



IMPROVING RELIABILITY & MONITORING OF TREATED WASTEWATER QUALITY TO FOSTER REUSE IN TUNISIA

LESSONS LEARNED & POLICY RECOMMENDATIONS

The Sustain Water MED project demonstrated the potential of simple solutions to improve the quality of treated wastewater and the continuous monitoring of its suitability for agricultural reuse purposes. The project, however, also uncovered significant challenges in implementation. This policy brief provides lessons learned and policy recommendations on how to further facilitate realisation of wastewater treatment and reuse projects in Tunisia.

💡 LESSONS LEARNED

- 💡 Amending existing treatment plants with relatively simple technologies can provide considerable benefits in terms of reliability of effluent quality as well as early warning in case of failure to meet standards.
- 💡 Involving farmers in effluent quality monitoring and transparent sharing of quality data increased trust in effluent quality and acceptance of reuse for irrigation in agriculture.
- 💡 Cross-sectoral coordination among the various institutions concerned with wastewater treatment and reuse in agriculture helps to identify and overcome barriers as well as diverging interests in wastewater reuse.

🚩 POLICY RECOMMENDATIONS

- 🚩 Adapt legal frameworks to encourage official and safe reuse of treated wastewater.
- 🚩 Improve implementation of existing governance frameworks for water supply in order to ensure long-term viability of reuse projects.



Existing treatment facilities
of Médenine Wastewater
Treatment Plant.

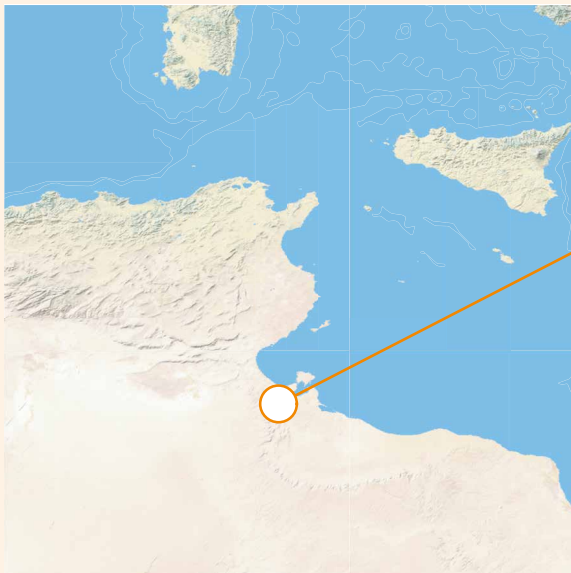
Source: GIZ

BACKGROUND

Growing water demand has put increasing pressure on Tunisia's water reserves over the last decade. Although Tunisia was the first country of the North African region to adopt wastewater reuse legislation in 1989, the potential of water reuse for irrigation purposes is far from being fully exploited. A major obstacle for the widespread reuse of treated wastewater for agricultural irrigation lies in the fact that the quality of treated effluents is often unreliable and insufficiently monitored. This results in limited acceptance of wastewater reuse as a common agricultural practice.

Against this backdrop, the Sustain Water MED project aimed to demonstrate the potential of simple solutions to improve the quality of treated wastewater as well as its continuous monitoring in a pilot project implemented at the Médenine wastewater treatment plant (WWTP) and in the nearby irrigation area of Oueljet El Khoder. Sustain Water MED partners built a tertiary treatment unit to ensure that relevant water reuse standards are met, and also installed adequate laboratory equipment for continuous water quality monitoring. Moreover, a computerised system allows for regular sharing of quality data with all concerned stakeholders as well as for early warning notification via SMS in case of quality problems.

LOCATION OF THE SITE IN TUNISIA



Source Map: Made with Natural Earth, 2015.
Source Picture: GIZ



Constructed sand filter of Médenine Waste Water Treatment Plant.

LOCATION: *Oueljet El Khoder irrigation area, Médenine WWTP, Tunisia*

WASTEWATER TREATMENT: *Slow sand filtration used for a volume of 1,150 m³ per day (out of 4,000 m³ per day treated by the WWTP); laboratory equipment and early warning system*

REUSE APPLICATION: *Irrigation in agriculture, aiming to increase reuse rate to 30–35 % (compared to 20 % before implementation of the project)*

INVESTMENT COSTS: *200,000 TND for the filter; 80,000 TND for laboratory equipment; 100,000 TND for the on-line analyser; 20,000 TND for the IT platform*

💡 LESSONS LEARNED**💡 Amending existing treatment plants with relatively simple technologies can provide considerable benefits in terms of reliability of effluent quality as well as early warning in case of failure to meet standards.**

By adding a relatively simple slow sand filter as a tertiary treatment unit to the Médenine WWTP, the quality of treated wastewater has considerably improved, meeting the Tunisian water reuse standards. The new laboratory and continuous monitoring will further improve reliability of effluent quality. Through a simple computerised system, farmers get an immediate notification via SMS in case unexpected pollution of the reclaimed water for irrigation is detected by the remote monitoring system. Several farmers actually used reclaimed water of unreliable quality before, taking major health risks for them as users of reclaimed water and for consumers of their crops.

💡 Involving farmers in effluent quality monitoring and transparent sharing of quality data increased trust in effluent quality and acceptance of reuse for irrigation in agriculture.

By improving the quality of reclaimed water and establishing an effective platform for sharing analysis data with all the concerned stakeholders on a regular basis, the pilot project increased trust in using treated effluents for irrigation purposes. The project partners further carried out a study that showcased that olives irrigated with treated wastewater actually show better quality than those irrigated with freshwater. Sustain Water MED thus successfully contributed to convincing farmers to use treated effluents, and to increasing the reuse rate in the irrigation area.

💡 Cross-sectoral coordination among the various institutions concerned with wastewater treatment and reuse in agriculture helps to identify and overcome barriers as well as diverging interests in wastewater reuse.

Within Sustain Water MED, Tunisian institutions responsible for the environment, agriculture, water resources and health formed a very active steering committee. This provided a valuable platform for discussing the institutions' respective responsibilities and interests. Their joint work in the project's steering committee has contributed to better cross-sectoral exchange of experiences and understanding.



Visit of the pilot site in Médenine organised during the regional training in Djerba, Tunisia.

Source: GIZ

🚩 POLICY RECOMMENDATIONS

The Sustain Water MED project in Tunisia successfully demonstrated tangible benefits of simple solutions to improve the quality of treated wastewater and the continuous monitoring of its suitability for agricultural reuse purposes. Nevertheless, the project partners faced several challenges in implementing the project. In support of Tunisia's national water policy and especially the new Water Code currently in development, the following recommendations should be taken into account:

🚩 Adapt legal frameworks to encourage official and safe reuse of treated wastewater.

The Tunisian standard on reuse is strict and calls for a level of water quality monitoring that the existing institutions cannot realistically provide due to a lack of capacity. Where legal requirements do not seem achievable under local circumstances, farmers resort to unofficial reuse of treated wastewater. Also, guidelines concerning health protection for people coming into contact with reclaimed water are often not observed in practice. Legal frameworks and requirements should therefore be based on a realistic assessment of which level of regulation is appropriate and feasible considering the existing situation and capacities. This should be complemented by awareness-raising campaigns for farmers using reclaimed water and financial support for protective equipment and vaccines recommended for the users.

🚩 Improve implementation of existing governance frameworks for water supply in order to ensure long-term viability of reuse projects.

Overlapping responsibilities between institutions at the local and national levels, poor enforcement of water fees as well as illegal connections to the distribution system currently result in poor monitoring of both the quantity and quality of the water resources distributed. Particularly when freshwater is used more or less without charge, there are only limited economic incentives to use – and pay for – treated wastewater. In order to improve wastewater treatment and to encourage safe reuse practices, responsibilities need to be clarified, while consistent requirements and procedures should apply and be enforced.

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THE PROJECT

The SWIM Sustain Water MED project involves a network of demonstration activities for sustainable integrated wastewater management and reuse in Jordan, Egypt, Tunisia and Morocco. The project is part of the Sustainable Water Integrated Management (SWIM) Programme, a regional technical assistance programme funded by the European Commission to contribute to the extensive dissemination and effective implementation of sustainable water management policies and practices in the Southern Mediterranean Region. Sustain Water MED is co-funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH together with seven national, regional and European partners. For more information see www.swim-sustain-water.eu.

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This policy brief was compiled by adelphi based on project reports and experience gained by the Sustain Water MED partners in Tunisia: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, National Sanitation Utility (ONAS). This publication has been produced with the financial assistance of the European Union and the German Federal Ministry for Economic Cooperation and development (BMZ). The views expressed herein can in no way be taken to reflect the official opinion of the European Union.