# RESET

Valorisation of non-conventional water resources in urban and peri-urban context



Water4All
Water security for the planet

## Abstract

RESET (Valorisation of non-conventional water resources in urban and peri-urban contexts) aims to advance circular water management by developing innovative strategies to recover water, nutrients and energy from urban wastewater streams.

The project focuses on the valorisation of non-conventional water resources, including treated municipal wastewater, greywater and blackwater, to support sustainable water use in urban and peri-urban environments.

RESET combines advanced technical processes with nature-based solutions to create integrated treatment systems capable of producing high-quality reclaimed water for non-potable uses such as toilet flushing, irrigation, urban gardening and industrial applications. By integrating these complementary approaches, the project seeks to increase the availability of alternative water resources while reducing pollutant emissions and improving the efficiency of urban water systems.

In parallel, RESET investigates innovative approaches for recovering valuable resources from wastewater, including nutrients such as nitrogen and phosphorus for fertiliser production, as well as energy through biogas generation and algal biomass. By linking water reuse with resource recovery, the project aims to transform wastewater treatment plants and decentralised systems into resource hubs that contribute to closing material and energy loops within the urban water cycle.

A key element of the project is the development of decentralised and hybrid water reuse solutions that allow water to be treated and reused close to where it is generated, reducing pressure on conventional drinking water supplies and increasing the resilience of cities to water scarcity. Laboratory and pilot-scale experiments will be conducted in Europe and Brazil to test the performance, scalability and transferability of these technologies under different climatic, regulatory and infrastructural conditions.

To support the implementation of these solutions, RESET will develop an optimisation framework for designing reclaimed water distribution networks and integrating them with existing urban water infrastructure. In addition, the project will assess the environmental performance and sustainability of the proposed systems through Life Cycle Assessment and comparative scenario analysis.

RESET also adopts a participatory approach that involves key stakeholders such as policymakers, water utilities, industry representatives and civil society. Through co-design activities, workshops and stakeholder engagement processes, the project aims to ensure that the developed solutions are technically feasible, socially accepted and aligned with real implementation needs.

Ultimately, RESET seeks to contribute to the transition towards a circular urban water cycle by reducing freshwater demand, improving wastewater management and recovering valuable resources. The project will deliver scientific knowledge, technological innovations and decision-support tools that support cities, utilities and policymakers in implementing sustainable and resilient water management strategies aligned with European environmental policies and global sustainability goals.

### Project coordinator

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### Project partners

- UNIVERSITY OF LUXEMBOURG - LUXEMBURG
- UNIVERSITY OF CHEMISTRY AND TECHNOLOGY IN PRAGUE - CZECHIA
- UNIVERSITAET INNSBRUCK - AUSTRIA
- RHEINLAND-PFÄLZISCHE TECHNISCHE UNIVERSITÄT KAISERSLAUTERN-LANDAU - GERMANY
- SUSTAINABLE WATER INFRASTRUCTURE SOLUTIONS GMBH - GERMANY
- FEDERAL UNIVERSITY OF MATO GROSSO DO SUL - BRAZIL

### Funding organisations

AEI (SPAIN) / FNR (LUXEMBURG) / TA CR (CZECHIA) / FWF (AUSTRIA) / BMFTR (GERMANY) / CONFAP (BRAZIL)

### Duration

3 years

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**KEYWORDS**

circular water management, water reuse, wastewater valorisation, resource recovery, nature-based solutions, advanced oxidation processes, nutrient recovery, decentralised systems, urban water cycle, life cycle assessment