Annex1: TERMS OF REFERENCE

Title of Assignment	Machinery and site operations
Project Title	Job creation to prevent soil erosion and reduce evaporation in Zarqa Ma'in dam
Location	Zarqa Ma'in Dam - Madaba
Duration	01st April to 13th October, 2023 (12.April to 13th October 2023)

Project Background

About the Project

The project Job Creation to Prevent Soil Erosion and Reduce Evaporation in Zarqa Ma'in Dam project is funded by the Federal Ministry for Economic Cooperation and Development /through Deutsche Gesellschaft für International Zusammenarbeit (GIZ), which is implemented by (IUCN).

The project aims to improve the living condition of the Jordanian host communities and the Syrian refugees by creating job opportunities to reduce soil erosion and minimize the evaporation in the dam, in order to achieve this objective IUCN intend to implement different types of interventions and measures such as NBS (gabion and rip rap structures), shading techniques, afforestation, rangeland restoration, support the local community through implementing water troughs and rehabilitate the existing irrigation canal.

Zarqa Ma'in Basin

The Zarqa Ma'in Basin is the largest of the water basins in the length of its tributaries, which extends 420 km in length and it serves several sectors including domestic, agriculture, and tourism. Given this basin's scale and geographical characteristics, it made the valleys associated with it vulnerable to flooding, including the Zarqa Ma'in valley, which is considered the most Sediment accumulation due to soil erosion. The basin of the Wadi Zarqa Ma'in basin is about 266 km², and it ranges in height from 100 (above sea level) to (400) m below sea level. The rate of its discharge to the Dead Sea is 23 million m³ annually with 3 million m³ annually considered as runoff water, and (20) million m³ annually of permanent mineral flowing from dozens of hot springs surrounding the area. Zarqa Ma'in watershed supports several villages that surround the tributaries of the basin where around 28 settlements are located along the main streams of Zarqa Ma'in.

Zarqa Ma'in Dam

The Zarqa Ma'in Dam is located 5 km south of Ma'in town at the top of the Ma'in Hammamet Resort, 12 km southwest of Madaba city and almost 21 km from the Jordan Valley (N 31° 38' 49.4196''; E 35° 42' 18.738''). Zarqa Ma'in Dam receives its water from the Zarqa Ma'in watershed that starts south of the village of Ma'in and it begins in Ain Al-Zarqa at an altitude of 584 m above sea level and meets with a group of springs in the area called the Ma'in Baths, its length is about 18 km.

Zarqa Ma'in dam is relatively a newly established dam, where it has begun storage in 2017. This provides a great opportunity to implement measures that can protect the dam structure from soil erosion and sediments, enhance water storage capacities, increase the life expectancy of the dam, and support beneficiaries in the long term.

Multiple solution frameworks have been proposed to reduce the impact of soil erosion, and one of these frameworks addresses natural-based solutions NBS; Riprap and Gabion structures along the main wadi stream, as well as afforestation and rangeland restoration. In addition, the local community will be supported by rehabilitation the existing irrigation canal and establish water troughs for the local small herders.

IUCN ROWA will lead the assessment, planning, supervision, implementation, and handover of the project. The project manager jointly with a technical field coordinator and technical field assistant will lead the planning and implementation of interventions by managing C4W daily, under full guidance and collaboration from the GIZ and JVA. Under this project, IUCN intends to hire heavy machinery (Intermittently and Continuously) with all required operational personnel. also, under this tender, the contractor requested to supply construction materials necessary to implement the project interventions in the Zarqa Ma'in Dam Catchment in Madaba governorate by CWs. Therefore, IUCN invites interested companies that have the required qualifications to submit their technical and financial offers according to the tender documents.

Objectives Scope of Work and.

The machinery and site operations tender aims to hire the needed heavy machinery to carry out the daily operations that are required for implementing the project interventions; the main operations for the heavy machinery will include but not be limited to excavations, backfilling, levelling, materials transportation, stones transportation, and any other duties in the site upon request from the site manager.

In addition, the site operations will include providing water for drinking, domestic, and irrigation purposes as well as sewage de-loading, and manage transporting any kind of waste to the official dump area. Moreover, construction materials (crushed stones and base course) should be supplied upon request which is necessary for the implementation of the interventions on daily basis. Furthermore, to supply the garbage cans and bins.

The geographic scope of this tender will be in the Madaba governorate – at the Zarqa Ma’in dam area. The below figure shows the working area (our lined with red buffer zone) with the possibility to request work beyond this area based on operations needs which will be decided by the site manager.

Figure 1: Working Area

Under this tender, the contractor should provide the heavy machinery listed on the BOQs including the qualified drivers, maintenance, fuel, and any other operations needs relevant to the rented machinery. In order to carry out the daily site operations in the project area (see figure 1), under full guidance and supervision from the IUCN-ROWA field team.

A. Heavy Machinery:

The heavy machinery daily operations will include but are not limited to the followings:

- **Rehabilitation and establishing access road:**

The machinery will use clean waste, sediments, dewater, level, maintain, compact and excavate in any type of soil, and transfer all unsatisfactory material to the official dump area, in order to rehabilitee such temporary access roads along the wadi bed to enable the labour buses to access the last intervention location.

- **Excavation works:**

The machinery will excavate in any kind of soil, rock, asphalt or base course etc., starting from existing ground levels to the bottom of the foundation level, as specified and shown in the

drawings including stockpiling satisfactory material and disposal of excess & unsatisfactory material to an approved damping area, under the site Engineer's instructions and according to specifications.

- Backfilling works:

The heavy machinery will spread, level and compact selected backfilling material includes material transfer, behind the internal face of the Gabion Wall and around the other Gabion structure and where specified on the drawings, from the foundation level to the specified level as shown on the drawings, the materials shall be spread in lifts not exceeding 25cm in un-compacted thickness, moisture conditioned to its optimum moisture content, and compacted to a density not less than 85 per cent of the maximum dry density as obtained by modified proctor compaction test (ASTM D 1557-09), under site engineer's instructions and according to specifications.

- Disposal:

Excavated materials determined to be unsuitable for reuse, vegetative material, and debris from site preparation operations should be transported by machinery to an approved off-site disposal area. No rubbish or debris of any kind shall be permitted to be buried on the project site.

Burning of cleared and grubbed materials or other fires for any reason will not be permitted.

- Protection the private and state property:

Protect existing, trees, pavements, fencing, structures, walls, utilities, signs and private property outside of the limit of work or within the project area indicated to keep all public and private properties at their original conditions before the beginning of these services, without causing any harm by the work conducted by the machinery contractor's team.

The contractor has to deal and compensate any losses occurred by their work.

- Transferring inside the working sites:

- Transporting the boulders, stones and other materials from Crusher Stones inside work site.
- Transporting the boulders/stones along the wadi bed from site to site.
- Transporting the Gabion Baskets, Geotextile, tools and wires from the storage area to the intervention/work location daily.
- Transporting the materials/excavated material from the site to the dump area specified by the authorities.

B. Construction Materials

- Stones/Boulders:

The stones/boulders fill for gabion units shall be clean rough quarry stone or pit or river cobbles or a mixture of any of these materials, and shall be essentially free from dust, clay vegetative matter and other deleterious materials.

Individual pieces of the stones /boulders must be 100-250 mm minimum for gabions, we will always check that the rock size is bigger than the hexagonal mesh opening (80*100 mm), within

the center of a gabion basket smaller rock may be used and limited to the center of the gabion only.

The stones/boulders shall be hard, tough, durable and dense, resistant to the action of air and water, and suitable in all aspects for the purpose intended and the materials must be approved by the site engineer.

- Base Courses:

Crushed aggregate for base course shall meet the requirements of Class A when tested in accordance with AASHTO T 27 after mixing with water.

Aggregates for use in base course construction shall be either crushed stone or crushed gravel. The fine aggregate shall consist of screenings obtained from crushed stone, gravel or sand. Aggregate shall be washed if necessary, to remove excessive quantities of clay, silty clay or salts.

Crushed stone shall consist of hard, durable particles or fragments of stone, free from dirt or other objectionable matter and shall contain no more than 8% of flat, elongated, soft or disintegrated pieces.

- Garbage bags and bins:

Should be supplied and deliver according to the specs mentioned in the BOQs.

For the construction materials, the contractor must undertake to inspect materials on his own expense, according to the required specification and national specification at the Royal scientific society (RSS) or any other entities recommends by the IUCN.

C. Site operations:

- Deliver drinking water

The contractor is requested to deliver drinking water for labour use on weekly basis, and also to provide the IUCN with required tests and certificates that demonstrate that the water quality meets the national drinking water stander and the truck is suited to deliver the water for drinking purposes. The tank of the truck should be in good condition and accepted to deliver drinking water from the relevant authority.

The total quantity of the drinking water will not be less than 700 m^3 along the project life (1st April to 13th October 2023), should be delivered on weekly basis upon request by the site manager. The test and certificates should be made every 3 months at the contractor's expense.

- Deliver Water domestic

The contractor is requested to deliver water for domestic use with total amount 300 m^3 along the project life, the water should be delivered on weekly basis upon request by the site manager. the water quality should meet the national stander of domestic water. The truck must be suited to deliver the water for domestic purposes. The tank of the truck should be in good condition, licensed and insured and accepted to deliver domestic water from the relevant authority.

- DE loading the sewage water

The contractor is requested to provide a sewage truck for de-loading the water sewage on weekly basis upon request by the site manager. The truck should be in good condition, licensed and insured and accepted to transport the sewage water to the authorized dumping areas.

- Water for irrigation.

The contractor is requested to supply water for irrigation purposes upon request from the site manager, the quantity is 1000 m^3.

Terms& Conditions:

- A qualified individual must be assigned by the contractor (as a contractor representative on the site/Drivers' supervisor). and he will be in charge along the project life to lead the operation staff (machinery drivers), as any daily tasks should be assigned to the drivers through him to ensure smooth communication and the work flow with all staff at the working site. The supervisor will be fully guided and supervised by the IUCN field team/site manager. It should be noted that the cost of this supervisor should be charged to the items on the BOQs. He should be on duty every day - 6 days a week / 8 hours a day.
- The assign drivers must be fully equipped with the PPE, all safety standards must be followed while working on-site and operating machinery.
- Machinery must be provided within 5 working days maximum after signing the contract.
- The working day is starting at 8:00 am until 4:00 pm from Saturday to Thursday.
- The start date of the work will be on 1st April 2023 until 13th October 2023.
- The machinery (vehicles) must be operated only by qualified drivers (operators), they must be licensed, insured, and fully aware of the operation of such machinery.
- Non-criminal certificates should be provided for all drivers and supervisor as well.
- The heavy machinery, drivers' supervisor, and drivers must be available throughout the duration of the project and should work parallel with the labors (CWs) throughout the work duration.
- In case of any machinery breakdown while on duty, the contractor must replace it immediately and ensure the operation continued without any setback (max within one working day).
- The machinery must be licensed and insured throughout the rental duration.
- Afford any permits or official documents needed from the government to keep the work operational.
- The contractor must provide IUCN with all support documents for vehicles and drivers in order to evaluate them.
- All vehicles will be inspected before starting work and any difference in the identification documents in the contract will be cancelled without holding IUCN any responsibilities.
- The IUCN has the right to extend this contract (in case no objection from both parties) without any additional cost at the accepted rate.

- In case of the need for any amendments and/or extensions, the monthly rates mentioned in the BOQ should be converted to daily rate using the following equation (**daily rate =Monthly rate /30**).

Restrictions and Limitations:

The contractor should consider the following restrictions while executing the works and developing the proposal.

The above duties description contains the main tasks, duties and responsibilities for the hiring machinery and site operation. However, the contractor is expected to show flexibility in the implementation of this tender and be willing to undertake any other tasks that are necessary to perform this tender to high standers of performance and safety in accordance with the tender documents, BOQs, and specifications.

Time Frame

The contractor must deliver the machinery, construction materials, and other. as well as carry out the daily site operation as mentioned on the tender documents within a work plan assuring implementation of this tender.

The project period will start on 1st April 2023 unit 13th October 2023. Considering that some of the machinery and operation will be upon request. **(intermittent working days).**

Deliverables and Reporting

The contractor is required to submit daily progress reports to the IUCN demonstrating the accomplished works including a timesheet for each provided machinery and should be signed and approved by the site engineer in compliance with the work plan (which will be set out by the IUCN field team).

In addition, the contractor should deliver the construction materials (base course and stones) supported with the test certificates which demonstrate meeting the requirement and specifications, as well as provide the water for different purposes supported with the test certificates which prove meeting the requirement and specifications. Other materials should be delivered according to the BOQs and tender documents.

Required staff

All the contractors should provide CVs for all the operators and supervisor, the table below illustrate the minimum requirement of the operations' team (supervisor and drivers):

Occupation	Requirement
Supervisor	• Minimum 10 years prove track experience in operating machinery field. (should be supported by experience letters and reference) • Reporting experience is required. • Ability to operate all kind of machinery (trucks, backhoe, excavator, etc), supported with track records. • Copy of valid License. • Copy of valid ID.

	• Strong interpersonal skills and the ability to communicate with various people in politically sensitive situations with diplomacy and tact. • Recent, Non-criminal certificate. • Write, read (Arabic). • Any academic degree will be advantage
Drivers	• Mnium 8 years prove track experience in operating machinery (according to type of machinery who will operate), should be supported by experience letters and reference. • Copy of valid License. • Copy of valid ID. • Recent, Non-criminal certificate. • Write, read (Arabic) as minimum. • Any academic degree will be advantage.

Remunerations (payments)

The payments will be made to the contractor upon satisfactory completion and handing over of deliverables as follows:

No.	Payments	Amount	Payment's Requirement
1	The First Instalment	Corresponding to 40% of the total contract amount	Upon sign the agreement.
2	Second installment	Corresponding to 40% of the total contract amount	This payment is subject to release at the end of July 2023 upon satisfactory tasks' completion and submits all the daily progress reports and timesheets for all machinery.
3	The Final Instalment	Corresponding to 20% of the total contract amount	This payment is subject to release at the end of contract period upon satisfactory tasks' completion and submits all the daily progress reports and timesheets for all machinery.

Risks and limitations

As a part of ensuring the implementation of the tender up to high standards of performance and safety, the contractor should consider and address properly the following risks:

- COVID-19 status.
- Accessibility to the site locations.
- Distance from the settlements.
- No public transportation.

- Different sources of hazards may happen in the workplace such as falling, slipping, snake bites, and random accidents. For controlling such risks, the contractor should apply restricted safety procedures and measures.
- Extreme weather conditions and floods: Extreme hot and cold temperatures and High-intensity rainfall events can affect contractor progress in terms of productivity and safety; thus, the contractor should monitor weather forecasts daily.
- Large vehicles and construction machines might not be able to easily access most of the Wadi area. Besides, the topography of the Wadi area is steep and has limited and narrow unpaved roads.
- Most of the Wadi areas are private ownership. Some of the Wadi mainstream areas might be owned by the government.
- The security of the contractor's machinery and equipment is the contractor's responsibility, and we recommend assigning a guard from the contractor's side and at his own expense.