

RICHWATER®, RECLAIMED WATER FOR IRRIGATION, MALAGA



Addressed SDGs:



Image: BIOAZUL

> OBJECTIVES

Water scarcity and low availability present real obstacles to implementing and maintaining nature-based solutions, such as urban agriculture and other peri-urban farming practices. Reclaimed water (i.e. treated wastewater) is an effective and efficient alternative water resource with many associated benefits, for example, providing nutrients that can be directly assimilated by plants. Furthermore, as the availability of reclaimed water is not so much dependent on climatic events, it is readily accessible year round.

> DESCRIPTION

RichWater® is an innovative solution which offers the capacity of treating municipal wastewater and supplying a constant source of nutrient-rich water for use in agriculture. In addition to use in urban and peri-urban agriculture, this solution provides an effluent suitable for irrigating community gardens, parks and green areas, urban forests or vertical gardens. The treatment provided by RichWater® allows the recovery of nutrients (e.g., nitrogen and phosphorus), reducing environmental problems (e.g. eutrophication) due to excesses of such compounds in the water bodies that receive wastewater. By integrating wastewater treatment and irrigation in a single system, this solution offers the possibility of automating and controlling the volume and quality of excess water through the use of sensors. The system is easy to operate and maintain and provides a high-quality effluent beneficial to plants, thus reducing the need for additional chemical fertilizers. Implementing RichWater® contributes to advancing agricultural technology while generating good quality jobs, not only in the design, manufacturing, and commissioning of the systems, but also in the maintenance and operation.

The availability of reclaimed water and its use in agriculture plays a fundamental role in the so-called “rural renaissance”, allowing

the conservation of the rural environment and its ecosystem services. Additionally, it facilitates a suitable working environment and promotes the integration of women in agricultural practices, facilitating a just and inclusive social structure in the region. The use of reclaimed water also contributes to the water sovereignty of farmers in areas affected by water scarcity and droughts, since the combination of this resource with more conventional ones can avoid supply cuts and the consequent food production losses. Broad implementation of this system implies a reduction in agricultural demands for drinking-quality water, which in turn allows prioritizing this water for tourism or for industries that require clean water.

RichWater® is one of the best practices on the European Circular Economy Stakeholder Platform (<https://circulareconomy.europa.eu/platform>), which is a joint initiative by the European Commission and the European Economic and Social Committee to bring together stakeholders active in the broad field of the circular economy in Europe.

The RichWater® membrane bioreactor (MBR) has been verified by the [Environmental Technology Verification](#) (ETV), a new tool of the [European Commission](#) to help [innovative environmental technologies](#) to reach the market by providing sound verification of the technology claims.

The utility company (water operator AXARAGUA), Research Centre CSIC-La Mayora, local and regional authorities, farmers and communities of irrigators as well as local action groups were involved in the implementation of RichWater®.

> CHALLENGES

- Strong dependency on political support, in the context of short-term policymaking. This is a problem as longer implementation

periods and long-term commitment from the public sector are required.

- Lack of knowledge in the public sector on NBS available on the market, lack of evidence of the effectiveness of NBS in addressing existing challenges, and lack of studies on economic feasibility and return of investment for NBS projects, products or services.
- Strict regulation and controls on wastewater treatment and reuse.
- Public perception: farmers have also shown reluctance to using reclaimed water.
- Difficulty in using public procurement, private public partnerships for such projects.
- Lack of knowledge of market opportunities and successful business cases.
- Lack of finance/funding opportunities for research and development.
- Lack of own financial resources by the municipalities. External support is needed, and this is normally used to invest in more conventional infrastructure, where the risk of not getting the return on the investment is lower. Innovative approaches are generally considered high risk operations.

> OPPORTUNITIES

- Emerging planning legislation/regulations/strategies supporting nature-based design.
- Strong partnerships and/or networks in the sector.
- Good mechanisms to share knowledge and technologies in the sector.
- Financing opportunities given by the European Investment Bank and other private entities.
- R&D and innovation projects, initiatives which are delivering the needed evidence and business cases on NBS.
- Support regulatory framework: Water Framework Directive, Regulation 741/2020 on minimum requirement for water reuse in agriculture, Biodiversity Strategy, Green Deal and Circular Economy, Common Agricultural Policy (CAP) which will allow for the mobilization of significant funds to support activities on agroforestry, development of an agriculture that includes ecosystem services and the promotion of multifunctional agricultural activities. In this framework, some actions contemplated by NBS, such as soil conservation practices, agroforestry systems or sustainable agricultural practices, can be financed through this instrument and provide incentives.
- Global initiatives such as the Agenda 2030 in the context of Climate Change.

> LESSONS LEARNED

While the technology and knowledge to implement projects using reclaimed water is already available, acceptance from the public and health authorities is still a determining factor. Support from local government and farmers should also be considered from the outset of the project. As such, a bottom-up approach with the participation of all actors in the value chain is essential in determining the success of the implementation. On top of that, there is a lot of bureaucracy associated with obtaining reuse permissions and the procedures and competencies of relevant authorities are sometimes unclear.

It is important to prepare a strong and comprehensive business model, putting special emphasis on the value proposition and clearly quantifying the return on investment, especially the financial return

and other social-environmental impacts. The financial aspects of the solution is a key element to convince stakeholders, especially potential investors. It is therefore crucial to have a business case, well described and assessed in order to convince investors.

> INSPIRATION FOR OTHERS

The applicability of RichWater® is considerably higher in water scarce regions of Europe and the MENA countries, especially in areas where agriculture plays a key role in the economy. The support of stakeholders from the quadruple helix (e.g., farmers and consumers, local government, etc.) is strongly recommended for a successful implementation. In addition, to facilitate the transferability and market uptake of RichWater®, the system has been validated within the EU Environmental Technology Verification (ETV) Pilot Programme. The increasing commitment of the City of Málaga for climate change adaptation, SDGs, Global Covenant of Mayors for climate & energy, etc. created a fertile environment for nature-based entrepreneurship, like Bioazul, the creator of RichWater, to flourish. For example, the recovery plan for the city of Málaga after COVID-19 (Plan de Reactivación de Málaga) includes actions in the short-medium term which support such businesses.

FURTHER INFORMATION

All fact sheets were produced from questionnaires and interviews conducted by the ICLEI team. Contact ICLEI Europe for more information or access Oppla: <https://oppla.eu/casestudy/21253>

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