2025 Annual Report
Innovation Department

The Blue Thread Driving Us Forward

Innovation. Growth. Future.

Contents

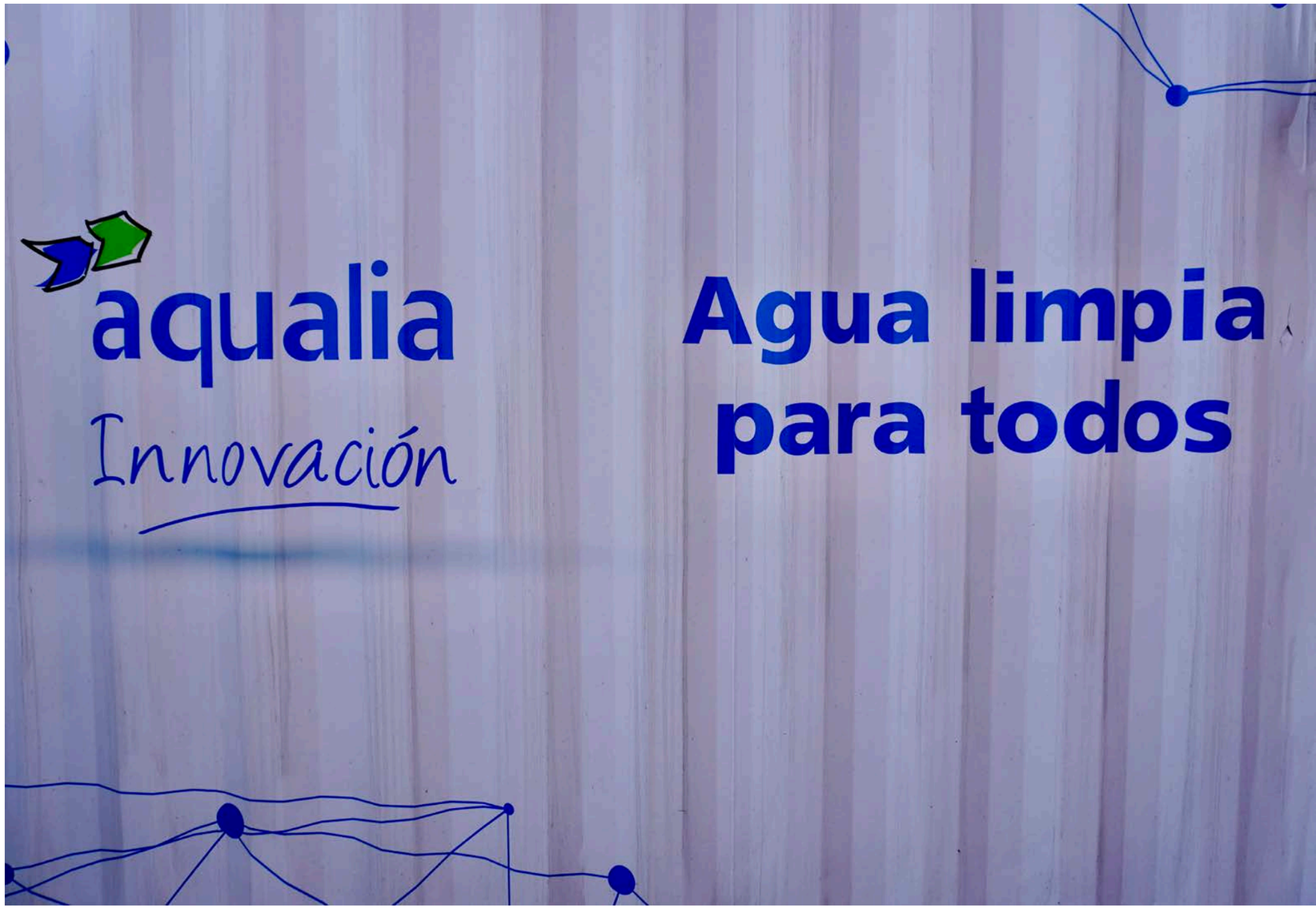
Introduction

In an economic and regulatory environment that demands greater efficiency, competitiveness and adaptability, innovation has become a strategic pillar for Aqualia. Throughout 2025, our technological solutions, pilot developments and innovation projects helped improve productivity across the end-to-end water cycle, optimise resources and strengthen the resilience of our infrastructure. This innovative approach not only drives our operating performance, but also increases our competitiveness in the market, supports the securing of strategic contracts and consolidates our international presence.

The development of our innovation, which is open, collaborative and impact-oriented, accelerates digitalisation, scales up energy-efficiency and circularity solutions, and enables progress in new models that strengthen the sustainability of the service. This report shows how, for Aqualia, innovation is a way of anticipating the future of water while also ensuring solid, sustainable growth in every territory where we operate.

As recognised by the World Economic Forum at the latest Davos Summit when presenting 2026 as the "Year of Water" in response to the water crisis affecting different parts of the planet, the future of sustainability in the water sector depends on innovation. To meet this challenge, this organisation proposes focusing on areas that are also key vectors, and the protagonists of these pages, at Aqualia: innovation and collaboration.

Since we began in 2008, the Innovation Department has evolved to become a relevant player within the international innovation ecosystem. This activity has led us to be present in numerous national hubs, where we develop our lines of work, enabling us to offer solutions that are close to the reality of contracts and to our clients' needs. In addition, international innovation activity has grown significantly in recent years.



2025 Milestones

Key achievements in 2025

€5,864,847
invested in innovation

3
new innovation projects launched in 2025, including the development of innovative solutions to protect the planet[1]

7
new implementations of innovation processes applied at facilities managed by the company[2]

20
ongoing projects developed by the Innovation and Technology Department

42
universities and

23
research centres with which we collaborate

24
patents in force[3]

Innovation close to production

» Teams deployed in **11 regional hubs in Spain: Algeciras, Almería, Asturias, Badajoz, Denia, Galicia, Jerez, Lleida, Salamanca, Talavera de la Reina and Tenerife**

» International innovation activity in **France, Georgia, Portugal and the Czech Republic**, in addition to partner activity in Colombia and Egypt.

Integration into production

» Award of the **first European project with the participation of Aqualia France.**

» **7** new implementations of innovation processes applied at facilities managed by the company.

» Execution of the first pilot and demonstration projects in MENA at New Cairo WWTP within the framework of the H2020 NICE project, and at the Mostaganem seawater desalination plant (Algeria, Rewaise project).

» Participation in the work carried out to secure the **projects for the reuse plant at El Ejido WWTP**, the **ELAN® reactor at the Heineken Sevilla industrial wastewater treatment plant**, the renovations of the **Nogales, Arcos de la Frontera and Villamartín DWTPs and sludge treatment at Villapérez WWTP.**

• **More information in 3. Activity and Impact**

» **R&D&I PROJECTS SUPPORTED BY THE EUROPEAN COMMISSION**

Participation in consortia facilitating collaboration with 42 universities and 23 research centres nationally and internationally.

Completion of the **H2020 Sea4value** project for the recovery of salts from brine and **LIFE Phoenix** for water reuse in Almería.

Final stages of implementation of the **H2020 Rewaise** and **H2020 Nice** projects, and **LIFE Reseau**, **LIFE Infusion** and **LIFE Zero Waste Water**, which were extended until 2026.

Completion of the two major renewable gas projects funded by the CDTI **Missions programme**: **Eclosion**, implemented at the Salamanca, Lleida and Jerez de la Frontera WWTPs, and **Zeppelin**, mainly active in Algeciras.

• **More information in 2.3 Projects funded by public authorities**

New tools

» **EIT Water** is launched, the largest Knowledge and Innovation Community addressing water risks in Europe, with **Aqualia as the only private operator** among its founding members.

» Aqualia participates for the first time in **Public Procurement of Innovation (PPI)** tenders: a tool through which the public authorities contract companies to develop prototypes for solutions that do not yet exist on the market.

[1] The new innovation projects launched in 2025, which include the development of innovative solutions to combat climate change, are LIFE SMALLWAT (France and Spain), HE WATERSENS (Spain) and AVI-PURAGUA (Spain).

[2] The new implementations of innovation processes applied at the facilities managed by the company in 2025 correspond to: Fe+Mn filter media, MBMBR Moving Bed Membrane Bio-Reactor, NF hollow-fibre membranes, reverse osmosis remineralisation, Microbial Desalination Cell (MDC), AquaGranular, chlorine dioxide THMs (trihalomethanes).

[3] Includes only national (ES), European (EP) and international PCT patents (MX, USA, CO) in force.

New funding

- Submission of **more than 30 project proposals to the European Commission and other** funding bodies in 2025.

- Approval of the applications for the European **LIFE SmallWat** project on sustainable water treatment in small communities, as well as the **Horizon Europe (HE) projects Flex-in-Bio, Post-Purple and WaterSens**, continuing the development of solutions for WWTPs focused on energy self-sufficiency and the circular economy:

  The **LIFE SmallWat** project (*Advanced Technological and Bioelectrochemical Modular Wetlands for water regeneration and nutrient recovery in small populations*), led by Aqualia, represents the continuation of the INTEXT hub's activity and supports major Aqualia actions in Talavera and Almería. The project is Aqualia France's first participation in innovation and also allocates €900,000 to actions by Hermigua Town Council and the Island Water Council on the island of La Gomera.

  The **HE Flex-In-Bio** project (*Flexible, Low-Energy, and Renewable-Integrated Production for Resilient Bio-Based Industries*), led by the Agricultural University of Athens, brings together 12 partners from six countries and develops the energy optimisation lines of work at Lleida WWTP.

  The **HE Post-Purple** project, led by Rey Juan Carlos University, continues the development work in Badajoz with purple phototrophic bacteria (PPB) launched through www.deep-purple.eu. The project will reduce wastewater treatment costs and support the creation of biomass that is easier to valorise than conventional sludge.

  Thanks to the award of the **HE Watersens** project, Aqualia will move forward with the development of: low-cost wastewater treatment solutions, proprietary technologies to meet nitrogen limits under the new UWWTD Directive 3019/2024, and solar water disinfection for reuse under Royal Decree 1085/2024.

CDTI MISSIONS PROGRAMME

- As a continuation of the CDTI Missions programme, in 2025 only 14% of the proposals submitted received funding; these included the Impulsaf project, with Aqualia's participation, which will support actions at the Jerez de la Frontera WWTP operated by Aqualia ("Research into collective mobility and the transport of large volumes using advanced sustainable fuels for the future"). Another 222 proposals fell below the selection threshold, including a consortium involving Aqualia that was just one point short of funding: "Protection of information, critical infrastructure and autonomous systems with AI".

- **More information in 2.3 Projects funded by public authorities**

Balance of national/regional projects

Aqualia also participates in other projects with national or regional support, with the following balance:

30
of projects with national or regional support, which have mobilised almost

€23M
for Aqualia

Overview of European innovation projects

Since 2011, when we first took part in European innovation projects, the track record comprises:

26 PROJECTS UNDER EUROPEAN UNION FRAMEWORK PROGRAMMES

7 of them coordinated by Aqualia: 1 under the **Horizon Europe** programme (Cirseau), 4 under the **H2020** programme (Rewaise, Deep Purple, Mides and Run4Life) and 2 under the previous **FP7** programme (Urbanwater and AllGas).

3 **Marie Skłodowska-Curie training** projects, which did not receive direct funding: (Nowelties, ExBriner and Trampoline).

The **23 funded projects** represent €138 million in support for the consortia as a whole, with almost €105 million in grants for the projects. Of this total, Aqualia has managed a budget of almost €32 million, with grants awarded in excess of €21 million.

6 of these projects received 100% funding as they were **RIAs: Research and Innovation Action**.

15 PROJECTS UNDER THE EUROPEAN UNION LIFE PROGRAMME

10 of them coordinated by Aqualia (Zero Wastewater, Reseau, Salteau, Smallwat, INTEXT. Methamorphosis, Memory, Remembrane, Phoenix and Ulises).

These projects have mobilised more than €31 million, with €18 million in grants allocated and more than €11 million in budget for Aqualia, equivalent to more than €6 million in grants.

Overall balance

Participation in

71
consortium projects

41
international and

30
national/regional.

34
consortia led by Aqualia

€73M
mobilised by Aqualia in innovation projects throughout the department's history, equivalent to more than

€34M
in grants

Management of results

» Adoption of new procedures under the **ISO 56001** Innovation Management standard, which replaces the previous UNE 166002 standard, with more optimised processes aligned with the Company's real operations, making Aqualia one of the first companies in the sector to be certified under this new standard.

- **More information in 2.2 Innovation Management System**

» **PROTECTION OF INTELLECTUAL PROPERTY**

Filing of three new patents in 2025: ABAD CARB, ABAD BIOCHEM and Green Solvents.

10 patent applications filed and under evaluation.

11 patent families in force.

- **More information in 4. Patents and Trademarks**

Positioning of the Innovation Department

» Participation in **38 events**: half at national congresses and half at international conferences.

» **INTERNAL DISSEMINATION OF KNOWLEDGE THROUGH WEBTECHS TRAINING,** which received **415 connections** at three events focused on:

Water reuse (9 April): 150

Transfer of good practices and innovative technologies (17 June): 46

Sludge treatment and valorisation (17 December): 219

» **AWARDS FROM SEVERAL ENTITIES**

AEDYR AWARDS. Two awards in the Sustainability and Innovation categories.

21st San Alberto Magno Award for Scientific Merit

Pre-qualification of the MIDES project for the XPRIZE Water Scarcity competition

Sustainability Actions 2025 for the WAVE Centre

Best oral presentation at the **15th Latin American Workshop and Symposium on Anaerobic Digestion** (DAAL XV)

- **More information in 5. Positioning of the ID**

1. Context
Ready for the challenges of the present and future

1.1 Internal and external context

The environment in which we carry out our activity is demanding, with numerous environmental, social, technological, regulatory and even geopolitical challenges, but reality also offers great potential to continue developing and applying innovative solutions. Innovation is once again taking centre stage on the European agenda, as the European Commission's roadmap for the coming years (Competitiveness Compass) sets out three transformation imperatives to strengthen competitiveness, the first of which is to **boost productivity through innovation.**

In the Innovation Department, we strive to identify opportunities and the main risks, as well as to implement actions to prevent or mitigate adverse events. We therefore use **SWOT** analysis to assess the internal aspects that limit performance (weaknesses) and the strengths, in terms of resources and capabilities, that provide advantages. These are compared against external factors, which include the threats that may affect success and the opportunities that can be harnessed for growth.

SWOT analysis of the external context

The first external risk is the possibility of losing technological and competitive capacity, which is offset by the strong commitment of the public authorities to promoting innovation in environmental and climate protection.

The emergence of new phenomena linked to climate change (flooding, prolonged droughts) is another threat, precisely because infrastructure has not been adapted to these increasingly frequent extreme events at all latitudes.

Ref.	Threats - Risks	Amount	Factors	Amount	Opportunities	Ref.
A1	Changes in international policy: economic uncertainty, changes in policy direction, reduced budget availability for Innovation	5	Political	3	Innovation activity may influence the legislative framework	O1
A2	Lack of social, legislative and/or market acceptance of new uses of water resources	3	Social	5	Very good internal and external perception of innovation activities	O2
A3	Increased competition for external funding for innovation activities	5	Economic	4	Improved competitiveness and efficiency in the company's processes	O3
A4	Loss of technological and competitive capacity	5	Market	5	Internationalisation of innovation activities	O4
				4	Increased appreciation of innovation activities in tender specifications. Work to modify tender specifications based on this public procurement of innovation model	O5
A5	The public procurement of innovation model does not favour the company's interests in protecting results	1	Technological	3	Monitoring and control systems need to be updated, and infrastructure resilience aspects need to be addressed in innovation developments. Greater importance of security aspects in systems and critical infrastructure	O6
				5	Integration of new AI tools into Innovation processes: ChatGPT, Gemini, Copilot, etc.	O7
A6	Lack of infrastructure resilience, particularly in adapting infrastructure to climate phenomena associated with global warming: storms, flooding, torrential rain, persistent droughts…	4	Environment	5	Need for short- and medium-term solutions for environmental aspects (climate change, energy transition, circular economy, carbon footprint, etc.).	O8
A7	Technological development through external collaborations may lead to a loss of control over the company's knowledge	4	Cooperation	4	Intensify collaborations with universities and technology centres that enable the development of new technologies	O9
A8	The development of consortium projects makes them harder to manage and may become a problem in the event of partners with limited technical and/or financial capacity	3		5	New collaboration models: stakes in companies, strategic alliances, Public Procurement of Innovation and similar mechanisms, etc.	O10
A9	Difficulty in closing agreements for the exploitation of joint results developed with partners	4		5	Aqualia is the only private operator that is a member of the new IET Water and can benefit from its three pillars: training, business creation and innovation funding	O11

Rating:

1 Aspect to be taken into account, but not a priority

2 Affects processes, but not the company's R&D objectives

3 May significantly affect the processes carried out and the company's R&D objectives

4 Very important for the company's R&D objectives

5 Critical for the company's R&D objectives

SWOT analysis of the internal context

Internally, the deployment of innovation activities in hubs involves both risks and strengths, although their relationship with Aqualia's production is identified as a new strength.

Meanwhile, the main internal weaknesses would be the strong dependence on external funding, difficulties in finding and retaining talent, and obstacles to technology transfer, offset by human resources with the necessary skills to develop innovation activities.

Ref.	Weaknesses - Risks	Amount	Factors	Amount	Strengths	Ref.
D1	The high complexity of the company's structure makes agile and efficient action more difficult	3	Organisation	4	The profile of the company and the Innovation Department fosters synergies that support the success of proposals submitted for public funding and the development of Innovation projects	F1
				4	The Innovation Management System is an effective organisational tool	F2
D2	The implementation of innovation activities in hubs may cause inefficiencies and creates a strong dependence on production	4		5	The implementation of innovation activities in hubs makes it possible to support real problems close to the client	F3
D3	The partial funding of the company's innovation activities through public grants conditions project development	5	Resources	5	The Innovation Department has highly specialised technical staff with the skills required to carry out innovation activities	F4
D4	Lack of ICT tools for managing and controlling innovation activities to facilitate the auditing of grants and tax relief	4		3	Strong commitment to innovation at all levels of the organisation	F5
D5	Limited capacity to transfer the technological results of innovation activities to the company's other productive areas	5				
D6	Need to improve the capacity to generate new Innovation opportunities	2	Knowledge	4	Extensive experience in developing projects with the support of public funding, with a strong capacity to achieve the objectives set	F6
D7	Ability to retain or attract highly specialised talent	5		5	Strong capacity to respond to new Production demands (both in tender specifications and in solutions to problems), thanks to the wide range of technologies on which the department works	F7

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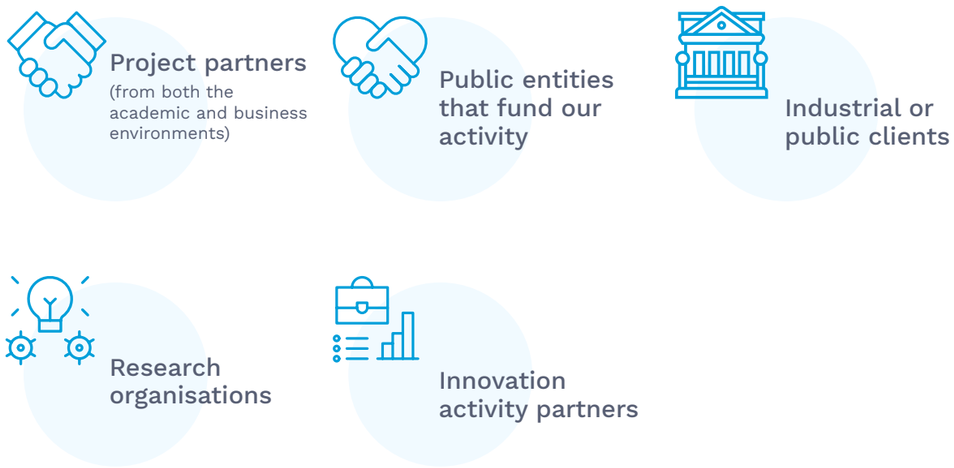
1.2 Our stakeholders

Our innovation activity has an impact on a series of stakeholders who, in turn, influence the work of the Innovation Department. Within the company, **five stakeholder subgroups** provide innovation-related needs and suggestions, and we share our results, communications and training with them:

Innovation projects and ideas also move forward thanks to the support of **five external groups:**



Ongoing dialogue with all our stakeholders, both internal and external, allows us to better understand the impact of Aqualia's innovation and align our decisions with their needs and expectations. To facilitate this communication, **we enable and promote the use of several two-way, transparent tools.**

	Stakeholders	Stakeholder subgroup	Needs, expectations and requirements	Managers	Communication tools
1	COMPANY	Production units	Support in tenders Competitive differentiation	Innovation Dept. Area directors Regional Manager	• Updated process and product catalogue • Transferred processes • Technical documents
2		Services	Problem solving Process improvements Resource optimisation	Innovation Dept. Delegates Area managers Service managers	
3		Industrial water	Support with bids Competitive improvements	Innovation Dept. Business development managers	
4		Engineering	Support in process optimisation New initiatives	Innovation Dept. Business development managers	
5		Other employees	Innovation culture Training Updates	Innovation Dept. People and Culture Dept. Communication Dept.	• Training catalogue • News and updates • Globalnews
6	PROJECT PARTNERS	Companies, SMEs, technology centres, local councils	Compliance with project requirements Proper project execution	Area managers Innovation Dept. Project managers Innovation Dept. Project coordinators Innovation Dept.	• Meetings • Deliverables • Reports • Participation in congresses and conferences
7	PUBLIC ENTITIES	European Commission, CDTI, ministries, regional entities	Compliance with legal and contractual commitments Assessment of impact on the development of new projects Grants	Innovation Director	• Contracts • Reports • Supporting documentation • Audits
8	CLIENTS	End clients	Process improvements Cost reduction Environmental improvements	Customer Management and IT Director	• Customer satisfaction surveys • Customer communication channels • Focus group • Annual Sustainability Report • Strategic Sustainability Plan • Annual Communication Plan
9	RESEARCH ORGANISATIONS	Technology centres, universities	New projects Research improvements Joint protections Publications Innovation synergies	Innovation Dept.	• Calls • Policy and strategy dissemination events • Technical reports • Technical articles
10	INNOVATION ACTIVITY PARTNERS	Strategic alliances	Joint improvements and developments Validations Pilot projects	Innovation Dept.	• Contracts • NDAs • MOUs

2025 Annual Report: **Innovation Department**

2. Strategic Approach: Efficiency and Value Creation for the Company

2.1 Our strategy

Our Innovation Strategy is geared towards seeking sustainable solutions that minimise environmental impact and maximise the quality of service provided to people. Internal and external collaboration is key to the transfer of knowledge that drives innovation at Aqualia and its contribution to economic and social development.

This roadmap is structured around two axes that extend across the end-to-end water cycle: eco-efficiency and sustainability. Through it, we focus on identifying opportunities in response to the environmental, social, technological and legislative challenges of end-to-end water cycle management, which take shape in six lines of work.

The innovation lines of work are supported by the Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda. Among them, affordable, high-quality water supply and sanitation services (SDG 6), an optimised energy balance (SDG 7), and responsible production and consumption (SDG 12) without affecting the climate (SDG 13) are particularly relevant.

ECO-EFFICIENCY

Follow circular economy principles through efficient management of natural resources and the recovery of raw materials.

Goals:

» Develop advanced technologies that optimise the use of renewable resources.

» Avoid waste generation in the company's processes and services.

» Seek solutions that enable growth in all water markets in line with eco-efficiency requirements.

SUSTAINABILITY

Minimise energy consumption, prevent pollution in an equitable social environment, and protect the climate and nature.

Goals:

» Develop cutting-edge technologies that foster the company's sustainability, protecting the environment and biodiversity.

» Improve energy efficiency in the company's solutions and services.

» Recovery of by-products from the end-to-end water cycle.

Lines of work and key actions in 2025

Following European policies as a roadmap, we work on and develop solutions across six areas of action with multiple projects.

SUSTAINABLE WATER TREATMENT

H2020 NICE, from concrete jungles to urban oases (Spain): integration of Nature-Based Solutions (NbS) into water cycle management in urban environments.

ALTERNATIVE RESOURCES: REUSE, DRINKING WATER TREATMENT AND DESALINATION

Inauguration of the WAVE Centre (Spain): this centre is a European benchmark in the development of research into new forms of desalination and brine valorisation.

SUSTAINABILITY AND ENERGY EFFICIENCY

Missions Eclosion and Missions Zeppelin, new models for obtaining green hydrogen (Spain): development of technological solutions for the production and storage of green hydrogen in the environment of wastewater treatment plants.

CIRCULAR ECONOMY, ECO-FACTORIES AND BIO-FACTORIES

Improving the quality of sewage sludge and resolving operational problems associated with its treatment (Czech Republic) through advanced sludge treatment systems that resolve operational problems and improve its quality.

INDUSTRIAL WATER

Reclamation of industrial water for reuse as process water (Spain), especially in cooling towers.

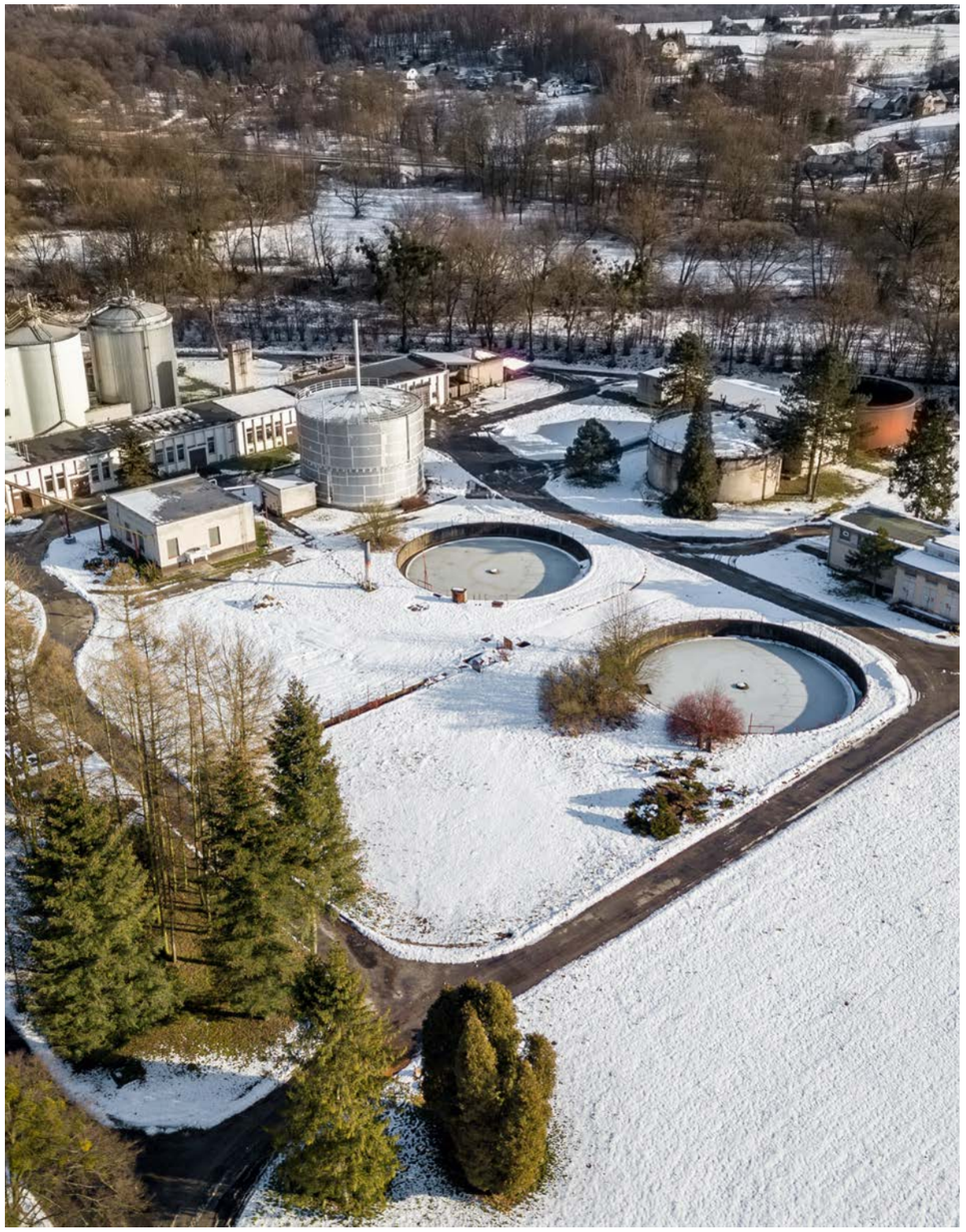
DIGITAL DEVELOPMENTS

LIFE RESEAU, digitalisation of the Moaña sewerage network (Spain) through an intelligent infiltration/runoff management system for network monitoring and control.

Objectives and indicators

Our Innovation objectives focus on funding and on achieving results aligned with Aqualia's strategy. Beyond the department's general objectives, we also set goals by area and line of work, including specific technical objectives as well as objectives relating to proposals, budget, publications and patents.

Both objectives and indicators are monitored throughout the year, with an interim assessment at the end of the first half and a final review at the end of the financial year.



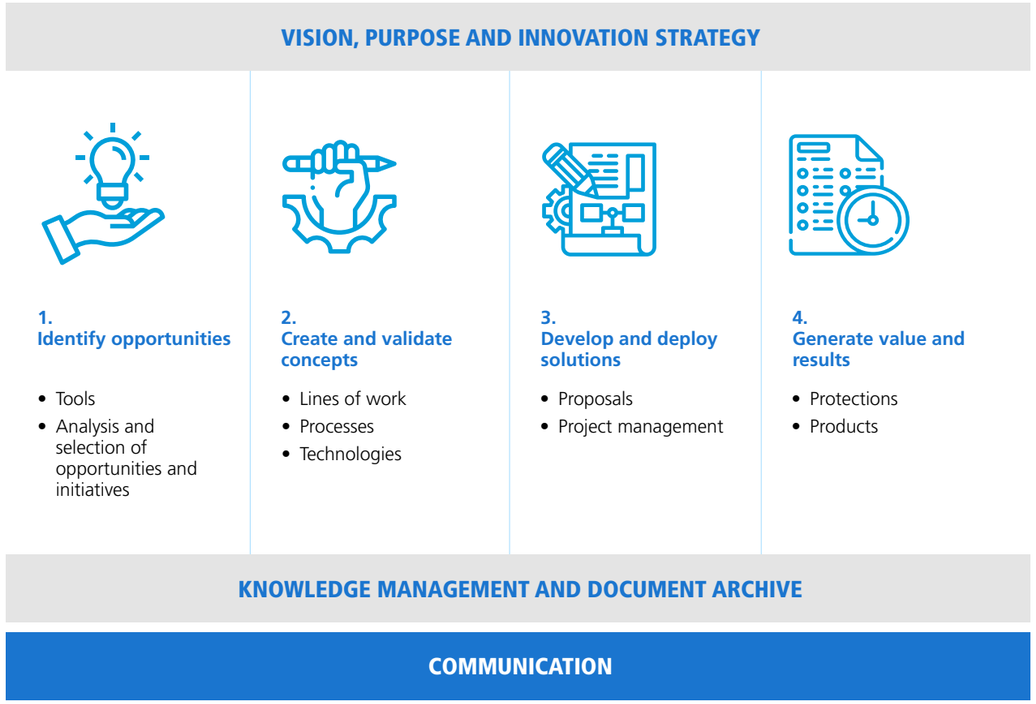
2.2 Innovation Management System

The Innovation Management System is a strategic element for the continuous improvement of the Innovation Department's activity.

Thanks to this system, we can document our functions, allowing us to evaluate our processes and continue adding value to the company's results. Since the first certification of the R&D&i Management System by AENOR in 2010, our Management System has evolved, enabling an increasingly optimised way of working for the company's innovation activities.

To adapt to the requirements established in the new ISO 56001:2024 standard, and in order to align the procedures with the company's way of working, in April 2025 the Coordination Committee approved **Aqualia's new corporate procedures for the Innovation Management System,** which reflect the company's way of working and consist of:

- **PAQ-IN-01 - Innovation Opportunities.** Establish the Innovation tools available to Aqualia to access opportunities: stakeholders, context, risks and opportunities, intelligence, creativity.
- **PAQ-IN-02 - Innovation Concepts.** Create the system for validating innovation concepts and presenting initiatives obtained from opportunities that promote innovation solutions, with technical and economic feasibility aligned with the organisation's activities and resources.
- **PAQ-IN-03 - Innovation Projects.** Determine the planning and development of innovation solutions, which at Aqualia are known as Innovation Projects.
- **PAQ-IN-04 - Innovation Results**. Describe the methodology for managing technology transfer and generating value through the protection and exploitation of results.
- **PAQ-IN-05 - Knowledge Management.** Define the minimum documents that record innovation-related knowledge, as well as the management of Aqualia's innovation archive.



Following the internal audit of the Innovation Management System in April 2025, carried out at the same time as the audit of the Health and Wellbeing Management System, AENOR conducted the external audit in May, enabling Aqualia to become one of the first companies in the sector to be certified under the new international standard ISO 56001:2024. The new certificate, issued on 18 July 2025, replaces the previous certifications based on the Spanish standard UNE 166002:2021, adopted by Aqualia in 2010.

In addition, a new course on Aqualia's Innovation Management System has been developed and is now available on the corporate training platform. It will facilitate staff training in the procedures associated with the Innovation Management System, contributing to its correct implementation and consistent application across the organisation.

- More information in **6.2 Innovation Management System: ISO 56004 certificate**

2.3 Projects funded by public authorities

In 2025, we launched three new European projects as a result of the proposals submitted in 2024, continued developing 14 ongoing projects and completed three others coordinated by Aqualia. We also laid the foundations for three new projects, which will be implemented from 2026 onwards.

New projects launched in 2025

» **HE WATERSENS,** led by the University of Cantabria and formed by an international consortium of 16 partners from different European countries. This project seeks to develop new models for water management in decentralised systems, and focuses on controlling the Anphora® process at Badajoz WWTP. It also includes nitrogen removal and solar disinfection of water for reuse.

- Client participation on the island of La Gomera (with funding for the Town Council of Hermigua of €675,000 and for the Island Water Council of €232,000).
- This marks Aqualia France's first participation in European projects, including an investment of €382,000.

The project's technological approach is based on integrating constructed wetlands with state-of-the-art advances, including bioelectroactive substrates, and intelligent digital tools (pH and oxygen sensors, control algorithms, etc.) that significantly reduce the physical and carbon footprint of the wastewater treatment process in small urban agglomerations, with an occupation of less than 0.4 m² per inhabitant, optimising both energy consumption and space use.

» **AVI PURAGUA,** a national consortium led by Biotechvana, seeks to remove, monitor and analyse emerging contaminants present in drinking water and wastewater streams, with activities in Denia and at Lliria WWTP focused on UV (ultraviolet) disinfection and pesticide removal using variants of biofiltration and adsorption with novel materials.

» **LIFE SMALLWAT,** led by Aqualia and with an international consortium of 8 partners, with the full title *Advanced Technological and Bioelectrochemical Modular Wetlands for water regeneration and nutrient recovery in small populations.*

- It has a budget of €1.3 million for actions in Almería and Talavera de la Reina. In Almería, the action will take place at Isleta del Moro WWTP, involving a comprehensive transformation of the existing plant.
- International consortium of 8 partners including large companies (Cotram, Herogra), SMEs (Ecobird), Aarhus University and public entities.

The project applies the principle of the circular economy by recovering nutrients present in wastewater, such as nitrogen and phosphorus, which are essential for agriculture. To this end, the constructed wetlands will be complemented by filtration modules incorporating innovative absorbent materials (such as apatite, calcite and biochar). These nutrients will subsequently be assessed for possible reuse in industry.

SmallWAT also seeks to give wastewater a second life through its reclamation and disinfection. Processes based on ultraviolet (UV) LED light will be developed to obtain reclaimed water suitable for agricultural irrigation, in compliance with European Regulation 741/2020.

Projects ongoing in 2025

» Four projects under the European **LIFE programme**:

- Zero Waste Water, Infusion and Reseau, which will end in 2026.
- Salteau, on sustainable desalination in Denia and Tenerife.

» Two projects under the European Union (EU) **H2020** programme, with extensions until 2026:

- Rewaise, led by Aqualia, with multiple circular economy actions.
- Nice, on wastewater treatment using nature-based solutions (NbS).

» Six projects under the EU **Horizon Europe (HE) programme**:

- D4Runoff, Cheers and Ninfa, with completion scheduled for 2026. In the latter project, Ninfa, Aqualia-LAB participates as an associated entity.
- Resurgence and United Circles, in which Aqualia participates as a partner.
- CSA (Coordination and Support Action) CIRSEAU, led by Aqualia.

» Two **InterReg European Territorial Cooperation projects with ERDF funding,** in which Aqualia is a partner:

- Gesteaur SUDOE (Spain, France and Portugal region), led by the University of Cantabria, in which Aqualia Portugal also participates.
- IDIwater MAC (Islands and Africa), led by the Canary Islands Institute of Technology.

Projects completed in 2025

» Two **Science and Innovation Missions** of the Centre for the Development of Technology and Innovation (CDTI) on renewable gases:

- Eclosion, with process intensification work at the Salamanca, Lleida and Jerez de la Frontera WWTPs.
- Zeppelin, with digestion and gas treatment work in Algeciras.
- A European LIFE programme project on water reuse: Life Phoenix at the REUSA hub in Almería.

Projects awarded in 2025 for implementation from 2026 onwards

» The following were selected under the European Commission's **Horizon Europe** programme:

- The **HE Flex-In-Bio** project (*Flexible, Low-Energy, and Renewable-Integrated Production Systems for Resilient Bio-Based Industries*), led by the Agricultural University of Athens, which brings together 12 partners from six countries, funds 70% of Aqualia's €1.1 million budget, and will support actions to improve energy efficiency and flexibility in energy consumption at Lleida WWTP.
- The **HE Post-purple** project, led by Rey Juan Carlos University, which will develop the existing demonstration-scale photobiorefinery in Badajoz based on purple phototrophic bacteria (PPB). The project has 14 partners from nine European countries and Aqualia's €500,000 budget is 100% grant-funded.

» In the national **Missions** call of the Centre for the Development of Technology and Innovation (CDTI), only 35 projects were selected, while another 222 proposals below the cut-off threshold of 83 points were left without funding:

- With 86 points, the Missions Impulsaf project ("Research into collective mobility and the transport of large volumes using advanced sustainable fuels for the future"), led by Sistem, was awarded funding, providing a 65% grant for Aqualia's €1.3 million budget between 2026 and 2029. At Jerez de la Frontera WWTP, solutions will be developed for energy self-sufficiency, associated with energy recovery from biogas and digestate.
- Another consortium in which Aqualia participated was just one point below the threshold of 83.5 points: "Protection of information, critical infrastructure and autonomous systems with AI".

- **More information in 6.1. Projects ongoing in 2025 and their main lines of work**

2.4 Aqualia, founding partner of EIT Water

The new EIT Water knowledge community will support the creation of new businesses for seven years and promote training and innovation to address Europe's water challenges from a collaborative perspective.

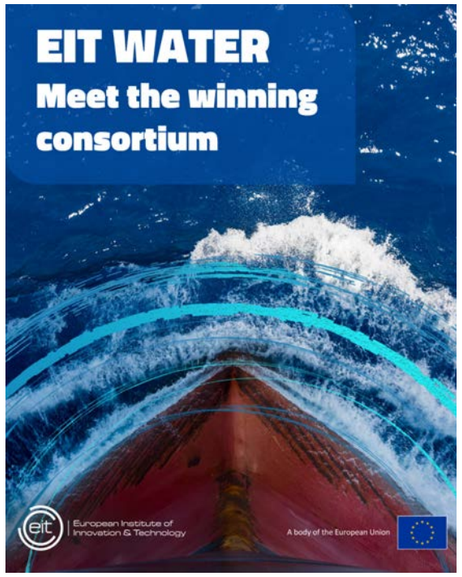
In 2025, the European Union, through the European Institute of Innovation and Technology (EIT), awarded the consortium to which Aqualia belongs (led by Aarhus University, our partner in LIFE Int-Ext, LIFE Phoenix and HE2020 Nice) the creation of **EIT Water,** the new Knowledge and Innovation Community dedicated to water and marine and maritime ecosystems.

In addition to being one of the 50 founding partners, Aqualia is the **only private water company in this new innovation funding mechanism,** based on creating knowledge and business in water and marine infrastructure. EIT Water complements the other nine KICs (Knowledge and Innovation Communities) already established in the areas of food, climate, culture, digital, energy, materials manufacturing, mobility and health.

EIT Water will receive an initial grant of up to €5 million for its launch, and has already **secured €66.6 million** in private funding during its formation phase thanks to the Grundfos Foundation, bringing together almost 250 partners in eight geographical clusters (Co-location Centers [CLCs]). Its objective is to quadruple the number of participants and create, over seven years:

- **137** start-ups through the entrepreneurship education programme.
- **247** new products on the market through the innovation programme.
- €**131** million in investment for the new companies incubated and accelerated in the KIC.

Aqualia's participation as a **founding partner of the consortium** gives us a **strategic advantage over its competitors,** allowing it to capitalise on **the resources and opportunities offered by the EIT.**



2.5 Public Procurement of Innovation as a contracting tool

Public Procurement of Innovation (PPI) is a tool for promoting innovation from the public sector, through the procurement of innovative solutions or solutions in the development phase.

One form of PPI is pre-commercial procurement (PCP), where the public authorities drive innovation by contracting companies to develop prototypes of solutions that do not yet exist on the market. It is characterised by risk and benefit sharing between the public and private sectors, focusing on research to solve specific technical needs without purchasing final commercial products. This process allows the public authorities to act as a "reference client" and help bring innovative solutions to market.

Since 2019, €425 million has been tendered in Spain using this contracting model, including projects ranging in value from €2.8 million to €105 million. Specifically in the water sector, projects worth approximately €25 million have been tendered for seawater desalination and surface-water monitoring. The development of innovative solutions for denitrification of inland waters has recently been put out to tender with the Autonomous Community of Murcia, focused on recovering the Mar Menor, and Aqualia will participate in this type of procurement for the first time.

Key features and benefits

» R&D PROCUREMENT

The successful companies obtain funding to develop innovative technologies that do not yet exist on the market, with public financial support. The Administration does not buy turnkey products, but instead funds research, design and prototype phases.

» ELIMINATION PHASES

It usually begins with a consultation with experts and companies to define the state of the art and technical specifications, known as Preliminary Market Consultation (PMC). It generally involves competitive dialogue in which several companies compete in phases, with only the best proposals progressing. It is structured in elimination phases that assess the effectiveness, efficiency and maturity level of the proposed solutions.

» PROMOTING INNOVATION

It helps the Administration solve technological challenges and companies validate new technologies in real environments. It provides a real testing environment to validate technology, in which the public authorities act as early users certifying the feasibility of the solutions. Companies that successfully complete PCP consolidate their position to market new innovative products and services globally, facilitating the international dissemination of their technology.

» SHARED FUNDING

The risk and benefit of the research are shared, promoting collaboration.

2025 Annual Report: **Innovation Department**

3. Activity and Impact: Solutions for real needs and transfer to the water cycle

3.1 Portfolio and lines of work

The activity of Aqualia's Innovation Department is grouped into six main lines of work, which are organised by categories known as **processes**, which in turn are associated with the development of different **technologies** and compiled in **Aqualia's Innovation Portfolio**.

lines of work

SUSTAINABLE WATER TREATMENT

Decentralised nature-based solutions and innovative intensive processes (granular aerobic and anaerobic processes in the water line) that guarantee the quality of treated water, including nutrient removal, while complying with urban wastewater treatment regulations. Aqualia's own developments stand out, including WETFAN, PUSH, ELAN®, Aqu-Elan® and ELSAR®.

ALTERNATIVE RESOURCES: REUSE, DRINKING WATER TREATMENT AND DESALINATION

In response to water stress and water quality issues, we propose drinking water treatment, desalination and wastewater reuse solutions adapted to the size of the population and the water quality required by regulations.

SUSTAINABILITY AND ENERGY EFFICIENCY

Use wastewater as a source of energy and the search for other renewable sources, such as transforming organic matter into bioenergy (e.g. biomethane, hydrogen) at WWTPs.

CIRCULAR ECONOMY, ECO-FACTORIES AND BIO-FACTORIES

These solutions address the use of waste and the transformation of WWTPs (wastewater treatment plants) into eco-factories and bio-factories, which minimise energy and reagent consumption, avoid waste production and generate new products.

INDUSTRIAL WATER

Solutions that enable industrial clients to adapt water use in their processes and optimise treatment of their effluents.

DIGITAL DEVELOPMENTS

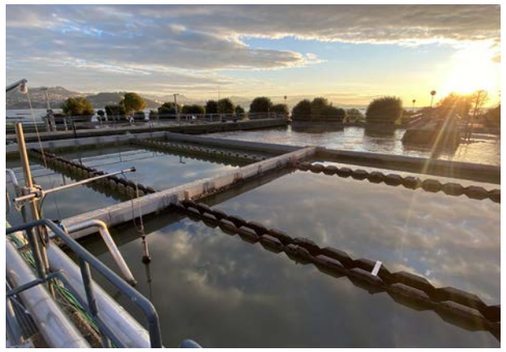
Advanced technology to improve management of the water cycle: Internet of Things, interconnection of multiple sensors, data analysis and AI. This combination of elements enables early detection of problems, a rapid response and process optimisation.

3.2 Innovation hubs in Spain

Like the company itself, the activity of Aqualia's Innovation Department has a global vocation with local roots and impact, always with the ambition of transferring knowledge into real solutions.

To generate greater impact and integrate our clients' needs, we carry out our activity at sites located within the infrastructure managed by Aqualia. In this way, we promote innovation close to production, offering solutions to the company's real and specific situations. All this is thanks to the teams deployed in 11 Innovation hubs in Spain.

GALICIA



The hub carries out innovation activities throughout Galicia (**Lagares, Redondela, Tomiño, Guillarei, Xinzo de Limia and Nigrán**) focused on energy recovery and fertiliser production, and outside Galicia, in the city of Santander (Cantabria):

» In the **municipality of Moaña**, within the sustainable water treatment line, we started up two full-scale aerobic granulation reactors that have improved the efficiency of the WWTP. We also digitalised the sewerage network in this Pontevedra town: through the data collected and AI models, the behaviour of the network can be predicted.

» In **Santander**, we are developing a project to manage pollution from urban runoff and stormwater, and we validated automated measuring equipment for emerging contaminants. The data collected will allow the design of hybrid nature-based solutions.

ASTURIAS

The hub coordinates activities in Asturias from its main location at the **Villapérez WWTP in Oviedo**, which in 2025 completed piloting of the membrane treatment train to obtain customised reclaimed water for reuse for various industrial purposes. The treatment train consists of ultrafiltration, reverse osmosis and electrodeionisation (EDI). Innovative membranes have also been validated, most notably biomimetic membranes with lower energy consumption.

Another milestone for this hub in 2025 was the start of piloting of the LIFE Infusion project for the treatment of landfill leachate and the liquid fraction from anaerobic digestion at **COGERSA**'s waste treatment centre (municipality of Gijón). The proposed treatment train transforms these streams into resources: biofertilisers, reclaimed water and energy in the form of biomethane.

At other WWTPs in Asturias, activity focused on:

» **LLANES.** The installation of two deodorising units made it possible not only to isolate odour sources, but also to validate regenerated materials and sensors for monitoring odorous compounds.

» **GRADO.** Simplified DAHLIA® digestion is being compared in two sludge reactors to optimise the process.

» **VILLABONA.** Monitoring and supervision of a new MBMBR (moving-bed membrane bioreactor) configuration to improve effluent quality and increase filtration performance.

» **NAVIA.** Validation of hydrogen sulphide removal technologies and monitoring of stormwater overflows, including the development of a digital tool to predict water quality.

LLEIDA

At the Lleida hub, an **advanced sludge laboratory** has been created to provide operational support to other facilities managed by Aqualia, and it carries out tests to assess the methanogenic potential of sludge and its activity through biogas analysis and characterisation. More than 60 samples have already been treated, enabling a diagnosis of the problems affecting digesters operated in other towns. The laboratory has also supported the **preparation of bids** in the context of industrial activity, assessing the possible incorporation of co-substrates to improve renewable gas production performance.

Lleida is the first WWTP in Spain to operate a fuel cell that transforms the biogas generated into electrical energy, with higher performance than cogeneration engines. Also in the field of energy efficiency, this WWTP is validating electrostimulated anaerobic digestion equipment to improve biomethane production with an external electrode cartridge.

At the **Mahou San Miguel** factory, operation of the ELSAR® reactor is the most significant activity managed from this hub. Developed and patented by Aqualia in collaboration with the University of Alcalá, the world's largest bioelectrostimulated reactor treats industrial effluents and obtains excellent-quality treated water. It also increases bioenergy production (biomethane and hydrogen) while achieving energy savings, flexibility and stability.

SALAMANCA

From its main location at **Salamanca WWTP**, the hub coordinates activity in Castile and León, specifically in the towns of **Guijuelo, Medina del Campo, Íscar, Tiñosillos, Fontiveros and Ávila**.

The Innovation Centre for the End-to-End Water Cycle at this WWTP supports production through 1:1-scale co-digestion, which evaluates substrates from industries located within a nearby radius to increase biogas production and energy efficiency.

In 2025, it deployed advanced instrumentation for the digitalisation of operational control, with multispectral cameras for continuous monitoring and early water-quality alerts, and an autonomous robot for inspecting photovoltaic panels. Collaboration with the University of Salamanca was also strengthened, and the following pilots were carried out in the HE United Circles, H2020 Rewaise and Missions Eclosion projects:

» **DAHLIA®:** operation in a cold climate of a low-cost solution for small communities, without external heating.

» **DUAL:** optimisation of biogas production through two-phase digestion (thermophilic and mesophilic), to assess hygienisation under thermophilic conditions and understand its behaviour for future deployments.

» **DRY DIGESTION:** the company's first steps in developing this technology, which would allow digestion of dewatered sludge from small WWTPs.

» **BIOGAS UPGRADING USING GREEN SOLVENTS:** pre-pilot plant fed with biogas to obtain biomethane using **supported** ionic liquids.

Activity at other sites in Castile and León focuses on pilots and demonstrators:

» **MEDINA DEL CAMPO WWTP (VALLADOLID).** Monitoring of the MAR aquifer recharge system.

» **ÍSCAR WWTP (VALLADOLID).** First 1:1-scale implementation of CAMELLIA® technology in Spain.

» **FONTIVEROS WWTP (ÁVILA).** Nature-based wastewater treatment system with aquifer recharge. Design for the construction, in collaboration with the Provincial Council of Ávila, of two electrostimulated wetlands for wastewater treatment, followed by two infiltration ponds for aquifer recharge.

» **TIÑOSILLOS DWTP (ÁVILA).** Operation of a biomimetic reverse osmosis demonstration plant, verifying its high effectiveness in nitrate removal.

» **PROVINCE OF ÁVILA.** Recovery of fire-degraded soil through the application of biomaterials obtained from sewage sludge.

BADAJOZ

The *Badajoz* hub coordinates innovation activities in Extremadura and also supports activities in Portugal (Cartaxo and Torres Vedras). The following activities were carried out in 2025:

» **RINCÓN DE CAYA WWTP (BADAJOZ):**

- Operation of the Anphora® demonstration plant, using phototrophic purple bacteria.
- Installation of a nitrification-denitrification system (Purasand-Nitri®) and bioelectrostimulated wetlands, for new wastewater treatment plants or the revamping of existing ones.
- Start-up of the low-cost Dahlia® digester for small communities.
- Implementation of an intelligent energy management system, integrating photovoltaic energy and battery storage.

» **NOGALES DWTP (BADAJOZ).** Operation of the demonstration plants for:

- Nanofiltration (NF) of water from the Nogales reservoir to prevent the formation of disinfection by-products and remove emerging contaminants.
- Production of chlorine dioxide (ClO_2) as an alternative oxidant to hypochlorite, reducing the formation of disinfection by-products in drinking water.
- Activated carbon pilot, validating its effectiveness as an adsorbent for micropollutants.

» **MÉRIDA WWTP.** Support for production in optimising the operation of the microalgae demonstration plant, and participation in the implementation of an ultrafiltration unit for water regeneration for industrial reuse. Installation of a membrane anaerobic reactor pilot integrated into the existing microalgae platform.

» **MÉRIDA DWTP.** Pilot plant for oxidation processes for trihalomethane removal.

JEREZ DE LA FRONTERA (CÁDIZ)

The *Jerez de la Frontera* hub carries out its activity at Guadalete WWTP and nearby locations such as Arcos de la Frontera and Villamartín, in close coordination with the Operations and Technological Transformation Department, the Engineering Department, the technical management of Zone III and Aqualia's Andalucía I delegation.

Among the most important activities in 2025 were:

» At **Guadalete WWTP**, the search for local co-substrates to optimise anaerobic digestion, as well as a study for the removal of hydrogen sulphide (H_2S) using a 500 m³/h odour-control pilot plant, including activated carbon obtained from sewage sludge, which will also be developed at Las Galeras WWTP (Puerto de Santa María) and at pumping stations in Sanlúcar de Barrameda.

» The recovery of phosphorus present in centrifuge liquor through the production of struvite (Aquavite® brand), with high added value for the fertiliser industry. The results were decisive in providing technical support for the tender for anaerobic digestion at Villapérez WWTP (Asturias), which included nutrient removal in line with the new European regulatory obligations.

» The start-up of the **first plant in Spain to produce green hydrogen from reclaimed wastewater**, integrating advanced water reclamation with next-generation electrolysis.

» The operation of an ultrafiltration plant with low-cost membranes for the production of reclaimed water for street washing and cleaning storm drains, under Article 3.2 of Royal Decree 1089/2025.

» Piloting to assess different advanced filter media for iron and manganese removal, which facilitated the award of the refurbishment of Fuente del Río DWTP (Arcos de la Frontera).

» Evaluation of different reverse osmosis membranes for nitrate and chloride removal at Villamartín DWTP, confirming that biomimetic membranes were the most suitable option, which has led to an extension of the service contract.

CAMPO DE GIBRALTAR (CÁDIZ)

The **Campo de Gibraltar hub** coordinates research, development and technology demonstration activities from its main site at **Algeciras WWTP (Isla Verde, Port of Algeciras)**. This environment brings together European projects, Aqualia's own patents and various experimental lines aimed at **resource valorisation**, the **production of renewable energy vectors** and **advanced optimisation of water treatment**.

During **2025**, the main activities were carried out at **three sites in the municipality of Algeciras**, namely Isla Verde WWTP, Lago Marítimo and the Pelayo area, as well as at **two sites in La Línea de la Concepción**, La Línea WWTP and the pumping stations, together with specific activities in **Tarifa**. The activities carried out were as follows:

» Operation of the dark fermentation plant, which generates hydrogen from organic streams, and of a reactor for converting residual carbon monoxide (CO) into more hydrogen.

» Dry-phase digestion with dewatered sludge at 15-18% and high temperatures, which makes it possible to significantly increase the efficiency of dewatered sludge digestion at small WWTPs.

» For the generation and treatment of renewable gases, the hub has several catalytic processes: hydrogen production using catalytic technologies, desulphurisation using filter media, conditioning and compression, and catalytic reforming to produce syngas and carbon monoxide.

» ABAD®: process for purifying biogas and increasing the methane content (CH_2) suitable for use in vehicles.

» Valorisation of fatty waste through alkaline saponification: aimed at increasing biogas production and reducing management costs.

» Micro-oxygenation: to reduce hydrogen sulphide (H_2S) in WWTP digesters, improving biogas quality and the stability of the anaerobic process.

» Advanced membrane pilot plant that validates advanced treatment and the reuse of municipal water to meet the needs of industries in the Bay of Algeciras and Campo de Gibraltar.

» Reverse electrodialysis (RED) and high-efficiency reverse osmosis (RO) pilot to produce very high-quality water, removing salts and remaining contaminants,

» Installation of an 85 m² vertical-flow demonstration wetland to treat stormwater and greywater from IES Torrealmirante.

» Support in the implementation of several Purasand HR continuous filters, with performance far above that of conventional filters.

» Design and optimisation of advanced systems to mitigate odour problems at pumping stations in La Línea de la Concepción.

CHICLANA (CÁDIZ)

At the Allgas hub in Chiclana de la Frontera, several of the technologies patented by Aqualia remain in full-scale operation. These include ELAN®, for the removal of nitrogen from centrifuge liquor (removing up to 75% of nitrogen); ABAD®, used for the purification and valorisation of biogas to vehicle-grade CNG quality, which currently supplies seven municipal vehicles with cumulative consumption of 3,080 kg of biomethane in 2025; and LEAR®, a low-energy system for stirring and optimising microalgae cultivation, combined with DAFAST®, for the concentration of secondary sludge.

In the field of microalgae cultivation, Chiclana continues to operate four 2.1-hectare reactors, integrated with DAFAST systems, anaerobic digestion, a centrifuge and auxiliary equipment. In parallel, a 3,000 m² HRAP is operated at El Toyo WWTP in Almería, also coupled to a DAFAST system.

These facilities, together with Hellín (one hectare of cultivation) and Mérida (two hectares), which combine microalgae cultivation with flotation systems, a centrifuge and vertical wetlands for effluent treatment, continuously demonstrate advanced biological treatment with microalgae and enable both biogas production and resource valorisation, in line with the principles of the circular economy.

DENIA (ALICANTE)

This hub (Desalination Innovation Centre) focuses mainly on improving processes for brackish-water desalination, **drinking water treatment, membrane application and wastewater reclamation**, coordinating support in these fields of application throughout Spain. The main activities in 2025 were:

» **MDC:** following modifications aimed at reducing CapEx, the microbial desalination cell was restarted to respond to the XPRIZE Water Scarcity award bid and thus study the partial desalination of seawater. Progress was also made in coupling it with hollow-fibre NF (industrial nanofiltration) membranes for wastewater reuse.

» **CAPDI:** the capacitive deionisation system was optimised for well-water desalination, working on its integration with renewable energy and other streams.

» **MEMBRANE TEST BENCH:** work is being carried out on monitoring and validating new types of osmosis membranes. To this end, the hub has three fully monitored test tubes installed in a rack, where novel membranes are validated in a real environment and with real water.

» **AITASA:** technical support and support for the commissioning and operation of the plants to prepare the tender for industrial wastewater reclamation treatment.

» **EL EJIDO:** optimisation of the reverse osmosis plant to reclaim urban wastewater from the WWTP through the application of innovative membranes to reduce wastewater conductivity.

» **LOS ALCÁZARES:** systems and sensors were implemented for monitoring and removing nitrates around the watercourses that flow into the Mar Menor (Murcia).

» In addition, support and monitoring were coordinated for different desalination plants and processes applying osmosis and nanofiltration membranes at different plants, such as Mancomunidad de El Quijote, Herencia, Santa Cruz de Bezana and Valle de la Orotava.

WAVE CENTRE (ADEJE, TENERIFE)

The WAVE Centre (Water Added Value European Center), opened in June at the La Caleta desalination plant (Adeje, Tenerife), is an Aqualia-Entemanser initiative supported by the local council. This centre is a European benchmark in the development of research into new forms of desalination, brine valorisation to recover resources such as critical raw materials, and the use of renewable energy

The solutions developed at this centre are **already being implemented at full scale** both in Tenerife and on the mainland: the **tertiary treatment at La Orotava WWTP and several drinking water treatment systems for Cantabria, Castile-La Mancha and Andalusia.**

The surface area of more than 3,000 m² is configured as a flexible platform, a unique infrastructure for the evaluation, demonstration, training and transfer of desalination technologies.

In 2025, the WAVE Centre worked on the following technologies:

» **Desalination:**

- Nanofiltration with spiral-wound membranes.
- Hollow-fibre nanofiltration.
- Membrane distillation.
- High-recovery reverse osmosis.
- Microbial desalination cell.
- Remineralisation with micronised calcite.

» **Brine valorisation:**

- Production of Alma de Mar® gourmet salt in evaporation ponds.
- Production of disinfectant agents by electrochlorination.
- Recovery of calcium and magnesium by selective precipitation.
- Critical raw materials recovery unit.

» **Renewable energies:**

- Solar collector field, harnessing solar thermal energy.
- Pressure-retarded reverse osmosis to generate electricity from the osmotic gradient.

TALAVERA DE LA REINA (TOLEDO) (INTEXT® *HUB*)

The Talavera de la Reina hub (INTEXT® hub) offers intensive-extensive hybrid solutions that make it possible to treat wastewater efficiently and economically, with resource recovery capacity. The centre promotes sustainable technologies for water treatment in small communities.

The platform operates as a demonstration centre where different processes are tested, combined and optimised under real conditions, supported by a comprehensive decision support system (DSS) to select the most suitable solution for each location.

The INTEXT® ***hub*** integrates 16 innovative hybrid technologies, configured to demonstrate their performance in multiple scenarios. In 2025, we compared the operation of these technologies and their suitability for each specific case. These include:

» UASB anaerobic pretreatment with PUSH® pulsed feeding.

» Vertical and horizontal constructed wetlands, with and without forced aeration, applicable to both raw and treated water.

» Microalgae ponds, which enable nutrient valorisation and carbon dioxide (CO_2) capture.

» Biofilm systems, such as trickling filters and biofilters.

» Aerated floating wetlands, suitable for limited spaces.

» Granular aerobic technology, with high efficiency and low energy consumption.

» Nutrient recovery, solar disinfection and smart irrigation processes to close the water cycle.

Thanks to its modular and replicable approach based on combined natural solutions, the platform located at the INTEXT® hub addresses wastewater treatment problems in small communities and offers flexible, scalable alternatives.

ALMERÍA – EL BOBAR

This hub turns El Bobar WWTP into a **circular economy demonstration platform** by converting wastewater treatment into a process capable of **generating resources and reducing energy consumption and emissions.** The hub integrates **innovative technologies** in the water, gas and sludge lines to move from the traditional linear model to a circular model in which wastewater is considered a **recoverable raw material**.

In 2025, the development of its three main lines continued:

- **Advanced anaerobic processes,** such as the **PUSH® reactor** and the **AnMBR** system, which produce biogas and reclaimed water with lower energy consumption and less sludge.
- **Granular aerobic technologies**, such as **AQU-ELAN®** and the **Salamina reactor**, which optimise organic matter and nutrient removal with less space and lower energy use.
- **Resource recovery**, including biomethane production **using ABAD BIOENERGY® technology**, phosphorus recovery using membranes and adsorption, and the generation of **high-quality biofertilisers** from digested sludge using an enzymatic hydrolysis reactor.
- Solar disinfection using Fresnel concentrators.

ALMERÍA – EL TOYO (REUSA *HUB*)

The REUSA hub, located at El Toyo WWTP (Almería), is our technology platform dedicated to the safe reclamation and reuse of wastewater for agricultural use. This hub responds to one of the Mediterranean's major challenges: growing water scarcity and the need to obtain alternative resources that can sustain agriculture in a context of persistent drought. Its objective is to offer flexible solutions capable of adapting to any wastewater treatment plant, the needs of each territory and the quality standards for water reuse established by European Regulation 741/2020 and Royal Decree 1085/2024. It also recovers more than 90% of nutrients from wastewater, which are reused as fertiliser. It also reduces tertiary treatment costs to between €0.10 and €0.15/m³, facilitating large-scale implementation; and minimises the environmental and health impact associated with reused water, especially in relation to the presence of antibiotics, microplastics and emerging contaminants.

In 2025, we continued to operate a set of technologies that can operate **independently or in an integrated way**, and that allow **customised, optimised treatment trains** to be configured:

- Advanced pretreatment and clarification: ballasted lamella settling (CLARIFAST) and dissolved-air flotation with ozone (DAFAST).
- High-performance physical filtration: disc filters and continuous-wash sand filters: PURASAND and PURASER.
- Biofiltration and hybrid treatments: pre-ozonation coupled with biologically activated carbon (BAC) to remove biodegradable organic matter and microcontaminants.
- Microalgae reactors and vertical and horizontal-flow constructed wetlands.
- Advanced oxidation and disinfection processes (AOP): ozone, hydrogen peroxide (H_2O_2) and UV.
- Nutrient recovery.

The results obtained make it possible to define a **broad range of applicability** with **validated solutions for the production of class A reclaimed water.** Their suitability and operational adjustment to achieve the other quality categories established in **Regulation (EU) 2020/741** (classes B, C and D) have also been demonstrated.

3.3 International activity

In addition to the activity carried out at the hubs in Spain, Innovation activity is growing internationally, with initiatives in France, Georgia, Portugal and the Czech Republic, as well as partners carrying out activities linked to our contracts in Colombia and Egypt.

FRANCE

2025 marked the start of innovation activity in France thanks to the award of the LIFE SmallWat project, one of the first Innovation Department initiatives in collaboration with Aqualia's subsidiary in France. This project is based on the integration of advanced constructed wetlands.

The second phase of the project provides for the transfer of the solutions to the sanitation contract for the community of Pithiviers-Gatinais, which brings together 25 WWTPs in small communities, with treatment capacities ranging from 180 to 6,000 PE. The agency in the community of Puiseaux will coordinate most of the activities and the implementation of the replication centre to optimise technology transfer.

EGYPT

During 2025, Egypt's Desert Research Center, DIT and Orasqualia began implementing an innovative INTensive-EXTensive solution (INTEXT®) at New Cairo WWTP, one of the largest treatment facilities in Africa. Located southeast of Egypt's capital, this WWTP was designed to process 250,000 m^3 per day and serve a population of three million, under a 20-year BOT (Build-Operate-Transfer) contract. The plant currently generates 1,500 m^3 per day of sludge with 4% dry matter, which poses major logistical and financial challenges.

To address this situation, the facility is integrating INTEXT® technologies, including sludge treatment reed beds (STRB), which offer a low-impact, highly energy-efficient alternative to conventional mechanical dewatering systems. This strategic change represents a major step forward in Egypt's commitment to sustainable infrastructure and the principles of the circular economy.

COLOMBIA

In 2025, we launched the Aqualia Chair in Sustainable Management of the end-to-end water cycle, together with Nueva Granada Military University (UMNG) in Bogotá, following the model already developed in Spain with the Aqualia Chair at the University of Almería.

In addition, through the H2020 Nice project, the wastewater treatment activities for small communities in Colombia are being completed.

- **More information about the Aqualia Chair in Sustainable Management of the End-to-end Water Cycle**

CZECH REPUBLIC

In collaboration with SmVak, our subsidiary in the Czech Republic, we carried out several innovation activities in 2025:

» **Pilot experience in solar sludge drying.** Carried out at the **Bohumín WWTP**, the technology has been tested in the Czech climate to reduce sludge management costs, facilitate handling at the plant and reuse the sludge as biosolids in agriculture and industry. The dryer uses solar energy to accelerate the drying process and the option of underfloor heating during the colder months. High solar drying performance was demonstrated even in the country's extreme weather conditions, making it possible to reduce sludge management costs by up to 70% and ensure high quality in the resulting biosolids.

» **Wastewater monitoring and microcontaminant removal using existing technology.** Several sampling campaigns were carried out, including PFAS, pesticides and persistent organic pollutants. This also included landfill leachate sampling and regular review of the data obtained during operation.

» **Innovation projects at Karviná WWTP.** In the area set up at this WWTP, two technologies focused on **biogas cleaning and enrichment** (pressurised ABAD) and an innovative technology for **CO_2 absorption and conversion into biomethane** (biomethanation) will be installed. For this second technology, a patent has **been filed,** in collaboration with the University of Valladolid.

» **Internal technology consultancy.** Support is provided to the infrastructure departments for investment and operational decision-making at SmVaK. Work is also being carried out on projects relating to sludge dewatering and the co-treatment of industrial water at **Třinec** WWTP, among others.

» **Drinking water treatment activities at Vyšní Lhoty DWTP.** In 2025, **prototype-scale testing** and the design of the **flotafiltration** demonstration plant were completed to improve water quality, especially during episodes of quality loss in turbidity and microbiological parameters.

GEORGIA

The success of solar drying in the Czech Republic has driven its application to municipal wastewater sludge in Georgia. Thus, in this country, the start-up of a solar sludge drying pilot at **Gardabani WWTP** is being prepared to demonstrate a cost-effective and environmentally sustainable method for generating high-quality dry sludge suitable for use in agriculture, land restoration and certain industrial applications. In addition to validating technical performance, this project will promote stakeholder involvement and produce essential data to support and strengthen sludge management legislation in Georgia.

PORTUGAL

Our activity in the neighbouring country began in **2019**, with two contracts awarded by **Águas do Algarve**, in **Loulé** and **Lagos**, to demonstrate the feasibility of implementing the PUSH patent. Subsequently, in **2021**, these plants were implemented in **Cartaxo**. Later, through the LIFE Phoenix project and in collaboration with **Águas de Portugal**, a new implementation was carried out in **Abrantes**. In 2025, thanks to Aqualia Portugal's participation as a partner in the GestEAUr project, we carried out several actions in the municipalities of **Cartaxo** and **Torres Vedras**:

» **VALADA WWTP (CARTAXO) - ELECTROSTIMULATED WETLANDS.** Construction project for the implementation of a nature-based solution (NbS), consisting of two wetlands for wastewater treatment.

» **TORRES VEDRAS WWTP - ULTRAFILTRATION (UF) PLANT.** Improvements to a UF unit for the regeneration of wastewater for garden irrigation, installed and operated in collaboration with Águas do Tejo Atlântico (AdTA), a subsidiary of the Águas de Portugal (ADP) group.

3.4 Key 2025 results: product transfer

Our relentless work in innovation, through technological innovations and pilot developments, strengthens Aqualia's technical proposals and provides solutions to business needs across its entire area of activity.

Support for production needs

Thanks to our deployment in hubs at more than ten locations (Almería, Algeciras, Asturias, Badajoz, Denia, Galicia, Jerez de la Frontera, Lleida, Salamanca, Talavera de la Reina and Tenerife), as well as numerous commercial demonstration initiatives with innovative solutions, pilot systems and demonstration systems, we create synergies with operational needs, specifically in the following five thematic areas:

» Drinking water treatment for inland water.

» Desalination.

» Urban wastewater treatment.

» Urban wastewater reuse.

» Wastewater treatment and reuse

Participation in infrastructure or services managed by Aqualia in 2025

Application	Location	Action Taken	Main Objective
Drinking water treatment for inland water	Badajoz	Disinfection with ClO_2	↓ trihalomethanes and precursors
	Icod de los Vinos (Tenerife)	NF piloting	↓ aluminium
	La Adrada	Supervision of UF/ClO_2 technical solution	Water quality improvement
	Riohacha (Colombia)	Study of membrane application	↓ Conductivity
	Mancomunidad Quijote (Castile-La Mancha)	Support for EDAS operation and troubleshooting	Membrane process optimisation
	Arcos de la Frontera (Cádiz)	Demo with novel filter media	Reduction of Fe and Mn concentration
	Denia (Alicante)	Activated-carbon filtration tests for pesticide removal from drinking water	Pesticide removal
	Villamartín (Cádiz)	Technical support in developing a solution to the presence of nitrates and chlorides in drinking water using membrane technology. Needs assessment and proposal of alternatives	Reduction of nitrates and chlorides
	EDAS Algodor	Technical support to improve operation and reduce membrane fouling	Fouling reduction
	Pelayo (Algeciras)	Installation of PURASAND HR	Eliminate turbidity issues
	Tarifa	Installation of PURASAND HR	Eliminate turbidity issues
	Benalmádena	The installation of PURASER 200 m^3/h was proposed	Improvement of turbidity issues
	Álora	The installation of PURASER 200 m^3/h was proposed	Turbidity issues

Application	Location	Action Taken	Main Objective
Desalination	Alboran Sea (Almería)	Technical support in the operation, monitoring and control of the seawater desalination plant	Improvement of seawater desalination plant operation (identification of improvement points). Pretreatment optimisation.
	Benalmádena	Installation of DAFAST + RO + calcite bed + hypochlorite proposed	Portable desalination plant
	La Caleta (Tenerife)	Remineralisation process optimisation	Reduction in reagent cost and regulatory compliance
Water treatment	Navia (Asturias)	Proposed activities for the contract's R&D commitment	Reduction of H2S in the facilities: micro-oxygenation and adsorption with regenerated materials
	Salamanca	Study of PAX-18 coagulant dosing in secondary treatment	Determine the effect of PAX-18 coagulant dosing in secondary treatment after an episode of instability at the WWTP
	Guijuelo, Salamanca, Lleida and La Navia	Installation of multispectral cameras for monitoring different control parameters	Salamanca WWTP: influent control after screening Guijuelo WWTP: control of industrial discharges in the influent and quality control at the outlet Lleida WWTP: effluent foam control (before 2025) and (planned 2026) control for centrifuge liquor quality La Navia WWTP: planned overflow control (2026)
	Zone I WWTP	Sludge stability study	Definition of parameters to determine sludge stability Determine the stability level of dewatered sludge from anaerobic digestion, extended aeration and thermal hydrolysis + anaerobic digestion
	Salamanca WWTP	Impact study of PORSIETE and Kimberly Clark grease co-digestion	Assess the feasibility of co-digesting Kimberly Clark industrial sludge and PORSIETE grease at Salamanca WWTP
	All areas	Methanogenic potential tests	Determination of the methanogenic potential of sludge and co-substrates
	Algeciras	Installation of micro-oxygenation with FeCl3 dosing	High H2S concentration with boiler out of service
	Algeciras	Saponification of grease and use as co-substrates	Improve low biogas production yield
	Algeciras	Proposal to build a storm tank and constructed wetland	Improve runoff problems in the maritime lake
	Tarifa	Installation of PURASAND HR + RO + DEMI proposed	Provide advanced treatment for H2 production
	Tarifa	Installation of PURASAND + RO proposed	Conductivity reduction for reuse
	Tarifa	Installation of AnMBR + AnMBR + ELAN® proposed	Treat leachate
	La Línea de la Concepción	Installation of micro-oxygenation with FeCl3 dosing	Provide a solution to the high H2S concentration with damaged boiler and gas line
	La Línea de la Concepción	A study of alternatives is carried out for each pumping station: micro-oxygenation and dosing of Nutriox and others	Address odour problems at pumping stations, both old stations and the new funeral-home station
	Chiclana de la Frontera	Study for the installation of a struvite reactor	Address problems related to struvite crystallisation
	El Puerto de Santa María	Preventive plans and analyses of Nutriox dosing and micro-oxygenation are presented	Address problems related to odours and H2S
	Yunclillos	INTEXT® solution presented for Yunclillos based on the French system	The municipality has no WWTP
	Nijar	Proposal presented to improve Isleta del Moro WWTP by converting it into an INTEXT development	Improvement of deficient wastewater treatment in several towns (Isleta del Moro, Las Negras)
	Cairo (Egypt)	Together with the Egyptian research centre DRC, a wetland is designed for sludge management	Improved sludge treatment
	Tbilisi (Georgia)	A report is prepared for the construction of a wetland for wastewater treatment	Wastewater treatment
Urban wastewater reuse	El Ejido	Biomimetic membrane demo	Reduce EC for the use of reclaimed water by the Irrigation Community.
	Puerto de la Cruz (Tenerife)	Supervision and technical support for the Valle de la Orotava reclamation system	↓ Conductivity and quality improvement
	Algeciras	Installation of EDR and PURASAND	Promote reclamation
Industrial water treatment and reuse	Tarragona (AITASA)	UF + RO piloting. Technical participation in the demonstration of the treatment train proposed to the client	Obtain the water quality required by AITASA

Technology validation actions: commercial demonstrations in 2025

We also carried out demonstrations with novel membranes in Icod de los Vinos, Nogales, Puerto de la Cruz and Tiñosillos, and supported the tertiary treatment and reuse pilot project at AITASA (Tarragona). The Vigo and Salamanca contracts, two locations where we have been present for more than 10 years, were extended.

Application	Location	Action Taken	Project	Comments
Drinking water treatment for inland water	Tiñosillos	Commercial demonstration of reverse osmosis with biomimetic membranes	Tiñosillos DWTP	↓ 95% nitrates (outlet 3.54 mg/L)
	Nogales	Nanofiltration demo	Removal of disinfection by-products at Nogales DWTP	↓ 61% TOC, outlet of 2.8 mg/L (< limit RD3/2023). Pending new PFTHM, PFAS, etc. analyses.
	Puerto de la Cruz (Tenerife)	Biomimetic membrane demo	Nitrate removal in groundwater in Puerto de la Cruz	Commercial definition stage for the tender for the service in Puerto de la Cruz
Urban wastewater reuse	El Ejido	Commercial demonstration of a low-pressure osmosis system	El Ejido WWTP	Industrial works awarded, worth €2m
	Vera	Commercial demonstration of a reclamation system: pretreatment + low-pressure osmosis	Vera WRRF	Agreement signed, pilot to be developed in 2026
Industrial water treatment and reuse	Mahou San Miguel (Lleida)	ELSAR monitoring	ELSAR® Mahou San Miguel Lleida	Final operation phase planned in 2026 to validate high organic loads
	Textile industry (Galicia delegation)	Filtration using novel hollow-fibre NF membranes to separate ionic-liquid streams	Reclamation of industrial process water	The capacity to separate streams using this technology was observed
	AITASA (Tarragona)	Technical monitoring, operation of DAF, filter-media, UF and RO pilots	AITASA Industrial Reclamation	A commercial pilot paid for by the client was carried out, with only two companies invited. Two years of operation. Tender in progress

Participation in tenders

In 2025, we collaborated in preparing bids for numerous tenders in **Spain, France, the Czech Republic, Georgia, Oman, Kazakhstan and Japan**, including several examples of inland-water drinking water treatment (6), desalination (1), wastewater treatment (8), integrated cycle (7), and petrochemical and mining industrial wastewater (2).

The piloting work (**commercial demonstrations**) carried out in various locations strengthened Aqualia's technical proposals and provided solutions that resulted in:

» Renewal of the Toledo service (€55 million over 10 years).

» El Ejido reuse treatment works (€2 million).

» Reuse treatment works at La Orotava - Puerto de la Cruz WWTP.

» Extension of the Villamartín (Cádiz) contract (€13.4 million over 10 years).

» Treatment works at Arcos de la Frontera DWTP (€0.5 million).

» Navia - CADASA Operation and Maintenance (R&D section).

» Villapérez sludge treatment works (including patents, DOFAST, ELAN® and Aquavite® recovery).

Transferred products

In 2022 and 2023, records and lists of transferred products were established containing 10 solutions that had already been used at several sites, such as micro-oxidation of hydrogen sulphide (H2S) in digesters, and algae, ELAN® and AnMBR (Anaerobic Membrane Reactor) reactors.

From 2024 onwards, following the criterion established in the new Innovation Management procedures, **processes and solutions are considered transferred once they have a second implementation in an Aqualia service.** In 2024, six solutions had met this criterion:

» AnMBR+ELAN® (Valdebebas/Almería and Xinzo de Limia-Industriales).

» Anphora® (Linares and Badajoz).

» ELSAR® (Guijuelo and Mahou San Miguel Lleida).

» Advanced thickener control (i4U) (Lleida and Jerez de la Frontera).

» Aquavite® struvite recovery (Guillarei and Jerez de la Frontera).

» Tertiary reuse with UF+RO membranes (Mahou San Miguel Lleida and AITASA).

In 2025, seven processes were transferred, presenting different water-treatment innovation solutions developed by Aqualia:

» **Filter media for iron and manganese (Fe+Mn) removal:** following completion of comparisons of advanced materials and validations in several pilots and applications in drinking water treatment, reuse and desalination, the following references are available:

- Arcos/Frontera DWTP. Fe and Mn removal (2025).
- Valverde DWTP. Mn removal (2024).
- Els Poblets EDAS. Brackish-water reverse osmosis pretreatment (2023).
- Mar de Alborán seawater desalination plant. Seawater reverse osmosis pretreatment (2023).
- Mostaganem seawater desalination plant. Seawater reverse osmosis pretreatment (2023).
- Cap d'Jinet seawater desalination plant. Seawater reverse osmosis pretreatment (2023).
- Racons EDAS. Brackish-water reverse osmosis pretreatment (2022).
- Guaymas seawater desalination plant. Seawater reverse osmosis pretreatment (2022).

» **MBMBR Moving Bed Membrane Bio-Reactor** is a wastewater treatment process that combines a membrane bioreactor (MBR) with biofilms on fluidised granular material (Moving Biofilm) and adsorbent to improve microcontaminant removal and reduce membrane fouling, with implementations at:

- Villabona WWTP (Asturias), in progress: Existing MBR (1,450 PE, average permeate flow 270 m^3/day). Powdered activated carbon dosing to improve membrane performance and microcontaminant removal (February 2025).
- Grado WWTP (Asturias): piloting with flat-sheet membrane MBR (1 m^3/h). Dosing of biochar produced from sewage sludge (2020).

» **NX Filtration hollow-fibre nanofiltration (NF) membranes,** standing out for their efficiency, low energy use, robustness and multiple implementations in reuse and drinking water treatment, including the following implementations:

- Mancomunidad Nogales (2025-present).
- Icod de los Vinos. Collaboration with the Tenerife Island Water Council (2022-2024).
- Laboratory scale. 14 locations have been tested with several objectives for treating water with different problems.

» **Post-reverse osmosis remineralisation,** aimed at validating design models (Engineering Department) and optimising processes in large seawater desalination plants, with implementations at:

- La Caleta seawater desalination plant (14,000 m^3/d) (2025).
- Fonsalía seawater desalination plant (21,000 m^3/d) (2024).
- Guaymas seawater desalination plant (17,280 m^3/d) (2023).
- El Alamein seawater desalination plant (150,000 m^3/d) (2023).

» **Microbial Desalination Cell (MDC),** capable of desalinating by harnessing the energy provided by the organic load of wastewater effluents, enables dual use in wastewater treatment and desalination without external energy input, with implementations at:

- New version started up in Denia with X-Prize in November 2025.
- La Caleta seawater desalination plant (Tenerife - 2020).
- Racons EDAS (Denia - 2018).

» **AquaGranular**, an activated sludge process that forms granular biomass and reduces surface area and energy use compared with conventional configurations, with demonstration executions at urban WWTPs and implementations at:

- El Bobar WWTP. 27 m^3 pilot (2025).
- Moaña WWTP (Pontevedra), treating up to 40% of the wastewater treatment plant's inlet flow through two 450 m^3 reactors (2024).
- Talavera de la Reina and Valdebebas WWTPs.

» **Chlorine dioxide** for disinfection at **DWTPs**, reducing the generation of disinfection by-products, **THMs (trihalomethanes)** and **HAAs (haloacetic acids)**, with the installation of ***in situ*** ClO_2 generation equipment at several DWTPs and EDAS, including:

- Nogales DWTP (THM and HAA reduction, DWTP capacity 9,600 m^3/d, 2024).
- Torrenueva-Castellar DWTP (1,800 m^3/d, 2020).
- Racons EDAS (Denia, EDAS capacity 16,800 m^3/h, 2019).
- Ampuriabrava distribution network (2018).

- The explanatory sheets for these products are included in **6.3. Transferred product sheets in 2025.**

2025 Annual Report: **Innovation Department**

4. Patents and Trademarks Technological versatility and collaboration ecosystems

4.1 Industrial Property Protection Strategy

Aqualia's industrial property reflects our technological versatility and our strategic commitment to creating collaboration ecosystems with universities and research centres.

The main result of each innovation project is a technological development, which often concludes with a patent application to protect intellectual property. The expectation is that at least 20% of ongoing projects will generate a patent application, and that the number of intellectual property protections will remain at 35% of the completed project portfolio.

Once a patent has been granted, its validation is requested in different geographical areas, according to the following criteria:

» The main European markets: Germany, Spain, France and the United Kingdom.

» Aqualia's markets of interest: Colombia, Mexico and the United States.

» Occasionally in relevant adjacent markets (Portugal, Czech Republic, Egypt).

4.2 Patent portfolio

At Aqualia, we have a broad and diversified patent portfolio that reflects our commitment to innovation in the water cycle. These technologies are grouped into different families, ranging from advanced biotechnological processes to systems for improving treatment and valorising waste. We also promote developments in emerging areas.

We currently have an extensive patent portfolio, grouped into the following families:

» **ELAN® family** (50% Aqualia, 50% University of Santiago de Compostela), based on an Anammox process (anaerobic ammonium oxidation) for autotrophic nitrogen removal, designed for low nitrogen concentrations and low temperatures.

» **Fluidised-bed MFCs** (50% Aqualia, 50% University of Alcalá de Henares), focused on the use of microbial fuel cells in a fluidised bed for wastewater treatment, enabling electricity to be generated from biological activity during the process.

» **PUSH**, consisting of two patents. The latest, which improves on the first, is an advanced anaerobic treatment for unsettled wastewater through the combination of a UASB reactor and a solids digester in a single stage, improving energy efficiency and energy recovery in the form of biogas.

» **Biogas upgrading**, with one European patent, several international registrations and two pending variations, is a two-stage biogas purification system that increases methane content and biomethane quality.

» **Microbial Desalination Cell** (50% Aqualia, 50% IMDEA Agua) combines bioelectrochemical processes and electrodialysis to increase the production of both desalinated water and treated wastewater in microbial desalination cells that use the energy generated by microorganisms during wastewater treatment to desalinate a saline stream.

» **SAnMBR** (50% Aqualia, 25% University of Valencia, 25% Polytechnic University of Valencia) is an anaerobic process with a filtration procedure for treating wastewater at room temperature.

» **Advansist/Anphora®**, consisting of anaerobic carousels enriched with purple phototrophic bacteria.

» **DARE**, a bioelectrochemical system for the simultaneous production of water-disinfection agents and carbon-neutral compounds.

» **Struvite Crystallisation** (50% Aqualia, 50% University of Santiago de Compostela), a development for the recovery of phosphorus by struvite precipitation (hexahydrated ammonium magnesium double orthophosphate) from phosphorus-rich water streams (>70 mg/L).

» **Purasand High Recovery** consists of optimising water treatment using sand filters and, more specifically, continuous-wash sand filters.

» **WETFAN** is an optimisation of an aerated vertical wetland.

» **Pressurised reactor** (pending) refers to a process for obtaining methane-enriched biogas, carried out in anaerobic digestion reactors.

» **Ectoine** (pending) seeks the bioconversion of methane-rich gas streams into value-added products such as ectoine, using high mass-transfer bioreactors.

» **Solar** (50% Aqualia, 50% University of Almería) (pending) seeks a method for wastewater reclamation using Fresnel solar technology.

» **DOFAST** (pending) refers to a dissolved-gas flotation unit for cleaning and purifying water by removing suspended solids and dissolved organic carbon.

The full list of patents can be found in **6.4. Patents registered by Aqualia.**

4.3 Jointly owned patents

Several of the patents obtained by Aqualia have been developed jointly with other entities and are therefore jointly owned.

For their exploitation, **exploitation agreements** are signed that establish specific conditions:

Patent	Ownership
ELAN® Anammox process EP2740713 *Method for starting up and controlling a biological process for ammonium removal by the action of autotrophic bacteria in wastewater*	Aqualia: 50% University of Santiago de Compostela: 50%
SAnMBR EP3225596 *Anaerobic process with filtration procedure for treating wastewater at room temperature*	Aqualia: 50% University of Valencia: 25% Polytechnic University of Valencia: 25%
AQUA-ELAN® (ELAN® in the water line) EP3255016 *Method for starting up and controlling a biological process for ammonium removal at low ammonium concentrations and low temperature through the use of a two stage autotrophic nitrogen removal process*	Aqualia: 50% University of Santiago de Compostela: 50%
Struvite crystallisation EP3112320 *Method and system for the crystallisation of struvite for recovering phosphates in wastewater*	Aqualia: 50% University of Santiago de Compostela: 50%
Fluidised-bed MFCs FBBR (ELSAR®) EP2927196 *Method for Treating Waste Water in a Fluidised Bed Bioreactor*	Aqualia: 50% University of Alcalá de Henares: 50%
MDC EP3336064 *Method for enhancement of simultaneous desalination and wastewater treatment in microbial desalination cells*	Aqualia 50% IMDEA Agua 50%
Solar Under examination	Aqualia 50% University of Almería: 50%
ABAD BIOCHEM Under examination	Aqualia: 50% SmVaK: 50%

4.4 Trademarks

We continue to strengthen the protection of our innovation by registering trademarks associated with proprietary technologies and products developed by the company. A trademark is a key **distinctive sign** that Aqualia uses to differentiate and individualise its solutions in the market, link them to their business origin and project an image of quality and reliability, as well as acting as a promotional tool. The relatively low cost of this form of protection, compared with other types of industrial property, favours its continued use as an effective tool for protection and positioning.

In 2025, the ABAD GRID® trademark was added to the existing portfolio, which now comprises a total of **11 registered trademarks.**

The full list can be found in **6.5. Trademarks registered by Aqualia.**

2025 Annual Report: **Innovation Department**

5. Positioning of the Innovation Department: visibility and recognition of our work

5.1 Publications

We develop a proactive communication strategy in **sector-specific press and general media**, with special attention to local media, where our actions have a more direct and tangible impact. This approach responds both to the need to disseminate the progress achieved in our projects and to the responsibility to convey to citizens and institutional clients the value we generate in their immediate surroundings. In each communication, we highlight how our initiatives contribute to technological development, sustainability and the improvement of services in the communities where we operate, thereby strengthening our relationship with the territories.

At the same time, Innovation's scientific publications strategy is aligned with the requirements established by the European programmes that fund a large part of our projects, such as Horizon Europe and LIFE, which require results to be disseminated through technical articles with methodological rigour and expert review. These publications are prepared in coordination with the universities and research centres participating in the consortia, ensuring scientific quality and strengthening knowledge transfer between academia and the water sector. Thanks to this collaboration, we contribute to advancing the state of the art and strengthen our positioning as an innovative company at European level.

In this table, we detail the main indicators for publications, events and innovation awards in 2025:

Scientific articles	**6**
Mentions in sector press	45
Mentions in general press	145
Participation in national events	19
Participation in international events	19

Scientific articles published in 2025

Year	Journal	Title	Authors	Other details
2025	*Advances in sustainable applications of microalgae*	Chapter 16 - Bioenergy and water recovery based on microalgae	Raúl Cano Herranz, David Marín de Jesús, Maikel Fernández Boizán, Enrique Lara Corona, Frank Rogalla and Zouhayr Arbib	2025, Pages 373-385, ISBN 9780443221279, https://doi.org/10.1016/B978-0-443-22127-9.00016-0
2025	*Advances in sustainable applications of microalgae*	Chapter 17 - Integration of anaerobic digestion and microalgal cultivation for efficient biofuel production from wastewater	Esteban Serrano León, Enrique Lara Corona, Frank Rogalla, Zouhayr Arbib, Maikel Fernández Boizán and José Antonio Perales Vargas-Machuca	2025, Pages 387-406, ISBN 9780443221279, https://doi.org/10.1016/B978-0-443-22127-9.00017-2.
2025	*Current Opinion in Biotechnology*	Anaerobic microbial core for municipal wastewater treatment — the sustainable platform for resource recovery	B. Conall Holohan, Anna Trego, Ciara Keating, Carlos L. Chernicharo, Glen Daigger, Stephen M Galdi, Ulrich Knörle, Eleonora Paissoni, Angel Robles, Frank Rogalla, Chungheon Shin, Ana Soares, Adam L Smith, Aleksandra Szczuka, Dermot Hughes, Vincent O'Flaherty	Volume 94, August 2025, 103317 DOI: https://doi.org/10.1016/j.copbio.2025.103317 ISSN 0958-1669
2025	*Journal of Water Process Engineering*	Demonstration-scale urban wastewater reclamation using concentrated solar radiation	D. Rodríguez-García, J.L. García Sánchez, J.L. Guzmán, Z. Arbib, J.L. Casas López, J.A. Sánchez Pérez	Volume 78, October 2025, 108817 DOI:https://doi.org/10.1016/j.jwpe.2025.108817 ISSN 2214-7144
2025	*Journal of Hazardous Materials*	Assessment of microplastic retention efficiency using pilot-scale filtration systems applied to drinking water	K. Herrera, A. Egea-Corbacho, D. Coello, J. Quiroga, E. Marín, V. Monsalvo, E. Lucero, R. Rodríguez	Volume 499, 5 November 2025, 140130 DOI:https://doi.org/10.1016/j.jhazmat.2025.140130
2025	*Bioresource Technology*	Valorisation of liquid digestate from organic waste: stripping, thermophilic anaerobic digestion and membrane technologies for resources recovery, and emerging contaminants assessment	Carlos Ramos, Caroline Sielfel, Queralt Farrás, Antonio Giménez, Marc Riu, Helena Torrell, Carme Bosch, Sandra Casas, Xavier Martínez	Volume 440, January 2026, 133477 DOI: https://doi.org/10.1016/j.biortech.2025.133477

5.2 Participation and leadership in knowledge transfer

Throughout the year, we participated in numerous sector events and scientific congresses, both national and international, with the aim of sharing knowledge, technologies and good practices with the sector's main players. Our objective is not only to attend, but to ensure that each participation includes an active contribution from our team, whether through presentations, round tables or presentations of results, thereby strengthening our visibility and leadership in leading forums such as those organised by IWA, IDRA, DAQUAS and AEDYR. This active presence allows us to project Aqualia's innovation globally and, at the same time, draw on the latest trends and technological advances.

In addition, we have a structured technology watch system that ensures all knowledge acquired at these events is collected, analysed and made available to the department as a whole. In this way, the lessons learned, market developments and scientific advances identified at these events are integrated into our projects and internal processes, contributing to continuous improvement and to more efficient, sustainable and competitive management of the end-to-end water cycle.

Participation in events in 2025

Event name	Start date	End date	Location (country)	Type
UM6P Desalination Conference	29/01/2025	30/01/2025	Marrakech (Morocco)	International
ECOISLAS International Forum	30/01/2025	31/01/2025	Las Palmas (Spain)	International
WEX Global 2025	10/02/2025	12/02/2025	Valencia (Spain)	International
Seminar: New challenges in reclamation and reuse. Implications of RD 1085/2024	11/02/2025	11/02/2025	Seville (Spain)	National
RENMAD Biomethane 2025	12/02/2025	13/02/2025	Toledo (Spain)	National
II International Conference UNIgreen	17/02/2025	19/02/2025	Almería (Spain)	International
High level Delegation on the EU Urban Wastewater Directive - Ministry of Foreign Affairs of Denmark	26/02/2025	27/02/205	Copenhagen (Denmark)	International
WORLD WATER-TECH Innovation Summit - Invest in Climate Resiliente Water Systems	25/02/2025	26/02/2025	London (United Kingdom)	National
Science Policy Event Nature-based solutions for urban-regional water resilience: What to do with too much water?	27/02/2025	27/02/2025	Brussels (Belgium)	International
5th Spanish Economic Forum of Castilla-La Mancha: The opportunities for Castilla-La Mancha in a period of major change	07/03/2025	08/03/2025	Toledo (Spain)	National
1st Water Positive Conference: Innovation, efficiency and positive impact in water management	03/04/2025	03/04/205	Gijón (Spain)	International
redSUDS 2025 Conference	07/04/2025	08/04/2025	Santander (Spain)	National
Fertiberia Seminar: The circular economy in the agricultural sector	23/04/2025	23/04/2025	Online	National
Desalination for the Environment - Clean Water and Energy - EDSOC	27/04/2025	30/04/2025	Porto (Portugal)	International
Global Water Summit 2025	12/05/2025	14/05/2025	Paris (France)	International
Opening of Eclosion Jerez de la Frontera	15/05/2025	15/05/2025	Jerez de la Frontera (Spain)	National
Opening of the NICE wetland park	19/05/2025	19/05/2025	Algeciras (Spain)	National
IWA Resource Recovery Conference 2025	19/05/2025	23/05/2025	Leeuwarden (Netherlands)	International
Congress Water Smart Economy & Society	25/05/2025	28/05/2025	Rotterdam (Netherlands)	International
IDRA Seville Colloquium on Resilient Water Solutions	02/06/2025	02/06/2025	Seville (Spain)	International
2nd International Congress The Value of Water: New Perspectives in a Global World	05/06/2025	06/06/2025	Jaén (Spain)	National
33rd European Biomass Conference and Exhibition EUBCE	09/06/2025	12/06/2025	Valencia (Spain)	International
Opening of Zeppelin project facilities	19/06/2025	19/06/2025	Algeciras (Spain)	National
3rd Series of 20 MasterClasses on urban and industrial wastewater treatment - Aguasresiduales.info	19/06/2024	19/06/2024	Online	National
ecoSTP2025	23/06/2025	26/06/2025	Stockholm (Sweden)	International
14th AEDYR International Congress	24/06/2025	26/06/2025	Tenerife (Spain)	International
ITG Conference: Digitalisation, Water Cycle and Urban Resilience	26/06/2025	26/05/2025	A Coruña (Spain)	National
Opening of the WAVE Centre	27/06/2025	27/06/2025	Adeje (Spain)	National
IDeas 2025 Conference of the AGA-AEAS R&D&i Group	26/06/2025	27/06/2025	Pamplona (Spain)	National
META - 2025 Symposium on Evaluation of the Application of Water Treatment Processes - 14th General Assembly of the Spanish Water Treatment Board	17/07/2025	18/07/2025	Oviedo (Spain)	National
11th International Symposium on Wetland Pollutant Dynamics and Control - WETPOL	07/09/2025	11/09/2025	Gdansk (Poland)	International
Cali Biodiversity Week	29/09/2025	05/10/2025	Cali (Colombia)	International
3rd Congress on Smart Cities and Big Data	15/10/2025	16/10/2025	Alcoy (Spain)	National
Territory, Climate Change and Water Management in Marina Alta Conference - Denia Ciutat del Pensament	20/10/2025	20/10/2025	Denia (Spain)	National
SENTIATECH Congress	21/10/2025	22/10/2025	Valencia (Spain)	National
Desalination Technology Expo 2025	04/11/2025	06/11/2025	Valencia (Spain)	International
CADE International Conference - SCWG Technology at the Innovation Centre for the End-to-End Water Cycle	24/11/2024	24/11/2025	Salamanca (Spain)	International
Innovation Day X DL_Lab - Opening of Nice in Las Tablas	28/11/2024	24/11/2025	Madrid (Spain)	National
Prensa Ibérica Forum: From Building and Forgetting to Managing and Valuing: The Water Revolution in Small Communities in the Canary Islands	04/12/2024	04/01/2024	Santa Cruz de Tenerife (Spain)	National

5.3 Awards

Webtechs organised by Innovation in 2025

Internal knowledge transfer is a fundamental pillar for ensuring that innovation has a real impact on the company. We actively promote the dissemination of new solutions, lessons learned and technological advances to the production areas, so that they can apply them in their day-to-day operations. This continuous flow of knowledge makes it possible to accelerate the adoption of improvements, promote collaboration between teams and ensure that each innovation developed translates into tangible value for the territories where we operate.

In this regard, three webinars were held during the year under the webtech label, organised in collaboration with the Talent and Diversity Department, achieving notable internal participation.

- Water reuse: legislative changes and innovations proposed by Aqualia (9 April) brought together 150 participants.
- Transfer of good practices and innovative technologies (17 June), attended by 46 people.
- Challenges, opportunities and solutions for the treatment and valorisation of sewage sludge (17 December) recorded record participation, with 219 attendees.

These spaces have become a key channel for sharing experiences, success stories and technological advances across the organisation.

Another essential tool for disseminating knowledge is the internal newsletter **Aqualia Global News**, which compiled more than 70 news items related to Innovation activity during the year. These included 16 technical articles prepared by our research team, detailing the improvements and innovations developed to facilitate their application in services. Thanks to this tool, we bring innovation into day-to-day operations in every place where we operate.

Sludge observatories

In 2025, the sludge observatory was carried out, making it possible to **review the current and future regulatory framework** related to sewage sludge **management and valorisation, establish quantifiable criteria to determine its stability and hygienisation, and evaluate the suitability of different treatment technologies** (mesophilic anaerobic digestion, extended aeration and combinations with other technologies). To this end, the regulatory framework and a broad set of physicochemical and biological parameters were analysed, in line with parallel observation and energy and nutrient recovery efforts mentioned in the working team's exchange.

The results show clear differences between treatments: mesophilic anaerobic digestion, with or without pretreatment, offers the best levels of stability according to the indicators analysed, while extended aeration shows greater residual biodegradability and lower biological stability.

The biosolids evaluated amply comply with the legal contaminant limits at European level, reinforcing their suitability for agricultural use. The most relevant aspects include: stability as a critical parameter for future regulations, the lack of uniform criteria in current legislation, the recommendation to avoid strictly respirometric parameters when defining stability, consistency between degradability indicators and organic composition, and confirmation that mesophilic anaerobic digestion is a robust, scalable solution aligned with current and future regulatory requirements.

Our efforts to promote strategic, impact-oriented innovation were recognised in 2025 at national and international level.

II AEDyR Awards
We had a prominent participation in the 14th International Congress of the Spanish Desalination and Reuse Association (AEDyR), with contributions focused on innovation and sustainability in water treatment. In addition, we were recognised with three awards at the 2nd AEDyR Awards.

- **Sustainability**. The MARadentro project received an award in this category for its focus on managed aquifer recharge with reclaimed water, improving groundwater quality and availability
- **Excellence**. Aqualia's wastewater reclamation solutions, which can adapt water quality to different uses: urban, agricultural, industrial or environmental, were distinguished.
- **Young Presentation.** José Luis Marín, project technician, received the Young Presentation award for his presentation on the operation of the Guaymas seawater desalination plant outfall, noted for its positive environmental impact.

Sustainability Actions 2025 Award for the WAVE Innovation Centre
The municipality of Adeje (Tenerife) received the Sustainability Actions 2025 award, in the Public Authorities category, for the development of the WAVE Centre. The event, organised by Custommedia through its media outlets *Equipos & Talento* and *CompromisoRSE*, brought together more than 800 professionals for a day devoted to sharing sustainability initiatives and good practices.

21st San Alberto Magno Award for Scientific Merit 2025
We received this award from the Official Association of Chemists of Asturias and León and the Association of Chemists of the Principality of Asturias for our exceptional contribution to scientific and technical progress in the field of water, our impact on sustainability and quality of life, and our ability to achieve tangible solutions for eco-efficient water management through innovation.

15th Latin American Congress on Anaerobic Digestion of the International Water Association (IWA)
The paper "In situ pressurised biogas upgrading for sustainable biomethane production", developed at the Innovation Centre for the End-to-End Water Cycle in Salamanca in collaboration with the University of Valladolid and Aqualia, within the framework of the Eclosion project, was recognised as one of the best presentations at the 15th Latin American Congress on Anaerobic Digestion.

X-Prize Water Scarcity
MIDES, our pioneering microbial cell for low-energy seawater desalination in Denia, was prequalified in the prestigious XPRIZE Water Scarcity competition. This global competition is sponsored by the Mohamed bin Zayed Water Initiative, which awards up to USD 119 million to develop reliable and sustainable seawater desalination systems. Of the 674 candidates, 93 teams were invited to the second phase and USD 3 million was distributed to demonstrate their system at a scale of 1 m^3/d. This recognition places us among the world's leading innovators in water technology.

5.4 Participation in business associations

Our commitment to sustainability, cooperation and the generation of applied knowledge drives us to establish different types of public-private partnerships.

Associations in which the Innovation Department participates:

- Aguas Residuales - Spanish-speaking community for water treatment professionals
- Spanish Association for Desalination and Water Reuse (AEDyR)
- Spanish Urban Water Association (DAQUAS)
- Catalan Water Partnership (CWP)
- Principality of Asturias Water Cluster
- Directorate General for the Circular Economy (CLM)
- European Federation of Water and Sanitation Services (EUREAU)
- IMDEA Water Institute
- Catalan Institute for Water Research (ICRA)
- International Desalination and Reuse Association (IDRA)
- International Water Association (IWA)
- Sentiatech
- Water Positive Think Tank
- Young Water Professionals (YWP)
- Young Water Spain (YWS)

Associations with which we have collaborated at congresses, conferences, presentations, etc.

- Andalusia Water Supply and Sanitation (ASA)
- Latin American Association for Desalination and Water Reuse (ALADYR)
- Water Environment Federation (WEF)
- Latin American Association for Desalination and Water Reuse (ALADYR)
- National Association of Water and Sanitation Utilities in Mexico (ANEAS)
- Portuguese Water Distribution and Drainage Association (APDA)

6. Annexes

6.1 Projects ongoing in 2025 and their main lines of work

The 20 projects developed by the Innovation Department during 2025 are listed below, indicating their start and end dates. The universities and research centres participating in each project are specified. The main lines of work for each project are also indicated, with the main lines marked in blue and the secondary lines in grey.

								LINES OF WORK					
Regi.	Acronym	Title	Start	End	Location	Universities	Research centres	Sustainable water treatment	Alternative resources: reuse, drinking water treatment and desalination	Sustainability and energy efficiency	Circular Economy, Eco-Factories and Bio-Factories	Industrial water	Digital developments
20 06	LIFE ZERO WASTE WATER	*Positive energy wastewater treatment plant for combined treatment of waste water and biowaste in small populations*	2020	2025	Almería	U. of Santiago de Compostela (ES) U. of Valencia (ES)		●		○			
20 07	LIFE INFUSION	*Intensive treatment of waste effluents and conversion into useful sustainable outputs: biogas, nutrients and water*	2020	2025	Gijón		EURECAT (ES)	●				○	
21 03	MISIONES ECLOSION	New materials, technologies and processes for the generation, storage, transport and integration of renewable hydrogen and biomethane from bio-waste	2021	2025	Salamanca (Innovation Centre for the End-to-End Water Cycle)	U. Autonomous University of Madrid (ES) U. of Castilla-La Mancha (ES) U. of Extremadura (ES) U. of Valladolid (ES) U. of Girona (ES)	AICIA (ES)			●	○		
21 04	MISIONES ZEPPELIN	Research into Innovative and Efficient Green Hydrogen Production and Storage Technologies based on the Circular Economy	2021	2025	Algeciras	U. of Valladolid (ES)	CARTIF (ES)			●	○		
20 04	H2020 REWAISE	*Resilient Water Innovation for Smart Economy*	2020	2025	Moaña / Almería (REUSA Hub) / Denia (Desalination Innovation Centre) / Adeje (WAVE Centre) / Oviedo / Salamanca	Coventry U. (RE) Lunds Universitet (SU) Politechnika Poznanska (PO) U. of Valencia (ES) Vysoka Skola Banska - Technicka Univerzita Ostrava (RE) Zagreb Uni. Sveu-ciliste U Zagrebu Fakultet Elektro-tehnike I Racu-narstva (CR)	CIEMAT (ES)		●		○		●
20 05	LIFE PHOENIX	*Innovative cost-effective multibarrier treatments for reusing water for agricultural irrigation*	2020	2025	Almería (REUSA Hub)	Ciesol (ES)	ICMS (ES)	○	●				
21 01	H2020 NICE	*Innovative and enhanced nature-based solutions for sustainable urban water cycle*	2021	2025	Talavera de la Reina (INTEXT Hub) / Madrid	Aarhus Universitet (DI) Politechnika Gdanska (PO) Politecnico Di Torino (IT) Sveriges Lantbruksuniversitet (SU)	IMDEA Energía (ES)	●	○				
21 02	LIFE RESEAU	*Resilience enhancement in the urban water sector*	2021	2025	Moaña		CETIM (ES)	●					○
22 02	HE D4RUNOFF	*Smart implementation of adaptive hybrid solutions in sewage networks for preventing and managing diffuse pollution from urban water runoff*	2022	2026	Santander	U. of Cantabria (ES) U. of Copenhagen (DI)	CIDAUT (ES)	○					●

								LINES OF WORK					
Regi.	Acronym	Title	Start	End	Location	Universities	Research centres	Sustainable water treatment	Alternative resources: reuse, drinking water treatment and desalination	Sustainability and energy efficiency	Circular Economy, Eco-Factories and Bio-Factories	Industrial water	Digital developments
22 03	HE CHEERS	*Producing novel non-plant biomass feedstocks and bio-based products through upcycling and the cascading use of brewery side-streams*	2022	2026	Lleida	U. of Valladolid (ES) ZHAW (SU)	CIEMAT (ES)				●	●	
22 05	HE NINFA	*Taking action to prevent and mitigate pollution of groundwater bodies*	2022	2026	Los Alcázares	U. Degli Studi Di Roma La Sapienza (IT)	ENERGYLAB (ES)		●				●
23 01	HE RESURGENCE	*Industrial water circularity: reuse, resource recovery and energy efficiency for greener digitized processes*	2023	2027	Algeciras	Kungliga Tekniska Hoegskolan (SU) National U. of Sciences And Technology At Islamabad (PK) Scuola Superiore Di Studi Universita-ri E Di Perfeziona-mento S Anna (IT) Sveuciliste U Zagrebu Fakultet Elektrotehnike I Racunarstva (CR) U. of Porto (PT)	IMDEA Energía (ES)				●	●	
24 01	LIFE SALTEAU	*Sustainable drinking and irrigation water production from saline alternative water resources*	2024	2028	Denia (Desalination Innovation Centre) / Adeje (WAVE Centre)	U. of Castilla-La Mancha (ES) U. of Salamanca (ES)	ITMATI (ES)		●				
24 02	INTERREG GESTEAUR	Sustainable and digitalised water management in rural environments of the SUDOE area	2024	2027	Tiñosillos / Fontiveros		ITQ (ES)				●		●
24 03	HE CIRSEAU	*Building a water smart economy and society*	2024	2026	Madrid	NTUA - National Technical U. of Athens (GR) TUD - Delft U. of Technology (PA)	CETIM (ES)						●
24 04	HE UNITED CIRCLES	*Interconnected efforts from feasibility to finance for industrial-urban symbiosis driven by circularity* hubs	2024	2028	Salamanca (Innovation Centre for the End-to-End Water Cycle)	U. of Almería (ES)	IETU. INSTYTUT EKOLOGII TERENOW UPRZEMYSLO-WIONYCH (PO)		●		●		
24 05	INTERREG IDIWATER	DESAL + LIVING LAB MAC	2024	2026	Adeje (WAVE Centre)	U. of Nouakchott (MR) U. of La Laguna (ES) U. of Las Palmas de Gran Canaria (ES) U. of Cabo Verde	CETIM (ES)		●				
25 01	LIFE SMALLWAT	*Advanced BIOlogical and ELECTRochemicAl processes for a sustainable wastewater treatment in small and medium agglomerations.*	2025	2029	Almería, Talavera, Brittany (France) and La Gomera	Aarhus Universitet (DI)	CETIM (ES)	●					
25 02	HE WATERSENS	*Decentralizing WATER Services by Developing Water SENSitive Cities combining innovative Blue-Green-Grey Infrastructures with Smart Integrated Water Management Systems*	2025	2029	Badajoz		DESERT RESEARCH CENTER (EG)	●	●		●		
25 04	AVI-PURAGUA	Treatment and Removal of Emerging Contaminants and Effluent Regulation for Water Transformation	2025	2028	Denia (Alicante) (CID)		INRAE (FR)		●		●		●
								8	9	3	9	3	7

6.2 Innovation Management System: ISO 5600 certificate

AENOR

R&D&i Management System Certificate

AENOR
INNOVATION MANAGEMENT
ISO 56001

IDI-0084/2010

AENOR certifies that the organization

Grupo FCC AQUALIA

has a R&D&i management system according to the ISO 56001:2024 Standard

for the activities: Research, development and innovation in:
- Operation, maintenance, environmental and technological processes (wastewater collection systems and treatment, desalination, water reuse, drinking water treatment and distribution) for integral water management.
- Biology and water chemistry.
- Computer science (control systems for production processes, instrumentation and simulation, information systems, design of components and client management applications) for integral water management.

which is/are carried out in: Oficinas Centrales (Centro permanente) AVENIDA DEL CAMINO DE SANTIAGO, 40. 28050 - MADRID

First issued on:2010-12-14 Last issued:2025-07-18
Validity date:2028-07-18

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6.3 Transferred product sheets in 2025

Reuse, drinking water treatment and desalination

PHYSICOCHEMICAL PRETREATMENT

Filter media

Scale **References**
>100 m³/h.

Description	Comparison database of novel filter media (granular media filtration). Capacity to compare novel filter media versus the state of the art (sand-anthracite) Comparison of new, more efficient media versus sand in different scenarios. Pilot plant for validation and commercial demonstration. Obtaining water-quality, operation and design data.
Application	• Drinking water treatment. • Wastewater reuse. • Osmosis pretreatment. • Removal of turbidity and suspended solids. • Removal of iron and manganese. • River/reservoir water treatment. • Swimming pool water treatment. • Industrial processes.
Competitive advantages	• Validation of novel filter media and transfer of these technologies to production. • Improved quality, filter run lengths and costs. • Commercial demonstrations.
Implementations	• Arcos/Frontera Drinking Water Treatment Plant Fe and Mn removal (2025). • Valverde Drinking Water Treatment Plant. Mn removal (2024). • Racons Brackish Water Desalination Plant (EDAS). RO osmosis pretreatment (2022). • Els Poblets Brackish Water Desalination Plant (EDAS). Osmosis pretreatment (2023). • Mar de Alborán Seawater Desalination Plant (EDAM). RO pretreatment (2023). • Guaymas Seawater Desalination Plant (EDAM) Osmosis pretreatment (2022). • Mostaganem Seawater desalination plant (EDAM). Osmosis pretreatment (2023). • Cap d'Jinet Seawater Desalination Plant (EDAM) Osmosis pretreatment (2023).
Protection and registration	Trade secret
Notes	• Multi-column pilot plant (48 m³/d) with four filters working in parallel. • Transportable. Requires cover.

Sustainable water treatment

AEROBIC

Moving Bed Membrane Bio-Reactor MBMBR

Scale **References**
(1,450 PE, 270 m³/day).

Description	Wastewater treatment based on a membrane bioreactor (MBR) with dosing of a support material (activated carbon, biochar). It combines a biological process + supported biomass (biofilm) + membrane filtration + adsorption, resulting in a very compact and highly effective process. It reduces membrane fouling and improves the quality of the treated water, increasing microcontaminant removal efficiency under the UWWTD by up to 70% compared with the conventional configuration.
Application	• Technology applicable to new or existing MBR reactors for wastewater treatment. • Resolve problems associated with membrane fouling. • Achieve high microcontaminant removal efficiencies to meet the objectives of the UWWTD.
Competitive advantages	A 30% reduction in reagent consumption for membrane cleaning is estimated.
Implementations	• Grado WWTP (Asturias): piloting with flat-sheet membrane MBR (1 m³/h). Dosing of biochar produced from sewage sludge. Year 2020. • Villabona WWTP (Asturias) - in progress: Existing MBR (1,450 PE, average permeate flow 270 m³/day). Dosing of commercial powdered activated carbon. February 2025.
Protection and registration	Trade secret

Reuse, drinking water treatment and desalination

PRESSURISED MEMBRANES

Nanofiltration (NF) Hollow-Fibre Membranes

Demonstration scale
(1-10 m³/h).

Description	Hollow-fibre nanofiltration membranes remove a wide range of contaminants, including divalent ions, organic matter, emerging contaminants and some monovalent ions. Hollow fibre offers a large filtration surface area in a small space, with high mechanical and chemical resistance. Compared with other filtration processes, hollow-fibre nanofiltration requires less energy and is notably more robust, with no pretreatment required.
Application	• Drinking water treatment. • Wastewater reuse. • Reverse osmosis pretreatment. • Industrial water treatment. • Water softening. • Sulphate removal. • Removal of specific ions from water (Al, Mn, Fe…) • Removal of microcontaminants and PFAS. • Removal of organic matter or colour in water. • Avoid generation of disinfection by-products.
Competitive advantages	• High separation efficiency. • Low energy consumption, operating at low pressure. • Compact design. • Chemical resistance, tolerating oxidants, acids and bases
Implementations	• Icod de los Vinos. (2022-2024). • Mancomunidad Nogales (2025). • Laboratory scale. 14 locations have been tested.
Protection and registration	Commercial agreement (exclusivity or competitive advantages).
Notes	• Pilot: NX Filtration equipment in a 20-foot container. 1-5 m³/h. • Laboratory: rapid portable test kit available.

Reuse, drinking water treatment and desalination

PRESSURISED MEMBRANES

Reverse Osmosis Remineralisation

Scale **References**
(>100 m³/h).

Description	Full-scale implementation tests are carried out to corroborate mathematical models and projections for the remineralisation process. Different sequence scenarios are implemented in piloting and their correspondence with full-scale sizing is verified.
Application	• Remineralisation in seawater desalination plants. • DWTP requiring a remineralisation stage.
Competitive advantages	• Process optimisation. • Parametric validation according to regulations.
Implementations	• Guaymas seawater desalination plant (17,280 m³/d) (2023). • Al-Alamein seawater desalination plant (150,000 m³/d) (2023). La Caleta seawater desalination plant (14,000 m³/d) (2025). • Fonsalía seawater desalination plant (21,000 m³/d) (2024).
Protection and registration	Trade secret
Notes	Pilot available, with 3 m-high columns and 1 m³/h treatment capacity.

Reuse, drinking water treatment and desalination

NON-PRESSURISED MEMBRANES

Microbial Desalination Cell (MDC)

Pilot
< 1 m³/h

Description	The Microbial Desalination Cell (MDC) makes it possible to carry out desalination processes by harnessing the energy generated in wastewater treatment without the need to supply external energy to the process. Bioelectrochemistry is combined with electrodialysis, making it possible to reduce the salt content of one stream while reducing the organic matter present in another stream.
Application	• Desalination. • Wastewater reclamation. • Industrial water treatment. • Industrial wastewater reclamation. • Decentralised systems.
Competitive advantages	• Very low energy consumption. • Energy optimisation. • Dual process (wastewater treatment/desalination).
Implementations	• Racons EDAS (Denia) (2018). • La Caleta seawater desalination plant (Tenerife) (2020).
Protection and registration	Patent granted: EP3336064, US10.954.145 and 419316 **See MDC US patent title 10,954,145**
Notes	• Two pilot plants available. • 40-foot container, treatment capacity 3 m³/d brackish water...

Sustainable water treatment

AEROBIC

AquaGranular

Two **demonstration-scale** reactors (450 m³ and >1,000 m³/d).

Description	Aerobic granular biomass is an improvement on conventional activated sludge. Microorganism aggregates (>0.2 mm) have a much higher settling velocity than activated sludge (>8.0 versus 1.0 m/h). They are formed due to the operating conditions imposed in the reactor (operating phases, feeding cycles…). Granular biomass compaction is achieved in less than 5 minutes, obtaining sludge volume indices (SVI) below 50 mL/g. Simultaneous biological processes take place inside the granule, so both organic matter and nutrients can be removed.
Application	Removal of COD, N, P and solids from pretreated urban wastewater through a more compact and efficient alternative to conventional activated sludge systems. The granular reactor can replace the conventional biological reactor and secondary clarifier.
Competitive advantages	Granular biomass reactors are more compact, require 75% less surface area and consume 30% less energy than activated sludge processes. The high settling velocity avoids the need to build a clarifier and recirculation systems. Granular technology can be used to build new plants or make use of existing infrastructure to increase treatment capacity without increasing the area used by the WWTP.
Implementations	• Moaña WWTP (Pontevedra), treating up to 40% of the wastewater treatment plant's inlet flow through two 450 m³ reactors, year 2024. • El Bobar Wastewater Treatment Plant (EDAR). 27 m³ pilot. Year 2025.
Notes	Container-sized pilot (50 m³).

Reuse, drinking water treatment and desalination

SPECIFIC CONTAMINANTS

Chlorine Dioxide Trihalomethanes

Scale **References**
(100 m^3/h).

Description	Generation of chlorine dioxide (ClO_2) *in situ* for dosing as a disinfectant in drinking water with trihalomethane (THM) problems. Sodium chlorite ($NaClO_2$) and hydrogen chloride (HCl) are used, reacting to generate ClO_2 in the reactor.
Application	Application in water treatment plants with THM problems.
Competitive advantages	• Dosing ClO_2 as a disinfectant reduces THM concentration compared with other types of disinfection compounds.
Implementations	• Nogales DWTP (THM reduction, DWTP capacity 400 m^3/h) (2024). • Racons EDAS (Denia, EDAS capacity 700 m^3/h) (2019). • Torrenueva-Castellar DWTP (1,800 m^3/d) (2020). • Ampuriabrava distribution network (2018).
Protection and registration	Trade secret
Notes	• Colbergue CLOS CW series equipment, chlorine dioxide generator with $NaClO_2$ and HCl, with production capacity of 360 g/h.

6.4 Patents registered by Aqualia

Type of protection	Short name	Grant date	Grant No.
OEPM national patent	Anaerobic batch water treatment system	06/05/2009	ES2300164*
OPEM national patent EPO European patent European patent	ELAN® Anammox process ELAN® Anammox process ELAN® in the water line	10/09/2014 17/12/2014 30/08/2023	ES2466090 EP2740713 EP3255016
EPO European patent EPO European patent EPO European patent	Fluidised-bed MFCs FBBR (ELSAR®) Influent distribution and Mixing Device for UASB Reactors PUSH PUSH improvement	22/04/2020 02/06/2021	EP2927196 18398327
EPO European patent PCT international patent PCT international patent	Biogas upgrading Biogas upgrading USA Biogas upgrading Mexico	29/03/2017 27/02/2018 02/12/2021	EP3061515 US9, 901, 864 B2 MX388417
EPO European patent PCT international patent PCT international patent	MDC (Microbial Desalination Cells MIDES) MDC USA and Mexico MDC USA and Mexico	26/08/2020 23/03/2021 02/12/2024	EP3336064 US10,954,145 MX/a/2019/007194
EPO European patent PCT international patent PCT international patent	SAnMBR SAnMBR USA and Mexico SAnMBR USA and Mexico	20/05/2020 03/03/2020 21/06/2022	EP3225596 US10,577,266 B2 MX393297
EPO European patent PCT international patent PCT international patent PCT international patent	ADVANSIST ADVANISIST/ANPHORA® COLOMBIA ADVANISIST/ANPHORA® MEXICO ADVANISIST/ANPHORA® USA	10/07/2020 31/07/2023 19/07/2024 03/09/2024	EP3454652 CO41631 MX415126 US12,077,737
EPO European patent	DARE	19/05/2021	EP3527538
EPO European patent	STRUVITE CRYSTALLISATION	17/04/2024	EP3112320
EPO European patent	Purasand High Recovery	31/07/2024	EP4344761
EPO European patent	WETFAN	27/11/2024	EP4375242

* This patent expired on 5 September 2025.

6.5 Trademarks registered by Aqualia

Type of protection	Short name	Grant date	Grant No.
Trademark registration	ELAN®	08/06/2013	11265559
UK trademark registration	ELAN® UK	15/09/2022	UK00911265559
Trademark registration	AQU-ELAN®	16/09/2024	12785771
Trademark registration	ELSAR®	02/06/2021	18398327
Trademark registration	ABADBioenergy®	22/05/2017	16146151
Trademark registration	ABAD GRID®	02/08/2025	19166861
Trademark registration	ANPHORA®	02/06/2021	1389329
Trademark registration	AQUAVITE®	02/06/2021	18398328
Trademark registration	ALMA DE MAR®	14/08/2024	1823060
Trademark registration	DAHLIA®	01/06/2023	18828624
Trademark registration	CAMELLIA®	19/06/2024	1898624

2025 Annual Report
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See 2025 Sustainability Report