



# H2O MAGHREB

## Providing innovative training for young water professionals

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# H2O MAGHREB

## *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



# H2O MAGHREB

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

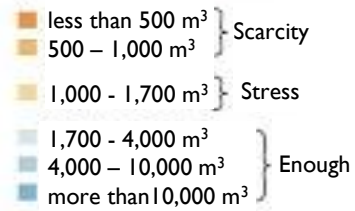


# — H2O MAGHREB

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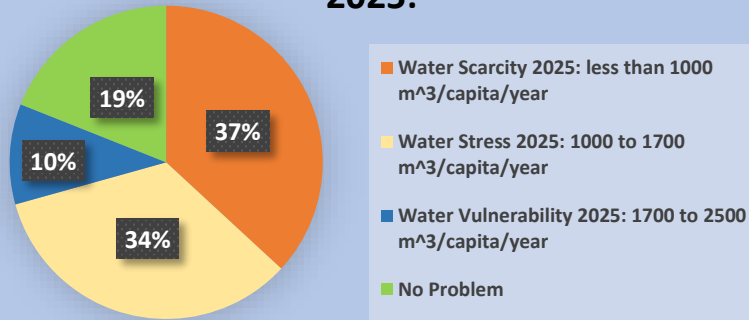
Water availability per person  
per year, estimated for 2025



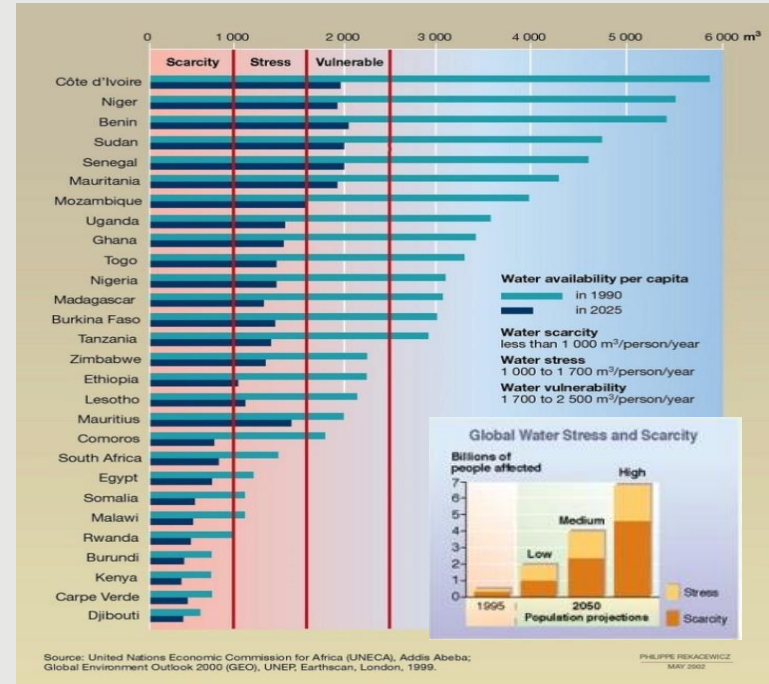
Predicted water availability per person in 2025.

# By 2025, 28 African countries will face water scarcity or stress, with a negative outlook

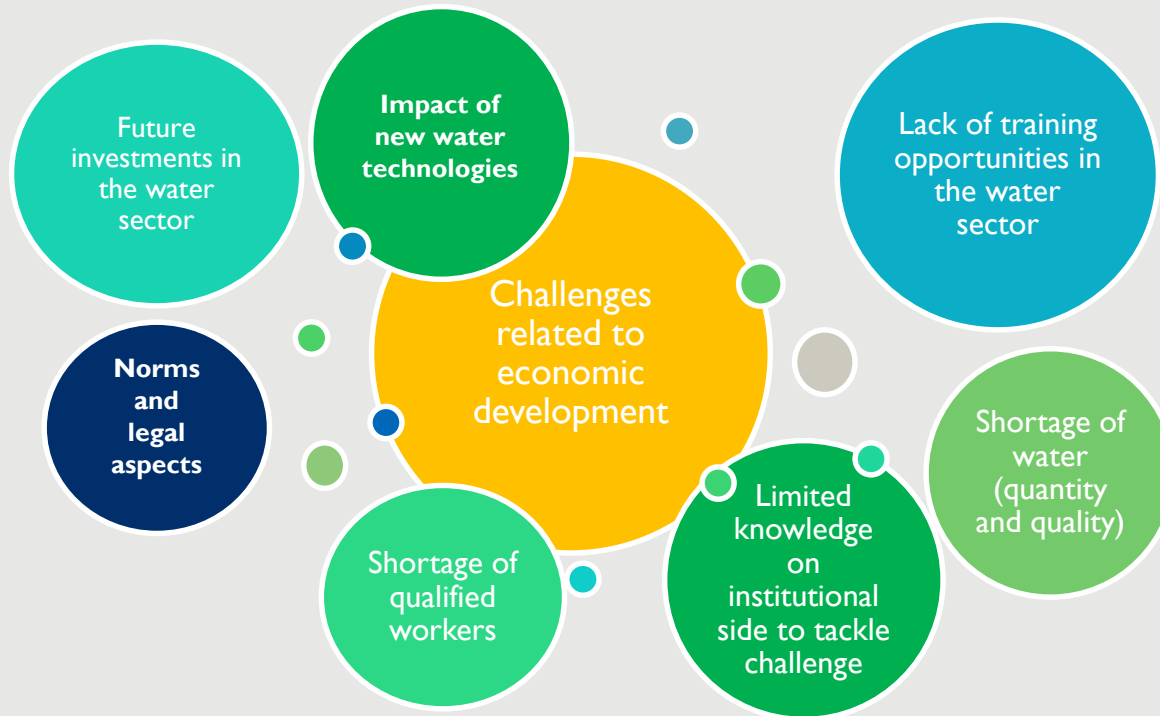
**% of population in the African continent which will face freshwater scarcity, stress or vulnerability in 2025:**



Source: United Nations Economic Commission for Africa (UNECA), Addis Ababa: Global Environment Outlook 2000 (GEO), UNEP, Earthscan, London, 1999. Population Action International.



# Water sector challenges for developing countries



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# Government response to the steady decrease of water availability in Morocco: the 2030 National Water Strategy

Water availability in Morocco is steadily decreasing, due to a multitude of reasons

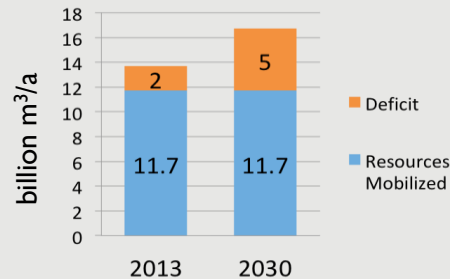
- Climate change
- Factors increasing demand:
  - Growing population
  - Rapid urbanization
  - Developing economy
- Degradation of resources



Moroccan National Water Strategy – 2030

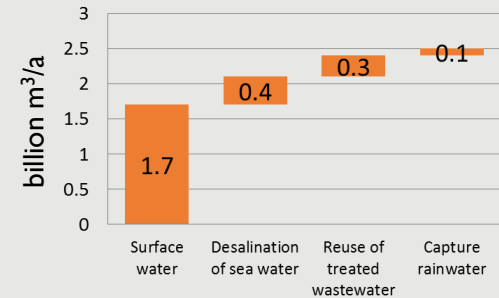
Morocco's National Water Strategy aims to mobilise 2.5 bn m<sup>3</sup> a year in additional water resources

By 2030 the water deficit will reach 5 bn. m<sup>3</sup>/a



Source: Labassi (2013): Water Resources in Morocco: An Overview.

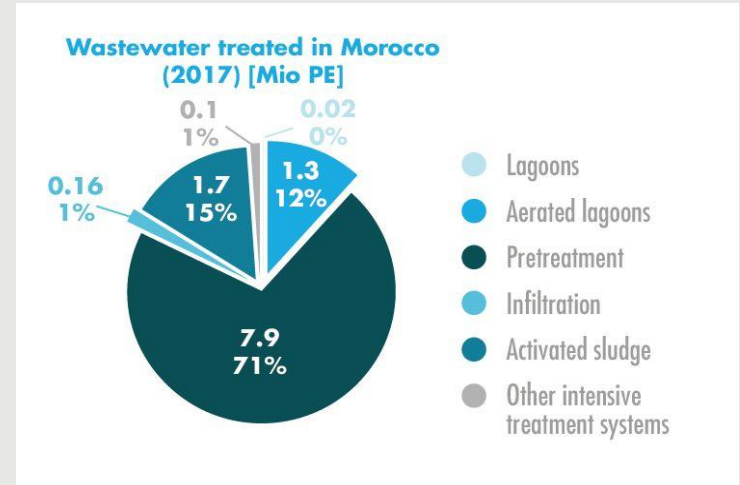
2,5bn m<sup>3</sup>/a (50%) of the deficit to be met by new resources



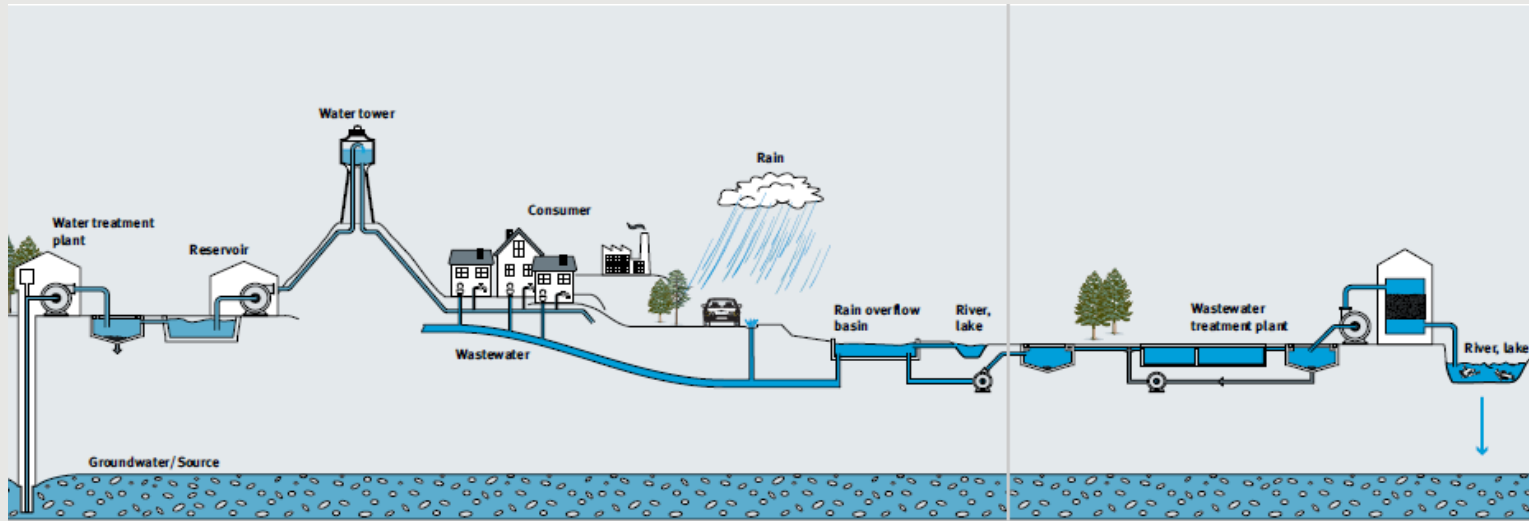
Source: State Secretariat of Water (2016)

# 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 (1 bn. m<sup>3</sup>/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



## Drinking Water

- Coagulation/Flocculation
- Sand filtration
- Membrane processes

## Water Distribution

- Water storage - water tower
- Water networks
- Pumping stations

## Sewage Networks

- Waste water transport
- Rainwater retention

## Waste Water

- Activated sludge process
- Sedimentation
- Reuse processes

Source: FESTO Didactic

# 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)

**Qualified workers**

## 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

# 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

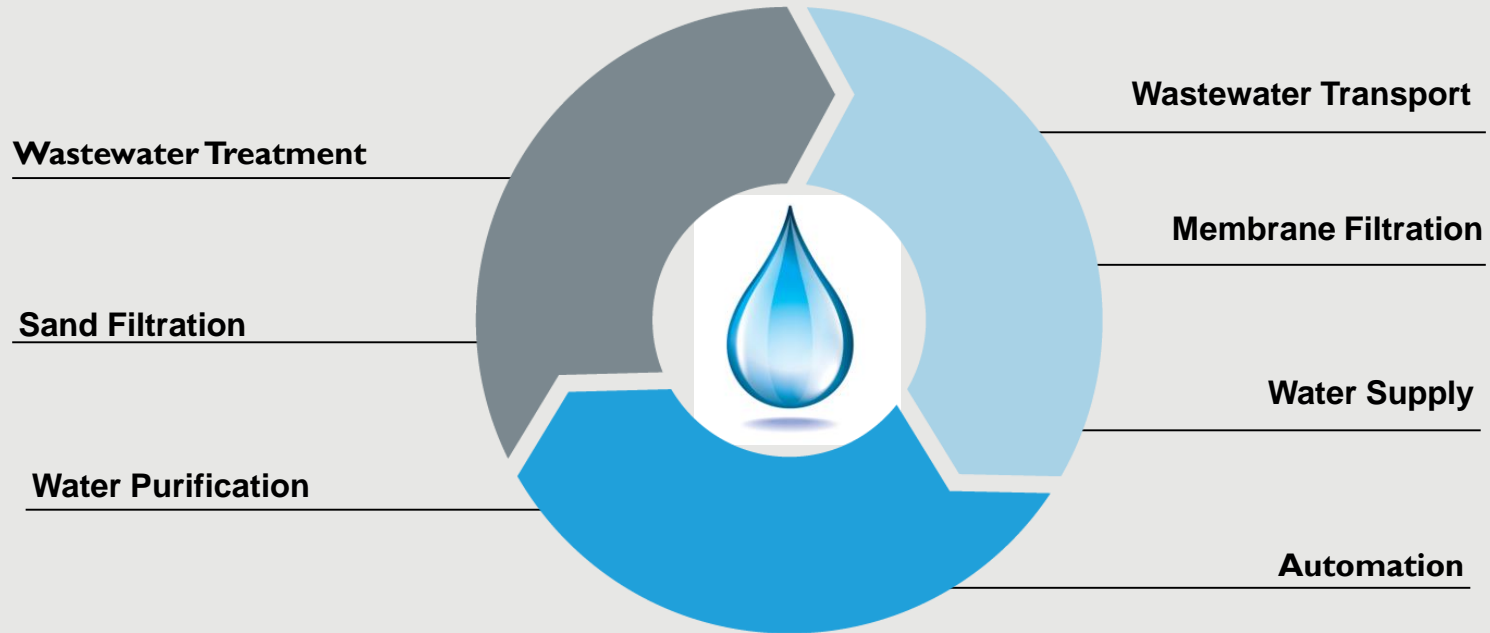


## EON Reality (USA)

- 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





# 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@)



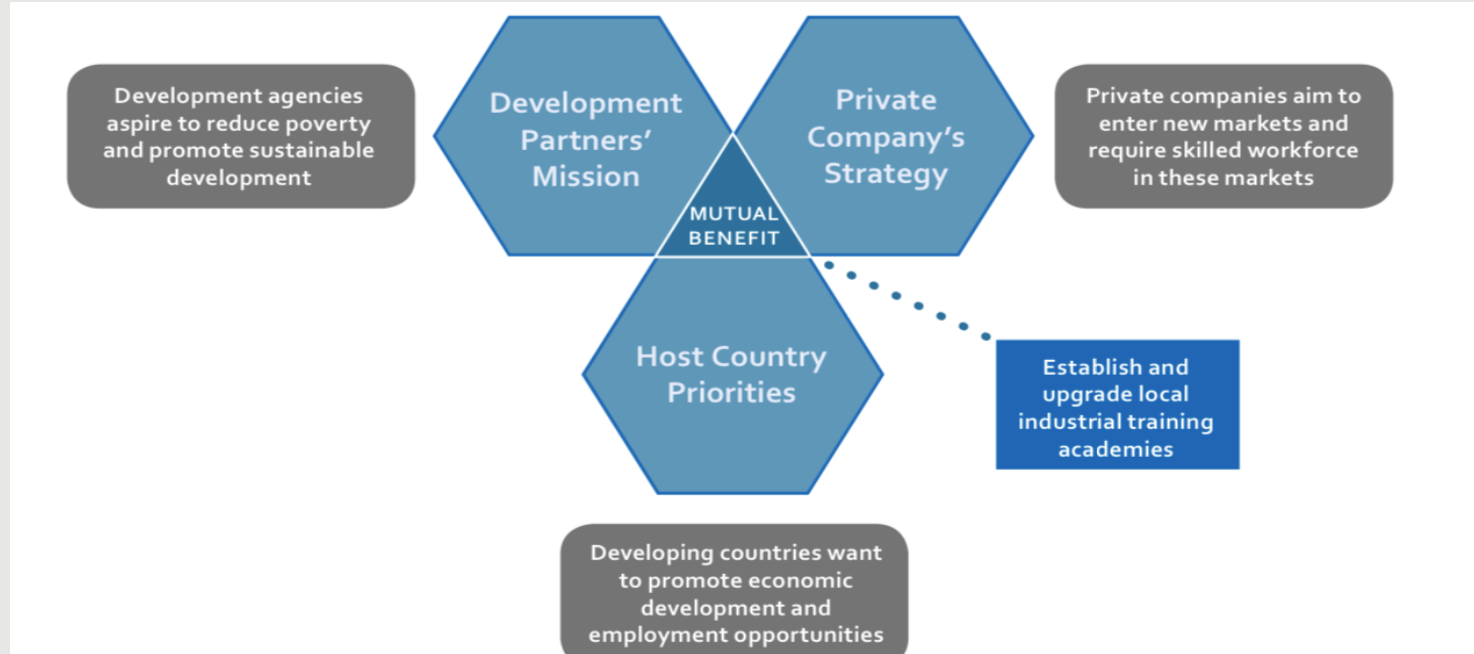
Students prepare for situations that are dangerous or difficult to reproduce through virtual reality (VR) exercises

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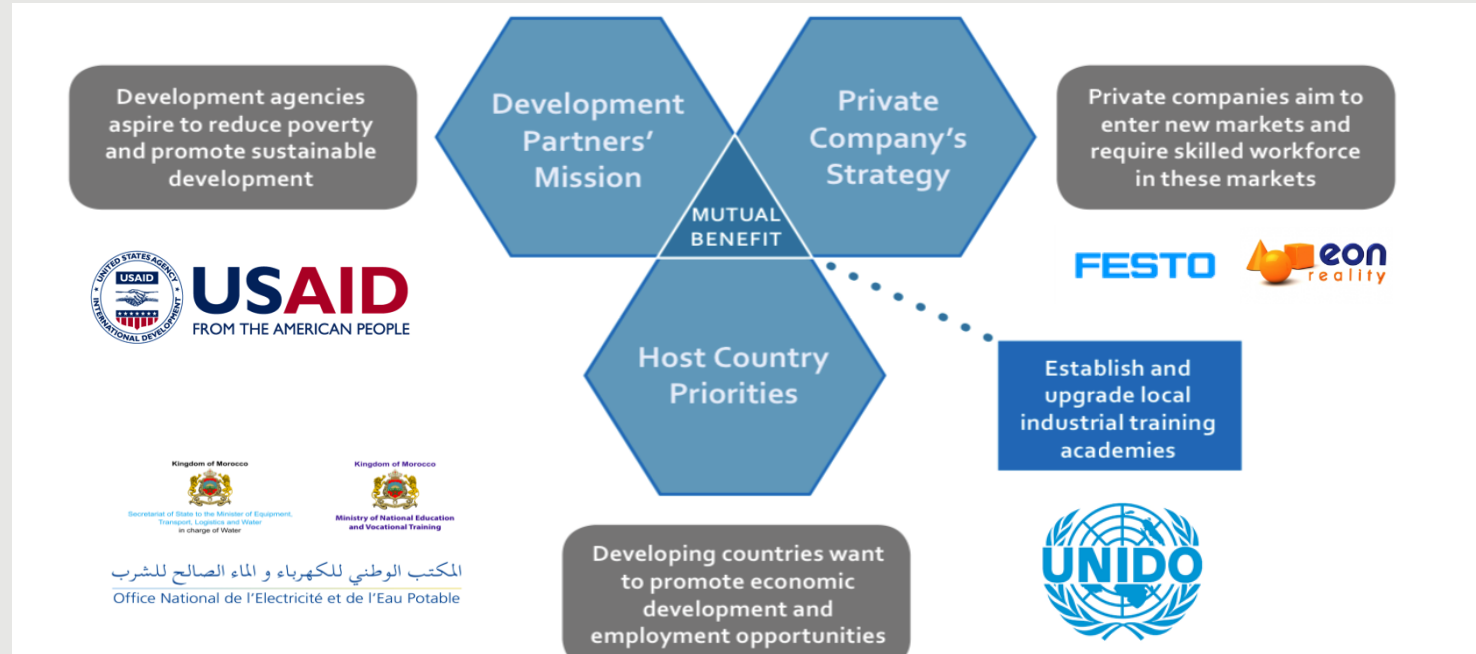
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# UNIDO uses the innovative Public-Private Development Partnership (PPDP) approach



# 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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