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EGYPT	Heliopolis University (HU)
ETHIOPIA	Water and Land Resources Institute (WLRI)
FINLAND	Finish Environment Institute (SYKE)
ITALY	Centro Internazionale di Alti Studi Agronomici Mediterranei di Bari (CIHEAM-Bari)
ITALY	Italian Research Council (CNR)
KENYA	Kenya Agricultural & Livestock Research Organization (KALRO)
SUDAN	Water Research Centre (WRC)
THE NETHERLANDS	International Soil Reference and Information Center (ISRIC)
UGANDA	Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)

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Abstract (for dissemination)	The activity 5.2 is fully undertaken under the frame of WATER KNOWLEDGE and WATDEV project is only a contributor. Within the framework of the Egyptian Italian Water Training Programme - WATER KNOWLEDGE project, the present intervention was focused on the reinforcement of the RTCWRI (Regional Training Centre for Water Resources and Irrigation) in Cairo City as Regional Water Knowledge Hub for the Arab Countries and African Neighbourhood Countries, through the upgrade of the physical and technical infrastructures and equipment for both the didactic section and the technical laboratories in the Centre. This is intended to enable the Centre to support, with the proper infrastructure and laboratories, the training activities of the water experts, managers, and leaders in the sector.
Keywords	training centre, physical and technical infrastructures, WATERKNOWLEDGE

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Acronyms and Abbreviations

AICS	Italian Agency for Development Cooperation
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa, Uganda
BMP	Best Management Practice
CIHEAM	Centre International de Hautes Etudes Agronomiques Méditerranéennes, Italy
CNR-IPSP	Consiglio Nazionale delle Ricerche, Italy
DeSIRA	Development Smart Innovation through Research in Agriculture
DoW	Description of Work
EU	European Union
HU	Heliopolis University (Egypt)
ICT	Information and Communication Technologies
IoT	Internet of Things
KALRO	Kenya Agricultural and Livestock Research Organization
KPI	Key Performance Indicator
NWRC	National Water Research Center (Egypt)
RTCWRI	Regional Training Centre for Water Resources and Irrigation
SYKE	Finnish Environment Institute
WATDEV	Climate Smart WATER Management and Sustainable DEVELOPMENT for Food and Agriculture in North-East Africa
WKH	Water Knowledge Hub
WLRC	Water and Land Resources Center (Ethiopia)
WRC	Water Research Centre (Sudan)

Executive Summary

The Climate Smart WATER Management and Sustainable DEvelopment for Food and Agriculture in East Africa (WATDEV) project aims to enhance sustainability of agricultural water management and resilience of agro ecosystems to climate change in East Africa and Egypt.

The executive agency is AICS (Agenzia Italiana per la Cooperazione e lo Sviluppo); the leading scientific institution CIHEAM-BARI is working with local partners ASARECA (Strengthening Agricultural Research in Eastern and Central Africa), KALRO (Kenya Agricultural and Livestock Research Organization), WLRC (Water, Land Resources Centre, Ethiopia), WRC (Water Research Centre, Sudan) and HU (Heliopolis University, Egypt).

The specific objectives include: (1) improve the knowledge on agricultural water management of National Ministries and Research Institutions; and (2) help farmers and local actors, cooperatives and Water User Associations implement innovative/sustainable solutions and improve skills on water management.

This deliverable presents the establishment of the Regional Water Knowledge Hub (RWKH) under Activity A5.2, aligned with DoW WATDEV. The Hub has been developed under the WATERKNOWLEDGE activities at RTCWRI “6th October Centre” in Egypt as a regional platform for training and capacity building in water management.

Key achievements include infrastructure upgrades, delivery of training programmes, and development of a regional network of stakeholders.

1. Introduction

1.1. Background

Within the framework of the Egyptian Italian Water Training Programme - WATER KNOWLEDGE project, the present intervention was focused on the reinforcement of the RTCWRI (Regional Training Centre for Water Resources and Irrigation) as Regional Water Knowledge Hub for the Arab Countries and African Neighbourhood Countries, through the upgrade of the physical and technical infrastructures and equipment for both the didactic section and the technical laboratories in the Centre.

This is intended to enable the Centre to support, with the proper infrastructure and laboratories, the training activities of the water experts, managers, and leaders in the sector. This activity is fully undertaken under the frame of WATER KNOWLEDGE and WATDEV is only a contributor.

Within the WATDEV project, Activity A5.2 aims at establishing a Regional Water Knowledge Hub (RWKH) to enhance knowledge, technical capacities, and cooperation in water resource management in North-East Africa.

The action builds on the concept of an “International Hydrology Lab”, intended to provide both:

- physical infrastructure for training and experimentation, and
- a regional platform for knowledge exchange and networking

The activity has been implemented in synergy with the broader Egyptian-Italian WATERKNOWLEDGE Programme, ensuring scalability and long-term sustainability.

1.2. Objectives

The main objective of Activity A5.2 is to establish a **functional Regional Water Knowledge Hub**, capable of:

- delivering **high-quality training programmes**
- supporting **institutional and technical capacity building**
- promoting **regional cooperation and knowledge sharing**
- enabling **application of innovative water management solutions**

Specific objectives include:

- upgrading physical and technical infrastructure
- developing training programmes and Training-of-Trainers (ToT)
- promoting transnational networking and policy dialogue
- supporting climate-smart and sustainable water management

2. Establishment of the Water Knowledge Hub

2.1. Overall approach

The Hub has been established at RTCWRI (Regional Training Centre for Water Resources and Irrigation) with a regional focus targeting African and neighboring countries, combining infrastructure development and training services.

The Water Knowledge Hub has been established with a strong regional orientation, targeting:

- Egypt
- Arab countries
- African neighbouring countries

The intervention combines:

- **infrastructure modernisation**
- **capacity building services**
- **regional networking**

This reflects the WATDEV DoW approach of a **network-based and demand-driven Hub**.

2.2. Infrastructure development

Under the WATER KNOWLEDGE activities, **physical and technical infrastructure and equipment** upgrade both of didactic infrastructures (library, classrooms) as well as the technical laboratories (Media room) placed at RTCWRI were carried on:

2.2.1. ICT and e-learning infrastructure

RTCWRI Remote Training and e-learning ICT systems were upgraded to enable remote learning and digital training delivery. Equipment was purchased in Italy and delivered in Egypt. The material will be installed by Centre personnel, with the support of CIHEAM Bari technicians.

The ICT system has been upgraded to support:

- remote training
- e-learning delivery
- digital content management

This includes:

- installation of servers, computers and network devices
- improvement of connectivity
- deployment of digital learning tools

This component enables **scalable and hybrid training delivery**, as required by WATERKNOWLEDGE and WATDEV projects.

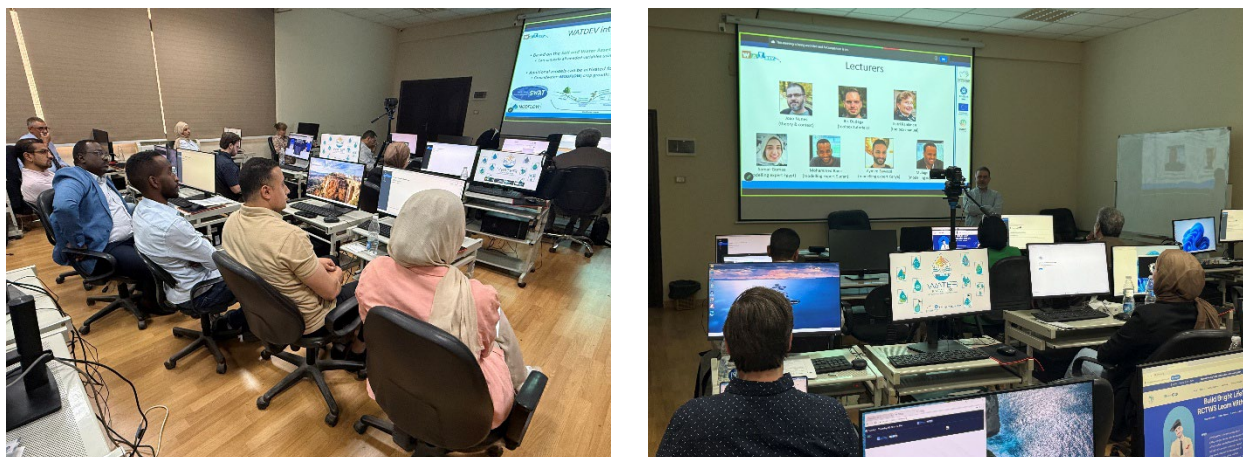


Figure 1 – The ICT training facilities at RTCWRI

2.2.2. Media Unit

To enhance the training capacity of RTCWRI, a dedicated "Media Unit" was made. This unit is tasked with creating online lessons and producing concise educational videos. To support this initiative, a compact studio was constructed under the Centre's premises. This studio is equipped with various technical resources, including cameras, lighting equipment, microphones, and more. The outfitting of the media room was completed on the 8th of February 2024.

A fully equipped **Media Unit** has been established, including:

- multimedia studio
- recording and editing equipment
- digital content production tools

The Media Unit allows:

- production of training videos
- development of e-learning modules
- dissemination of knowledge products

This represents a key innovation in training delivery.



Figure 2 – Image of Media room

2.2.3. Water Quality Laboratory

At the RTCWRI, there is a water quality analysis laboratory donated by a previous project in the late 1990s. The purpose of this laboratory is to complement the Centre's courses with practical experiences. The initial step in enhancing the laboratory involves replacing the existing furniture with

specialized laboratory furniture. A proposal for the layout of the new technical furniture has been developed.

The existing laboratory has been upgraded through:

- new equipment and instrumentation
- improved layout and safety features
- modernization of working spaces

The laboratory supports:

- practical training
- applied research
- hands-on learning



Figure 3 – Water Quality and Hydraulic Lab activities

2.2.4. Smart Farming Pilot

The Smart Farming Pilot is under construction within the premises of the RTCWRI and its primary aim is to serve as an educational tool for demonstrating smart farming concepts and conducting in-situ performance tests, such as assessing distribution uniformity and application efficiency in agriculture. The designed area covers a surface of 348 square meters and will be equipped to support the training on the sustainable use of water in agriculture and on digital agriculture. The area prepared for sub-surface irrigation will be duly equipped with weather and soil sensors with a transmission system (adhering to the Internet of Things). In addition, it will serve as a demo park for the private sector, interested in showing and disseminating their tech and apps.

A **Smart Farming Pilot area (348 m²)** has been developed as a demonstration facility, including:

- IoT-based sensors
- soil and climate monitoring systems
- innovative irrigation solutions

The pilot is used for:

- training on sustainable water use in agriculture
- testing of technologies
- private sector engagement



Figure 4 – Smart Farming Pilot area i) under preparation and ii) aerial view of the site
[sources: i) WATERKNOWLEDGE archive; ii) Google Earth].

2.3. Training and capacity building services

2.3.1. Training system

Ten thematic training pillars were developed under WATERKNOWLEDGE project to cover the following key water management topics:

- climate-smart irrigation
- water governance
- remote sensing
- flood risk management
- non-conventional water resources

Training programmes have been designed through stakeholder consultation.

These activities will complement training planned by WATDEV on modelling, aiming to enhance a more specific and professional knowledge and a shared vision on water as valuable contribution to improve an integrated water management approach at Institutional level through institutional capacity development, infrastructural intervention, network enhancing, training quality improvement.

Under WATDEV actions 4.1/5.1, a Regional Toolbox Training (RTT) was carried out to build capacities in the use of the WATDEV Integrated Models Toolbox. This training event, hold on 13-14/05/2026, was addressed to 12 WATDEV beneficiaries and 10 WATERKNOWLEDGE beneficiaries (mainly decision-makers) from Egypt and Sudan. A total number of 28 participants, equally distributed between male and female, attended the RTT.

Table 1 – Number of 3rd RTT participants (per project and gender)

Participants	Male	Female
WATDEV beneficiaries (PhD students included)	4	8
WATERKNOWLEDGE beneficiaries	6	4
WATDEV trainers	4	2
TOTAL	14	14

More details on the Regional Toolbox Training are provided in deliverable D5.1.1 “Report on the implementation of the training and coaching programs”.

2.4. Regional and transnational dimension

The Hub supports regional cooperation and knowledge exchange among multiple African countries.

The Hub operates as a **regional platform**, ensuring:

- participation from multiple countries
- exchange of experiences and best practices
- strengthening of regional cooperation

Activities include:

- regional workshops
- thematic training on transboundary water management
- international study visits

3. Alignment with WATDEV Activity A5.2

According with the WATDEV DoW, “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” (WATDEV project).

The implementation shows strong alignment with the DoW requirements for A5.2:

Table 2 – Alignment between WATDEV DoW requirements and achieved results

WATDEV requirement	Achieved result
Hydrology Lab / infrastructure	RTCWRI upgraded with labs, ICT, media unit
Training programmes	10 pillars, regional delivery
ToT and soft skills	Dedicated training modules
Innovation	Media Unit, e-learning, Smart Farming Pilot
Regional networking	Multi-country participation
Applied learning	Demonstration pilot and lab activities

The Hub fully aligns with the DoW objectives in terms of infrastructure, training services, innovation, and regional networking.

4. Results

The Hub successfully delivered infrastructure, training programmes, and stakeholder engagement on a regional scale.

Key results include:

- **Infrastructure fully established**
- **Training programmes successfully delivered**
- **High participant satisfaction ($\approx 4+/5$)**
- **Wide regional outreach**
- **Improved institutional capacity**

The Hub demonstrates strong effectiveness in:

- knowledge transfer
- technical training
- regional cooperation

5. Conclusions

The Water Knowledge Hub is fully operational and represents a sustainable regional capacity building platform in line with WATDEV objectives.

The Regional Water Knowledge Hub has been **successfully established and is fully operational**, achieving the main objectives of Activity A5.2.

The initiative demonstrates:

- strong alignment with the WATDEV DoW
- high relevance for regional needs
- sustainability through integration into RTCWRI and WATERKNOWLEDGE programme
- scalability as a regional training platform

The Hub represents a **key legacy of WATDEV**, providing a long-term infrastructure for:

- capacity building
- innovation
- cooperation in climate-smart water management

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