



Terms of Reference for Service

Title: Establishing Rainwater Harvesting & Efficient Irrigation Interventions in Karak and Madaba Governorates.

Background

Project Reference: **P04385**, Donor reference: **AVRO-00078**.

About IUCN

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 is now the world's largest and most diverse environmental network, harnessing the knowledge, resources and reach of more than 1,400 Member organisations and around 15,000 experts. It is a leading provider of conservation data, assessments, and analysis. Its broad membership enables IUCN to fill the role of incubator and trusted repository of best practices, tools, and international standards.

IUCN provides a neutral space in which diverse stakeholders including governments, NGOs, scientists, businesses, local communities, Indigenous peoples' organisations, and others can work together to forge and implement solutions to environmental challenges and achieve sustainable development.

Collaborating with many partners and supporters, IUCN implements a large and diverse portfolio of conservation projects worldwide. Combining the latest science with the traditional knowledge of local communities, these projects work to reverse habitat loss, restore ecosystems, and improve people's well-being.

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About the Project

Jordan's water scarcity is compounded by different pressures including climate change, industrial and agricultural practices, population growth, and Syrian refugee's influxes, which create barriers to economic development. Climate-related hazards in Jordan include droughts, extreme temperatures, storms, landslides, and flash floods. While these hazards are a natural occurrence in Jordan, they nevertheless pose serious constraints on development, and their intensity and frequency are likely to increase under a changing climate. Climate change is increasingly affecting vulnerable communities in Jordan, as the country simultaneously grapples with social cohesion and rapid population growth. Refugee arrival waves and the existing presence of Syrian refugees increase citizens' discontent towards local governmental entities and their ability to fairly manage shared resources such as water and land. The most affected sectors by water issues in Jordan are the agricultural sector and the labour sector. Those sectors are already impacted by the Syrian crisis and the presence of refugees. Responding to these challenges, the AMER project has been developed to enhance sustainable economic mechanisms in the agriculture and food security sectors as drivers to empower Jordanian host communities and Syrian refugees in southern governorates. The project would create job and livelihood opportunities in the agriculture sector. Moreover, it will introduce and promote sustainable agriculture practices that build the resilience of vulnerable farmers and residents against climate change impacts. The main project's objectives:

1. Improve the living conditions of Jordanian host communities and Syrian refugees in the targeted governorates through income-generation practices related to agriculture and sustainable production methods.

2. Strengthen the capacity and awareness of local communities, local authorities, academic institutions, and schools in the targeted governorates regarding sustainable practices for agriculture and food security.
3. Improve the resilience of small farmers and breeders from host communities and Syrian refugees in the targeted governorates to climate change challenges.

Under this tender, IUCN is seeking a contracting company that has demonstrated experience in implementing rainwater harvesting and efficient irrigation interventions in the Karak and Madaba governorates.

Description of the Service

The tender aims to strengthen adaptive capacity and resilience to climate change impacts on local communities and Syrian refugees by introducing and promoting the best rainwater harvesting practices and efficient irrigation techniques at farm and household levels in the Karak and Madaba governorates. The tender will improve irrigation efficacy and rainwater harvesting by providing smart irrigation techniques, water harvesting systems, solar systems, and rehabilitation of the existing irrigation system on the farm and household levels.

Section one: Rainwater Harvesting Interventions:

Under this section of the tender, IUCN will support households and small farmers with rainwater harvesting systems to strengthen their adaptive capacity and resilience to climate change impacts in Karak and Madaba. Where eight rainwater harvesting systems/rooftops for direct use and six rainwaters harvesting at the farm level for irrigation and livestock watering use will be established. The targeted beneficiaries are in separate locations within targeted governorates; the following is a general description of the requested systems' components, whether at household/farm levels.

- A. Rainwater harvesting rooftop system for direct use (domestic or/and irrigation): the following are the main component for this harvesting system.
 1. Catchment area (rooftop): The catchment of the rainwater harvesting system is the rooftop surface of the house, which directly receives the rainfall. It provides water to the collection system. The rooftop should be reshaped using concrete and then lined with epoxy to ensure the rooftop slope is directed to the drain system.
 2. Coarse Mesh: It should be fabricated out of a network of wire/plastic screens used to prevent the entry of debris into the drainpipe from the catchment (rooftop).
 3. Drainage/collection system: It is the system that carries out the collected water from the catchment (rooftop) to the storage tank (ground well). It is made out of PVC materials and the size should be determined based on the area of the rooftop and rainfall intensity.
 4. First flush: It is a valve/bypass arrangement that ensures that runoff from the spell of rain, which contains pollutants from the air and debris from the catchment (rooftop), is flushed out and does not enter the collection system (ground well).
 5. Filtration unit: The filtration unit or chamber is used to remove suspended particles from rainwater collected and several types of filtering media can be used in the filtration unit (sand and charcoal filters are used).
 6. Storage tank (ground well): It is a ground well to store the collected and filtered rainwater for domestic and irrigation use. It should not be less than 35 m³ in capacity and should be lined with cement or any other suitable materials. Avoid the use of any kind of material that could be toxic.
- B. Rainwater harvesting farm system for irrigation and/or watering livestock: the following are the main component for this harvesting system.
 1. Catchment area (farm area): the catchment of water harvesting system is the farm are surface which directly receives the rainfall and provide water to the collected ground well.
 2. Filtration unit: could be installed surrounding the ground well using gabion terraces.
 3. Storage tank (ground well) or rehabilitate the existing storage facilities: It is a ground well to store the collected and filtered rainwater for irrigation and/or watering livestock. It should not be less than 35

m3 in capacity and should be lined with cement or any other suitable materials. Avoid the use of any kind of material that could be toxic.

Section Two: Efficient Irrigation system:

Under this section of the tender, IUCN will support small farmers by providing them with efficient irrigation techniques (fully/partially) or rehabilitating the existing ones to strengthen their adaptive capacity and resilience to climate change impacts in Karak and Madaba. Fourteen small farmers will be provided with irrigation equipment, or/and PV systems or/and irrigation networks or/and rehabilitation of existing irrigation facilities, etc. to foster irrigation efficiency. The targeted beneficiaries are in fourteen separate locations within the targeted governorates, as stated in Attachment 2: initial BOQs and Specs.

This tender is comprised of three main phases, as follows:

A. Detail Design Phase:

The key tasks to be undertaken to deliver this phase should include but not be limited to the following:

- The contractor should assign a team comprised of three experts in construction, irrigation, and renewable energy to work collaboratively on developing detailed designs and implementing the water harvesting and efficient irrigation interventions in full compliance with the key components that are listed in the initial BOQ, specs, and design requirements (Attachment.2), with IUCN oversight and guidance.
- The expert's team should conduct field visits to all targeted sites to explore and assess the sites and available resources and infrastructure. Consider taking advantage of any infrastructure available on the project site to maximize benefit for the beneficiaries if it exists.
- Submission of detailed design packages for each single intervention in alignment with the BOQ, specs, and design requirements (Attachment.2), including drawings, detailed BOQs, and specifications. Both soft (AutoCAD & PDF) and hard copies.
- During design, all safety precautions and environmental regulations must be considered.
- Before starting implementation on the ground, the design packages must obtain written approval from the IUCN.

B. Implementation phase.

The key tasks to be undertaken to deliver this phase should be included but not limited to the following:

- The contractor must obtain full approval from the IUCN on the design package before starting implementation.
- The contractor should bear all resulting costs from opening access roads, land levelling, reshaping slopes, and land cleaning and all related-works that was not mentioned on the tender documents.
- The contractor should be responsible for all needed resources during installation such as water, electricity, facilities for the staff and workers, and guarding as well.
- The contractor should supply and install all required goods, materials, and equipment for all sites in compliance with the approved design. The raw materials of the plastic sheets and pipelines are 100% virgin, with the needed certificates for that being ISO and DIN certificates.
- The contractor should be responsible for guarding the implementation sites and materials until the final handover to IUCN and its partners.
- During implementation, all safety precautions and environmental regulations must be applied/followed.

C. Commissioning phase (testing, operation, training, and handover).

- The contractor should test and operate all implemented interventions in witness of the IUCN team (or delegated partners) before proceeding with the handing over process to ensure all intervention

components are optimally functional. The testing/operation process should be fully documented (photos and video).

- According to the installed systems, the contractor should develop and submit operational and maintenance guidelines material in Arabic and English for the entire system (including water harvesting, agriculture, irrigation, and renewable energy devices and components) for the beneficiaries' use.
- Conducting on-site or/and on-the-job training for the beneficiaries on the installation, operation, and maintenance of the implemented systems.
- Develop and submit a list of the spare parts and warranties for the installed systems.
- the contractor should provide the As-built drawing for the implemented interventions and submitted to IUCN.
- During the project life, the contractor should provide monthly reports for the progress of this contract.

Essential Requirements

1. Qualification of experts.

The contractor should provide a team of experts that have the following qualifications and experiences as a minimum requirement to design, implement, and commission the water harvesting and efficient irrigation interventions in the targeted areas, considering the expert should be available all the project life:

<u>Expert qualifications</u>
<p>1. Construction manager (team leader)</p> <ul style="list-style-type: none"> • University degree in civil engineering or a relevant field (master's /PhD degree is an advantage). • A minimum of 10 years of overall experience in agriculture and construction sectors (water harvesting, irrigation, farms, etc). • Expertise and in-depth knowledge of the field of implementing rainwater harvesting system and agriculture projects. • Demonstrated experience in managing, designing, and implementation of various related projects that applied best agricultural and rainwater harvesting practices. • Advanced knowledge of English and Arabic languages. • Strong interpersonal skills and the ability to communicate with various stakeholders in politically sensitive situations with diplomacy and tact.
<p>2. Irrigation expert</p> <ul style="list-style-type: none"> • University degree in irrigation/agriculture or relevant field (master\PhD is an advantage). • A minimum of 10 years of experience in design and implementation of water harvesting and irrigation techniques such as drip irrigation, etc. • Expertise in-depth knowledge of the field of agriculture includes irrigation and water harvesting in Jordan. • Expertise in designing and implementing various irrigation projects and rehabilitation of existing system. • Advanced knowledge of English and Arabic languages. • Strong interpersonal skills and the ability to communicate with various stakeholders in politically sensitive situations with diplomacy and tact.
<p>3. Water harvesting expert.</p> <ul style="list-style-type: none"> • University degree in renewable energy or relevant field (master\PhD is an advantage). • A minimum of 5 years' experience in the designing and implementation of renewable energy techniques. • Proven expertise and in-depth Knowledge of the field of renewable energy in Jordan. • Demonstrated experience in designing, and implementation of various Renewable energy related projects that applied best agricultural practices. • Advanced knowledge of English and Arabic languages. • Strong interpersonal skills and the ability to communicate with various stakeholders in politically sensitive situations with diplomacy and tact.

Duration of the tender

The contractor should design, supply, install, and commission the requested interventions during the period from **upon signature to the End of April 2025.**

Deliverables and Activities

The contractor will provide the following deliverables to the IUCN:

# Deliverable	Description of deliverables	Deadline
Deliverable one;	Submit full design packages for fourteen water harvesting systems and fourteen efficient irrigation systems, including design drawings, detailed BOQs, and specifications per the design phase for all interventions.	20/01/2025
Deliverable two;	Supply, transport, install, commission, and hand over of (8) water harvesting systems (rooftop).	20/02/2025
Deliverable three;	Supply, transport, install, commission, and hand over of (6) water harvesting systems (farm level).	20/03/2025
Deliverable four;	Supply, transport, install, commission, and hand over fourteen efficient irrigation systems.	30/04/2025

Payment Schedule

The table below summarises the chronological order of deliverables & payments at which IUCN will pay the contractor upon satisfactory completion of conducting the tender.

# Payment	Expected time to submit the payment	Milestone payment
Payment 1;	Upon signature of the contract accompanied by the bank guarantee.	30% of the corresponding total amount
Payment 2;	Upon satisfactory completion and approval of the deliverable 1.	20% of the corresponding total amount
Payment 3;	Upon satisfactory completion and approval of deliverables 2 &3.	30% of the corresponding total amount
Payment 4;	Upon satisfactory completion and approval of the deliverable 4.	20% of the corresponding total amount

Supervision and coordination

The contractor will report to and work under the supervision of (IUCN project team).