Hydraulics Research Center
مركز البحوث الهيدروليكية

RESEARCH PROGRAM ON Water, Land and Ecosystems

Harnessing Floods to Enhance Livelihoods and Ecosystem Services

Introduction

The research project "**Harnessing floods to enhance livelihood and ecosystem services**" is funded by the CGIAR research program on Water, Land and Ecosystems and it is being implemented in the Gash area in Sudan by the Hydraulics Research Center (HRC) of the Ministry of Water Resources and Electricity over the period Jan. 2015 to Dec. 2016 in collaboration with other partners, Spate Irrigation Network Foundation (leading partner), MetaMeta, UNESCO-IHE and Mekelle University.

Research Problem

Recognizing the importance of Flood-based Farming Systems "FBFS" for local livelihoods and economies, the Sudanese government supported by donors such as IFAD started investing in the improvement of infrastructure (weirs, intakes, canals) and on-farm practices to enhance agricultural productivity.

However, it is unknown how these interventions at scheme level interact with other functions provided by floods at the local and landscape level and how these interventions affect livelihoods of different stakeholders.

Research Objectives

This research aims :

to optimize the use of floods for agriculture and ecosystem services

to support livelihoods settings in the Gash, Sudan.

To study the interventions at Gash scheme level and how these interventions affect the livelihoods of different stakeholders.

Research Partners

IWMI International Water Management Institute

META META

Spate Irrigation Network

Research Methodology

System management

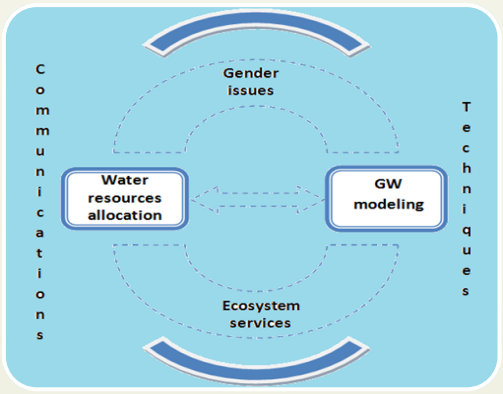
The goal of this research is to assess different development scenarios in the Gash Agricultural Scheme and evaluate the implications on groundwater level, and the ecosystem services in the Gash Die.

Groundwater modeling

This component aims to understand the groundwater system of Gash, and how it interacts with different water allocation scenarios.

Ecosystems services

This part aims to focus on the added value of including ecosystems' perspectives in current or planned interventions and policies in the Gash.



Allocation of Gash River floods

The RIBASIM model will be used to test different water allocation scenarios to satisfy different water uses e.g. irrigation, water supply, minimum flow to Gash die, groundwater recharge, etc…

Gender and equity

The outputs would address gender-specific questions and a methodology for gender inclusive investments in flood based farming through different approaches.

Findings

1. Above average of the annual yield of the Gash River (0.65 BCM) satisfy the current utilization for irrigation, groundwater recharge and for grazing land and natural forests in the Gash Die.
2. Water abstraction of horticultural sector has to be decreased by 25-50% to maintain sustainability of groundwater aquifer.
3. An integrated approach for Gash River water resources management is developed through modeling of the available water resources taking into account the impact on gender and ecosystem services.
4. Etc…

Beneficiaries

§ **F**armers

§ **G**overnment officials/decision makers

§ **T**echnical experts/investment planners

§ **C**ivil societies, community organizations, WUAs, etc…

§ **D**onors

§ **R**esearch and knowledge centers

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