H2O MAGHREB
Providing innovative training for young water professionals

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Project overview

- Country: Morocco
- Implementation timeframe: April 2017 – December 2019 (2.5 years)
- Estimated budget: 2.7 millions US dollars
- Development partners: USAID and UNIDO
- Partner companies: EON Reality, FESTO and ONEE
- Institutional partners: Ministry of National Education, Water Department
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Supporting improved water management skills and youth employability

I. Context and Challenges

II. Implementation of the H2O Maghreb project

III. The Public Private Development Partnership approach

IV. Project replication in the MENA/Africa regions
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Water availability per person per year, estimated for 2025

- less than 500 m$^3$: Scarcity
- 500 – 1,000 m$^3$: Stress
- 1,000 – 1,700 m$^3$: Enough
- 1,700 – 4,000 m$^3$
- 4,000 – 10,000 m$^3$
- more than 10,000 m$^3$

Predicted water availability per person in 2025.
By 2025, 28 African countries will face water scarcity or stress, with a negative outlook

% of population in the African continent which will face freshwater scarcity, stress or vulnerability in 2025:

- Water Scarcity 2025: less than 1000 m³/capita/year
- Water Stress 2025: 1000 to 1700 m³/capita/year
- Water Vulnerability 2025: 1700 to 2500 m³/capita/year
- No Problem

Water sector challenges for developing countries

- Challenges related to economic development
  - Future investments in the water sector
  - Impact of new water technologies
  - Norms and legal aspects
  - Shortage of qualified workers
  - Limited knowledge on institutional side to tackle challenge
  - Shortage of water (quantity and quality)
  - Lack of training opportunities in the water sector
  - Impact of new water technologies
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Water availability in Morocco is steadily decreasing, due to a multitude of reasons:

- Climate change
- Factors increasing demand:
  - Growing population
  - Rapid urbanization
  - Developing economy
- Degradation of resources

Morocco’s National Water Strategy aims to mobilise 2.5 bn m$^3$ a year in additional water resources.

By 2030 the water deficit will reach 5 bn. m$^3$/a

2.5bn m$^3$/a (50%) of the deficit to be met by new resources.


Source: State Secretariat of Water (2016)
Wastewater Treatment in Morocco

• 74 % of the wastewater was collected in urban areas in 2015 (40 % in rural areas)
• 45 % of the collected wastewater is treated (planned for 2030: 100% collection in urban areas)
• < 30 % of the collected wastewater is subject to advanced wastewater treatment. (planned for 2030: 100% treatment of collected wastewater)

→ <10 % of total wastewater generated receive advanced treatment

• 50 % increase of generated wastewater (1bn. m³/a) is expected until 2030 due to economic and demographic growth.
H2O Maghreb is building capacity along the entire water cycle, from drinking water to wastewater.
H2O Maghreb training program: what is special?

New Approach to Training
• Modular approach (Drinking Water, Sanitation, Operation, and Maintenance)
• Practical training (including the use of IEA’s platforms & internships)

Innovative training tools
• Virtual Reality (VR)
• Environmental Discovery System (EDS)
• E-learning (self-learning)

National & International Expertise
• ONEE / IEA
• FESTO Didactic SE, EON Reality
• National accreditation

Two Training Modes
• Young Technicians – 6 months
• Professionals – modules of 2-5 days

Qualified workers
In cooperation with local stakeholders from industry and the public sector, 19 training modules identified and developed.
The project uses the well-established facilities and premises of the ONEE / IEA in Rabat.

The Institut International de l’Eau et de l’Assainissement (IEA) of the Moroccan water provider ONEE is equipped with a variety of pedagogical equipment for training purposes:

- Training platforms for water distribution and sewerage collection
- Wastewater treatment plants using different techniques (activated sludge, lagoons, etc.)
- Control systems as well as workshops for hydraulics and mechanics
Private sector partners provide state-of-the-art technical equipment & virtual reality simulation

FESTO SE (Germany)

- FESTO provided innovative EDS equipment and e-learning modules
- Modules duplicate a wide range of operational practices in lab scale – with intuitive and didactic approaches

EON Reality (USA)

- EON Reality contributed to the project by elaborating a Virtual Reality (VR) simulation of a wastewater treatment plant.
- Through VR, water technicians can learn how to cope with events that are of low probability but high risk and consequences to health & safety, equipment, and the environment.
EDS water management station

- Wastewater Treatment
- Sand Filtration
- Water Purification
- Wastewater Transport
- Membrane Filtration
- Water Supply
- Automation
EDS Water Management by FESTO Didactic
Innovative learning methods like EDS and Virtual Reality enable better, faster and safer skills training for aspiring water sector professionals.

Students discover the entire water cycle through the lab-scale Environmental Discovery System (EDS®).

Students prepare for situations that are dangerous or difficult to reproduce through virtual reality (VR) exercises.
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UNIDO uses the innovative Public-Private Development Partnership (PPDP) approach
The Public-Private Development Partnership (PPDP) approach for H2O Maghreb
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Project replication: H2O in Africa and the MENA region

- H2O Maghreb: an innovative & efficient approach to capacity building
  - **PPDP:** An innovative partnership approach with proven success in several African countries
  - **Customization:** Curricula follow a modular approach and can be easily tailored to local context
  - **Innovation:** Vocational training includes intuitive Virtual Reality (VR) and Environmental Discovery System (EDS)
  - **Ready for replication:** Moroccan training hub at ONEE can serve as a base

- Project aligned with Sustainable Development Goals
  - **SDG 6:** Supporting the provision of access to clean water and sanitation
  - **SDG 4:** Providing intuitive educational tools for skills development
  - **SDG 5:** Enhancing female employability in a male-dominated area
  - **SDG 17:** Partnering with public and private sector entities
Benefits of the H2O Maghreb approach

- Success in Morocco: pilot training accredited by vocational training authorities
- Partners’ willingness to support and facilitate the replication of this model in other regions/countries
- Demonstrated contribution to the improvement of water management practices at country level
- Relevance of using new technologies to increase training quality and to match technological development of water facilities
- Innovation: E-learning / VR for maximum outreach and knowledge sharing
- Providing relevant technical and soft skills to youth can help boost their employability
- Modular content allow for easy adaption to local context and needs
- Partnership with the private sector to leverage contributions and build Public-Private Development Partnerships (PPDPs)
Let's get in touch!

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