
WATDEV PROJECT

Background

The Climate Smart Water Management and Sustainable Development for Food and Agriculture in East Africa (WatDev) Project is a programme financed under the European Union (EU) initiative, the Climate-relevant Development Smart Innovation through Research in Agriculture in developing countries – DeSIRA.

Project amount

The total cost of the project is 7,499,897 Euro and the Lead implementing agency is Italian Agency for Development Cooperation (AICS) in a co-creation arrangement with Italy-Germany under DeSIRA Thematic Area on “Water-Food-Energy-Forestry. The project is designed to last a period of 48 months.

Project partners and institutional counterparts

- 1) Italian Agency for Development Cooperation (AICS) - acting as leading organisation;
- 2) CIHEAM-Bari (international organization) - Technical and Scientific coordination;
- 3) The Italian National Research Council (CNR) – Italy;
- 4) Finnish Environment Institute (SYKE) - Finland;
- 5) International Soil Reference and Information Centre, independent research foundation (ISRIC) – The Netherlands.
- 6) Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA); Entebbe, Uganda;
- 7) Water and Land Resources Center, (WLRC) – Ethiopia;
- 8) Regional Training Sector for Water Resources and Irrigation (RTCWRI) and/or National Water Research Centre (NWRC) and / or Nile Forecast Centre (NFC) – Egypt
- 9) Water Research Centre (WRC) – Sudan;
- 10) Kenya Agricultural & Livestock Research Organization (KALRO) – Kenya.
- 11)

General Objective of the project

The general objective of the project is to ensure sustainability of agricultural water management and resilience of agro-ecosystems to climate change in East Africa and Egypt.

Specific objectives

- 1) National Ministries and Research Institutions improve their knowledge and management of water in agriculture
- 2) Farmers and local actors, cooperatives and Water User Associations implement innovative/sustainable solutions and skills on water management.

Background and justification

Agriculture accounts for 70% of total global freshwater withdrawals, making it the largest user of water. Simultaneously, food production and supply chains consume about 30% of total energy consumed globally. This situation is expected to exacerbate in the near future as 60% more food will need to be produced in order to feed the world population in 2050.

It is for this reason that that Agenzia Italiana per la Cooperazione allo Sviluppo (AICS/Italy) and the German Federal Ministry for Economic Cooperation and Development (BMZ) through the WatDev project, financed by the DEVCO under the DeSIRA Platform have joined forces to promote innovation at the interface of the sectors energy, water, and agriculture, creating opportunities for economic development and increasing resilience to climate change in East Africa and the greater Nile Basin.

The project brings together academia, policy and private sector to create an environment conducive to agricultural innovation and modern transformation. On one hand, reliable data and knowledge management tools are needed to make informed decisions about natural resources management, investments, and policies. WatDev aims to develop an in-depth understanding of small to large-scale water and agricultural resource dynamics and management and people's resilience to climate through innovative research, modeling, and capacity building approaches.

Lines of work

The program approach consists of two main lines of work at two different scales:

- 1) Carrying out inventory, sustainability and feasibility analysis and implementation of agricultural water-related Best Management Practices (BMP) and Innovations (innovative technical and non-technical solutions) in the selected study areas through pilot initiatives;
- 2) Integrated modeling at catchment to basin-scale in selected study areas to assess BMP and Innovations upscale and out-scale scenarios and their large-scale impact on water resources, soil, ecosystems services, economics and agricultural production.

The above main research activities are complemented by training and capacity building along for different beneficiaries including farmers, extension services, practitioners, researchers, stakeholders in study and innovation areas, and institutions, and decision-makers.

Countries of intervention

- 1) Kenya—Upper Tana River basin.
- 2) Ethiopia—Central Oromia area, Western Oromia area, and North West Lowlands
- 3) Sudan—Blue Nile area and Nile river sub-catchment Kassala.
- 4) Egypt—North Egypt Nile river

Multi-stakeholder involvement

All WATDEV activities are multi-level beneficiary driven, from the BMP/Innovation assessment including farmers, planners, ministries, extension services, researchers to modelling impact scenarios and building the water management toolbox.

Target group and final beneficiaries

The initiative foresees a change in behaviour within at least 4 main types of stakeholders:

Farmers: Horticulture farmers and farmers' groups are expected to benefit through adoption of new techniques, inputs, and technologies. In turn, this will increase their capacity to identify and report on BMPs that will lead to best water management, higher production, and more sustainable agricultural techniques.

Local Institutions: Local extension services will enhance their capacities and knowledge to efficiently disseminate Best Management Practices techniques and information to farmers and women/youth. Local and private extension services will be actively involved in the project and willing to identify common priorities in terms of dissemination and scenarios of intervention.

Research Institutions: Researchers with experience in modelling and scenario design will be involved. Due to access to new technical tools, knowledge enhancement, and new skills, researchers will be able to positively affect the process of conceiving new water management policies, by acquiring efficient communication skills for dialogue with decision-makers at various institutional levels on water management.

Ministries: Officials of National Ministries directly in charge of water policies and officials of Ministries which are not directly involved in water policy will be sensitized on the themes of water consumption reduction, water and sustainable agricultural solutions.

Expected Results and Main Activities

R.1: Best fitting BMPs and Innovations in project countries (ref SO1)

A1.1. Inventory and stocktaking of BMPs and Innovations

Leading partner: CNR (IT); contributing partners: CIHEAM – Bari (IT), SYKE (FI), ISRIC (NL), ASARECA, NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA), includes interaction with GIZ.

The activity will be carried out with the aim of assessing and identifying successful stories, their impact, and embedded innovations. The inventory and analysis will mainly focus on initiatives of water management having an impact on water-energy nexus, surface, and groundwater resources, soil quality and erosion, ecosystems, farmers' income, climate impact mitigation. Activities will be devoted to the collection of water/soil/crop management practices already in use in the 4 countries, with the aim to identify the good/best practices to increase resilience to climate.

A1.2 Setting the evaluation process of BMPs and Innovation

Leading partner: CIHEAM - Bari (IT); contributing partners: CNR (IT), SYKE (FI), ISRIC (NL), ASARECA, RTCWRI

and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

Participatory evaluation will be carried out following a participatory approach, including all actors that have a stake in the implementation of BMPs and innovations. The process will allow building an assessment conceptual framework of variables, factors, and indicators laying at the base of their failure and success. The framework will consider indicators and factors explaining differences in success and failure such as scale, innovation actors, stakeholders, knowledge, environmental and socio-economic factors, climate, cultures, institutional settings, and operational management. The framework will then be used to guide implementation of the analysed BMPs or Innovations in the selected study areas.

A1.3. Organisation of multi-actors regional meetings and brokerage on BMPs and Innovations.

Leading partner: ASARECA; contributing partners: CNR (IT), RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

Regional meetings will be organised to discuss and share evaluation outcomes in study areas with different actors, stakeholders, and institutions likely to have an influence on the issue at stake in order to finalise a list of BMPs and innovations of interest for local communities and a list of suitable zones in study areas for further implementation. Brokerage meetings around BMPs and innovations will also be carried out in envisaged areas of implementation with the aim of exploring the feasibility of potential research-private-public partnerships able to sustain the implementation of imported BMPs and Innovations. Activities (A1; A1.3) will be carried out in collaboration with BMZ funded WE4F, in particular, where innovations stocked in previous WE4F activities and new innovations triggered by the new WE4F call for proposal will be included in the inventory and assessed following the same process described above.

R.2: Enhanced implementation of BMPs/innovations in study areas (ref SO1)

BMPs and Innovations selected through the inventory will be analyzed for their implementation feasibility with beneficiaries and stakeholders in the project study areas.

A2.1 Awareness sessions for farmers and local actors

Leading partner: ASARECA; Contributing partners: CIHEAM - Bari (IT), RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

This activity enhances the implementation of BMPs and Innovations through a number of awareness sessions in the territory/communities of the study areas where selected BMPs and Innovations are implemented. The awareness is addressed to farmers potentially involved by BMPs or Innovations and local actors having a relevant stake. A stakeholder analysis will be conducted in the territories encompassed by the BMPs / Innovations in order to identify most suiting and needed stakeholders. The awareness events are centered on the explanation of selected BMPs or Innovations, outlining goals, means, and possible impact. ASARECA shall ensure the overall coordination of the tasks; CIHEAM-Bari shall contribute to the development of awareness and sensitization messages on BMPs and Innovations and review of reports of awareness events. While local partners (RTCWRI, WLRC, WRC, and KALRO) will contribute essentially to conducting the stakeholder analysis in the target project sites; facilitation of actual awareness events and preparation of awareness campaigns reports.

A2.2 Training and capacity building in areas where BMPs and Innovations are enhanced

Leading partner: CIHEAM - Bari (IT); Contributing partners: CNR (IT), ASARECA, RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

A series of training and capacity building activities targeted to end-users and relevant stakeholders will be carried out with the aim of building common knowledge, increasing absorption and running capacity in relation to most innovative solutions (innovative smart applications, smart agricultural practices, intelligent/smart devices, etc.), understanding practices and technical solutions embedded in the BMPs and Innovations. Capacity building will also include assistance to end-users in the implementation of adopted BMPs and Innovations in terms of support to local micro and small farmers/enterprises to access local credit and financing opportunities, testing, and demonstrations networking and facilitate the private-public-research partnership. CIHEAM - Bari will, as leading partner prepare the programme and ensure the readiness of lecturers/technicians for each training and capacity building session, in close collaboration with contributing partners.

A2.3 Feasibility study on BMPs and Innovations

Leading partner: ASARECA; Contributing partners: CIHEAM - Bari (IT), CNR (IT), RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

Each BMP or Innovation selected for implementation will be subject to a participatory feasibility and sustainability analysis of designed solutions, considering economic, social, environmental and institutional sustainability. A first

consultation session with farmers and stakeholders will be carried in order to build a common and shared frame of objectives and indicators to be used for the feasibility analysis. The feasibility analysis will then be supported through a continuous consultation process with farmers and stakeholders till the delivery of the feasibility study.

A2.4 Training and participatory evaluation of BMPs/Innovations implementation and upscaling – out-scaling assessment

Leading partner: ASARECA. Contributing partners: CIHEAM - Bari (IT), CNR (IT), RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

This activity aims at defining the potential for large scale upscaling and outscaling of the BMPs / Innovations selected for the above activities. The activity will be carried out pulling together actors from different study areas (particularly from the zones affected by BMPs / Innovations implementation), in order to share different experiences and increase knowledge on implementation failures and successes linked to different framework conditions. This activity is targeted to farmers' representatives, stakeholders, local agricultural extension officers from different areas of implementation.

R.3: BMPs /Innovations upscale and outscale scenarios performed

A3.1. Integrated and multi-thematic modelling

Leading partner: ISRIC (NL); Contributing partners: CIHEAM - Bari (IT), CNR (IT), SYKE (FI), ASARECA, NFC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

This activity will allow simulation of possible impact scenarios due to the upscale and out-scale of BMPs and Innovations from areas of implementation to large scale/catchment within the study areas and possibly beyond them. Modelling and scenario simulations will be performed in consultation with stakeholders with the use of an integrated and modular model.

A3.2. Carrying out a participatory identification of best suiting and feasible scenarios for the implementation of BMPs and Innovations by planners and decision-makers.

Leading partner: ISRIC (NL); Contributing partners: CIHEAM - Bari (IT), CNR (IT), SYKE (FI), ASARECA, RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

Scenarios will be shared and discussed in the regional meeting organised in the study areas with stakeholders, planners, extension services from different areas/districts and countries with the aim of building a common understanding of BMPs and Innovations impact and a possible common view of planning. The meetings will also host training sections for water managers and practitioners on modelling opportunities, enhanced scenarios, and implementation of feasible solutions.

R.4: A water planning/management toolbox available for Researchers and Institutions

A 4.1 Customisation and integration of modelling modules and planning functions

Leading partner: ISRIC (NL); Contributing partners: CIHEAM - Bari (IT), SYKE (FI), ASARECA, RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA).

Thematic models, assessment and planning algorithms, scenarios and indicators, solutions from BMPs and Innovations used for scenarios assessment modelling will be integrated and customised into an easy to use Toolbox, which will support water planning in agriculture.

A 4.2 Technical validation of the toolbox platform

Leading partner: SYKE (FI); Contributing partners: CIHEAM - Bari (IT), ISRIC (NL), ASARECA, RTCWRI (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

The activity will be devoted to validating the toolbox, through extensive testing of planning scenarios agreed and in collaboration with planners, representatives of farmers associations, decision-makers, researchers, water experts. Meetings with local and central administrations of each country involved in WATDEV will be carried in order to identify toolbox users and centers for training and hosting of the toolbox.

A 4.3 Toolbox refinement and development of management procedures and guidelines

Leading partner: SYKE (FI); Contributing partners: CIHEAM - Bari (IT), ISRIC (NL), ASARECA, RTCWRI and/or NWRC (EGY), WLRI (ETH), WRC (SUDAN), KALRO (KENYA)

R.5: Strengthened knowledge and capacity building and established regional "Water Knowledge" Hub

A 5.1 Training programme on the use of the water planning toolbox

Leading partner: CIHEAM Bari (IT); Contributing partners: SYKE (FI), ISRIC (NL), ASARECA, RTCWRI (EGY),

WLRI (ETH), WRC (SUDAN), KALRO (KENYA).

The training program following a participatory approach and led by CIHEAM Bari will be based on a series of training courses targeted to planners, experts/practitioners, research centers, decision-makers, agricultural extension officers and professionals. The stakeholder mapping and selection will be performed in collaboration with local and central administrations. The training courses and coaching will be conducted at the country level, however, trans-national training will also be carried out with the aim of building a multi-country capacity to share and use common planning means. Training will be conducted also on water accounting to link it with decision making and circular economy. One training will be organised in Europe and the others in one of the project target countries.

A 5.2 Establishing of a regional Water Knowledge Hub for training and capacity building services on regional / trans-national water management in East Africa with the specific aim of sharing knowledge on climate-smart water management and with the African Network of Centres of Excellence on Water Science and Technology (ACEWATER phase II)

Leading partner: CIHEAM Bari (IT); Contributing partners: CNR (IT), ASARECA

The Hub consists of an International Hydrology Lab properly upgraded to fit modern training needs and according to environmental standards. The Hub will be financially supported by the Italian Cooperation under the newly funded "Water Knowledge" initiative and will be launched in 2020. In particular, the physical and technical infrastructure and equipment (International Hydrology Lab) will be enhanced to host regional innovative water training services for WATDEV countries.

A 5.3 Implementation of a regional Water Management and Knowledge Portal

Leading partner: CIHEAM - Bari (IT); Contributing partners: CNR (IT), SYKE (FI), RTCWRI (EGY)

To ensure effective dissemination of the knowledge of the project, technology transfer and knowledge transfer as well as capacity building will be undertaken. WatDev will develop and make use of the latest tools, resources, and communication channels resulting in cost-effectiveness and maximum impact. A dedicated implementation of a modern and user-friendly regional open-source Water Management and Knowledge Portal is foreseen to promote the project's purpose, strategies, activities and the outcomes of the research. It will provide advice and facilitating exchange, brokerage and networking around agricultural water management innovation and designed to be accessible by East-African operators. The Portal will also provide policy, science and technology-related information with regard to water management guidelines, newsletters, relevant demonstration videos, dissemination material for different stakeholders: researchers, practitioners, agricultural extension officers, innovation actors, farmers and other relevant interested parties that can help with water management.

Source URL: <https://khub.asareca.org/asarecasite/projects/watdev-project>