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## Public Dissemination Report - WeWorld-GVC

### **Gaza H2.O: Innovation and Water Efficiency for Enhancing Water Infrastructure Resilience in the Gaza Strip**

**Implementation Period:** October 2020 – August 2025

**Implemented by:** WeWorld-GVC in partnership with Technische Universität Berlin (TUB) and the Palestinian Hydrology Group (PHG)

**Funded by:** European Commission through Water and Environment Support (**WES - Biodiversity and Climate Action**) programme – **GRANT EUR 1,000,000**

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### **1. Project Overview**

The European Union-funded project “Gaza H2.O: Innovation and Water Efficiency for Enhancing Water Infrastructure Resilience in the Gaza Strip” aimed to improve water resources management and reduce water losses in Khan Younis through innovative smart water technologies and enhanced operational capacities.

Implemented by WeWorld-GVC

together with Technische Universität Berlin (TUB)

and the Palestinian Hydrology Group (PHG),

The project introduced advanced District Meter Area (DMA) approaches and Smart Water Network (SWAN) technologies to strengthen resilience and efficiency in Gaza’s highly stressed water sector.

Despite significant operational constraints related to COVID-19 restrictions, import limitations, and the fragile context in Gaza, the project successfully advanced innovative water management solutions adapted to local realities.

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### **2. Key Achievements**

#### **Improving Water Network Efficiency and Infrastructure Mapping**

The project carried out a comprehensive assessment and modernization process for the water distribution system in Khan Younis Municipality.

Major achievements included:

- Development of an updated and comprehensive inventory of the Khan Younis water distribution system.
- Inspection and validation of nearly **430 km of water pipelines** across the municipality.

- Survey and assessment of:
  - **36 water wells**
  - **8 water reservoirs**
  - **34 controlling valves**
  - **27 water distribution zones**
- Identification of a **48.22% discrepancy** between existing network conditions and previous system maps, significantly improving data accuracy for future planning and investments.

The project also developed a calibrated hydraulic model of the water network, providing an important technical foundation for future rehabilitation and water-loss reduction interventions.

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### **Introducing Smart Water Management Approaches**

The Gaza H2.O project introduced innovative digital water management approaches based on:

- **District Meter Areas (DMA)**
- **Smart Water Networks (SWAN)**

The project supported:

- Hydraulic modeling and calibration of the Khan Younis water distribution network.
- Development of technical proposals for smart monitoring systems capable of real-time hydraulic monitoring.
- Establishment of a Non-Revenue Water Unit (NRWU) control center concept for monitoring field devices and network performance.

These innovations aimed to reduce water losses, improve operational efficiency, and support evidence-based water management in Gaza.

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### **Capacity Building and Technical Training**

The project invested significantly in strengthening local technical capacities in water management and leakage control.

Key activities included:

- Specialized technical training for:
  - **15 engineers and operators** from Khan Younis Municipality and the NRW Unit.
  - **55 service providers and water sector stakeholders.**
- Training modules focused on:
  - Water balance calculations.

- Leakage detection and repair.
- DMA design and management.
- Commercial loss reduction.
- Smart water monitoring systems.

The project combined theoretical learning with practical field-based training, supporting long-term institutional capacity within local water authorities.

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### **Stakeholder Coordination and Knowledge Sharing**

Strong coordination and collaboration mechanisms were established throughout implementation.

The project organized:

- Steering committee and consultation meetings with local authorities.
- Technical discussions on smart water technologies, hydraulic modeling, and integration with national water sector plans.

The project also promoted international knowledge exchange through participation in:

- The **42nd WEDC International Conference** on sustainable WASH services.
- **Cairo Water Week 2021**.

Project experiences and lessons learned were shared with regional and international audiences, highlighting innovative approaches for water resilience in fragile contexts.

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### **3. Innovation and Impact**

The project demonstrated the importance of digital innovation and data-driven management in addressing water scarcity and infrastructure challenges in Gaza.

Through the application of DMA and SWAN approaches, the initiative:

- Improved understanding of water losses within the distribution system.
- Strengthened the technical basis for future infrastructure rehabilitation.
- Enhanced institutional capacities for proactive leakage detection and water management.
- Contributed to more resilient and efficient water service delivery.

The project also strengthened collaboration between local institutions, international research partners, and service providers, fostering sustainable technical knowledge transfer.

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### **4. Challenges and Context**

Implementation took place under highly challenging circumstances, including:

- COVID-19 restrictions and movement limitations.
- Delays in importing specialized technical equipment.
- Energy shortages and operational constraints.
- Escalations of conflict affecting field access and implementation schedules.

The fragile operational environment required continuous adaptation, close stakeholder coordination, and flexible implementation approaches.

Despite these challenges, the project successfully established critical technical foundations for future smart water management initiatives in the Gaza Strip.