Municipal Upgrading of Water Systems for Local Impact – MUWALI LIBYA

Duration and location

September 2025 - November 2027

Libya, in particular the following **municipalities**: Sebha, Tragin, Ghat and Kufra, Tobruk, Almarg, Tokra and Albeida, Gharyan, Bani Walid, Zliten and Tajoura.

Partners and roles

- **European Union**: financial partner under the "Water Resources Management Facility" Special Measure for Libya 2023
- **Italian Agency for Development Cooperation** (AICS): implementing authority of the programme component at local level
- Implementing partners:
    - **Autonomous Province of Trento** (PAT): management and overall coordination of the activities
    - **University of Trento** (UNITN): in charge of the implementation of the scientific and training activities and delivery of the respective outputs, with the support of Libyan technical staff

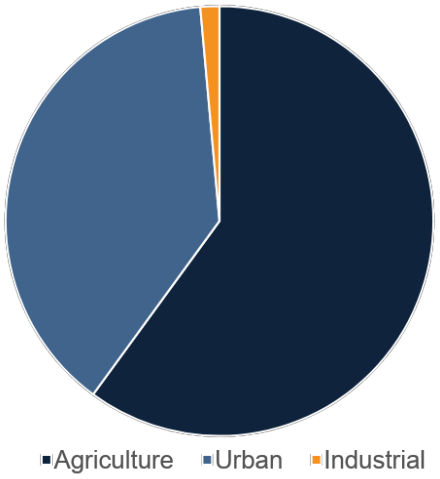
- **Centre for International Cooperation** (CCI): facilitation of the MUWALI community of practices, awareness raising and community engagement; methodological aspects of the training process.

Context and motivation

Libya's water scarcity is pronounced, with an average renewable water endowment of about 100 cubic meters per person per year, only one-tenth of the internationally accepted scarcity threshold. Despite the endeavours of public authorities to ensure access to potable water for all citizens, the rate of drinking water connections has not surpassed 64.5% of the total population. A significant portion relies on private wells (17.4 %) or rainwater collection (15.8 %), while some resort to alternative methods like water springs or purchasing water from trucks (2.3 %).

Groundwater constitutes about 83% of the water supply used in various sectors and activities, while surface water, including dams, accounts for around 5%. Of currently supplied water, only 1.8% comes from a renewable source of water: water desalination and wastewater treatment.

Figure 1. Water use in Libya



Libya's water sector is in dire need of comprehensive reforms and innovative solutions to ensure sustainable management of water resources, water equitable distribution, and resilience of water resource systems, requiring significant investments, enhanced governance structures at both national and municipal levels. There is an overall need for a cohesive national approach, while the institutional capacities remain weak, with limited human, financial, and technical resources to implement comprehensive changes in the sector.

Specific objective

The specific objective (outcome) of the MUWALI intervention is as follows: improve the management of water resource systems as well as data collection and reporting at local level.

Expected outputs

The expected outputs of the MUWALI intervention are:

1. **Strengthened local capacity to make sustainable, inclusive, and efficient use of the existing water resources' system.**

After an initial situation analysis and needs assessment, specific capacity building to water service providers will be implemented to promote inclusive and effective water management practices at municipal level - also through a wide involvement of local communities. The situation analysis will facilitate the process toward the definition of an Integrated Water Resources Management (IWRM) Plan in the target municipalities, to be developed for the sustainable management of conventional and unconventional water resources across sectors. Moreover, a pilot project will be implemented based on the findings of the situation analysis and coherently with the IWRM Plan.

2. **Enhanced data collection and management capacity of local administrations in the water sector.**

MUWALI will enhance local administrations' capacities on water data collection and management. Based on an assessment of current practices, new methodologies will be introduced to gather, standardize, and process data from fragmented sources, fostering that data flow among stakeholders at municipal, regional and national levels. To support these advancements, MUWALI will provide essential equipment for a pilot project to test innovative technologies and comprehensive training for local administrations' staff, leading to more informed decision-making and better resource allocation.

3. **Increased knowledge and dissemination of non-traditional water resources usage at local level.**

MUWALI will increase knowledge and dissemination of non-traditional water resource usage at local level. A thorough assessment will be conducted to identify those methods that are more suitable for the target Municipalities, and training will be provided to concerned local administrations. The identified methods for increasing the use of non-traditional water resources will be tested as a pilot project in a group of municipalities, selected from the twelve targeted. Continuous monitoring and evaluation of pilot performance will inform future efforts to scale up successful practices.

Main activities

The Intervention addresses critical gaps in water resource management, governance, and the use of non-traditional water resources in Libya. These gaps hinder sustainable development and equitable access to water. By empowering local administrations, service providers, and communities with skills, tools, and pilot-tested solutions, the project seeks to foster sustainable, inclusive, and innovative water management practices.
The pathways of the change (**key activities**) envisaged by MUWALI are:

- Conducting a situation analysis and needs assessments to identify opportunities and gaps in capacity, technical solutions, and sustainable practices.
- Delivering training programs for water service providers and local administrations to build skills in efficient and inclusive water management.

- Setting the conditions for developing an Integrated Water Resources Management (IWRM) Plan in project municipalities.
- Implementing pilot projects informed by the situation analysis and needs assessment to test and demonstrate scalable solutions.
- Providing equipment and technology to enhance data collection and test innovative methods for non-traditional water use.
- Conducting community engagement and awareness raising activities, on water management and on non-traditional water resource usage.

By improving local capacities, fostering collaboration among stakeholders, and testing innovative solutions, MUWALI establishes the foundation for sustainable water resource management system and governance in Libya (outcome). This contributes to national resilience against water scarcity and strengthens overall governance in the water sector (impact).

Hereafter follows a list of indicative key activities per Output which will be fine-tuned during the Inception phase upon further consultation with the MoLG and the targeted local administrations.

To achieve the envisaged Outputs and the specific Objective, a similar activities' package per each Output is foreseen:

1. Situation analysis and Needs assessment (Output 1, 2 and 3): the assessment will consist in gathering both quantitative and qualitative data on water availability, usage, quality, and distribution within the targeted area, data collection mechanisms in place and their main gaps, dataflow mechanism among stakeholders, existing non-traditional water resources. This can include field surveys, satellite data, hydrological studies, and reviewing existing reports or databases, based on the relevant field of action. In addition, a thorough training needs assessment will be conducted among local technicians / water managers to inform the development of a capacity building plan at national level, including the preparation of curricula and training content to be approved by the competent national authorities. Engaging with local stakeholders, such as water authorities, communities, agricultural sectors, and industry representatives, is also essential to better understand the local context, challenges, and priorities as well as lack of resources and/or skills of the local stakeholders in managing water resources in an efficient and effective way.

2. Setting the conditions for the development of an Integrated Water Resources Management (IWRM) Plan (Outputs 1, 2, 3): suitable solutions will be identified through the Intervention and integrated into a comprehensive plan aimed at creating a new framework for the management of water resources at the local level. This framework will serve as a guiding structure for local administrations to address current challenges and ensure sustainable water resources management, considering both immediate needs and long-term strategies for local implementation. The Integrated Water Resources Management (IWRM) Plan should include several key components to ensure its effectiveness and sustainability:

- Roles of Stakeholders: Clearly define the roles and responsibilities of local actors involved, such as local administrations, local communities, private sector companies, and CSOs. Each actor's contribution to policy making, implementation, monitoring, and maintenance should be outlined.
- Coordination mechanisms: Strengthen or create mechanisms and instruments to ensure a management environment built on collaboration among multiple

stakeholders, including government agencies, municipalities, local communities, and the private sector, ensuring coordinated planning and implementation.

- Information Flow: Establish efficient communication channels and data sharing among stakeholders. This ensures timely data sharing on water usage, quality, and availability. Transparent reporting and coordination mechanisms can prevent mismanagement and encourage collaborative decision-making, in agreement with central authorities and based on national strategies and policies.
- Technological Infrastructure: Identify and integrate the necessary technologies for water resources monitoring, distribution, and conservation. This could include smart meters, satellite systems for tracking water levels, and purification technologies to ensure water quality.
- Sustainable Practices: Encourage practices that promote long-term water conservation, such as recycling wastewater, rainwater harvesting, and the use of drought-resistant crops in agriculture.
- A clear plan of action and future investments guided by a sustainable economic, social, and environmental perspective, addressing both water quantity (balancing supply and demand, ensuring resilience to floods and droughts) and water quality concerns.
- Public Awareness and Education: Implement educational programmes to inform the local population about responsible water usage and conservation efforts, ensure continuous engagement of local communities in the water resources management and encourage usage of non-traditional water resources.

These elements work together to ensure a comprehensive approach to water resources management, addressing both present and future challenges in the area and supporting the implementation of a governance structure between national authorities and local administrations in the water sector.

3. Capacity building (Outputs 1, 2, 3): relevant institutions and organisations at local level in charge of water management will participate in training sessions, in particular municipal officials and technical staff engaged in various facets of local administration, including water and sanitation services, environmental affairs, revenue collection and human resource management. These training activities will be tailored on the training needs assessment conducted during the first phase of the Intervention and based on the identification of specific roles and definition of responsibilities between key stakeholders, which are necessary to enforce existing laws, policies and procedures set to improve the water sector management. A capacity building plan covering the territorial approach to local development (TALD) and crosscutting the three main areas of intervention, namely the local water management systems, the data collection and management systems and usage of non-traditional water resources will be developed. Part of the training will be articulated in two blocks of activities: a Training of Trainers (TOT) to a group of Libyan technicians, to be identified among key technical experts/administrators of the water sector; and a cascade training delivered by these trainers to the staff of the target Municipalities. Both trainings will be organised in training cycles using a blended methodology (i.e., both online and in presence; it may include on-the-job training) and will be based on the principles of adult experiential learning.

4. Implementation of Pilot projects (Outputs 1, 2, 3): the Intervention foresees the testing of pilot solutions to address the main challenges related to water resources management at municipal level:

- Improving water management practices (for example: address the current high non-revenue water which currently is not managed adequately due to technical constraints and low capacities);
- Increasing drinking water quality and availability;
- Improving data collection and management at local level;
- Promoting efficient water uses in the agricultural and industrial sectors (for example: agricultural consumption accounts for 83.1% of total freshwater resources. This can be addressed both in terms of exploring the possibility to rely, partly, on non-traditional water resources and reducing the inefficient use of water for irrigation).

These pilot projects will be implemented to improve the efficiency of existing water resource systems and test the identified solutions.
Pilot project activities include training, procurement, (international) field visits.

5. Community of practices (Outputs 1, 3): The Community of Practices is a “networking tool” connecting all activities: it is the space where partners and key stakeholders meet and exchange experiences. It is also a way of implementing the Muwali Single project document itself, an experiment of participation of key selected stakeholders, with space and opportunities for submitting proposals and therefore for dialogue. At the local level, a peer-to-peer learning approach will be applied to allow local administrators from target municipalities to exchange best practices among each other. This exchange will promote the sharing of skills, enhance local human resources, and strengthen partnerships and cooperation across different areas of the country. Additionally, the exchange of local administrators between partner Libyan municipalities will ensure cross-fertilization of ideas and expertise sharing. The peer-to-peer learning approach will be applied through various activities such as thematic workshops, online and in-person meetings, and on-the-job exchanges. As for the latter, it may take place through short visits or missions by local administrators to other municipalities, in coordination with the relevant authorities. These activities will foster knowledge exchange and capacity building, enhancing collaboration and the sharing of best practices across different contexts. At the international level, two-one-week winter/summer schools will also be organized in Italy or in another European country to explore best practices and innovations from international partners. The winter/summer schools will be organized abroad to explore international best practices and innovative solutions that can be applied to Libya. The above-mentioned activities will help consolidate a community of practices among the various partners involved in the project, laying the foundation for an enabling and cooperative institutional environment.

6. Awareness campaigns and community engagement (Outputs 1, 3): the project will support local administrations in engaging the local community by raising public awareness about key issues such as water scarcity, the balance between supply and demand, efficient water usage and conservation, while also establishing collaborative governance models. Suitable Community-based mechanisms for water resources management in both urban and rural areas will be encouraged to ensure an adequate engagement of local communities in the planning, management, and distribution of water resources, ultimately ensuring sustainability. Methodologies and approaches of awareness raising, and community

engagement will be identified during the implementation of the Intervention, in accordance with local administrations and communities.

Beneficiaries and target groups

The **target groups** of the MUWALI project include:

- Municipal Officials and Technical Staff, who are responsible for local administration aspects, including water and sanitation services, environmental affairs, and resource management (revenue collection, human resource management,…). Their involvement is crucial for implementing and sustaining project activities.
- General Company for Water and Wastewater (and other affiliated entities of the MWR): Officials and Technical Staff.
- Civil Society Actors, Academia, Media, and Activists: Engaged in fostering inclusive and holistic approaches to water management through awareness campaigns and participatory processes.

Beneficiaries:

- Libyan Citizens and Communities: They will benefit directly from improved water resource management, enhanced service delivery, and increased community participation in decision-making processes.
- Vulnerable Populations: Groups such as displaced persons and rural communities, who face greater barriers to accessing water resources and services, are prioritized.