

Term of Reference

GIS based Hydrological Modeling in Ziglab Dam Area and Suitability Mapping for Optimum Site Selection for Check Dams, Gabions and Terraces Construction;

Prevention Measures of Soil Erosion and Sediments Accumulation Control of Ziglab Dam Area

Introduction and Background

Jordan is suffering from a severe water scarcity with renewable water resources below 100 m³/per capita annually, far below the global threshold of severe water scarcity, Jordan is one of the most water-scarce countries in the world. The Ministry of Water and Irrigation (MoWI) outlined in its 2016-2025 Water Sector Strategy the challenge of the growing national water demand over the medium to long-term due to increased demographic pressure (significantly linked to the Syrian refugee influx), compounded by severe deterioration in water resource quality due notably to malpractices in agricultural activities. Despite the construction of more than 30 dams, a high level of sedimentation and the lack of local capacity to effectively clean sediment from reservoirs threatens water supply. The water stored in Ziglab dam is used for municipal supply, livestock, agriculture and groundwater recharge. The Jordan Valley Authority (JVA) oversees the functionality of the dams as potential resources for maximizing the amount of run-off collected. This, in return, will relieve the dependency on the excessive use of groundwater and will provide additional water for the municipal, industrial and agricultural sectors.

IUCN will conduct in full coordination with Jordan Valley Authority (JVA) a hydrological study of the whole Ziglab dam's watershed area to include information received from the local municipality, detailed maps, data analysis, and risk rate of erosion in the wadi. The report will be collated and shared with the relevant authorities and IUCN will formally present the results to the JVA. The hydrological study will act as a base for the site selection and will highlight the measures to be taken for erosion prevention across the watershed.

Consultancy Objective:

The objective of the consultancy is to perform a GIS based hydrological modeling to determine the optimum site selection for sediment load control in Ziglab dam upstream area. This study comes along the design of different interventions like check-dams, gabions retaining walls and terraces as a protection measures to the current load of sediments accumulation behind Ziglab dam catchment area

Consultancy location and duration:

Location: Ziglab Dam, Jordan

Duration: Two months from signing the contract

Starting Date: 20th January 2019

End Date: 19th March 2019

Consultancy Specific Tasks:

The consultant will be specifically responsible for:

- ✓ Determine the sediment accumulation points at the main streams and wadis where sediment outflow is maximum according the hydrological analysis.
 - Modelling the sediment transport and soil erosion to identify the hotspot areas for soil erosion along Ziglab Reservoir.
 - Prepare vulnerability maps where sedimentation load is high, low and moderate at sub-basin level around Ziglab dam and describe the magnitude of sediments accumulation in the water channels.
 - Disaggregating the watershed into sub-basins and has defined all hydrological parameters and runoff factors and flow rates/velocities and discharges at maximum rate conditions.
 - Build slope suitability mapping for most accessible and most vulnerable area of sedimentation control.
- ✓ Selection of final sedimentation control areas and structures (check-dams, Terraces and other Rock-retaining walls) based on slope suitability mapping, accessibility and field visits.
- ✓ Prepare the required cross sections and land profiles and generated 3D drawings showing width and height of Channels and Wadis where Protection measures like Terraces and check-dams' interventions should be taken.
- ✓ Provide a narrative description and full reporting of the proposed sediment control measures and interventions within the development upstream area including a description of any flooding areas which have high potential of sedimentation loads, site discharge location(s), points of Sediments outflow and all other maps and results.



- ✓ Provide the design company and the construction engineers with all required design settings and all hydrological data and results on the optimum sites selection of control measures.
-

Bidding Information:

IUCN is seeking to contract a consultancy firm or an individual to conduct this assignment. The bidder must submit:

1. Narrative Proposal
2. Financial Proposal
3. Company profile / CV for individual

Offers will be evaluated based on the following:

Narrative Proposal	35%
Company profile / CV for individual	35%
Financial Proposal	30%

Qualified consultants shall send their proposals and requirement documents to the email: Ali.hayajneh@iucn.org before 4:00PM of 18.01.2019.