

CETAQUA ANNUAL REPORT

CONTENTS

- 01 ➤ Opening remarks
- 02 ➤ Cetaqua, a benchmark in water innovation
- 03 ➤ Our ecosystem
- 04 ➤ Innovation strategy
- 05 ➤ Innovative infrastructure
- 06 ➤ Results with an impact
- 07 ➤ Knowledge transfer

01 — OPENING REMARKS



Opening remarks

ALBERTO SÁNCHEZ
Director of Innovation
at Veolia in Spain and
General Manager of
Cetaqua

I am proud to present the Cetaqua annual report for 2025, a publication that cements our position as an international benchmark in innovation applied to the sustainable and efficient management of the complete water cycle.

Our leadership is reflected in a series of milestones, not the least of which is the launch of 11 new European projects. They all serve to strengthen our ability to lead and participate in international partnerships of excellence, to harness scientific and technological knowledge, and to transform the sector’s major challenges into solutions with a real impact.

These projects will enable us to make progress in strategic and highly complex areas, such as direct reuse for drinking purposes, seawater desalination and the recovery of resources from brine for industrial use. They will also help us in the development of nature-based solutions, incorporating advanced computer vision monitoring technologies to assess their performance, progress and impact.

If we focus strictly on the positive impact of our work, 2025 has also been another very successful year for Cetaqua, with the organisation contributing across all areas to safeguarding and improving the management of a resource as essential as water.

In the field of production and new resources, we have developed a scalable and modular solution that transforms treated wastewater into a high-value resource, enabling the production and supply of nutrient-enriched water for agricultural use.

In the field of water resource planning and management, we have developed a solution that enables operators to assess the condition and availability of water bodies, as well as to simulate scenarios and optimise decision-making from the perspectives of safety, cost and environmental impact.

In the field of zero waste and decarbonisation, we have designed a specialised and replicable service that supports wastewater treatment plants (WWTPs) with digestion capacity in implementing anaerobic co-digestion, adopting a comprehensive approach to assess its technical and economic viability.

In the field of sustainability, we have established the international standard for offsetting water impacts, which enables companies to offset their water footprint through certified water resource conservation and restoration projects.

Finally, in the digital sphere, we have developed a solution based on computer vision applications that enable the real-time monitoring of processes

or variables for which no sensors exist or which are difficult to measure.

The year 2025 will also feature prominently in Cetaqua’s history thanks to some very significant milestones, such as the celebration of Cetaqua Andalusia’s tenth anniversary, the completion of the CIGAT Circular joint research centre in collaboration with the Xunta de Galicia, and the creation, in Sant Joan Despí, of the new experimental platform Cetaqua Lab&Tech, which will undoubtedly help to accelerate the transfer and industrialisation of our research findings.

This brief summary is just a glimpse of the strength of an innovation model that is unique in the environmental sector: a public-private partnership model developed thanks to the involvement of our partners – the CSIC, the Universitat Politècnica de Catalunya-BarcelonaTech (UPC), the University of Santiago de Compostela (USC) and the University of Málaga (UMA).

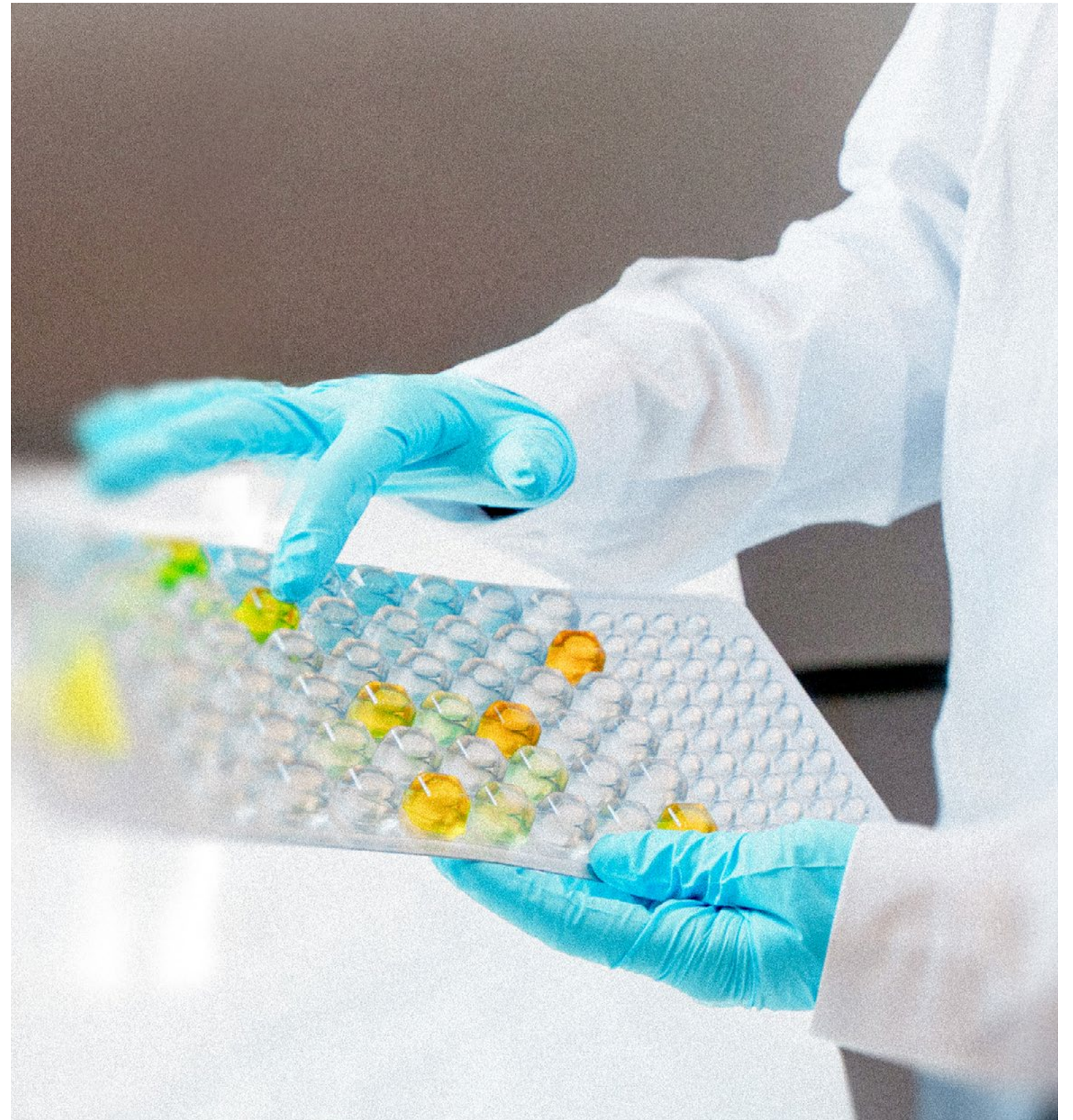
As always, I would like to emphasise that none of this would be possible without the commitment and excellence of the people who make up Cetaqua. To all of them, my sincerest thanks for continuing to champion a shared vision: transforming the management of the complete water cycle through innovation, making it more efficient, more resilient and more sustainable.



“

In 2025, Cetaqua has solidified its position as an international benchmark for innovation in the sustainable and efficient management of the complete water cycle.

02 — CETAQUA, A BENCHMARK IN WATER INNOVATION



2.1. A network of centres at the forefront of RDI

We are Cetaqua, a network of water technology centres specialised in water, based on a unique public-private partnership model.

We develop innovative solutions that guarantee sustainability and efficiency in all stages of the complete water cycle. As we are always connected to the regions, we understand local needs when addressing present and future global challenges. In doing so, we contribute to sustainable economic, environmental and social development.

We turn ideas into transformative realities that generate a positive impact in the regions where we operate.

To this end, we put technological development and RDI at the service of people, drawing on scientific knowledge and forging partnerships with public and private organisations to boost their competitiveness through innovative, effective and sustainable solutions that promote the responsible and efficient use of water.

Our work focuses on:

- Driving continuous innovation by developing advanced solutions to address water cycle challenges.
- Fostering collaboration with the public and private sector, involving key stakeholders in regional ecosystems to maximise social impact.
- Ensuring operational excellence in everything we do, thereby consolidating our position as international leaders in technologies applied to water and the environment.



We are at the forefront of RDI to promote adaptation and strengthen resilience to climate change.

2.2.

Areas of innovation

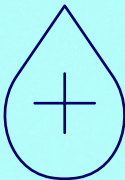
We are organised into five strategic areas of innovation designed to meet the needs of businesses and regions, tackling today's main water-related challenges with practical solutions that have a direct impact on society and the environment and contribute to more resilient, efficient and sustainable water resource management.

Our areas of innovation are aligned with the United Nations Sustainable Development Goals:



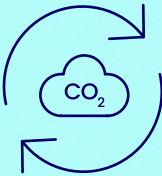
Area 1

Resource planning and management



Area 2

Production and new resources



Area 3

Zero waste and decarbonisation



Area 4

Territorial and social sustainability



Area 5

Digital services and AI applications

Area 1



Resource planning and management

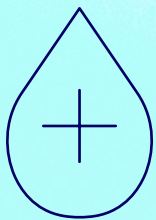
We provide comprehensive resource management to ensure water security

We anticipate water availability and demand by proposing predictive, thorough water management, covering both surface and groundwater. We achieve this by supporting the use of tools such as aquifer recharge with non-conventional resources and models for climate adaptation.

In this area of innovation, we have developed several programmes that allow us to:

- Improve water security through smart water resource management.
- Work on advanced aquifer management.
- Improve resilience to extreme weather events.

Area 2



Production and new resources

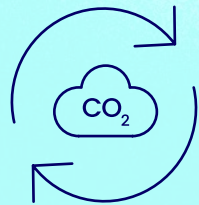
We ensure territorial water security and promote resource recovery

We develop safe, innovative solutions for drinking water purification, wastewater reclamation and seawater desalination processes. Through these initiatives, we maximise the quantity and quality of available water resources.

In this area, we promote programmes that allow us to:

- Guarantee the supply of drinking water.
- Promote the reuse and the use of alternative water resources.
- Provide environmental solutions for industry.

Area 3



Zero waste and decarbonisation

We promote efficiency in wastewater treatment, energy self-sufficiency and resource recovery

We develop and validate innovative processes that improve the efficiency and sustainability of wastewater treatment plants, minimising operational risks, generating green energy and reducing the carbon footprint. We also work on the recovery of high-value by-products.

Our approach ensures the quality of treated effluents, drives decarbonisation in our plants and promotes circular business models.

In this area of innovation, we run different programmes that allow us to:

- Provide advanced wastewater treatments.
- Develop technologies for decarbonisation and gas recovery.
- Convert waste into high-value products, with the goal of achieving zero waste.

Area 4



Territorial and social sustainability

We drive forward solutions that ensure sustainable development and improve citizens' well-being

We develop methodologies, tools, strategies, plans and management models that, when applied to territories and companies, guarantee sustainable development that is environmentally friendly, economically viable and focused on social benefit.

In this area of innovation, we carry out programmes that allow us to:

- Contribute to environmental neutrality and circularity.
- Promote the water economy and commitment to social innovation, involving the general public in the process.

Area 5



Digital services and AI applications

We provide digital tools for the roll-out of innovative solutions that transform management of the complete water cycle

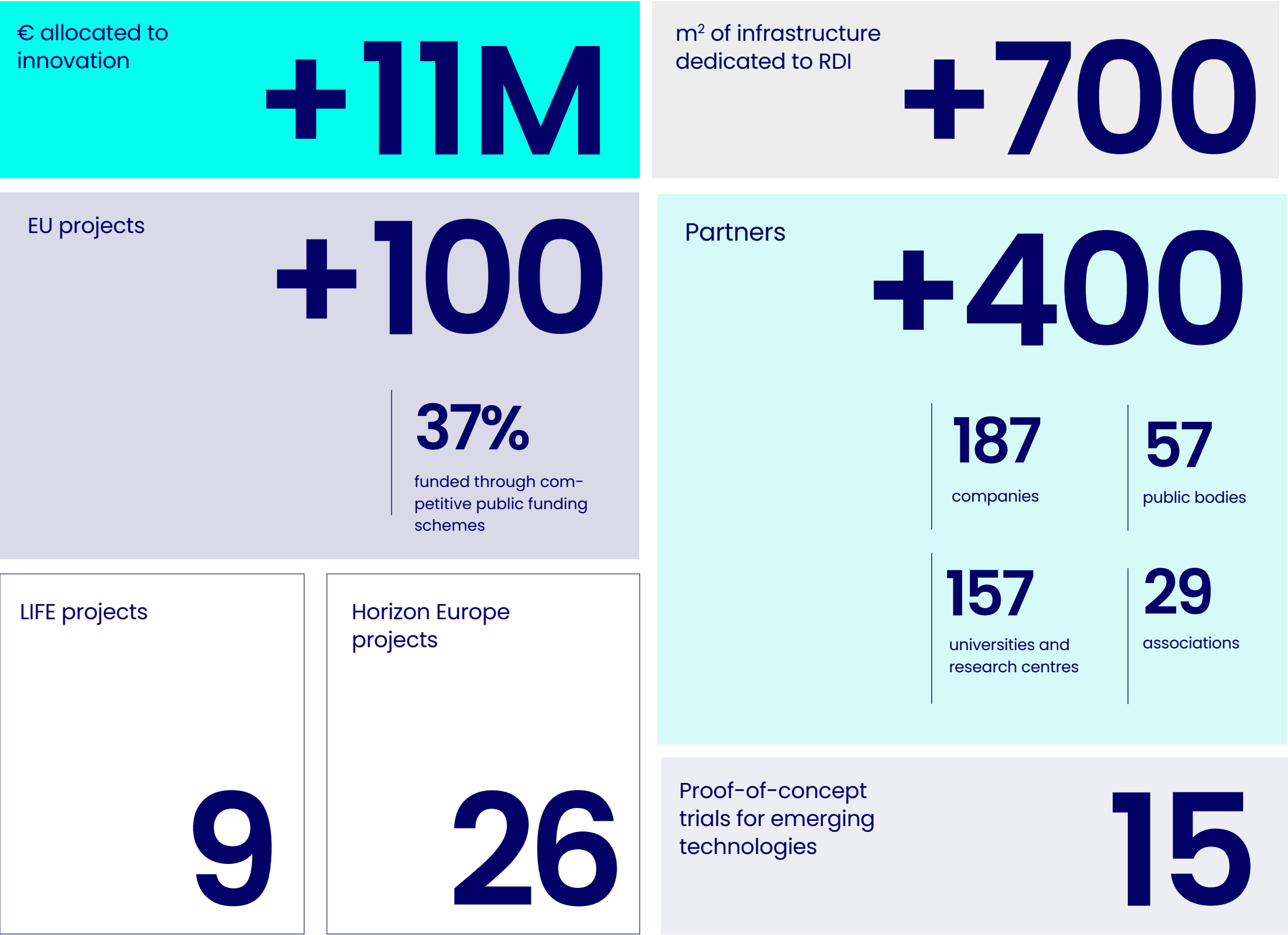
Through advanced technological solutions, we optimise resources, improve operational efficiency and ensure environmental sustainability.

Our approach ranges from understanding problems to assessing requirements, while designing and developing software architectures and transferring solutions for integration into the client's existing systems.

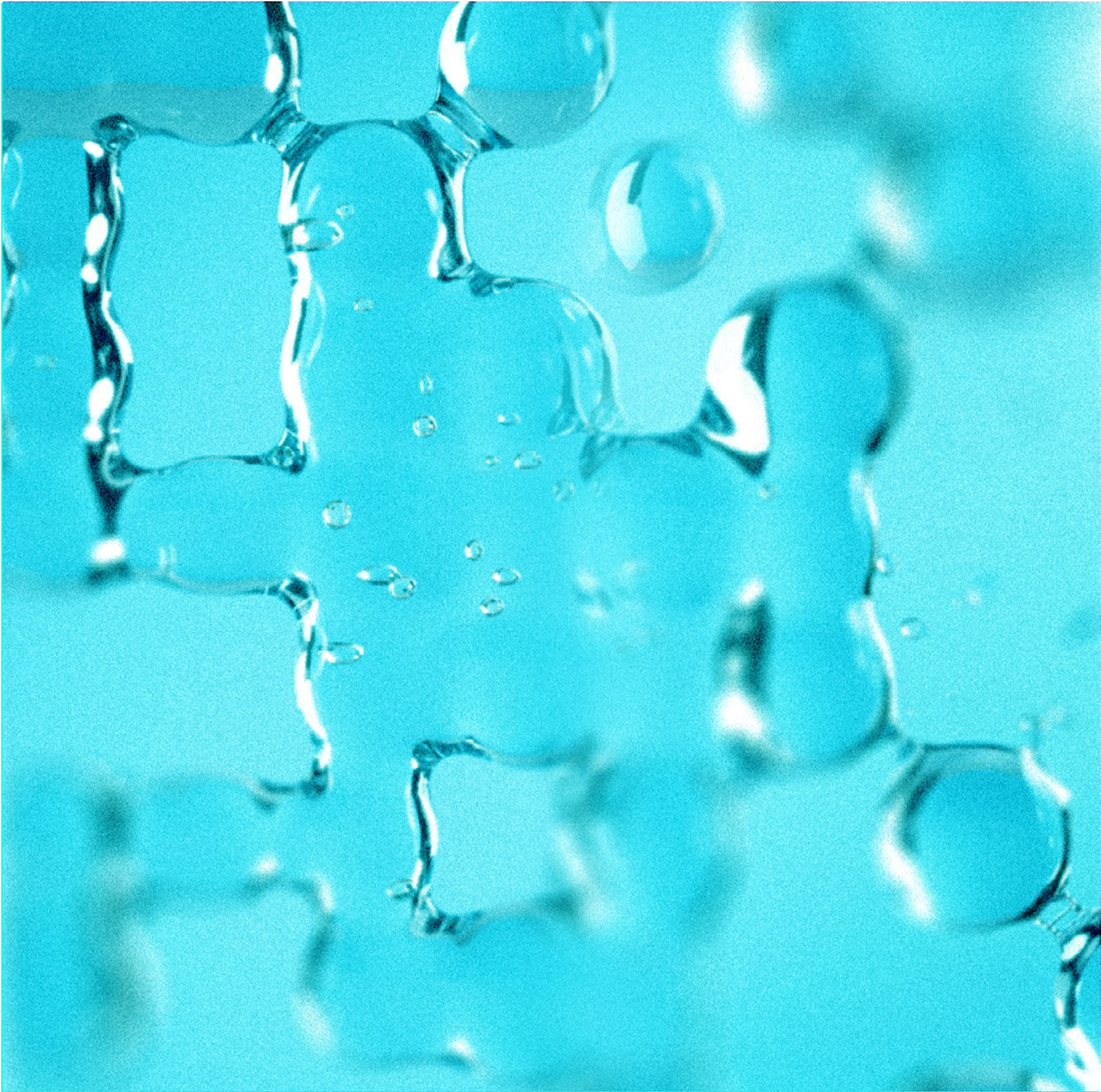
In this area of innovation, we promote programmes that allow us to:

- Provide asset optimisation solutions.
- Turn data into actionable know-how to improve decision-making.
- Revolutionise how processes are monitored using computer vision technologies.
- Integrate environmental, climate and agricultural intelligence to protect natural resources and adapt to climate change.

2.3. Innovation in figures



03 —
OUR
ECOSYSTEM



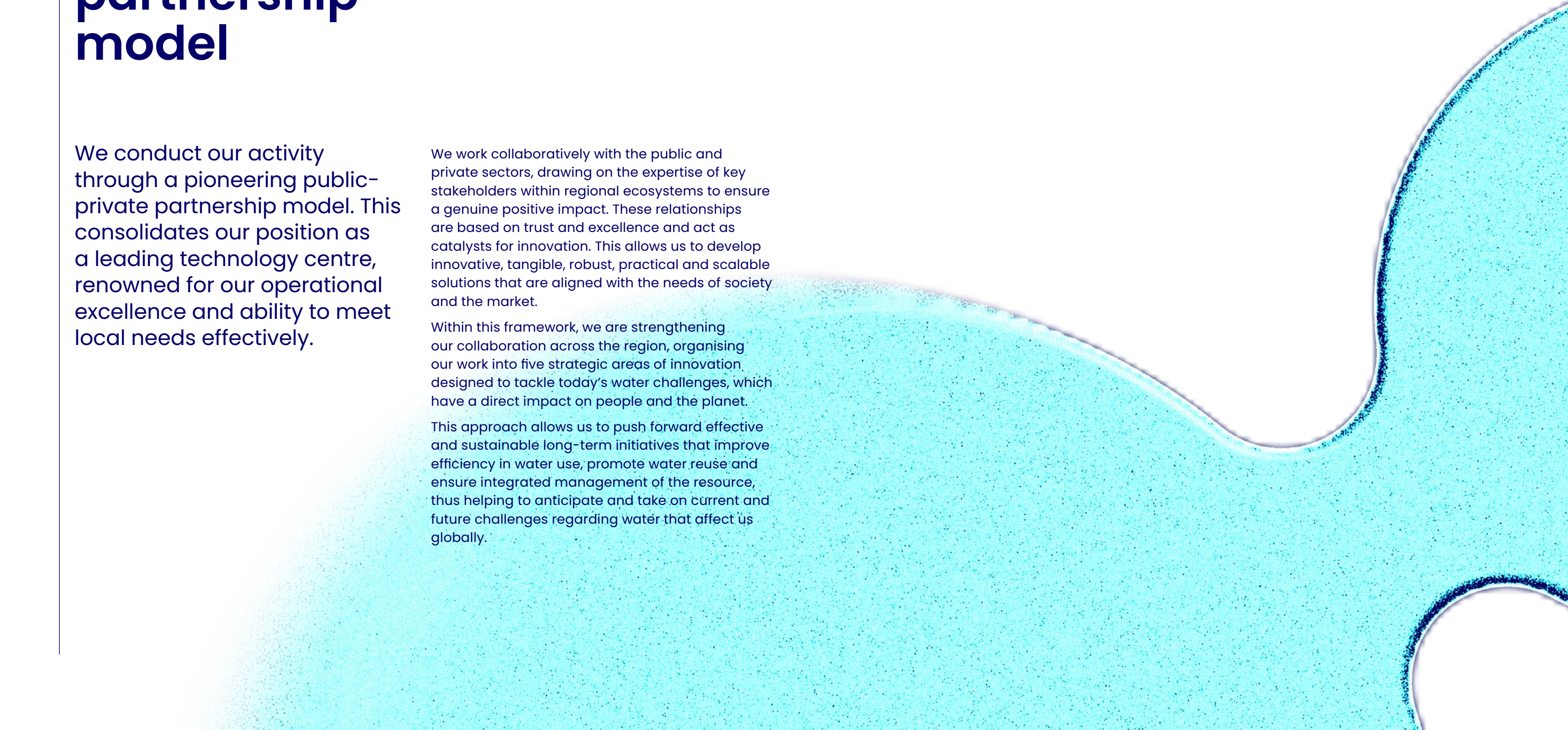
3.1. Pioneering partnership model

We conduct our activity through a pioneering public-private partnership model. This consolidates our position as a leading technology centre, renowned for our operational excellence and ability to meet local needs effectively.

We work collaboratively with the public and private sectors, drawing on the expertise of key stakeholders within regional ecosystems to ensure a genuine positive impact. These relationships are based on trust and excellence and act as catalysts for innovation. This allows us to develop innovative, tangible, robust, practical and scalable solutions that are aligned with the needs of society and the market.

Within this framework, we are strengthening our collaboration across the region, organising our work into five strategic areas of innovation, designed to tackle today's water challenges, which have a direct impact on people and the planet.

This approach allows us to push forward effective and sustainable long-term initiatives that improve efficiency in water use, promote water reuse and ensure integrated management of the resource, thus helping to anticipate and take on current and future challenges regarding water that affect us globally.



Strategic alliances

We rely on key stakeholders in regional ecosystems and European leaders to offer solutions that promote sustainable, economically viable and social welfare-oriented development and territorial resilience.



Board of Trustees

This is our main governing body, made up of representatives from our founding organisations.



Scientific-Technical Council

This advisory body guides innovation policies and identifies funding opportunities and development programmes, while proposing new lines of work and assessing emerging needs.



Mixed model

We are structured in a network that connects three independent centres that work closely together. Each centre operates under a public-private cooperation scheme with universities, companies and leading organisations in the region.

CETAQUA
BARCELONA

CETAQUA
GALICIA

CETAQUA
ANDALUCÍA

3.2.

Our governing body

Trustees

CETAQUA BARCELONA

Chairman

Rubén Ruiz, Veolia

Vice-Chairman

Francesc Torres, Universitat Politècnica de Catalunya-BarcelonaTech (UPC)

Non-trustee Secretary

Fernando Tallarico, Veolia

Members

Carlos Closa, Spanish National Research Council (CSIC)

Alberto Sánchez, Veolia

Cristina Baixauli, Veolia



Marina Arnaldos,
Manager of Cetaqua Barcelona

CETAQUA ANDALUCÍA

Chairman

Marcos Martín, Hidralia

Vice-Chairman

Juan Teodomiro López, University of Málaga

Non-trustee Secretary

Teresa Vizcaíno, Veolia

Non-trustee Vice-Secretary

Jorge Palomino, Hidralia

Members

Carlos Closa, Spanish National Research Council (CSIC)

Ernesto Sánchez, Hidralia

Pedro Jesús Maireles, University of Málaga

Alberto Sánchez, Veolia



Enrique Gutiérrez,
Manager of Cetaqua Andalusia

CETAQUA GALICIA

Chairman

Javier Díez, Veolia

Vice-Chairman

Ana Tejeiro, Veolia

Non-trustee Secretary

María Teresa Abalde, Veolia

Members

Carlos Closa, Spanish National Research Council (CSIC)

Antonio López, University of Santiago de Compostela

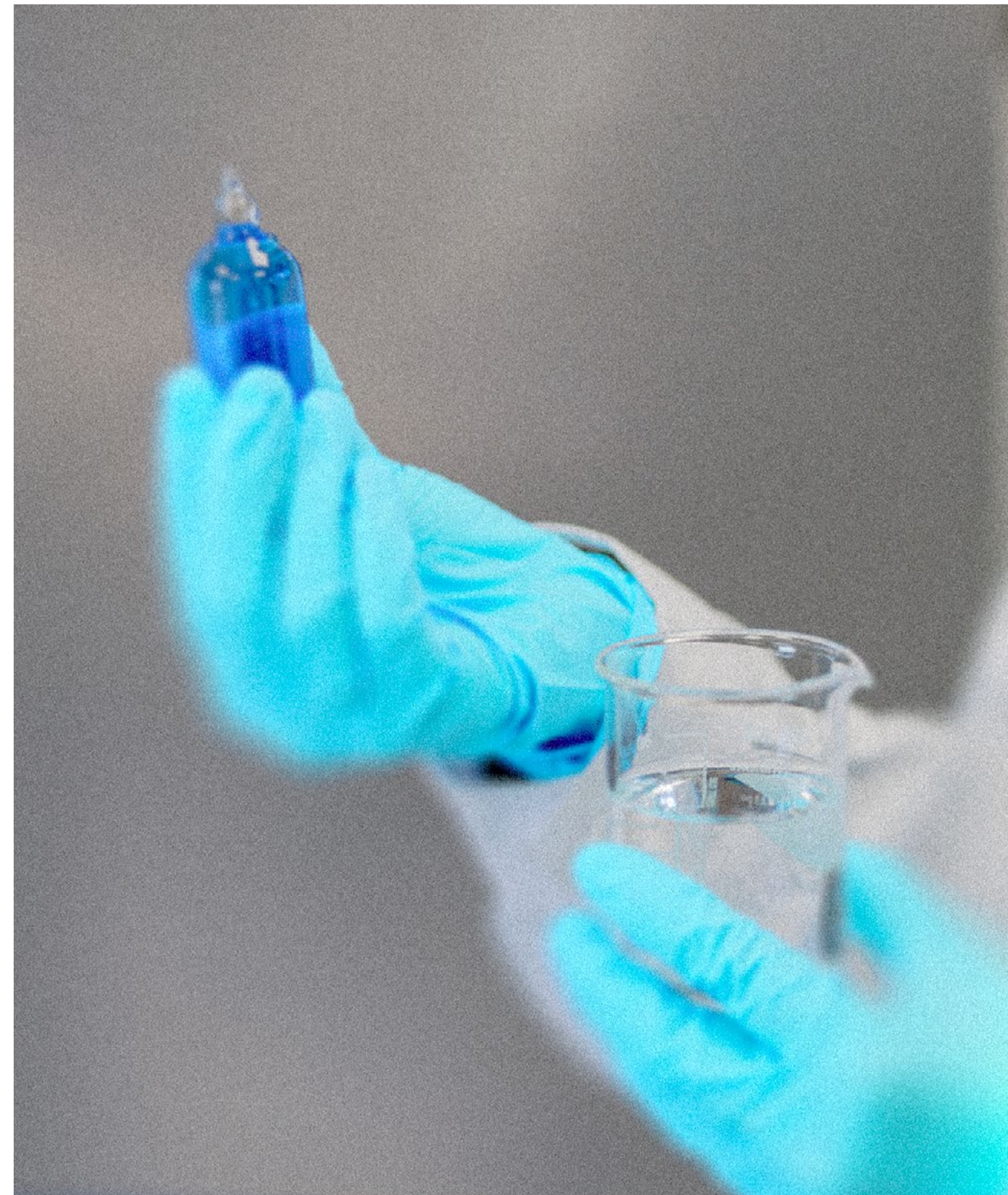
Alberto Sánchez, Veolia

Catalina Balseiro, Veolia



Leticia Rodríguez,
Manager of Cetaqua Galicia

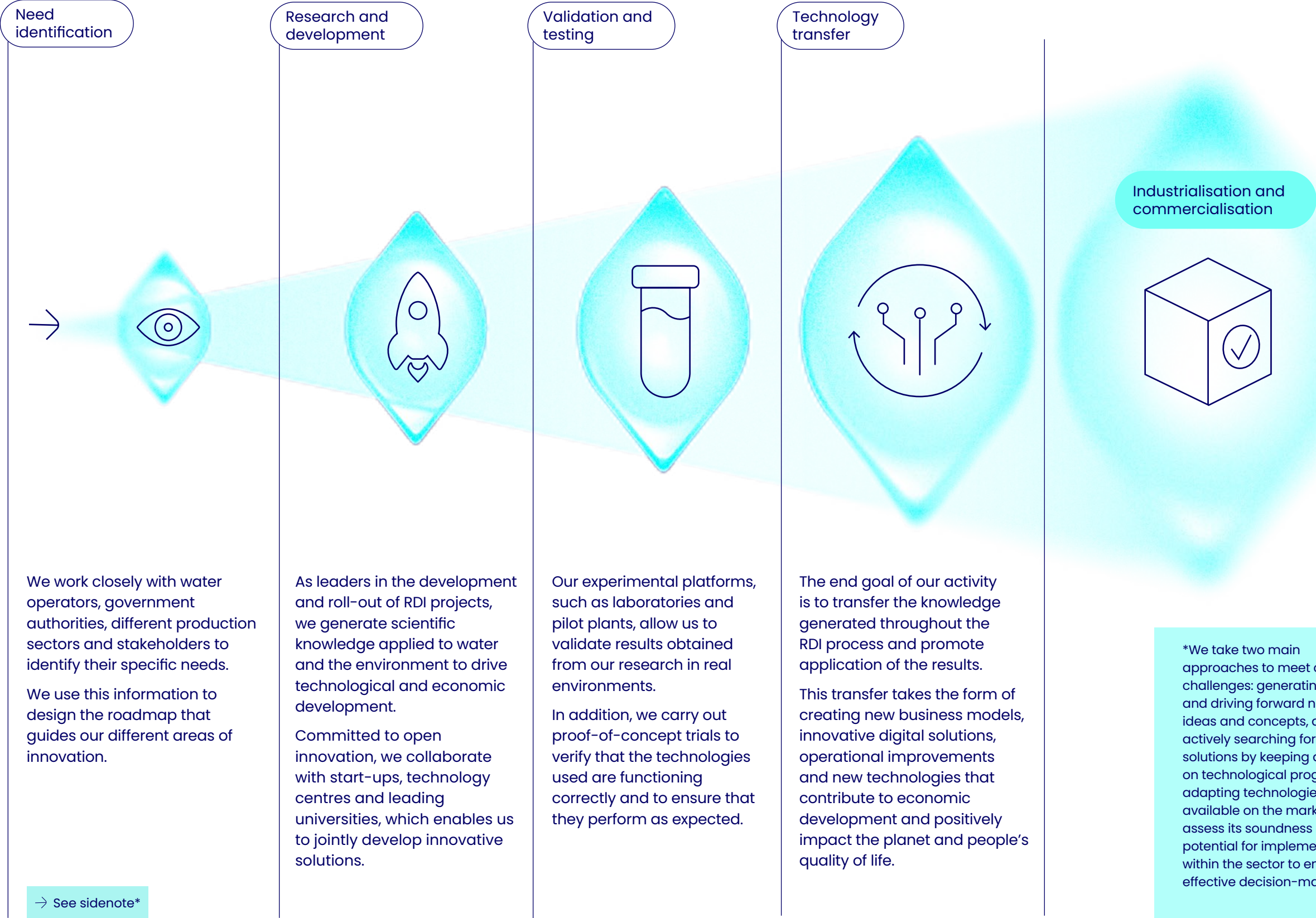
04 — INNOVATION STRATEGY



Our methodology covers the entire innovation process: from detecting environmental needs and opportunities to generating scientific knowledge which is turned into applicable solutions.

- Water operators
- Society and the environment
- Productive sectors
- Government

Through our activity, we develop and implement tangible, robust and scalable solutions that cover the complete water cycle, ranging from innovative business models and advanced products and services to improvements in water resource management.



*We take two main approaches to meet current challenges: generating and driving forward new ideas and concepts, and actively searching for solutions by keeping an eye on technological progress, adapting technologies already available on the market. We assess its soundness and potential for implementation within the sector to ensure effective decision-making.

05 — INNOVATIVE INFRASTRUCTURE



Technological progress and knowledge implementation are essential to addressing challenges associated with the climate emergency and the resulting issue of water scarcity.

At Cetaqua, we promote innovation through our experimental platforms, such as laboratories, pilot plants and prototypes, which allow us to transfer the results of our research projects to applications in real environments.

Laboratories

2

Pilot plants

30

m² Infrastructure
dedicated to RDI

+700

5.1. Laboratories

CETAQUA LAB & TECH

Bringing together knowledge and technology, this facility in Sant Joan Despí has been designed to accelerate innovation and the implementation of transformative solutions in water management.

Through this experimental platform for applied innovation, we explore, validate and scale up technological solutions to improve water quality and optimise water treatment efficiency, addressing key water-related challenges and linking research with its application in real-world settings.

We carry out work on a laboratory scale and develop prototypes, which we subsequently scale up through pilot schemes at drinking water and wastewater treatment plants in the complete water cycle.



Cetaqua Lab&Tech’s main areas of work

We work to ensure the safety, quality and availability of water resources throughout the complete water cycle by identifying and validating the most efficient solutions to tackle current and future water-related challenges.

1. Quality and quantity guarantee

We focus on improving the quality of drinking water and managing new environmental risks, particularly those linked to emerging pollutants. That is why we develop and evaluate advanced treatment processes that maximise water production and remove these substances, using technologies such as granular activated carbon columns and ion-exchange resins.

We also address water availability in situations of prolonged drought, where the recharge of aquifers with reclaimed water is establishing itself as a strategic solution. Using infiltration columns, modelling and tracers, we study changes in groundwater quality and the long-term behaviour of the aquifer.



2. By-product recovery and reuse

We work to recover high value-added by-products from waste streams, promoting more sustainable and efficient waste management.

In this area, we are researching the recovery of chemical reagents, salts and metals present in waste streams, such as sludge and brine from drinking water treatment plants and wastewater treatment plants, using technologies that enable these resources to be reused in new processes and help us move towards circular models of water management.



3. Gas recovery

We develop solutions to recover energy from wastewater treatment plant sludge by producing and using biogas, biomethane and hydrogen. In the laboratory’s gas chamber, pilot-scale digesters replicate the sludge treatment process in order to study how to maximise energy production and improve its use.

Areas of research include the upgrading of biogas or co-digestion with other organic waste – solutions that are already being implemented in real-world water cycle infrastructure to reduce its environmental footprint and move towards a more circular, low-carbon model.



4. Computer Vision Lab

The Computer Vision Lab is a space for experimentation in computer vision that enables new digital solutions to be developed and validated in a controlled environment more easily.

Tools based on computer vision and advanced data analysis are being developed to monitor processes and detect incidents in real time; these can be applied to the control of discharges, the monitoring of water quality in distribution networks, and the early detection of anomalies in treatment plants.

Once validated on the platform and in real-world environments, they are implemented in the day-to-day operations of the complete water cycle.



CIGAT

Here we validate innovative solutions for wastewater treatment and waste stream recovery, aimed at obtaining by-products and sustainable energy.



CIGAT

Biochemical methane potential (BMP) tests

Assessment of the biodegradability and biogas production potential of sludge and organic substrates under controlled conditions.

Continuous operation of anaerobic digesters

Technical validation of sludge and/or substrates for biogas production using 15-litre reactors to monitor operational stability, yield and the quality of the digestate produced, as a preliminary step prior to industrial-scale production.

Heavy metal precipitation tests

Tests designed to optimise the simultaneous removal of multiple metals from waste streams or landfill leachate.

Recovery of phosphorus salts

Determination of the optimum operating conditions for precipitating phosphorus from water and wastewater streams, assessed both through batch tests and using laboratory-scale continuous-flow reactors.

Respirometry tests

Biological tests to determine biomass activity (heterotrophic, nitrifying, denitrifying and dephosphatising), nutrient removal kinetics and the possible inhibitory effect of certain substances.

Jar testing (coagulation–flocculation)

Evaluation and optimisation of the dosages and types of commercial chemical reagents and green polymers for solid-liquid separation and the pre-treatment of complex waste streams.

Validation of membrane filtration processes

Laboratory-scale tests using microfiltration, ultrafiltration, nanofiltration and reverse osmosis systems to determine optimum conditions (pressure, temperature) and to produce reclaimed water or concentrate valuable by-products.

Ozonation tests

Technical validation for advanced wastewater treatment and the removal of emerging pollutants and pathogens, as well as pre- and post-treatment testing of sludge to improve its stabilisation, sanitisation and potential for biogas production through anaerobic digestion.

Evaluation of adsorbent materials

Preparation of adsorption isotherms and validation tests using activated carbon, biochar or zeolites in filtration systems or biological reactors to remove micropollutants or eliminate phosphorus.

Validation of strategies for bioreactors

Laboratory-scale experimental tests to verify the proposals for optimising operating parameters and strategies for improving nutrient removal, which were previously obtained through simulation.

Analysis of the physicochemical parameters of wastewater

5.2. Pilot plants

Our pilot plants are key spaces in our innovation process. We test and validate, under real conditions, the results of our research in these facilities, prior to full-scale implementation.



Cetaqua pilot projects

Community of Valencia

Co-digestion and biogas production pilot plant	In progress	LIFE MERLIN project. Rincón de León WWTP. Alicante.
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Andalusia

LIVING LAB ZLD and metal recovery in the mining sector	Completed	LIFE REMINE WATER project. SandfireMATSA. Huelva.
Pilot plant for the concentration of sulphuric acid and the recovery of cobalt in the mining sector	In progress	METALLICO project. Cobre Las Cruces facilities. Seville.
Pilot plant for the production of reclaimed water with nutrients	Completed	Roquetas de Mar. Almería.
Computer vision pilot project for discharge detection in rivers	Completed	EMERITUS project. Guadalhorce River. Málaga.
Salt precipitation in supply networks pilot project	Completed	PRESS project. Torremolinos. Málaga.
Pilot project for artificial aquifer recharge with reclaimed water	In progress	LIFE MATRIX project. Víbora WWTP. Marbella.
Computer vision pilot project for the detection of coloured discharges/ sudden colour changes in the WWTP inlet	Completed	ZeroVision project. Biofactoría Sur. Granada.
Computer vision pilot project for the detection of hydrocarbon discharges at the WWTP inlet	Completed	ZeroVision project. Biofactoría Sur. Granada.
Computer vision pilot project for run-off classification at WWTPs	In progress	ZeroVision project. Biofactoría Sur. Granada.
Computer vision pilot project for detecting dirt in grilles	In progress	ZeroVision project. Paseo del Salón. Granada.

Castile-León

Full-scale InDense technology	Completed	DENMASS project. Palencia WWTP.
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Catalonia

Pilot project for the extraction of polyphenols from oil industry waste	In progress	LIFE CYCLOPS project. Unió Origen facilities in Vilallonga del Camp, Tarragona.
Computer vision for quality centring	Completed	Computer Vision Lab project. Gavà-Viladecans WWTP. In the process of industrialisation.
Computer vision for turbidity classification	Completed	EMERITUS project. Sant Joan Despí DWTP.
Biological methanation pilot	Completed	LIFE NIMBUS project. Baix Llobregat WWTP.
Ion-exchange metal separation pilot project	In progress	RESiLEX project. Cornellà de Llobregat.
Biogas and green hydrogen production pilot plant	In progress	BioPhoto project. Cornellà de Llobregat.
Metal precipitation pilot project	In progress	RESiLEX project. Cornellà de Llobregat.

Galicia

Pilot project on volatile fatty acids (VFA) sludge and the organic fraction of municipal solid waste (OFMSW)	Completed	CIGAT Circular project. Santiago de Compostela.
Reclaimed water pilot test	Completed	RUAGUA project. A Rúa.
Pilot plant for the purification of volatile fatty acids (VFA)	Completed	CIGAT Circular project. Santiago de Compostela.
Pilot production of medium-chain fatty acids	Completed	CIGAT Circular project. Santiago de Compostela.
Water reclamation plant	Completed	CIGAT Circular project. Ourense WWTP.
Smart biofertiliser pilot project	Completed	WalNUT project. Ourense WWTP.
Biological SBR pilot project 500 L	In progress	PLISAN WWTP. Ourense.
Biological MBBR pilot project 500 L	Completed	Praceres WWTP. Pontevedra.
Ammonia production pilot project	Completed	CIGAT Circular project. Santiago de Compostela.

Asturias

Computer vision pilot project for detecting brown foam in a WWTP biological reactor	Completed	CV EDAREO project. Eo WWTP.
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Murcia

Water reclamation with reused membranes pilot project	Completed	LIFE WARRIOR project. Nueva Sucina WWTP.
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06 — RESULTS WITH AN IMPACT





Area 1.

Resource planning and management

AREA 1

GOVAQUA, tools and guides for a more sustainable and equitable use of water



Project

GOVAQUA

Duration

February 2023 – January 2027

Partners

Cetaqua, University of Córdoba (UCO), Ecologic Institute (ECOLOGIC), University of Twente (UTwente), Office International de l'Eau (OiEau), French National Research Institute for Agriculture, Food and Environment (INRAE), WWF Romania, Alliance for Water Stewardship (AWS), UK Centre for Ecology and Hydrology (UK CEH), The Rivers Trust

Coordinator

SYKE

More information

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The IWAM tool was designed collaboratively with various stakeholders involved in water management in Axarquía, a region characterised by severe, chronic water scarcity. This tool will enable users to gain first-hand access to up-to-date data, such as the status of water resources or the availability of non-conventional water sources.

Damián Sánchez, GOVAQUA project manager

CHALLENGE/CONTEXT

Europe is faced with an overexploitation of its water resources, which is having an impact on the ecological status of its water bodies, threatening livelihoods and, ultimately, undermining the economy. To help tackle this situation, the GOVAQUA project, funded by the Horizon Europe programme, identifies, evaluates, develops and validates innovative governance tools and approaches to support and accelerate the transition towards sustainable and equitable water use in Europe.

SOLUTION PROPOSED BY THE PROJECT

GOVAQUA provides fresh know-how, participatory tools and best-practice guidelines that will pave the way towards a sustainable and equitable future for water. One of the project’s six laboratories (living labs) is in Andalusia, specifically in the Axarquía region (Málaga). The lab works to tackle the challenge of reconciling the water needs of different uses (water supply, irrigation of subtropical crops, ecological flows) through a new governance model based on integrated water resource management.

RESULTS

The Axarquía living lab is developing a digital tool called IWAM (Integrated **W**ater **M**anagement), which will enable the integrated management of the region’s water resources by displaying necessary information on a single platform. IWAM will act as a key tool in establishing a new governance model based on three main pillars:

- Integrated water cycle management.
- User participation.
- Incorporation of a hydro-economic model in Axarquía.

AREA 1

MAR2PROTECT,
groundwater
protection
using advanced
treatment
technologies,
sensors and a
decision support
system



Project

MAR2PROTECT

Duration

November 2022 – November 2026

Partners

Cetaqua, Alma Mater Studiorum – Università di Bologna (UNIBO), Fundación Empresa–Universidad Gallega (FEUGA), Interdisciplinary Centre of Marine and Environmental Research (CIIMAR), IHE Delft Institute for Water Education (IHE), Instituto de Telecomunicações (IT), Higher Institute of Applied Biological Sciences of Tunis (ISSBAT), Kaunas University of Technology (KTU), Stellenbosch University (SU)

Coordinator

NOVA School of Science and Technology

More information

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MAR2PROTECT represents a major step forward for groundwater management because it provides useful tools based on up-to-date information to facilitate informed decision-making while promoting collaboration between stakeholders.

Isabel Gamallo, MAR2PROTECT project manager

CHALLENGE/CONTEXT

MAR2PROTECT, funded by the Horizon Europe programme, aims to provide a holistic approach to preventing groundwater pollution from the impacts of climate change, featuring seven case studies. The Spanish case study, led by Cetaqua, concerns the Señorío coastal aquifer, located in Marbella and potentially affected by saline intrusion.

SOLUTION PROPOSED BY THE PROJECT

The project is developing tools based on artificial intelligence to assess the impacts of climate change on the quality and availability of groundwater. In addition, it carries out public awareness-raising activities and coordinates a Community of Practice to promote the sustainable use of these waters and explore managed aquifer recharge (MAR) as a useful resource in situations of water scarcity.

RESULTS

- The main outcomes of MAR2PROTECT will be:
- The development of a digital tool that will receive real-time data from sensors.
 - A decision support system (DSS) that will incorporate technological and social participation data to optimise the quality and quantity of groundwater.

AREA 1

MARCLAIMED, managed aquifer recharge with alternative water resources



Project

MARCLAIMED

Duration

February 2024 – January 2027

Partners

Veolia, Aigües de Barcelona, Catalan Water Agency (ACA), Laboratório Nacional de Engenharia Civil (LNEC), Easy Global Market (EGM), IMDEA Water, Fresh Thoughts, Acacia Water, Instytut Metali Nieżelaznych (IMN), Águas do Alentejo, Water Europe

Coordinator

Cetaqua

More information

[↗](#)

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MARCLAIMED is committed to working very closely with the Communities of Practice, as the success of the solutions developed during the project depends on users being aware of them and finding them useful.

Sara Espinosa, head of the Advanced Aquifer Management programme and MARCLAIMED project manager

CHALLENGE/CONTEXT

MARCLAIMED aims to integrate managed aquifer recharge using alternative water resources into hydrological and drought management plans, as a structural measure to mitigate the impacts of climate change in Europe.

SOLUTION PROPOSED BY THE PROJECT

This project, funded by the Horizon Europe programme, is working to test innovative digital tools at three demonstration sites in Spain, Portugal and the Netherlands. These tools are intended to improve operational efficiency, economic sustainability and social perception of the use of these types of water resources.

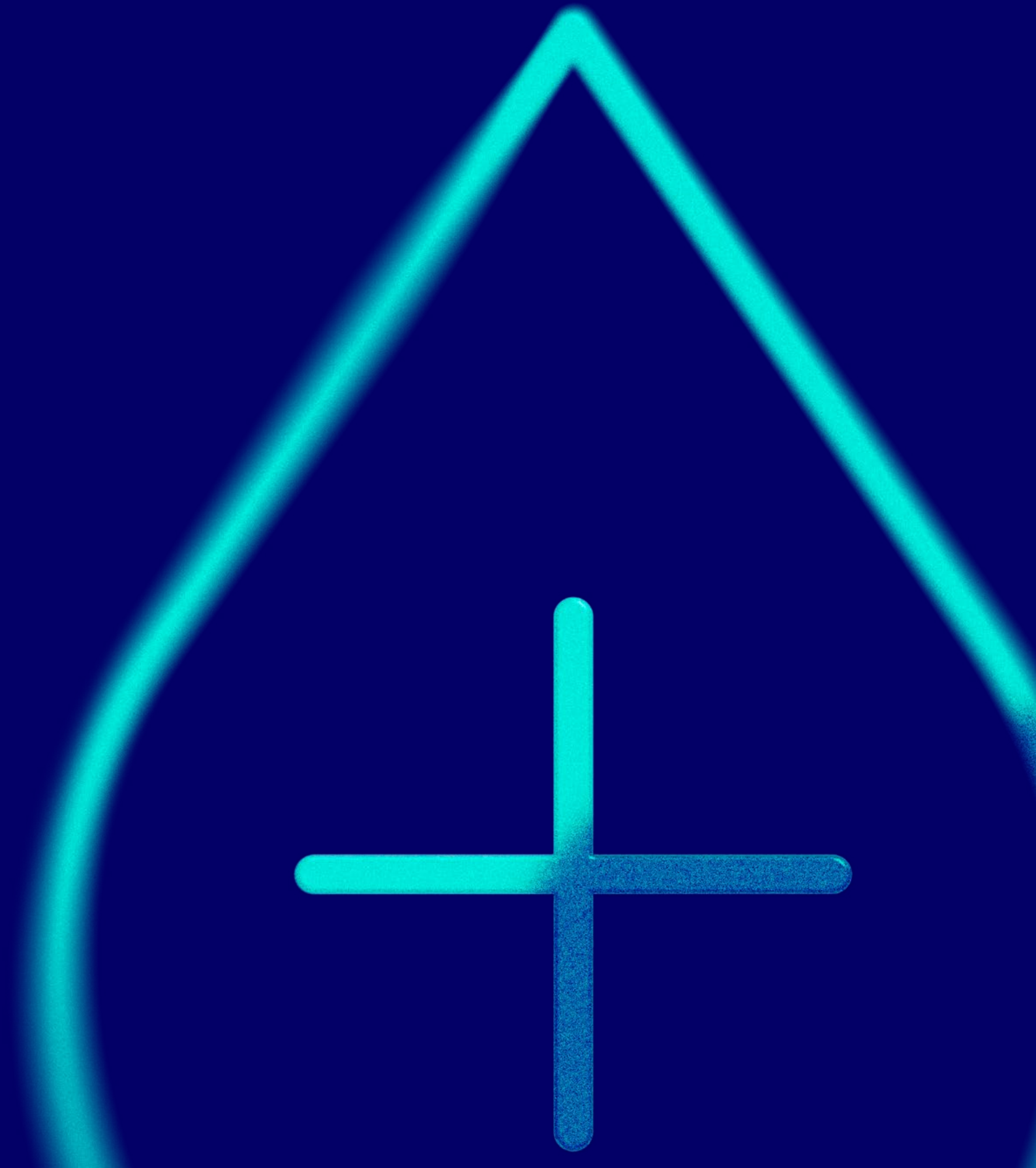
RESULTS

The Integrated Decision Support Tool (IDST) – the main outcome from MARCLAIMED – will provide solutions to address existing and emerging threats, supporting decision-making and climate change adaptation policies.

The project also focuses on social acceptance, involving European Union policymakers through three Communities of Practice, one for each case study, to co-create solutions and define guidelines and recommendations within the European regulatory framework.



Area 2. Production and new resources



AREA 2

NutriLoop, nutrient-rich reclaimed water for more resilient and circular agriculture



Project

NutriLoop

Duration

June 2024 – October 2025

Partners

Hidralía, Instituto de Investigación y Formación Agraria y Pesquera de Andalucía (IFAPA)

Coordinator

Cetaqua

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NutriLoop demonstrates that nutrient-rich reclaimed water is a strategic resource for agriculture, combining water security, reduced environmental impact and savings on fertiliser, thereby promoting more circular and resilient agricultural models.

Eleana Mundaray, head of the Promoting Reuse and other Water Resources programme and NutriLoop project manager

CHALLENGE/CONTEXT

Water scarcity and pressure on conventional water resources in agricultural regions experiencing water stress, such as southeastern Spain, make it necessary to promote solutions that ensure the sustainable availability of water and reduce dependence on mineral fertilisers.

In this context, NutriLoop promotes the reuse of reclaimed water and the nutrients present in treated wastewater, thereby fostering the circular economy in the water-agriculture sector.

SOLUTION PROPOSED BY THE PROJECT

NutriLoop has carried out a pilot project at the Roquetas de Mar WWTP (Almería) to validate the use of nutrient-rich reclaimed water for agricultural irrigation. The treatment system preserves the nutrients in the treated wastewater and adjusts its conductivity to ensure it is safe for use.

The solution has been evaluated in agronomic trials at the IFAPA La Mojonera centre, comparing the cultivation of Dutch cucumbers in greenhouses using NutriLoop reclaimed water, well water, desalinated water and mixtures of these.

RESULTS

- The project has proven reclaimed water to be a competitive option thanks to:
- Agricultural yields comparable to those achieved with other water sources, ensuring reliable and efficient irrigation.
 - Reduction in the use of mineral fertilisers due to the nutrients provided by reclaimed water.
 - Estimated financial savings of €1,200–1,600 per hectare per year due to reduced use of fertilisers.
 - A 40% reduction in the carbon footprint associated with fertilisers.
 - A water resource that is competitive with desalinated water and more stable than well water.

AREA 2

LIFE GENESYS, eliminating antimicrobial resistance in hospital effluent



Project

LIFE GENESYS

Duration

September 2024 – February 2028

Partners

APRIA Systems S.L., Corporació Sanitària Parc Taulí de Sabadell, Parc Taulí Research and Innovation Institute Foundation (I3PT), Consorci Corporació Sanitària Parc Taulí de Sabadell (CSPT), Companyia d'Aigües de Sabadell, S.A (CASSA), Labaqua

Coordinator

Cetaqua

More information

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LIFE GENESYS will demonstrate, under real-world conditions, the potential of treating hospital wastewater at source to reduce antibiotics, resistant bacteria and antibiotic resistance genes before they enter the urban sanitation network. The technical and operational evidence generated will be used to evaluate more efficient, preventative and replicable solutions in other European hospitals.

Blanca Perdigones, LIFE GENESYS project manager

CHALLENGE/CONTEXT

At present, healthcare facilities in Spain are not required to install specific systems to remove pharmaceuticals, antibiotic-resistant bacteria and associated resistance genes from their wastewater, thereby contributing to the spread of resistance. The LIFE GENESYS project is anticipating future regulatory requirements by developing a treatment system capable of removing pharmaceuticals and significantly reducing the presence of resistance genes and resistant bacteria in hospital effluent.

SOLUTION PROPOSED BY THE PROJECT

LIFE GENESYS, co-funded by the European LIFE programme, will set up a wastewater treatment plant at the Hospital Universitari Parc Taulí (Sabadell), comprising a membrane bioreactor and an advanced oxidation process (AOP) based on the combined use of hydrogen peroxide dosing and UV LED technology.

This initiative will include a digital early-warning platform for antibiotic resistance, which will measure antibiotic levels in hospital effluent and enable healthcare professionals to make informed decisions when prescribing antibiotics.

RESULTS

The project will offer various solutions, whose expected outcomes include:

- 90% efficiency in the removal of specific pharmaceutical products used in the hospital.
- 99% reduction in antibiotic resistance genes.
- 100% reduction in antibiotic-resistant bacteria.

AREA 2

DECIDEIX, direct reuse of reclaimed water for drinking to strengthen the metropolitan area’s water resilience



Project

DECIDEIX

Duration

July 2025 – January 2028

Partners

Eurecat, Aigües de Barcelona, Cetaqua, Catalan Water Partnership (CWP), Catalan Institute for Water Research (ICRA), Universitat Politècnica de Catalunya-BarcelonaTech (UPC)

Coordinator

Eurecat

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DECIDEIX will provide scientific and technical evidence on the viability of direct reuse for drinking water as a strategic resource in the face of water stress, promoting more resilient, safe and sustainable management models capable of guaranteeing new, stable and local sources of supply in a context of growing climate uncertainty.

Anna Aixalà, DECIDEIX project manager

CHALLENGE/CONTEXT

Water scarcity and the climate emergency are reducing the availability of conventional resources along the Mediterranean coast. In the Barcelona metropolitan area, the water deficit could reach 130 hm³ by 2027 if new water sources and resilience strategies are not put in place.

Faced with this scenario, the reuse of reclaimed water is gaining ground as a key solution for securing water supplies, reducing pressure on ecosystems and moving towards a more circular and sustainable approach to water management.

SOLUTION PROPOSED BY THE PROJECT

DECIDEIX assesses the potential of direct potable reuse (DPR), which uses advanced treatment processes to produce water fit for human consumption without it first passing through rivers or aquifers. The project will develop planning and decision support tools to validate this option's safety and technical feasibility at metropolitan level. A pilot demonstration will be carried out at the Gavà-Viladecans WWTP to evaluate advanced treatment methods and monitoring systems that ensure water quality and protect public health.

RESULTS

- DECIDEIX will provide scientific, methodological and technical evidence to assess the feasibility of DPR and support the development of regulatory frameworks and water planning strategies.
- Validation of a pilot DPR model.
 - Development of decision support tools.
 - Evaluation of treatments and monitoring systems to ensure health and safety.
 - Promotion of resilient and sustainable solutions to address water scarcity.
 - Development of technical knowledge through a panel of international experts.

Area 3. Zero waste and decarbonisation



AREA 3

LIFE NIMBUS and SEMPRES-BIO, circular economy for a sustainable transport system



Project LIFE NIMBUS **Duration** September 2020 – June 2025
Partners Aigües de Barcelona, Universitat Autònoma de Barcelona, Transports Metropolitans de Barcelona **Coordinator** Cetaqua **More information** [↗](#)

Project SEMPRES-BIO **Duration** November 2022 – September 2026
Partners Aigües de Barcelona, CRYO INOX S.L., DBFZ Deutsches Biomasse-forschungszentrum Gemeinnützige GMBH, Danmarks Tekniske Universitet (DTU), Inveniam Group, Propuls, Sintef, TerraWatt, TMB, Universiteit Gent (UGent), University of Vic–Central University of Catalonia (UVic–UCC), BIOGAS–E, Innolab, Naturgy, NV De Zwanebloem, Biothane **Coordinator** Cetaqua **More information** [↗](#)

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LIFE NIMBUS and SEMPRES-BIO have proven that biomethane production at wastewater treatment plants is a viable solution for adding value to the biogas generated during wastewater treatment and converting it into a sustainable and efficient source of energy to decarbonise urban transport in Barcelona.

Alejandra Córdova, head of the Decarbonisation and Gas Recovery Technologies programme and SEMPRES-BIO project manager

CHALLENGE/CONTEXT

LIFE NIMBUS, co-funded by the European LIFE programme, and SEMPRES-BIO, funded by the Horizon Europe programme, are developing innovative solutions for the production of biomethane as an alternative source of sustainable transport fuel – one of the sectors with the highest energy demand in Europe. Both projects promote the circular economy and the decarbonisation of urban transport in the Barcelona metropolitan area through the use of biomethane for city buses, in line with the European Green Deal.

SOLUTION PROPOSED BY THE PROJECTS

LIFE NIMBUS has developed and validated a system for producing sustainable biomethane from wastewater treatment plant sludge using power-to-gas technologies that harness surplus renewable energy. SEMPRES-BIO is scaling up this concept by incorporating optimised methanation processes and new technologies for producing renewable hydrogen, with a view to demonstrating a more efficient biomethane value chain on a larger scale. Both projects, located at the Baix Llobregat WWTP, demonstrate water cycle infrastructure’s potential to play an active role in the energy transition.

RESULTS

LIFE NIMBUS (completed) has supplied a pilot bus operated by Transports Metropolitans de Barcelona (TMB), reducing CO₂ emissions by up to 28 tonnes per year and cutting its carbon footprint by more than 80%. SEMPRES-BIO (ongoing) features a pilot plant equipped with an electrolyser capable of producing 20 Nm³/h of hydrogen, which, when combined with the carbon dioxide present in the biogas, will be converted into 14 Nm³/h of biomethane, enough to power two TMB buses every day. This solution will enable the existing biogas from the wastewater treatment plant to be used even more effectively and contribute to the decarbonisation of metropolitan transport.

AREA 3

CIGAT Circular, helping decarbonise Galicia by converting waste into resources



Project

CIGAT Circular

Duration

May 2022 – September 2025

Partners

Veolia

Coordinator

Cetaqua

More information

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CIGAT Circular has driven the evolution of the traditional wastewater treatment model towards an ecofactory and decarbonisation approach. The project has shown that it is possible to transform wastewater treatment plants into platforms for the supply of high-value by-products, such as the Bioclean eco-cleaning product and recovered cellulose, and to enhance water resilience through systems such as AQUARGA.

Celia Castro, head of the Zero Waste and Decarbonisation division

CHALLENGE/CONTEXT

The CIGAT Circular Joint Research Centre was set up in a context of climate crisis, in which sustainable and circular economy models need to be adopted to increase regional resilience and adaptability. CIGAT Circular, the result of a collaboration between Veolia and Cetaqua and funded by the Axencia Galega de Innovación (GAIN), works to drive decarbonisation and position Galicia as a carbon-neutral region.

SOLUTION PROPOSED BY THE PROJECT

CIGAT Circular, the highest level in the GAIN Joint Research Centres Programme, proposes an integrated model to transform industrial, urban, agricultural and rural waste into high-value-added resources. Focusing on four key areas – water, energy, waste and digital technology – between 2022 and 2025, the project established itself as a laboratory for applied innovation aimed at the green transition and decarbonisation in Galicia.

RESULTS

- CIGAT Circular closed with very positive results:
- In the water sector, the Ourense ecofactory now removes more than 97% of the microplastics that reach the facility every day, and the AQUARGA plant, Galicia’s first reclaimed water recharge point, produces 100 m³ per day for urban use, reducing the water footprint by up to 60%.
 - In the energy sector, advances have been made in the production of green hydrogen from urban and industrial waste and in the recovery of ammonia as an energy carrier.
 - In the waste sector, both the production of volatile fatty acids from wastewater treatment plant sludge and ammonium and phosphorus recovery for use as agricultural fertilisers have been scaled up.
 - The project has also created more than ten skilled jobs and led to the registration of three international patents.

AREA 3

LIFE MERLIN, maximising biogas production



Project	LIFE MERLIN	Duration	September 2024 – August 2028
Partners	Createch Solutions S.L., AGUAS MUNICIPALIZADAS DE ALICANTE (AMAEM), E.M. AGUAS Y SANEAMIENTO DE MURCIA (EMUASA), Labaqua		
Coordinator	Cetaqua	More information	↗

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LIFE MERLIN uses waste to promote energy self-sufficiency at wastewater treatment plants. The project is in line with the European Union’s objectives of reducing energy dependence on non-EU countries and increasing the use of renewable energy sources.

Marcel Vilaplana, LIFE MERLIN project manager

CHALLENGE/CONTEXT

One of the major challenges facing the European Union is its energy dependence on imports from non-EU countries. The EU is taking the bull by the horns and driving forward the transition to renewable and domestically sourced energy. It is against this backdrop that the LIFE MERLIN project has been launched. Co-funded by the European LIFE programme, it aims to increase biogas production from waste generated at urban wastewater treatment plants and in industries located near these plants.

SOLUTION PROPOSED BY THE PROJECT

The project is developing a technology that combines pre-treatment of sludge generated at urban wastewater treatment plants with an anaerobic co-digestion process, incorporating waste from the food industry as a co-substrate. It uses a bespoke digital tool to maximise biogas production to generate electricity to power the treatment plants themselves.

RESULTS

On completion of the project, which will be tested at the Monte Orgegia (Alicante) and Murcia-Este (Murcia) WWTPs, the technology developed under LIFE MERLIN should have achieved the following:

- A total annual reduction of 7% in electricity consumption at the Monte Orgegia and Murcia-Este WWTPs.
- A total annual increase of 17% in the amount of renewable energy produced for self-consumption at these two wastewater treatment plants.
- A total annual reduction of 7% in greenhouse gas emissions at these two sites.

Area 4. Territorial and social sustainability



AREA 4

BioReCer,
optimising existing
certification
schemes to
promote the use
of bio-based raw
materials



Project

BioReCer

Duration

September 2022 – August 2025

Partners

Active Citizenship Network, ANFACO-CECOPESCA, Betania Legio SL, Brunel University London, CAP, CERTH, Cluster Spring, EGM, MEO Carbon Solutions (MCS), nova-Institut GmbH, RISE, UNI – Ente Italiano di Normazione, Unitelma Sapienza, University of Santiago de Compostela (USC), Università Politecnica delle Marche (UNIVPM), Imperial College London

Coordinator

Cetaqua

More information

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This project paves the way towards a more transparent and traceable model for biomass use, not only by facilitating its integration into certification schemes, but also by strengthening confidence in the bio-based sector.

Lucía Jimena González, head of the Water Economy and Citizenship programme and BioReCer project manager

CHALLENGE/CONTEXT

Biomass and bio-waste contain high value-added compounds that can be recovered and used as raw materials in bio-based industries. However, the current certification schemes for these types of uses are not standardised and are focused on energy and fuel production, thereby hindering integration into the value chains of bio-industries. In response, BioReCer was established to optimise these certification schemes and promote the use of bio-based raw materials as a substitute for those based on fossil fuels, thereby contributing to the goal of a climate-neutral Europe by 2050.

SOLUTION PROPOSED BY THE PROJECT

Funded by the Horizon Europe programme, BioReCer is developing a methodological framework to analyse the impact of using biomass and bio-waste and their traceability throughout the value chain. This framework will provide the basis for a standardised certification scheme aimed at both certification bodies and bio-based industries, such as the bioplastics sector. The initiative is working on four case studies in Spain, Italy, Greece and Sweden. In the Spanish case study, in Galicia, a multi-stakeholder approach is being used to test the certification scheme with various bio-based raw materials, such as by-products and wastewater from canning industries, seaweed and wastewater treatment plant sludge.

RESULTS

The project has developed a methodology for assessing the sustainability, circularity and traceability of biomass of biological origin throughout the entire value chain. In addition, a digital platform has been created to connect biomass producers, industry and certification bodies, facilitating the use of secondary resources and improving transparency and traceability within bio-based value chains.

AREA 4

ICARIA, improving critical infrastructure's resilience to extreme weather events



Project

ICARIA

Duration

January 2023 – March 2026

Partners

Cetaqua, Aigües de Barcelona, Foundation for Climate Research (FIC – FIClima), Catalonia Institute for Energy Research (IREC), University of Exeter (UoE), National Center for Scientific Research Demokritos (NCSR), Laboratório Nacional de Engenharia Civil (LNEC), DRAXIS, Center for Research & Technology, Hellas (CERTH), University of Naples Federico II, Austrian Institute of Technology (AIT), Àrea Metropolitana de Barcelona (AMB), Region of South Aegean, Verbund Energery4Business GmbH, Centro Studi per l'ingegneria idrogeologica, vulcanica e sismica (PLINIVS)

Coordinator

Veolia, Universitat Politècnica de Catalunya-BarcelonaTech (UPC)

More information

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ICARIA has successfully demonstrated that it is possible to translate complex climate projections into practical decision support tools. The results obtained in Barcelona, the South Aegean and Salzburg lay a solid foundation for other European regions to apply these methodologies to their own critical infrastructure.

Sergio Baraibar, ICARIA project manager

CHALLENGE/CONTEXT

Climate change-related disasters are increasing in frequency, duration and intensity. Phenomena such as heatwaves, extreme winds, droughts and floods are having an increasingly severe impact on society and the economy, affecting critical infrastructure operations. The ICARIA project, funded by the Horizon Europe programme, was launched with the aim of improving preparedness for natural disasters affecting critical infrastructure in sectors such as water, energy and transport.

SOLUTION PROPOSED BY THE PROJECT

ICARIA has developed and validated models and tools to understand, quantify and predict the impacts of extreme weather events on critical infrastructure, with the aim of improving climate resilience and supporting decision-making in Europe. The risk assessment methodologies have been tested in three case studies selected on the basis of their exposure to different climate risks: the Barcelona metropolitan area, the South Aegean islands and Salzburg.

RESULTS

Project outcomes include small-scale regional climate projections, risk maps to identify the most vulnerable assets and areas, and a decision support system (DSS) aimed at public authorities and infrastructure operators, enabling them to compare different strategies to protect critical assets. ICARIA has also developed a portfolio of adaptation measures for communities, alongside advanced tools and multi-risk assessment models.

AREA 4

CARDIMED, climate adaptation and resilience in the Mediterranean region through nature-based solutions



Project

CARDIMED

Duration

September 2023 – March 2028

Partners

Cetaqua, National Technical University of Athens, ICCS, University of Utrecht, BIOAZUL, CORE Innovation Centre, Veolia, ICLEI – Local Governments for Sustainability, Alchemia-nova Research, LIBRA AI Technologies, ALEA srl, Centro Tecnológico de la Construcción, MedINA, HYDRASPIS, North Aegean Region, Region of South Aegean, Halcor, ITAINNOVA, Region of Central Greece, ReonHydor, Università Politecnica delle Marche, Alma Mater Studiorum – University of Bologna, IRIDRA, Università di Catania, City of Catania, Region of Sicily, SVIMED, SEMIDE, Aix-Marseille Université, EMPAN, Region of Provence-Alpes-Côte d’Azur, CIRCE, BETA Tech Centre, Government of Aragón, University of Évora, Intermunicipal Community of Alentejo Central, eBOS, Gardens of the Future, City of Nicosia, İzmir Institute of Technology, IzBelcom, Izmir Metropolitan Municipality, Doga Dernegi, İZSU, BABEG, SEO/BirdLife, Murcia City Council, Aguas de Murcia, IRENA, City of Alghero, Imperial College London

Coordinator

NTUA

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Generating rigorous and accessible knowledge about nature-based solutions (NbS) and understanding their impact is essential to driving its implementation and scalability. Furthermore, involving the public in planning and evaluation helps to improve the design and acceptance of such measures, enabling us to tackle climate-related challenges such as flood management.

Carolina Villa, CARDIMED project manager

CHALLENGE/CONTEXT

Nature-based solutions (NbS) are key tools for building resilience to climate change, but a lack of coordination between stakeholders can limit their impact. CARDIMED has been set up to create a common NbS framework that brings together individual and collective efforts across nine countries and strengthens climate resilience in the Mediterranean region.

SOLUTION PROPOSED BY THE PROJECT

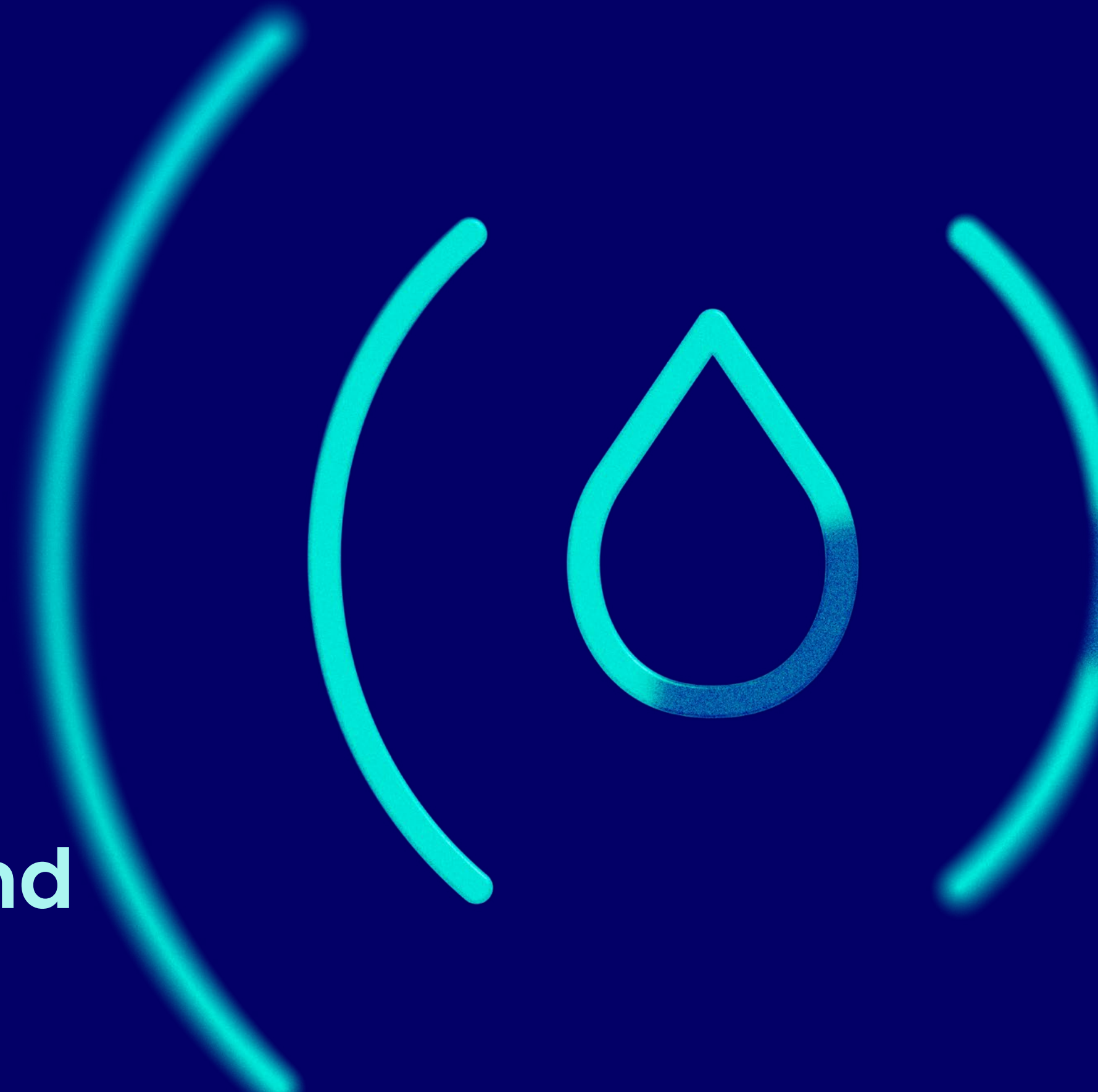
CARDIMED, funded by the Horizon Europe programme, is developing 9 demonstration projects in various Mediterranean countries to test and evaluate more than 20 types of NbS using a common methodology based on planning, evaluation and public participation, integrating all the information into a single digital tool.

RESULTS

Cetaqua’s key contributions include:

- The development of an NbS catalogue containing technical, environmental and economic information on more than 30 NbS.
- The creation of a digital tool to advise public authorities and consultancy firms on which NbS projects to prioritise and where, and another tool to analyse and compare different NbS projects aimed at water conservation.
- The implementation and evaluation of NbS aimed at water treatment and flood mitigation.
- The development of citizen science strategies focused on improving our understanding of NbS and analysing the social factors that influence their acceptance, implementation and future scalability.

Area 5. Digital services and AI applications



AREA 5

ZeroVision, computer vision to optimise wastewater management



Project

ZeroVision

Duration

September 2022 – September 2025

Partners

Cetaqua, University of Málaga, Emasagra

Coordinator

Hidralia

More information

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ZeroVision has allowed us to progress in optimising key processes, helping to reduce costs and minimise environmental and operational impacts in real-world operating environments. Furthermore, its modular and scalable design makes ZeroVision a key solution for modernising wastewater management.

Carlos Carmona, head of the Operations Virtualisation programme at Cetaqua and ZeroVision project manager

CHALLENGE/CONTEXT

ZeroVision aims to transform process monitoring in the water sector with AI-based technologies, such as computer vision. It addresses critical issues such as the detection of blockages in grilles and screens at pumping stations, the identification of discharges at the inlet to treatment works, and the monitoring of effluent from the centrifuge in the sludge dewatering process. The project aims not only to improve operational efficiency, but also to contribute to environmental sustainability.

SOLUTION PROPOSED BY THE PROJECT

This public-private partnership project has developed a tool that combines advanced computer vision model training with a system for capturing, analysing and reporting critical events in wastewater treatment.

RESULTS

The main outcomes of the project are:

- The successful training of deep learning models specialising in tasks such as object detection or image segmentation for the following use cases: Detection of blockages in grilles in relief chambers / Detection of visible effluent discolouration at the inlet to treatment works / Classification of effluent from the centrifuge / Detection of supernatant sludge in secondary decantation processes.
- The development of a computer vision API that processes captured images and generates results based on trained models, and of another API that compares these results against predefined thresholds to identify potential anomalies.
- The implementation of a backend system for data management (data capture, processing and alarm management) connected to the various APIs developed.
- Connecting the system to an automated notification platform that sends email alerts.

AREA 5

METROPOLIS, AI-based solutions to tackle non-revenue water in drinking water distribution



Project

METROPOLIS

Duration

September 2022 – November 2025

Partners

Cetaqua, Aigües de Barcelona

Coordinator

Veolia

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METROPOLIS has proven that it is possible to build a robust data infrastructure that integrates smart metering, external data sources and language models to reduce non-revenue water (NRW), thereby laying the foundations for a transition towards more efficient, data-driven urban water management.

Miquel Sàrrias, head of Digital services and AI applications

CHALLENGE/CONTEXT

In the current context of water scarcity and pressure on urban systems, water operators must improve service efficiency. Although the roll-out of smart metering has increased the availability of data, this information remains underutilised. The main challenge lies in harnessing the enormous transformative potential of these large volumes of operational data. It is therefore essential to overcome the current limitations in order to effectively reduce NRW losses and support strategic decision-making.

SOLUTION PROPOSED BY THE PROJECT

This public-private partnership project aims to develop a comprehensive smart metering platform that combines advanced data management with artificial intelligence models. The solution integrates remote meter reading data with multiple heterogeneous contextual sources, such as meteorological and demographic information. It also includes an automated management tool and a decision support system (DSS).

RESULTS

METROPOLIS has successfully demonstrated the viability and robustness of its digital platform by testing it in the pilot cities of Barcelona and Alicante. By applying the solution, network operations are optimised, significantly improving anomaly detection through AI. In terms of key operational impacts, the project lays the foundations for reducing overall losses by 5%. Furthermore, the platform ensures scalability and interoperability through open APIs, making it easy to replicate.

AREA 5

IRIS, smart monitoring of green infrastructure to promote its replication



Project

IRIS

Duration

November 2025 – November 2028

Partners

Cetaqua, Aguas de Alicante (AMAEM), Aigües d'Elx

Coordinator

Veolia

More information

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IRIS aims to highlight the value of green infrastructure and help both public authorities and the general public understand its benefits, with a view to promoting its replication in other parts of the Mediterranean region.

Clothilde Breger, IRIS project manager

CHALLENGE/CONTEXT

Green infrastructures are natural or semi-natural spaces designed to help conserve and enhance biodiversity. They are a vital nature-based solution for combating the effects of climate change. IRIS aims to monitor and digitise the operations of these spaces in order to improve their efficiency and facilitate more informed management.

SOLUTION PROPOSED BY THE PROJECT

This public-private partnership project will implement artificial intelligence technologies such as computer vision and predictive models, alongside data analysis, to obtain metrics relating to water quality, visitor numbers and the presence of animal species in two green spaces in the province of Alicante. In addition, it will also launch initiatives to promote the environmental and social benefits of these areas among those who visit them.

RESULTS

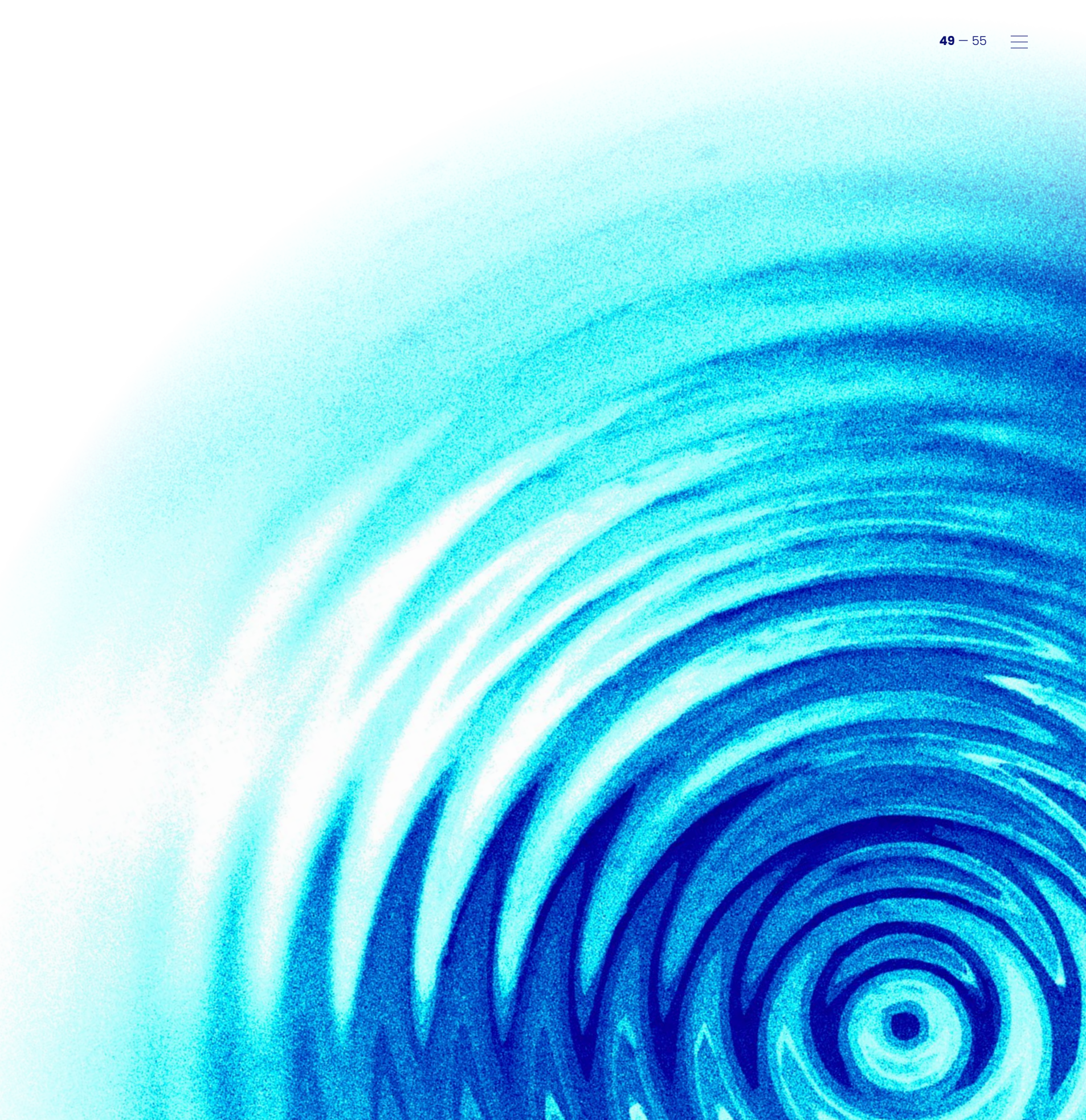
- IRIS, which will be tested in La Marjal (Alicante) and Clot de Galvany (Elche), will produce the following outcomes:
- The development of a decision support tool that will integrate all the data collected, so that the organisations responsible for managing these areas can easily access high-quality, up-to-date information.
 - The creation of a digital outreach tool to raise public awareness of the environmental and social benefits of green infrastructure.

07 — KNOWLEDGE TRANSFER



Accessible knowledge

At Cetaqua, we believe that the knowledge generated through our work and our expertise should translate into a real and transformative impact, delivering economic, environmental and social value. With this goal in mind, we disseminate the results of our research through the most appropriate channels to bring them to the attention of society and the communities that share our mission, values and objectives.



7.1. Sharing results with our ecosystem

We organise webinars to share advances and results from the innovation projects we lead or collaborate with. These initiatives bring together professionals and key stakeholders from various fields, such as academia, government and the business sector. The aim is to foster an ecosystem of excellence that facilitates the transfer of knowledge, encourages new ideas, promotes debate and strengthens cross-sector collaboration.

Webinars with active participation

13



7.2. Participation in strategic congresses for the future of water

In addition, we actively participate in scientific and technological congresses, conferences and seminars to share advances in our research with experts in the water, technology and environment sector, as well as with members of the public interested in our areas of specialisation.

Active participation in congresses and conferences

49

Future4 Water

We took part in the panel on innovation and technology at Future4 Water, where we discussed how applied innovation is driving the transformation of the complete water cycle through tangible and scalable solutions. During the debate, we highlighted Cetaqua’s role in developing projects relating to the reuse of water for drinking purposes, artificial intelligence, water footprint offsetting and the recovery of resources from brine, as well as its ability to apply global knowledge and insights to specific local challenges.



12th International Symposium on Managed Aquifer Recharge

A meeting at which we shared pioneering initiatives in managed aquifer recharge (MAR) using reclaimed water. Specifically, we presented the case of Sant Vicenç dels Horts, which involves the reuse of reclaimed water from the Baix Llobregat WWTP, as an example of a solution to strengthen the region’s water resilience.



Water Projects Europe

We took part in Water Projects Europe to present IDEATION, an EU-funded pioneering project that promotes the integration of inland water data into the Digital Twin Ocean ecosystem, to offer a more comprehensive view of water resources.



7.3. Academic publications

At Cetaqua, we promote the dissemination of scientific and technological knowledge by publishing our findings in internationally renowned peer-reviewed scientific journals and in specialist technical publications. This helps to enhance our research's impact and visibility, strengthening our position as a leader in innovation and development in the field of water and sustainability, both nationally and internationally.

Throughout 2025, we worked intensively to generate and transfer knowledge, publishing a total of 18 articles, 10 of which were scientific papers in peer-reviewed, indexed journals and 8 were technical articles in specialist publications. The research and projects carried out addressed strategic areas ranging from water management and the complete water cycle to digitalisation

and advanced data analysis. They also focused on the circular economy and resource recovery, as well as environmental sustainability, the water footprint and climate resilience, in addition to innovative solutions applied to environmental health and urban management.

Among the most notable publications were scientific articles published in prestigious, high-impact journals such as the *Journal of Environmental Management*, *Sustainability*, *Science of The Total Environment*, *Environmental Science and Ecotechnology* and *Climate*, among others. They also included collaborations in leading technical media such as *TecnoAqua*, *RETEMA* and *IndustriAmbiente*.

Publications in technical and scientific journals

18



Journal Sustainability "From House to Farm: Life Cycle Assessment of Sewage Sludge as a Circular Fertiliser at Regional European Level"

[Read article](#)

Jessica Pérez García; Pedro Villanueva Rey; Leticia Rodríguez Hernández; Teresa Alvarinho; Lucía González Monjardin

Volume 17, Issue 4, February 2025, 1698



Journal of Environmental Management "From dairy waste to butyric acid: Scaling the valorization process"

[Read article](#)

Tamara Casero Díaz; Celia Castro Barros; Miguel Mauricio Iglesias; Marta Carballa

Volume 380, April 2025, 124934



Journal Water Practice and Technology "Physicochemical analysis coupled to machine learning to predict drinking water organoleptic perception"

[Read article](#)

Ioanna Karakatsanidou; Bernat Joseph Duran; Albert Serra Compte; Alejandra Hernández Valencia; Pere Emiliano Estapé; Susana González; Fernando Valero Cervera; María Isabel Pérez

Volume 20, August 2025. 1729–1744.

7.4. Driving innovation: promoting STEM education

At Cetaqua, we work to bring science, technology, engineering and mathematics (STEM) to the next generation, in the belief that fostering an interest in science is key to building a more innovative, inclusive society that is prepared for future challenges.

In 2025, we strengthened our commitment to this objective by again participating in the #científiques initiative, promoted by the Catalan Foundation for Research and Innovation (FCRI) and the Barcelona Institute of Science and Technology (BIST), with the support of the Generalitat de Catalunya Ministry of Education.

As part of this initiative, female scientists and professionals from Cetaqua visited various schools to share their experiences and give pupils an insight into what a career in STEM is really like. The hope is to foster an interest in science and highlight female role models in scientific and technical fields, particularly among girls, who remain under-represented in these disciplines.

Furthermore, taking advantage of the International Day of Women and Girls in Science, a talk was given on the use of brine and its impact on ecosystems. Students were introduced to some of the current challenges facing sustainable water management and the role of science and innovation in developing solutions that have a positive impact.



7.5. Acknowledgements

Lifetime Achievement Award as an Innovation Hub in the Territory of Andalusia

Cetaqua Andalusia was recognised at the 9th La Razón Technology and Innovation Awards for its track record in Andalusia as an innovation hub. This recognition highlights a decade of driving forward more than 150 RDI projects aimed at transforming water management and strengthening climate resilience in Andalusia, in collaboration with partners and key stakeholders in the region.



European Union highlights the innovative potential of LIFE CYCLOPS

The European Union included the LIFE CYCLOPS project among the “great EU-funded innovations”, highlighting it as an innovative solution aimed at upcycling polyphenols from agri-food waste. Regarded as a market-ready innovation, LIFE CYCLOPS stands out for its high level of maturity and innovation management, as well as for its remarkable market-creation potential, according to the Joint Research Centre (JRC) evaluation framework.



