WATDEV: Climate Smart Water Management and Sustainable Development for Food and Agriculture in East Africa

The Water Pan by Matt Jenkins | Nature, 31 August 2019 – Picture credit: ©Roshni Lodhia

Purpose of the project

The overarching objective of the project is to increase the sustainability of agricultural water management and the resilience of agro-ecosystems to climate change in East Africa and Egypt. This will be achieved through two specific objectives:

SO1. National ministries and research institutions will be able to improve their knowledge and management on water in agriculture.

SO2. Farmers and local actors will implement innovative/sustainable water management solutions and skills.

Background

WATDEV targets Kenya, Ethiopia, Sudan, and Egypt, all of which perform poorly on the Human Development Index. They need to improve water and soil management and agricultural production methods. However, if harnessed, the agricultural sector can increase investment, create jobs, contribute to poverty eradication, and improve food security and human well-being. Agriculture is the primary user of fresh water in East African river basins, accounting for up to 75% of total withdrawals. Water management becomes a difficult step when combined with climate change scenarios and extreme weather conditions such as high seasonality of rainfall, large inter-annual changes, and frequent droughts. The resilience of water resources, limited innovation, and management gaps call

for increasing multi-country efforts in agricultural water research, innovation, and capacity building at various levels and scales. To sustain local livelihoods, there is a pressing need for integrated and inter-sectoral approaches to water that consistently address sensitive issues associated with complex ecosystems and their interactions from small to large scales. Transnational policies and conversations have proven difficult in recent years and require a more common and shared pool of knowledge on water management.

The theory behind the change

The ToC (Figure 1) is based on the paradigm that to achieve the expected impacts, notably the sustainability of agricultural systems and water use efficiency in agriculture, a set of intermediate and long-term outcomes need to be achieved. First, policy and decision makers along with farmers and land users must implement the best management practices and innovations that the project will offer. The strategic framework for accomplishing these results stems from the bottom-up approach that first identifies research gaps and then addresses them through the design and application of innovations. Numerous meetings and awareness sessions with local stakeholders will test the feasibility and validity of the approach.

Once this is achieved, the project will carry out an extensive stakeholder engagement process to accelerate the dissemination and replication of BPMs through the outsourcing and scaling up based on an integrated modelling approach that will incorporate water, soil, crops and socio-economic indicators. To this end, training of local stakeholders and communities takes particular importance. This will be clearly defined from the outset of the project, and one of the major outputs will be a toolbox for water use planning and sustainable management that will be handed over to African partners. The toolbox will be a policy tool to help local and national decision makers in Egypt, Sudan, Ethiopia, and Kenya to make the right decisions about water use in agriculture while ensuring the sustainability of the natural resource management and improving the livelihoods of local communities.

The ToC provides a well-articulated logical framework and information flow based on an agro-ecosystem approach that starts with problem identification and ends up with solutions. The wealth of existing knowledge from recent and ongoing research and operational projects, but also databases, modelling tools, technologies, and related operational frameworks will be collected and used as a baseline for evaluation and monitoring. Finally, the project will accelerate knowledge sharing at regional level and will facilitate information sharing between countries through the Water Knowledge Hub. The complementarities of the project with other initiatives such as the "Nexus Regional Dialogues Programme" funded by EU and GIZ will also be strengthened.

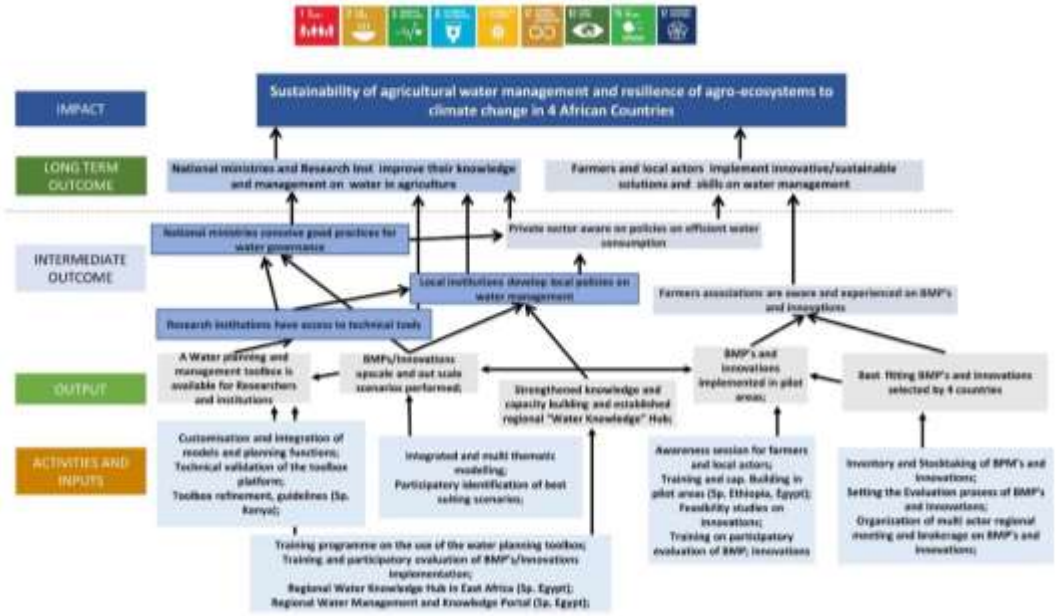

Figure 1. Schematic representation of the activities and outputs based on Theory of Change logical framework

Main activities

The main activities of the project are as follows:

- the collection, inventory, and recording of best management practices (BMPs) and innovations, as well as the establishment of a mechanism for their evaluation;
- the organisation of regional meetings with multi-stakeholder approach to assess and validate BMPs and innovations under real conditions in the four African countries;
- awareness-raising sessions for farmers and community stakeholders, as well as training and capacity building in areas of research;
- scaling up and outsourcing of BMPs and innovations using integrated multi-thematic integrated modelling at a larger scale, usually at watershed and landscape level;
- customisation and integration of modelling and planning modules and functions;
- validation of the toolbox platform at a technical level, refinement of the toolbox, and establishment of management practices and guidelines through training;
- four PhD students (one per country Egypt, Sudan, Ethiopia and Kenya) will be trained in integrated watershed modelling to assess the scaling up of BMPs[1] and innovations;
- communication and visibility will be promoted through the WATDEV website, social media and participation in various events at national and international events

Organisation

The project is organised into four components:

Result 1: Best fitting BMPs and innovations selected by 4 countries

As a bottom up, WATDEV will start with the selection and inventory of BMPs in the study areas with the possibility of promoting their wider dissemination by scaling them up in other similar regions. Activity 1 is subdivided in three sub-activities as follows.

[1] BMP = Best Management Practice; BMP is meant here as an action, activity, project embedding successful and sustainable water management solutions or water management techniques aimed at increasing agricultural productivity or reducing impact on water resources, soil, ecosystems or mitigating climate (i.e.: long term drought conditions, erratic extreme events).

Result 2. Enhanced implementation of BMPs and innovations in study areas
Once the BMPs are collected and evaluated, they will be shared with local stakeholder meetings and brokerage events to check their suitability for further implementation. Several training events will facilitate this process.

Result 3. BMPs and innovations upscale and outscale scenarios performed
Integrated modelling will be used to assist in the scaling up and scaling out of BMPs and technological innovations. Modelling will include aspects of water management, hydrology, soils, land, crops, management practices and socio-economic aspects.

Result 4. A water planning/management toolbox available for researchers and institutions
The toolbox will be the main achievement of the project as an instrument available for local decision-makers to make the right decisions in terms of sustainable water use and management and overall natural resource management, with the aim of increasing crop productivity and improving livelihood of local communities.

Result 5 Strengthened knowledge, capacity building and established regional "Water Knowledge Hub"
Establishment of a training programme on the use of the water planning toolbox. Establishing a regional Water Knowledge Hub for training and capacity-building services in East Africa, and implementation of a regional Water Management and Knowledge Portal.

The management and administrative aspects of the project (coordination, monitoring, and evaluation) will be covered by the Italian agency of cooperation and development (AICS) while the technical, scientific, and financial aspects are assigned to CIHEAM Bari. Both AICS and CIHEAM Bari are responsible for the overall management of the project. The CIHEAM Bari team consists of researchers who work internally to coordinate and support the project and financial administrators who handle financial matters for all project partners. A special role will be played by the local AICS offices in Egypt, Sudan, Ethiopia, and Kenya. Close cooperation and synergy is established with the WF4E project managed by the GIZ office in Nairobi and the AICS-funded Water Knowledge Hub office in Caro.

In close collaboration with all the partners, a stakeholder forum will be established. It will play the role of overseeing project activities, deliverables s and overall project performance.

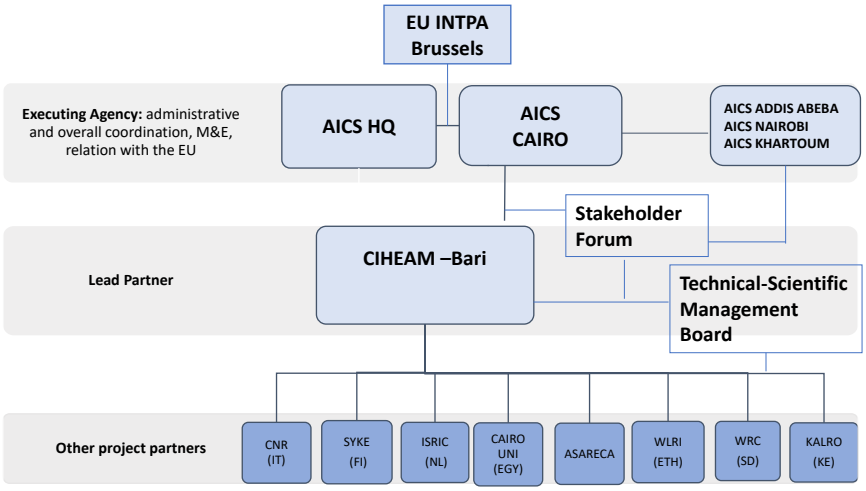

Figure 2. Management structure of the project

Implementing organisations

The Italian Agency for development and cooperation (AICS) and project partners.

Project partners

- National Council for Scientific Research, Institute for Sustainable Plant Protection (CNR – IPSP Turin), Italy
- Finnish Environment Institute (SYKE), Finland
- International Soil Reference and Information Centre (ISRIC), The Netherlands.
- Association for strengthening agricultural research in Eastern and Central Africa (ASARECA)
- Water and Land Resources Center (WLRC), Ethiopia
- Heliopolis University (HU), Egypt
- Water Research Centre (WRC), Sudan
- Kenya Agricultural & Livestock Research Organisation (KALRO), Kenya

Other main stakeholders

Governmental organisations (i.e. Ministries of Water and/or Agriculture and/or Research), farmer associations, extension services, water boards, NGOs are involved as important interlocutors.

Location

Egypt, Ethiopia, Sudan, and Kenya with study areas identified in each country.

Funding and co-funding

European Union: EUR 7 499 897
AICS along with Water Knowledge Hub: EUR 1 200 000

Duration

1 January 2022 – 31 December 2026