemicals and waste	3	2	M
SS 3: Safety of dams	4	2	M
SS 4: Involuntary resettlement	2	1	L
SS 5: Indigenous peoples	1	3	L
SS 6: Labour and working conditions	1	1	L
SS 7: Cultural heritage	2	2	L
SS 8: Gender equity (analyse and develop the Gender Action Plan)	3	2	M
SS 9: Economic sustainability	2	1	L
Additional Safeguard questions for projects seeking GCF-funding (Section IV) on emergency and security issues	2	1	L

D. ESE screening decision[58]

Low risk	Moderate risk **X**	High risk	Additional information required

C. Development of ESE Review Note and screening decision

Updated by	Chester Kaplan Kevin Emslie Ehab Eid Shadia Nassar Tarek Abulhawa	Date of latest update: 17 November 2023
Safeguards Advisor	Yunae Yi	Date of latest update: 15/08/2020

[57] Refer to UNEP Environment, Social and Economic Sustainability (ESES): Implementation Guidance Note to assign values to the Impact of Risk and the Probability of Risk to determine the overall significance of Risk (Low, Moderate or High).
[58] **Low risk**: Negative impacts negligible: no further study or impact management required.

Moderate risk: Potential negative impacts, but less significant; few if any impacts irreversible; impact amenable to management using standard mitigation measures; limited environmental or social analysis may be required to develop a ESEMP. Straightforward application of good practice may be sufficient without additional study.

High risk: Potential for significant negative impacts, possibly irreversible, ESEA including a full impact assessment may be required, followed by an effective safeguard management plan.

Project Manager	AbdelKader Bensada	Date of latest update: 15/08/2020

E. **Recommended further action from the Safeguard Advisor:**

The final ESERN reflects the risks identified in the ESIA and ESMP and Gender Action Plan. We would recommend that the ESMP, Stakeholder Action Plan and Gender Action Plan are duly complied with during the project management; monitored, reported and disclosed to public; and revisit and adaptively readjusted if needed.

18.3. ESES Principle and Safeguard checklist

Table 31. Principle and Safeguard checklist

Precautionary Approach
The project will take precautionary measures even if some cause and effect relationships are not scientifically established to the full extent and there is risk of causing harm to people or the environment.
Human Rights Principle
The project will make an effort to consider any potentially affected stakeholders, in particular vulnerable and marginalised groups; through their inclusion in decision-making process that may affect them.
The project will respond to any significant concerns or disputes raised during the stakeholder engagement process.
The project will make an effort to avoid inequitable or discriminatory negative impacts, on the quality of and access to resources or basic services, on affected populations — particularly people living in poverty or marginalised and/or excluded individuals or groups.[59]

Screening checklist	**Y/N/ Maybe**	**Comment**
Safeguard Standard 1: Biodiversity, natural habitat and sustainable management of living resources		
Will the proposed project support directly or indirectly any activities that **significantly** convert or degrade biodiversity and habitat including modified habitat, natural habitat and critical natural habitat?	N	Not anticipated, on the contrary the project will improve ecosystems. The project 's aim is to combat land degradation through an integrated landscape management approach. The project outputs that are expected to trigger mild adverse E&S risks under this category and that and that can be addressed through mitigation measures include: 1. Climate resilient ecosystem-based WSM and agricultural opportunities developed; 2. restoring ecosystems in the watersheds of the target sites/ 3. Reducing the impacts of habitat destruction on biodiversity and conserving and protecting priority ecosystems. 4. Conserve thriving and productive ecosystems

[59] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

Will the proposed project likely convert or degrade habitats that are legally protected?	N	No negative impacts are anticipated on the Protected Areas within the Project's sites. On the contrary, the project 's aim is to combat land degradation through an integrated landscape management approach. The project will be aligned to the National Action Plan to Combat Desertification's vision of the sustainable use of land resources The project outputs to be addressed through mitigation measures include: 1. Climate resilient ecosystem based WSM and agricultural opportunities developed; 2. restoring ecosystems in the watersheds of the target sites/ 3. Reducing the impacts of habitat destruction on biodiversity and conserving and protecting priority ecosystems. 4. Conserve thriving and productive ecosystems
Will the proposed project likely convert or degrade habitats that are officially proposed for protection? (e.g.; National Park, Nature Conservancy, Indigenous Community Conserved Area, (ICCA); etc.)	N	No negative impacts are anticipated on the habitats of the project sites.
Will the proposed project likely convert or degrade habitats that are identified by authoritative sources for their high conservation and biodiversity value?	N	No negative impacts are anticipated on the habitats that are officially proposed for protection.
Will the proposed project likely **convert or degrade habitats** that are recognized- including by authoritative sources and /or the national and local government entity, as **protected and conserved** by traditional local communities?	N	No negative impacts are anticipated on the habitats within the Project's sites. On the contrary, the project 's aim is to combat land degradation through an integrated landscape management approach. The project will be aligned to the National Action Plan to Combat Desertification's vision of the sustainable use of land resources The indicative project outputs to be addressed through mitigation measures include: 5. Climate resilient ecosystem based WSM and agricultural opportunities developed; 6. restoring ecosystems in the watersheds of the target sites/ 7. Reducing the impacts of habitat destruction on biodiversity and

		conserving and protecting priority ecosystems. 8. Conserve thriving and productive ecosystems
Will the proposed project approach possibly not be **legally permitted** or inconsistent with any officially recognized management plans for the area? (Legal and policy requirements should be analysed)	N	Not anticipated, on the contrary the project approach is to work in close collaboration with the government of Jordan (Ministry of Environment) in collaboration with other relevant ministries and government bodies in additional to NGOs to ensure consistency with recognized management plans in the area.
Will the proposed project activities result in **soils deterioration and land degradation**?	N	Not anticipated, on the contrary the project's objective is to combat land degradation through an integrated landscape management. However, the methodology and approach which will be used for this project are the most appropriate and doesn't cause any unintentional consequences. The project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: - The implementation of adaptation measures such as active restoration of forest ecosystems and passive restoration of rangelands. .
Will the proposed project interventions cause any changes to the **quality or quantity of water in rivers**, ponds, lakes or other wetlands?	Y	While positive impacts on water quality, quantity and management capacities are envisioned, caution will be needed due to the increasing scarcity of water in Jordan. The project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: - Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley - Empower local communities to monitor and manage local water supplies more effectively. - Improved protection, supply and use of water under climate change conditions.

		Furthermore, knowledge and awareness of climate change adaptation for landscape and water resources management. will be improved.
Will the proposed project possibly introduce or utilize any **invasive alien species** of flora and fauna, whether accidental or intentional?	N	The project's restoration interventions will include the removal of invasive alien plant species.

Safeguard Standard 2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes		
Will the proposed project likely result in the significant release of pollutants to air, water or soil?	N	Not anticipated, on the contrary the project will improve the soil quality., The project will apply and promote specific climate change adaptation interventions at the landscape level, through passive and active restoration of ecosystems which will prevent soil erosion, slow the rate of reservoir sedimentation, and reduce the levels of pollution in water bodies by filtering runoff. Furthermore, the project will increase local awareness of ecosystem-based CC mitigation and adaptation opportunities, including: a) Awareness and know-how on climate change adaptation needs promoted among targeted rural communities; b) Ecosystem-specific and locally adapted CC awareness raising campaigns; and c) Usage of locally available media and means to reach communities.
Will the proposed project likely consume or cause significant consumption of water, energy or other resources through its own footprint or through the boundary of influence of the activity?	N	Not anticipated, on the contrary the project will improve a sustainable water management approach with a positive impact on water quality, quantity and management capacities. The project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: - Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley - Empower local communities to monitor and manage local water supplies more effectively. - Improved protection, supply and use of water under climate change conditions.

		Furthermore, knowledge and awareness of climate change adaptation for landscape and water resources management. will be improved.
Will the proposed project likely cause significant generation of Green House Gas (GHG) emissions during and/or after the project?	N	GHG reduction through CCM and CCA is among the project's objectives
Will the proposed project likely generate wastes, including hazardous waste that cannot be reused, recycled or disposed in an environmentally sound and safe manner?	N	Not anticipated
Will the proposed project use, cause the use of, or manage the use of, storage and disposal of hazardous chemicals, including pesticides?	N	Not anticipated
Will the proposed project involve the manufacturing, trade, release and/or use of hazardous materials subject to international action bans or phase-outs, such as DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Convention on Persistent Organic Pollutants or the Montreal Protocol?	N	Not anticipated
Will the proposed project require the procurement of chemical pesticides that is not a component of integrated pest management (IPM)[60] or integrated vector management (IVM)[61] approaches?	N	Not anticipated
Will the proposed project require inclusion of chemical pesticides that are included in IPM or IVM but high in human toxicity?	N	Not anticipated
Will the proposed project have difficulty in abiding to FAO's International Code of Conduct[62] in terms of handling, storage, application and disposal of pesticides?	N	Not anticipated

[60] "Integrated Pest Management (IPM) means the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/ipm/en/

[61] "IVM is a rational decision-making process for the optimal use of resources for vector control. The approach seeks to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of disease-vector control. The ultimate goal is to prevent the transmission of vector-borne diseases such as malaria, dengue, Japanese encephalitis, leishmaniasis, schistosomiasis and Chagas disease." (http://www.who.int/neglected_diseases/vector_ecology/ivm_concept/en/)

[62] Find more information from http://www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/CODE_2014Sep_ENG.pdf

Will the proposed project potentially expose the public to hazardous materials and substances and pose potentially serious risk to human health and the environment?	N	Not anticipated

Safeguard Standard 3: Safety of Dams		
Will the proposed project involve constructing a new dam(s)?	Y	The project will involve the construction of 12 Rockfill dams to contribute to Managed Aquifer Recharge. These are likely to be relatively small, with surface areas of no greater than $20m^2$. However the volume of the dams cannot be estimated at this time, as the final specifications for these dams, including construction modality and siting will be developed via detailed feasibility studies undertaken during the project implementation. The management of risks associated with the construction and operations of these dams will be ensured by comprehensive ESIA's undertaken to address any identified risks.
Will the proposed project involve rehabilitating an existing dam(s)?	N	Not anticipated
Will the proposed project activities involve dam safety operations?	Y	Safety operations for the 12 Rockfill dams to be constructed under the project will be incorporated as an aspect of the ESMP's that are developed as an output of the ESIA's described above. These ESMP's will include comprehensive safety considerations, including on Health and Safety, operational limits and emergency response and preparedness in the case of dam collapse or other catastrophic failure.

Safeguard Standard 4: Involuntary resettlement		
Will the proposed project likely involve full or partial physical displacement or relocation of people?	N	Not anticipated
Will the proposed project involve involuntary restrictions on land use that deny a community the use of resources to which they have traditional or recognizable use rights?	Maybe	The project might involve the temporarily restriction of the use of degraded land through rotational land-use practices to allow land restoration and rehabilitation. Extensive consultation with the concerned local communities took place to explore options to avoid or minimize any negative impact on their livelihoods. Such assessment has been followed closely through the stakeholder consultation plan.

		The indicative project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: - Climate-resilient ILWRM practices and ecosystem restoration implemented in three watersheds in the Jordan Valley - Empower local communities to monitor and manage local water supplies more effectively. - Improved protection, supply and use of water under climate change conditions.
Will the proposed project likely cause restrictions on access to land or use of resources that are sources of livelihood?	N	
Will the proposed project likely cause or involve temporary/permanent loss of land?	N	Not anticipated
Will the proposed project likely cause or involve economic displacements affecting their crops, businesses, income generation sources and assets?	N	
Will the proposed project likely cause or involve forced eviction?	N	
Will the proposed project likely affect land tenure arrangements, including communal and/or customary/traditional land tenure patterns negatively?	N	

Safeguard Standard 5: Indigenous peoples[63]		
Will indigenous peoples be present in the proposed project area or area of influence?	Maybe	Although some baseline studies have shown limited presence of indigenous people in the project sites, the centrality of tribal Bedoiun to Jordanian society is a crtical consideration. The project additionally seeks to incorporate traditional land management approaches into certain activities, implying that Indigenous groups may be present or involved with the project. To safeguard against this risk, the project has developed and IPPF, which will be operationalised in the development of an IPP to ensure any indigenous groups are adequetely included in project activities and engaged via an appropriate FPIC process.
Will the proposed project be located on lands and territories claimed by indigenous peoples?	Maybe	The baseline studies have shown no presence of indigenous people in the project sites. However,

[63] Refer to the Toolkit for the application of the UNEP Indigenous Peoples Policy Guidance for further information.

		in case of presence of indigenous people the project will fully engage with them for in the implementation using participatory tools. (see above.
Will the proposed project likely affect livelihoods of indigenous peoples negatively through affecting the rights, lands and territories claimed by them?	N	The baseline studies have shown no presence of indigenous people in the project sites. However, in case of presence of indigenous people the project will fully engage with them for in the implementation using participatory tools. The indicative project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: a) Climate resilient ecosystem-based WSM and agricultural opportunities developed;
Will the proposed project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	Maybe	The project will be developing land-use management plans. These plans, if implemented in lands that are utilised by indigenous groups for their livelihoods, may affect their development priorities, livelihood strategies and land utilisation patterns. The IPPF and IPP will address this risk by ensuring that Indigenous peoples that are identified within the footprint of the project are included in all decision-making processes that may affect them via an FPIC process.
Will the project negatively affect the development priorities of indigenous peoples defined by them?	Maybe	
Will the project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples?	Maybe	
Will the project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	Maybe	The project may incorporate certain traditional adaptation strategies in the development of its knolwedge management portal (Activity 4.1.2). This may constitute the utilisation of cultural heritage of these groups. The IPPF and IPP acknowledge this risk and will ensure that Informed consent is secured before utilisation of any of these strategies, and appropriate acknowledgement of Intellectual Property Rights and potential benefits are equitably shared with the Indigenous Groups whose knolwedge is utilised.

Safeguard Standard 6: Labor and working conditions		
Will the proposed project involve the use of forced labor and child labor?	N	Not anticipated
Will the proposed project cause the increase of local or regional unemployment?	N	Not anticipated

Safeguard Standard 7: Cultural Heritage		
Will the proposed project potentially have negative impact on objects with historical, cultural, artistic, traditional or religious values and archeological sites that are internationally recognized or legally protected?	Maybe	Jordan is known as country rich historical and cultural heritage sites. However, the nature of the project and its approach is as such that it is unlikely to influence or impact positively or negative on the cultural heritage site. However, the project will ensure that forest, land uses and co-management areas are identified and agreed upon by main users and governance systems including for cultural, artistic, traditional, religious values and archeological sites. The indicative project outputs that are expected to trigger mild adverse E&S risks under this category and that can be addressed through mitigation measures include: 4. Climate resilient ecosystem based WSM and agricultural opportunities developed; 5. restoring ecosystems in the watersheds of the target sites/ 6. Reducing the impacts of habitat destruction on biodiversity and conserving and protecting priority ecosystems.
Will the proposed project rely on or profit from tangible cultural heritage (e.g., tourism)?	N	Not anticipated
Will the proposed project involve land clearing or excavation with the possibility of encountering previously undetected tangible cultural heritage?	N	Not anticipated
Will the proposed project involve in land clearing or excavation?	N	Not anticipated

Safeguard Standard 8: Gender equity		
Will the proposed project likely have inequitable negative impacts on gender equality and/or the situation of women and girls?	Maybe	Gender issue will be handled with caution and sensitivity. The project will approach gender issue in culturally, socially and religiously respected manner. Gender needs and roles within the diverse socio-economic context will be respected and reflected in the gender action plan. However, during the project period:

		a) Gender Assessment and Gender Action Plan (which has been developed) will be implemented b) Participatory land use mapping and planning will be strengthened, taking gender dimensions into account.
Will the proposed project potentially discriminate against women or other groups based on gender, especially regarding participation in the design and implementation or access to opportunities and benefits?	N	Gender issue will be handled with caution and sensitivity. The project will approach gender issue in culturally, socially and religiously respected manner. Gender needs and roles within the diverse socio-economic context will be respected and reflected in the gender action plan. However, during the project implementation period: a) Gender Assessment and Gender Action Plan (which has been developed) will be implemented b) Participatory land use mapping and planning will be strengthened, taking gender dimensions into account.
Will the proposed project have impacts that could negatively affect women's and men's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services?	N	Gender issue will be handled with caution and sensitivity. The project will approach gender issue in culturally, socially and religiously respected manner. Gender needs and roles within the diverse socio-economic context will be respected and reflected in the gender action plan. However, during the project period: a) Gender Assessment and Gender Action Plan (which has been developed) will be implemented b) Participatory land use mapping and planning will be strengthened, taking gender dimensions into account.

Safeguard Standard 9: Economic Sustainability		
Will the proposed project likely bring immediate or short-term net gain to the local communities or countries at the risk of	N	

generating long-term economic burden (e.g., agriculture for food vs. biofuel; mangrove vs. commercial shrimp farm in terms of fishing, forest products and protection, etc.)?		
Will the proposed project likely bring unequal economic benefits to a limited subset of the target group?	N	- Stakeholder mapping has been carried out. - Environmental and Social Assessment (ESIA) and Environmental and Social Management Framework (ESMF) However, the project will adopt an innovative mechanism to diversify targeted local communities' livelihood and resilience strategies, via: a) the implementation of the completed Gender Assessment and Gender Action Plan b) Participatory land use mapping and planning will be strengthened, taking gender dimensions into account -

18.4. Additional Safeguard Questions for Projects seeking GCF-funding

Table 32. Additional Safeguard Questions for Projects seeking GCF-funding

Community Health, Safety, and Security		
Will there be potential risks and negative impacts to the health and safety of the affected Communities during the project life-cycle?	N	
Will the proposed project involve design, construction, operation and decommissioning of the structural elements such as new buildings or structures?	N	Not anticipated
Will the proposed project involve constructing new buildings or structures that will be accessed by public?	N	Not anticipated
Will the proposed project possibly cause direct or indirect health-related risks and impacts to the Affected Communities due to the diminution or degradation of natural resources, and ecosystem services?	N	Not anticipated, on the contrary the project will improve ecosystems. The project 's aim is to combat land degradation through an integrated landscape management approach. The project outputs that are expected to trigger mild adverse E&S risks under this category and that and that can be addressed through mitigation measures include: 5. Climate resilient ecosystem-based WSM and agricultural opportunities developed; 6. restoring ecosystems in the watersheds of the target sites/ 7. Reducing the impacts of habitat destruction on biodiversity and conserving and protecting priority ecosystems. 8. Conserve thriving and productive ecosystems
Will the proposed project activities potentially cause community exposure to health issues such as water-born, water-based, water-related, vector-borne diseases, and communicable diseases?	Maybe	The project will include the construction of 12 Rockfill dams. While these dams are not retention dams nor are they of a large size with estimated surface areas of $20m^2$, their presence may result in a slight increase in vector-borne diseases. This risk will be addressed in the ESIA to be undertaken in the context of this activity.
In case of an emergency event, will the project team, including partners, have the capacity to respond together with relevant local and national authorities?	Y	In coordination with relevant partners such as OCHA, an assessment will be carried out with an emergency plan including general training for project's team if needed

Will the proposed project need to retain workers to provide security to safeguard its personnel and property?	N	Not anticipated

Labor and Supply Chain		
Will UNEP or the implementing/executing partner(s) involve suppliers of goods and services who may have high risk of significant safety issues related to their own workers?	N	Not anticipated

19. Appendix 2: Indicative TORs for ESIA and associated ESMP

This document delineates the detailed and indicative Terms of Reference (ToR) for the preparation of a Comprehensive Environmental and Social Impact Assessment (ESIA) and its corresponding Environmental and Social Management Plan (ESMP). These assessments are deemed necessary for projects or sub-projects categorized as moderate risk or greater, which applies automatically to any activities that involve the construction of dams. The ToR provides a flexible framework adaptable to specific project requirements, emphasizing the essential involvement of an independent expert. It is critical to note that the ESIA is only applicable when all project components are fully identified.

1. Context and Background

This section offers a comprehensive understanding of the operational context, including predecessor projects, government initiatives, and policy reforms influencing project planning. It encompasses details on the country context, recent relevant developments, and sector-specific trends. Insights into the relationship between the implementing partner and involved parties are recommended for a holistic understanding.

2. Project Description and Components

Provide an exhaustive summary of project objectives, features, location, and status. This section includes a detailed description of the project and its components, highlighting geographical, environmental, socio-economic, and temporal aspects. Identify potential social and environmental issues, risks, and impacts based on a thorough screening and initial scoping process.

3. Objectives of the Consultancy

The overarching objective of the consultancy is to ensure compliance with national environmental legislation and relevant social and environmental standards of the GCF within the operational context. Specific objectives include the preparation of a comprehensive ESIA and ESMP to address risks associated with the construction of Rockfill dams, analyzing impacts, and proposing measures for addressing identified impacts in addition to developing a robust consultation plan, stakeholder engagement strategy, and actively support meaningful consultations that will be undertaken by the implementing partner.

4. Principal Activities

The preparation of the ESIA involves a series of activities:

- Identification of data availability and gaps
- Comprehensive data gathering from various sources
- In-depth description of the project and its components
- Rigorous analysis of alternatives and justification of project location
- Detailed project location and environmental features
- Description of project components and sub-components
- Integration of green building principles if appropriate
- Establishment of mechanisms for community participation
- Inclusion of a non-technical summary for effective stakeholder engagement

5. Diagnosis of the Project’s Area of Influence and Beneficiaries

This phase involves meticulous data collection, analysis, and interpretation of existing documentation, focusing on environmental and social conditions. Characterize the area of direct impacts, including mapping, socio-economic factors, gender dynamics and risks and the potential for environmental aspects. Consider both positive and negative impacts, direct and indirect effects, and potential cumulative impacts.

6. Institutional and Legal Framework

This section includes a detailed description of regulations, environmental licensing requirements, and international obligations. Emphasize compliance with relevant social and environmental standards, identify gaps in national legislation, and propose practical solutions in collaboration with the implementing partner.

7. Main Environmental and Social Impacts

Develop a robust methodology for impact assessment, considering short and long-term, reversible and irreversible impacts. Evaluate environmental viability, potential cumulative impacts, transboundary impacts, and downstream environmental and social impacts. Address present and future anticipated impacts, including organizational and management scopes. This should include a methodology for assessing potential SEAH and GBV risks during implementation (for the construction phase) and during operations (once the rockfill dams have been completed) and in accordance with best practice principles, for example as outlined in the in GCF guidelines to assessing SEAH and GBV risk [64].

8. Preparation of the ESMP

The ESMP comprises a comprehensive set of mitigation, monitoring, and institutional measures for social and environmental sustainability. It ranges from routine measures to specific plans based on project risks. Essential components include measures for operations, a detailed flow chart of actions, environmental monitoring plans, indicators, and a contingency and emergency response plan.

The Environmental and Social Management Plan (ESMP) will encompass actions for mitigating social and environmental impacts. These actions adhere to the mitigation hierarchy and are listed in descending order of preference:

- Avoid, prevent, or eliminate environmental and social risks and adverse impacts, where technically and financially feasible. For proposed projects involving existing facilities, remediation may be necessary in addition to or instead of mitigation.
- If avoiding, preventing, or eliminating risks and impacts is not feasible, identify measures to minimize and mitigate impacts to ensure compliance with applicable international, national, and local environmental and social laws and regulations or achieve acceptable impact levels otherwise defined and agreed upon.
- If minimizing and mitigating risks and impacts is not feasible, identify measures to offset them by enhancing positive environmental and social impacts.
- When avoidance, mitigation, and offset measures are not feasible, identify compensatory measures to balance residual adverse impacts.

The ESMP will provide detailed descriptions of each mitigation measure, including the type of impact, relevant social and environmental parameters, location, frequency, timing, and conditions for

[64]https://www.greenclimate.fund/document/sexual-exploitation-abuse-and-harassment-seah-risk-assessment-guideline

implementation. Additionally, it will estimate potential social and environmental impacts, with linkages to other mitigation plans where required.

10. Social and Environmental Risk Monitoring and Reporting

The ESMP will outline social and environmental monitoring during project implementation to:

- Provide information on actual versus predicted impacts
- Measure the effectiveness of mitigation, remediation, and enhancement measures
- Evaluate compliance with applicable laws, regulations, and standards
- Facilitate corrective action when necessary

The ESMP will detail:

- Monitored mitigation measures
- Parameters for measurement and introduction of indicators
- Sampling and analytical methods, including staff, procedures, and detection limits
- Sampling or monitoring locations
- Frequency or timing of measurements
- Definition of thresholds requiring corrective actions
- Responsibilities for monitoring and reporting throughout the project life cycle

Monitoring activities will include dynamic mechanisms such as inspections and audits, involving direct participation of affected stakeholders where possible. Stakeholder complaints or grievances will be tracked, and corrective actions monitored. Data will be disaggregated by beneficiary categories, and qualified external experts may verify monitoring information.

11. Capacity Development

The ESMP will assess and outline a plan for developing implementation capacity as needed. This involves assessing the implementing partner's capacity and any affiliated organizations for ESMP implementation. The plan will:

- Recommend management arrangements, including structure, roles, responsibilities, and authorities
- Designate specific personnel with well-defined responsibilities.
- Ensure ongoing oversight and provision of human and financial resources for effective and continuous environmental and social management

If necessary, the capacity development section will address strengthening capacities of relevant staff, contractors, and personnel. The plan will identify capacity needs, develop a capacity development plan, and include monitoring and evaluation of the plan.

12. Implementation Action Plan (Schedule and Cost Estimates)

For mitigation, monitoring, capacity development, and stakeholder engagement, the ESMP will provide an implementation schedule and capital and recurrent cost estimates. These figures will be integrated into total project cost tables.

13. Public Consultation and Disclosure Procedures

The ESMP will be developed in consultation with stakeholders, promoting meaningful consultations during project implementation. It will include a stakeholder analysis, consultation plan, and effective

processes for addressing stakeholder concerns. Periodic reports will be provided to affected communities, describing progress, and any material changes or additions to the mitigation measures will be communicated.

14. Reports/Deliverables

Reports will be submitted, including a work plan to complete the tasks, Environmental and Social Assessment, and Environmental and Social Management Plans. The timeline and payment schedule will be adapted based on project complexity, depending on the final activity design, and siting of dams and work required to complete the required ESIA's and ESMPs, and may include quarterly reporting.

15. Minimum Requirements

The minimum requirements for the consultant to undertake the ESIA should be listed in the ToRs. This should be decided in consultation with project proponents, including UNEP, IUCN and the Ministry of Environment. The Consultant should at minimum have completed similar assignments previously utilizing international ES Standards (such as the IFC PS), should be accredited as per Jordanian legislation and be appropriately qualified as per the determination of the project proponents.

Additional note: Within the Scope of the ESIA the following risks should be considered at minimum with respect to Activity 3.1.1 regarding the establishment of the Rockfill dams.

Potential Social Risks to Consider:

- Disturbance of archaeological sites
- Land tenure issues
- Public acceptance challenges
- Vandalism concerns
- Conflict of interest with local communities regarding water use
- Infrastructure safety risks
- Health risks related to water quality and the potential for vector-borne and water-borne diseases
- Labour related risks
- Gender related risks, including the potential for SEAH and GBV
- Access risks or restrictions

Potential Environmental Risks to Consider:

- Noise and air pollution during construction
- Landscape degradation
- Reduced downstream water flows affecting local communities and ecosystems
- Siltation
- Groundwater contamination
- Aquifer damage

20. Appendix 3: Indicative TORs for an ESMS for the Water Fund

Indicative Terms of Reference for Environmental and Social Management System (ESMS) for the Water Fund. These ToRs provide an outline of what the ESMS should achieve. However, the final specifications of the ESMS should be defined in consultation with the team developing the Water Fund during project implementation. This will ensure that the ESMS can align with the design of the water fund and can be developed in a coordinated manner

1. Introduction

The purpose of this document is to outline the Terms of Reference (TOR) for the development and implementation of an Environmental and Social Management System (ESMS) for The Water Fund. The ESMS will serve as a comprehensive framework for identifying, assessing, and managing environmental and social risks associated with The Water Fund, particularly in the context of the Green Climate Fund (GCF) Environmental and Social Standards (ESS). The ESMS will also prioritize the inclusion and protection of vulnerable communities as beneficiaries.

2. Background

2.1. Overview of The Water Fund

- Provide a detailed description of The Water Fund, its objectives, and the payment for ecosystem services it aims to support as well as its functional operation, legal basis and the priority selection criteria it will employ to select and/or prioritise beneficiaries.

2.2. GCF Environmental and Social Standards

- Outline the relevant GCF/UNEP ES Standards that apply to the Water Fund and highlight the need for compliance (i.e., why the Water Fund requires an overarching ESMS).

3. Objectives of the ESMS

The ESMS aims to:

- Provide a standard environmental and social policy that governs the operations of the water fund, including
- Provide a system to Identify and assess environmental and social risks associated with the Water Fund and the distribution of funding for sub-projects via the fund.
- Develop and implement mitigation measures to manage identified risks.
- Ensure compliance with GCF ESS.
- Prioritize the inclusion and protection of vulnerable communities.

4. Scope of the ESMS

4.1. Stakeholder Inclusion

- Identify and engage relevant stakeholders, including local communities, NGOs, and government agencies, to ensure their input in the ESMS development and implementation in both the development of the Water Fund structures and in the selection of sub-projects for support.

5. ESMS Components

5.1 ESS Policy for the Water Fund

- Develop an overarching policy that will govern the operations of the Water Fund in accordance with the policies of the GCF, UNEP and the government of Jordan. This policy should include operational guidelines for ensuring the fund does not contribute to social, environmental and gender-related impacts in its operations (including SEAH).
- Develop guidelines for internal safeguards and controls to protect the rights and safety of water fund employees and beneficiaries, including an anonymized grievance redress mechanism for operational staff and beneficiaries.
- Incorporate core content, including 1) a definition of SEA (that is aligned with the UN's definition); 2) a clear description of behavior expected of personnel on-and off-duty (reflecting the IASC's Six Core Principles Relating to SEA); 3) an explicit statement of zero tolerance for SEA (i.e. SEA as a ground for disciplinary actions, which may result in termination of employment).
- Develop a strategy for publicizing of the policy widely by distributing it among personnel, beneficiaries, communities and others (e.g. posters in public places, intranet/internet, copy with contracts, childfriendly materials) and integrating it into training and awareness-raising efforts (see Section 4.3. Training and Awareness-raising).

5.2. Environmental and Social Risk Assessment

- Develop a comprehensive risk assessment methodology that considers potential impacts on ecosystems and communities utilising the water fund. This risk assessment methodology should be aligned with the GCF's ES Standards and those of UNEP.
- Provide a risk assessment framework based on the methodology above to assess risks related to water quality, biodiversity, land use, benefit sharing, gender related risks (including SEAH and GBV) and social dynamics for each sub-project application.

5.3. SEAH/GBV Due Diligence Process

- Develop a SEAH and GBV risk baseline in relation to the operational limits of the fund (types of interventions, geographical extent, beneficiary selection criteria). This SEAH/GBV risk baseline will be utilised to undertake accurate due diligence of proposed sub-projects that may be supported by the Water Fund.
- Develop an effective SEAH and GBV due diligence methodology for assessing whether sub-projects supported under the water fund may contribute to — or exacerbate — SEAH or GBV within the footprint of any propose sub-project. This methodology should be based on good practice (in alignment with organisational guidelines, such as those developed by UNICEF[65] or by the GCF[66] and assess:
  - i) The degree to which consultative processes have been undertaken with women and other vulnerable minorities in the development of the sub-project design with specific consideration given to the modality of any engagements and whether any risks or concerns were raised.
  - ii) The potential for the sub-project to exacerbate SEAH risks, based on the developed baseline, geographic location and extent of the proposed sub-project and with consideration of the sub-projects proposed activities.
  - iii) The potential interaction between other identified ESS risks and SEAH or GBV risks, as identified via the Environmental and Social Risk Assessment detailed in 5.2.

[65] https://www.unicef.org/sites/default/files/2019-05/UNICEF-Strategy-Prevent-Respond-Sexual-Exploitation-Abuse-Sexual-Harassment-January-2019.pdf
[66] https://www.greenclimate.fund/document/sexual-exploitation-abuse-and-harassment-seah-risk-assessment-guideline

iv) The accessibility of reporting processes or similar grievance redress mechanisms for potential survivors of SEAH or GBV that prioritize the protection of survivors or individuals making any reports.

v) The potential for mitigation measures to be implemented to effectively avoid, manage or mitigate GBV or SEAH risks (i.e. how easy will it be to implement, monitor, assure and report on mitigation and management measures).

5.4. Mitigation and Management Measures

- Propose strategies and measures to mitigate identified risks, emphasizing the importance of managing such risks within the mitigation hierarchy (avoid, minimize, restore and offset).
- Establish monitoring and reporting mechanisms to track the effectiveness of mitigation measures.
- Develop an accessible grievance redress mechanism with clear reporting lines to ensure any persons adversely affected by the Water Fund operations or support sub-projects are able to report such impacts.

5.5. GCF ESS Compliance

- Develop a plan to ensure full compliance with relevant GCF ESS, including their guidelines on gender mainstreaming, GBV and SEAH.
- Integrate GCF requirements into the ESMS processes, emphasizing the rights of vulnerable communities and indigenous peoples and the protections afforded to minorities and other vulnerable groups under GCF's policies.

6. Vulnerable Communities Prioritization

6.1. Definition of Vulnerable Communities

- Clearly define the criteria for identifying vulnerable communities to support in the context of the Water Fund, considering their reliance and/or potential to contribute to the conservation of water-related ecosystems.
- Gender considerations should be mainstreamed across the Water Fund, both with regard to equity and the management of gender-related risks in its ESMS

6.2. Inclusive Decision-Making

- Implement mechanisms to include vulnerable communities in decision-making processes related to the Water Fund, particularly those affecting selection of sub-projects and allocation of funding.

6.3. Benefit Sharing

- Design and implement mechanisms to ensure that vulnerable communities benefit from the Water Fund, with an emphasis on equitable benefits to be shared across participating and/or beneficiary communities.
- The benefit sharing mechanism should incorporate the needs of marginalised, vulnerable and indigenous groups.

7. Implementation Plan

Develop a phased implementation plan, including:

- Timeline for ESMS development and rollout.

- Responsibilities of key stakeholders, considering water resource management experts, environmental scientists, and community representatives.
- Training programs for staff involved in ESMS implementation, with a focus on social and environmental risks and community engagement.

8. Monitoring and Evaluation

Establish a robust monitoring and evaluation framework to:

- Assess the effectiveness of the ESMS in assessing and reducing risk, addressing identified risks and ensuring equitable benefits.
- Ensure ongoing compliance with GCF ESS, emphasizing social and environmental indicators as per their policies.
- Evaluate the impact of the Water Fund on vulnerable communities, particularly in terms of access to financial support, improvement in ecosystem services and prioritization of sustainable management of land and water resources.

9. Reporting

Define reporting requirements, including regular reports to stakeholders, regulatory authorities, and the GCF, as applicable, with a focus on environmental and social outcomes.

10. Review and Update Mechanism

Establish a periodic review and update process for the ESMS to adapt to changing circumstances, new risks, and emerging best practices in water resource management, payment for ecosystem services and community-led sustainable management initiatives.

11. Budget and Resources

Outline the financial and human resources required for the development, implementation, and maintenance of the ESMS, with specific allocations derived from the fund or financial partners.

12. Approval Process

Define the process for approval of the ESMS, including sign-off by relevant authorities and stakeholders, with an emphasis on water resource management experts and community representatives.