

# Deliverable 6.6

Report on water sector and industry  
in Europe and beyond

**Disclaimer:** This deliverable has not yet been approved by the European Commission and should be seen as draft!

Author(s): Gerard van den Berg

Date: 29/10/2024





## Technical References

Project Acronym	ULTIMATE
Project Title	ULTIMATE: indUstry water-utiLiTy symbiosis for a sMarter wATer society
Project Coordinator	Gerard van den Berg KWR
Project Duration	01.06.2020 – 31.10.2024 (53 months)

Deliverable No.	6.6
Dissemination level <sup>1</sup>	PU
Work Package	6
Task	6.5
Lead beneficiary	KWR
Contributing beneficiary(ies)	WE, ESCI, others
Author(s)	Gerard van den Berg
Quality Assurance	Joep van den Broeke
Due date of deliverable	31-10-2024
Actual submission date	29-10-2024

<sup>1</sup> PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)





## Document history

V	Date	Author(s) /Reviewer(s) (Beneficiary)	Description
0.1	27 October 2024	Gerard van den Berg	Draft version for QA
0.2	27 October 2024	Joep van den Broeke	Quality Assurance
1	28 October 2024	Gerard van den Berg	Final version to be submitted





## Executive Summary

ULTIMATE was initiated to become a catalyst of a particular type of industrial symbiosis which is termed “Water Smart Industrial Symbiosis” (WSIS). Water and wastewater play a key role in WSIS, both as a reusable resource per se but also as a vector for energy and materials to be extracted, treated, stored and reused within a dynamic socio-economic and business oriented industrial ecosystem.

The setup of ULTIMATE was designed in such a way that it would support uptake in and transfer of WSIS knowledge and experiences to other industrial environments, different regional and cultural settings, as well as the upscaling of current case studies. As such, ULTIMATE actively contributes to the green and digital ‘twin’ transition promoted by the EC in the EU and beyond.

ULTIMATE has successfully shown the potential of Water Smart Industrial Symbiosis (WSIS) based on nine case studies in different industrial settings. The uptake of WSIS, however, is strongly dependent on the availability of wastewater and the opportunities for reuse of water, energy and resources, as well as a positive business case and governance and legal arrangements in place. ULTIMATE partners have put significant efforts in sharing their experiences with WSIS with water industry and industrial stakeholders across Europe and beyond, and identify opportunities for WSIS in different industrial settings. To reach out to water industry and industrial stakeholders, the following activities have been carried out:

- *Matchmaking events for water industry and interested industrial stakeholders*  
Water Europe has hosted events for water industry and interested industrial stakeholders (primary members of Water Europe). These include Water Market Europe (as well as other Water Europe) events that were generally organised in Brussels but also in connection to other events aiming to extend to other interested stakeholders with support and/or contributions by ULTIMATE (partners). These events were aimed at promoting interaction and matchmaking with industrial associations, industrial stakeholders and other interested parties. In addition, two Water Market Europe roadshows have been organised back to back to important international events selected according to their calendar and matching with the ULTIMATE project work plan.
- *Other international events for water industry and industrial stakeholders*  
In addition to events organised by consortium partner Water Europe, ULTIMATE has also contributed to events organised by the EC and different EU institutions, as well as others, stimulating interaction and exchange of knowledge and experiences with industrial parties. ULTIMATE has actively linked to Research and Innovation clusters (ICT4Water, CIRSEAU, Biorefine, Hubs4Circularity), and shared experiences and knowledge with other projects and initiatives that have a focus on





a variety of circular economy aspects related to one or more industrial sectors. These contributions gave the opportunity to discuss and share results with additional industrial stakeholders and industrial sectors and settings not covered by ULTIMATE. Finally, ULTIMATE has contributed to a significant number of international events (beyond those of WE) sharing knowledge and experiences on water smart industrial symbiosis. These include Amsterdam International Water Week (AIWW), ECOMONDO, Blue Planet Berlin Water Dialogues, Water Reuse Europe, and the European Sustainable Nutrient Initiative (ESNI).

- *International learning and action alliances with regions with high replication potential*

ULTIMATE has identified a number of regions with potential for replication in which focused activities have been organised focussing on the development of learning and action alliances (also building on the Watershare platform and its partners and regional hubs). The first region encompasses Romania, Greece and selected Western Balkans and Eastern Partnership countries (Moldova, Serbia, Albania, North Macedonia and Ukraine) through the WaterWise Excellence Hub. The second region includes The Netherlands and Flanders through the Water in the Circular Economy collaborative research programme with Dutch and Flemish public water utilities and industrial partners. Also other regions have been identified as having potential for replication.

STRANE has developed a startup company (NEWASYS) with the specific goal to provide services to municipalities, water utilities and industries in France in the field of circularity and WSIS. Other consortium partners also are promoting WSIS as a circular solution to deal with water challenges, supporting new initiatives in their home countries, e.g. in Italy, Spain, Greece and Germany.

Also, two EU funded projects incorporate results and outcomes from ULTIMATE and further promote the concept of WSIS by stimulating adoption and implementation of innovative technologies and further development and incorporation of new insights in the Water Europe Marketplace.

- *International conference & exhibitions for water industry and industrial stakeholders*  
To profile project experiences and solutions to industries ULTIMATE has actively contributed to international professional conferences, such as the International Water Association (IWA) World Water Congress. ULTIMATE has also contributed to the UN Water Conference in New York in 2023 promoting the concept of WSIS to support the transformation to a circular economy.
- *Contributions to (local, regional) events dedicated to industries*  
In addition to international conferences and exhibitions, ULTIMATE has organised and contributed to dedicated events for industrial sectors with a combination of exhibition stand, stakeholder dialogue meetings, networking attendance and formal speaking slots.





- *Publications in professional journals for industrial stakeholders*

Finally, ULTIMATE partners have published articles on water smart industrial symbiosis, approaches, and project outcomes in professional journals targeting industrial stakeholders.

The outreach to the water industry and industrial stakeholders in Europe and beyond has clearly benefited to a large extent from the Horizon2020 grant, which gave ULTIMATE the opportunity to link activities on local and regional scale to European targets and policies regarding circularity towards 2050, showcasing the **EU-added value**.

The **European scale of research** has been used to the benefit of consortium partners providing services and bringing innovations (e.g. technologies contributing to circularity) to the market. Also the translation to local and regional scale development and implementation of WSIS has been stimulated by the broad outreach of ULTIMATE. The development and continuous improvement and extension (in follow up projects) of a market tool (the Water Europe Marketplace) has supported the **exploitation potential** of ULTIMATE results.

**Policy development** in the field of circularity (and goals to create a water smart society) has been strongly supported by actual data from real scale pilots applying and testing innovative solutions (technologies, stakeholder engagement, governance arrangement, business models, etc.) in real environments. ULTIMATE has presented results as part of policy sessions (organised mainly by Water Europe).

## Disclaimer

This publication reflects only the author's views and the European Union is not liable for any use that may be made of the information contained therein.





## Table of Contents

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>8</b>
1.1.	ULTIMATE GENERAL OUTLINE .....	8
1.2.	SETUP OF DELIVERABLE .....	9
<b>2.</b>	<b>OUTREACH ACTIVITIES TO THE WATER SECTOR AND INDUSTRY .....</b>	<b>11</b>
2.1.	MATCHMAKING EVENTS FOR WATER INDUSTRY AND INDUSTRIAL STAKEHOLDERS .....	11
2.2.	OTHER INTERNATIONAL EVENTS FOR WATER INDUSTRY AND INDUSTRIAL STAKEHOLDERS 14	
2.3.	INTERNATIONAL LEARNING AND ACTION ALLIANCES WITH REGIONS WITH HIGH REPLICATION POTENTIAL .....	18
2.4.	INTERNATIONAL CONFERENCE & EXHIBITIONS FOR WATER INDUSTRY AND INDUSTRIAL STAKEHOLDERS.....	20
2.5.	CONTRIBUTIONS TO (LOCAL, REGIONAL) EVENTS DEDICATED TO INDUSTRIES .....	23
2.6.	PUBLICATIONS IN PROFESSIONAL JOURNALS FOR INDUSTRIAL STAKEHOLDERS.....	29
<b>3.</b>	<b>CONCLUSIONS .....</b>	<b>31</b>







# 1. Introduction

## 1.1. ULTIMATE general outline

ULTIMATE was initiated to become a catalyst of a particular type of industrial symbiosis which is termed “Water Smart Industrial Symbiosis” (WSIS). Water and wastewater play a key role in WSIS, both as a reusable resource per se but also as a vector for energy and materials to be extracted, treated, stored and reused within a dynamic socio-economic and business oriented industrial ecosystem.

Industry accounts for circa 40% of all water abstractions in Europe, making it one of the largest water users next to agriculture and households. Circular concepts are already implemented in industry, but the European Commission (EC) is now giving specific attention to ‘Water Smart Industrial Symbiosis’ in which economic value and increased sustainability is created by introducing circular symbiotic arrangements between industry and water service providers. This approach will further enhance the opportunities for recovery and reuse of water embedded resources and stimulate new circular business arrangements (public-private partnerships, new service providers, specialised technology suppliers, etc.).

ULTIMATE supports the transition to WSIS and has systematically addressed technical, digital, socio-economic, governance and business systems interdependencies, by:

- showcasing successful high profile WSIS paradigms where water and industrial sectors collaborate to deliver innovative resource-efficient, circular solutions, with special emphasis on cross synergies, transferability and applicability of the WSIS concept.
- developing, optimising and demonstrating more than 25 novel technologies for water reclamation and reuse (recovery, refining and reuse of wastewater from industries and municipalities), exploitation of energy and heat (extraction of energy, combined water-energy management, water enabled heat transfer, storage and recovery of heat), nutrient and material recovery/reuse (nutrient mining, extraction/reuse of high-added value exploitable compounds), and assessing the impact with life cycle and risk based tools, within key industrial sectors (agro-food processing industry, beverage industry, heavy chemical/petrochemical industry and biotech industry).
- assembling and applying digital support tools to improve the design, control and operation of industrial symbiotic schemes, such as: an ontology model, a stress testing tool building on hybrid modelling and simulation to experiment with alternative socio-economic/environmental scenarios, an interactive gamified 3D visualisation tool to support the (co-)design of circular systems across industries,







and immersive, eXtended Reality (XR) built narratives to learn about complex issues.

- developing and demonstrating novel exploitation/valorisation schemes (value chains) for these resources, through a range of business models and symbiotic arrangements, linking them to ongoing investments and plans for industries and water utilities.
- designing, promoting and accelerating business transformation to WSIS, through active stakeholder engagement and innovation co-creation, by drawing on transdisciplinary knowledge and capacities from Art, Technology and Digital Humanities, for business-to-business, citizen and Living Lab engagement.
- reducing existing barriers for recovery, reuse and commercial exploitation of valuable water-related resources (incl. requirements and standards for reuse) through WSIS novel governance approaches and best practice guidelines.

The setup of ULTIMATE is such that it supports uptake in and transfer of WSIS knowledge and experiences to other industrial environments, different regional and cultural settings, as well as the upscaling of current case studies. As such, ULTIMATE actively contributes to the green and digital ‘twin’ transition promoted by the EC in the EU and beyond.

### 1.2. Setup of deliverable

ULTIMATE deliverable D6.6 (Report on water sector and industry outreach in Europe and beyond) gives an overview of how ULTIMATE has connected to, and engaged with, multipliers, events and industries in Europe and worldwide. This deliverable is linked to task 6.5. KWR has been lead partner for this Task and Deliverable.

To reach out to water industry and industrial stakeholders, this deliverable distinguishes between the following activities:

- *Matchmaking events for water industry and interested industrial stakeholders*  
Water Europe has hosted events for water industry and interested industrial stakeholders (primary members of Water Europe). These include Water Market Europe (as well as other Water Europe) events (generally organised in Brussels, but also in connection to other events aiming to extend to other interested stakeholders, with support and/or contributions by ULTIMATE (partners) aimed to promote interaction and matchmaking with industrial associations, industrial stakeholders and other interested parties. In addition two Water Market Europe roadshows have been organised back to back to important international events selected according to their calendar and matching with the ULTIMATE project work plan.





- *Other international events for water industry and industrial stakeholders*  
In addition to events organised by consortium partner Water Europe, ULTIMATE has also contributed to events organised by different organisations stimulating interaction and exchange of knowledge and experiences with industrial parties. These also include interactions with other projects and initiatives that have a focus on a variety of circular economy aspects related to one or more industrial sectors
- *International learning and action alliances with regions with high replication potential*  
ULTIMATE has identified a number of regions with potential for replication in which focused activities have been organised focussing on the development of learning and action alliances (also building on the Watershare platform and its partners and regional hubs).
- *International conference & exhibitions for water industry and industrial stakeholders*  
To profile project experiences and solutions to industries ULTIMATE has actively contributed to international professional conferences, such as the International Water Association (IWA) World Water Congress.
- *Contributions to (local, regional) events dedicated to industries*  
In addition to international conferences and exhibitions, ULTIMATE has organised and contributed to dedicated events for industrial sectors with a combination of exhibition stand, stakeholder dialogue meetings, networking attendance and formal speaking slots.
- *Publications in professional journals for industrial stakeholders*  
Finally, ULTIMATE partners have published articles on water smart industrial symbiosis, approaches, and project outcomes in professional journals targeting industrial stakeholders.



## 2. Outreach activities to the water sector and industry

### 2.1. Matchmaking events for water industry and industrial stakeholders

ULTIMATE has co-hosted and contributed to a large number of Water Europe events (Water Market Europe, Water Knowledge Europe, Water Innovation Europe, Water Projects Europe) addressing water smart industrial symbiosis as an important collaborative approach by water and wastewater utilities and industries to support a transformation into a circular economy, and apply new approaches, specifically addressing WSIS, to achieve circular economy goals for Europe and beyond. Two Water Project Europe events have been organised in parallel to ECOMONDO, a yearly green technology exposition. In addition two roadshows have been organised by Water Europe. In all mentioned events ULTIMATE partners have presented technical improvements as well as results of application of WSIS from ULTIMATE case studies and potential for implementation in other industrial settings.



Contribution to panel session during the Water Innovation Europe 2024 event



Event	Location and date	contribution	Partners involved
Water Market Europe Roadshow	Brussels (B), October 2024	Roadshow on “Water treatment, water monitoring and management”	WE
Water Market Europe	Brussels (B), September 2024	ULTIMATE was co-organiser of and contributed to this event showcasing cutting-edge solutions from EU-supported projects, with a focus on the applicability and uptake of circular water systems	KWR, WE
Water Innovation Europe	Brussels (B), June 2024	Presentation on the Kalundborg case study during the workshop on “Building water-smart economy: How circular economy solutions contribute to ensuring water resilience and security?”	KWR, AQUALIA, KALUND, WE
Water Innovation Europe	Brussels (B), June 2024	Contribution as panelist in the session on “Turn out linear process and go straight ahead to circular economy”	KWR, WE
Water Market Europe	Brussels (B), March 2024	Presentation on ‘Reuse of reclaimed water for industrial applications, Aretusa CS’	ARETUSA, WE
Water Market Europe Roadshow	Venice (IT), December 2023	Roadshow 2023 on “Una visione di innovazione per le acque nel territorio veneziano e regionale”.	ARETUSA, UNIVPM, WE
Water Projects Europe on at ECOMONDO	Rimini (IT), November 2023	Presentation on Best practices e cooperazione	UNIVPM
Water Projects Europe	Brussels (B), February 2023	Contribution to session on Communities of Practice, presentation on ULTIMATE, strength of cooperation to achieve circular	KWR, WE





Event	Location and date	contribution	Partners involved
		economy goals	
Water Projects Europe at Ecomondo	Rimini (IT), November 2022	Contribution to Clusters, synergies and interface with market players and problem owners	UNIVPM, ARETUSA, WE
Water Projects Europe	Brussels (B), June 2022	Side event co-hosted by ULTIMATE on How can innovation projects support a water smart industrial emissions directive, discussion between 5 case studies	KWR, UNIVPM, WE
Water Projects Europe	Brussels (B), March 2022	Contribution to session on Circular solutions for water smart industrial management and industrial symbiosis	KWR, WE
Water Project Europe at Ecomondo	Rimini (IT), November 2021	Contribution to sessions	UNIVPM, ARETUSA, WE
Water Knowledge Europe	Brussels (B), March 2021	Presentation on Water in the Circular Economy Policy Agenda	WE





## 2.2. Other international events for water industry and industrial stakeholders

ULTIMATE has actively contributed to events organised by the European Commission and EC institutions, specifically the Green Week events and events on the New European Bauhaus, and events organised by the Joint Research Centre (JRC), showcasing results about WSIS application in Europe.

In addition, ULTIMATE has connected to existing clusters, such as ICT4Water, CIRSEAU, the BIOREFINE cluster and the Hubs4Circularity, to secure broader dissemination and uptake of results, with a specific focus on industry in Europe, and also contributed to events organised by these clusters.

ULTIMATE has also linked to individual EU funded projects focusing on circularity in different industrial sectors, and also contributed to events organised by these projects. Specifically, this concerned the following projects:

- LIFE ANHIDRA (focus on circular solutions for the textile industry)
- LIFE BIOSCHAMP (focus on circular solutions for sustainable food production, specifically the mushroom industry)
- LIFE ECODigestion 2.0 (focus on the generation of biogas in sewage treatment plant digesters)
- LIFE Green Sewer (focus on the treatment of urban and industrial wastewater)
- SAIS SPIRE (is the skills alliance for Industrial Symbiosis representing the cement, ceramics, chemicals, engineering, minerals, non-ferrous, steel and water industries)
- InterReg WaterMan (focus on strategies for reuse of water and recirculate retained water for e.g. industry and agriculture)

These contributions gave the opportunity to discuss and share results with additional industrial stakeholders and industrial sectors and settings not covered by ULTIMATE.

Finally, ULTIMATE has contributed to a significant number of international events (beyond those of the IWA) sharing knowledge and experiences on water smart industrial symbiosis. These include:

- Amsterdam International Water Week (AIWW)
- ECOMONDO
- Blue Planet Berlin Water Dialogues
- Water Reuse Europe
- European Sustainable Nutrient Initiative (ESNI)





Event	Location and date	Contribution	Partners involved
EU Green Week partner event	Online, June 2024	Co-organiser of a session on ‘The circular water vision of Water Europe within the context of new EU directives’	UNIVPM, ARETUSA, KWR, WE
EU Green Week – LIFE ANHIDRA partner event	Online, June 2024	Presentation on Water smart industrial symbiosis	KWR
EU Green Week – BIOSCHAMP partner event	Online, May 2024	Contribution to webinar on Mushroom production, how does it contribute to food-driven water resilience.	WE
EU Green Week – LIFE ECOdigestion 2.0 partner event	Online, May 2024	Presentation on Biogas production from anaerobic pre-treatment of municipal and/or food industry wastewater in Karmiel, Israel	GSR
New European Bauhaus (NEB) festival	Brussels (B), June 2024	ULTIMATE Exhibition booth: <i>Wastewater: A new resource?</i>	NTNU, KWR, ESCI
SAIS SPIRE Rollout event on water	Brussels (B), March 2024	Contribution to event, presentation on experiences from Aretusa case study	ARETUSA
Ecomondo	Rimini (IT), November 2023	Presentation on Desalination approach & saline water management for reuse in Horizon2020 ULTIMATE in event on Source to sea approach, saline water and intrusion management, desalination and bathing water	UNIVPM, ARETUSA







Event	Location and date	Contribution	Partners involved
Amsterdam International Water Week (AIWW)	Amsterdam (NL), November 2023	Contribution to seminar and presentation on experiences from the Kalundborg symbiosis case study	KALUNDBORG
Blue Planet Berlin Water Dialogues	Online, October 2023	Presentation on Water smart industrial symbioses: recovering and reusing resources from industrial wastewater	KWB
Water Reuse Europe	Brussels (B), October 2023	Presentation on ULTIMATE promoting water smart industrial symbiosis	KWR
General Assembly Réseau REUSE	Paris (FR), September 2023	Contribution to discussion reuse opportunities and regulation in France	STRANE
Biorefine Cluster Europe – ESNI (European Sustainable Nutrient Initiative) conference	Brussels (B), September 2023	Presentation on Nutrient concentrations for recovery from greenhouse wastewater by electro dialysis.	KWR
InterREG WaterMan event	Kalundborg (DK), September 2023	Presentation on Membrane technology for reuse of treated wastewater	KWB, KALUNDBORG
JRC webinar	Online, June 2023	Presentation on Reuse of reclaimed water for industrial applications. 15-year experience of reusing 54 million cubic meters of reclaimed water at the Solvay Plant in Tuscany (Italy)	ARETUSA
Workshop LIFE GREEN SEWER	Online, June 2023	Presentation on Resource recovery and reuse with membranes	AQUALIA





Event	Location and date	Contribution	Partners involved
Ecomondo	Rimini (IT), November 2022	Challenges and eco-innovation actions addressing water scarcity and drought in Mediterranean countries	UNIVPM, ARETUSA
Green Week	Brussels (B), June 2022	Session on Water, Energy and Carbon Nexus Management within circular territories and industries, contribution on Circular water within the water-smart-urban-industrial symbiosis: ULTIMATE	KWR, UNIVPM
European Sustainable Nutrient Initiative ESNI	Online, March 2022	Presentation on ULTIMATE: Industry water-utility symbioses for a smarter water society	KWR
Ecomondo	Rimini (IT), October 2021	European Horizon 2020 Systemic Actions for Water-Smart Circular Cities, Regions and Industries. Contribution: Circular Transitions in industrialized regions	ARETUSA, UNIVPM
JRC Webinar	Online	Results from and the ULTIMATE project - focus circular economy and water reuse	KALUNDBORG





## 2.3. International learning and action alliances with regions with high replication potential

Although ULTIMATE aims to continue collaboration between stakeholders in the 9 case studies, promoting co-learning and co-design of solutions on local scale, ULTIMATE has also supported the development of two distinct international learning and action alliances with regions with high replication potential.

Following the results from ULTIMATE and other Circular Economy related projects, core partners from ULTIMATE (NTUA, KWR, UNEXE, UCRAN) have initiated the **WaterWise Excellence Hub** as an action-oriented initiative that aspires to serve as a catalyst for R&I (creation and uptake), business development, and knowledge dissemination for water in the circular economy (CE). The excellence hub will receive funding from the European Commission Horizon Europe programme, specifically from the WIDERA call, and starts in January 2025. It leverages circular economy principles to rethink and transform water management in Romania, Greece and selected Western Balkans and Eastern Partnership countries (Moldova, Serbia, Albania, North Macedonia and Ukraine). The WaterWise Excellence Hub perceives the water sector not only as sustainable, but also regenerative, emphasizing closed-loop systems, optimal resource use, and reduced waste, in line with EU policies and RIS3 strategies. It is based on a quadruple helix model of innovation, and works at the nexus of technology acceleration, entrepreneurial support and R&I, boosting water innovation in the Region and beyond. To this effect the Hub's partners co-create an R&I Strategy, an Action and Investment Plan, a FundFinder Portal, a Strategic & Tactical Decisions Toolbox as well as an operational Decisions Toolbox, setup Water Tech Challenges, develop and launch an Innovation Accelerator, produce LLL Training Courses, create and share a Knowledge Hub and develop and deploy a Mentoring Scheme through a bottom up approach in collaboration with a wide range of key actors and stakeholders across the region. The Hub is empowered by its strong partnership that brings together actors from government, R&I-driven universities and research centres, funding bodies, business, water utilities, SME associations and civil society to create services tailored for post-project sustainability and real-world impact. ULTIMATE has co-organised (together with Watershare, Romanian water utilities and Eastern European Local Water Forums Networks) and contributed to a number of Aqua Circular Conferences showcasing practical applications of WSIS.

**WICE, Water in the Circular Economy**, is a co-funded research programme in which Dutch and Flemish water utilities collaborate with (public and industrial) partners in the water cycle on water availability, climate, energy transition, and circular economy contributing to societal challenges on local, national and international scale. Main goal is to secure the availability of water.





WICE focuses on water (efficiency and reuse), resources (efficiency and reuse) and water & energy. As a transition to a sustainable society requires integrated solutions, WICE is looking for integrated approaches in which multiple actors and societal and industrial sectors play a role. WICE focuses therefore on systems knowledge (on technical solutions in the nexus of water, climate, energy and resources) and the impact on societal transitions in these areas, normative knowledge (on requirements of different actors and societal values) and transition knowledge (on how change can be realized in practice). Base funding for WICE projects is made available by the participating Dutch and Flemish water utilities. Co-funding for collaborative projects comes from participating public and private (industrial) partners. As part of a Watershare webinar series on Sharing international experiences on water supply, ULTIMATE partners (KWR, UNIVPM, NTUA, others) have presented on Technologies for smart and circular water management building on experiences from ULTIMATE (as well as NEXTGEN). ‘

Other regions have also been identified as having potential for replication. STRANE has developed a startup company (**NEWASYS**) with the specific goal to provide services to municipalities, water utilities and industries in France in the field of circularity and WSIS. Other consortium partners also are promoting WSIS as a circular solution to deal with water challenges, supporting new initiatives in their home countries, e.g. in Italy, Spain, Greece and Germany.

The continuation of ULTIMATE outcomes is also assured by the initiation and funding of two CSA projects BOOST-IN and CIRSEAU. Both projects build on results of ULTIMATE (and other circular projects) and aim to further develop the Water Europe Marketplace and stimulate technological improvement, as well as to stimulate CE knowledge exchange, learning and supporting new governance schemes and policy support.



## 2.4. International conference & exhibitions for water industry and industrial stakeholders

ULTIMATE has participated in a number of international conferences and exhibitions to showcase WSIS results. These include several International Water Association conferences. ULTIMATE has also participated in the UN Water conference in New York in 2023 in a session on the WEFE nexus and the need for a water smart industry.



Contribution during panel discussion at the UN Water conference side event on the WEFE nexus

Event	Location and date	Contribution	Partners involved
The IWA 2024 Conference on the Design, Operation and Economics of Large Wastewater Treatment Plants	Budapest (HU), September 2024	Presentation on Digitalisation and modelling: Modelling and scenario investigation of two wastewater treatment plants for the development of a predictive joint control system.	KWB



Event	Location and date	Contribution	Partners involved
The IWA 2024 Conference on the Design, Operation and Economics of Large Wastewater Treatment Plants	Budapest (HU), September 2024	Presentation on Resource recovery: Full-scale nutrient recovery producing struvite and ammonium sulfate solution	KWB
IWA World Water Congress and Exhibition 2024	Toronto (CND), August 2024	Presentation on National water regulations and the future supply of water to a growing Industrial symbiosis in Kalundborg,	KWR, KALUNDBORG
LET2024: 19th IWA Leading Edge Conference on Water and Wastewater Technologies	Essen (GE), June 2024	Poster presentation. Long-term operation of an Electro-Stimulated Anaerobic Reactor (ELSAR®) on Brewery Wastewater	AQUALIA
International Desalination Association (IDA) Summit on Water & Climate Change	Sevilla (SP), October 2023	Presentation on membranes for water reclamation in brewery and municipal: a feasible and proven opportunity	AQUALIA
IWA ecoSTP	Girona (SP), June 2023	Poster presentation on Electrostimulated granular sludge bioreactors: from the laboratory to real-scale ELSAR®	AQUALIA







Event	Location and date	Contribution	Partners involved
UN Water Conference	New York (USA), March 2023	UN 2023 Water conference, side event on WEF nexus: highlighting the need for water-smart industry	KWR, WE
IWA World Water Congress and Exhibition	Copenhagen (DK), September 2022	Seminar on Circular Economy: Taking stock of waste(water), Co-organised by ULTIMATE and Watershare	KWR, KALUNDBORG, others
17th IWA World Congress on Anaerobic Digestion	Ann Arbor, Michigan (USA), June 2022	Poster presentation + Panel (from Research to Application: Identifying and overcoming barriers to adoption of new AD technology)	AQUALIA
International Desalination Association (IDA) 2020 International Water Reuse & Recycling Conference	Roma (IT), October 2021	Oral presentation	AQUALIA
4th IWA Resource Recovery Conference	TR/online, September 2021	Smart Water and Efficient Management in Large Industrial Sites: The Italian Case Study of Aretusa	UNIVPM, ARETUSA
4th IWA Resource Recovery Conference	TR/online, September 2021	Keynote towards water smart industrial symbiotic systems, and presentation on First Experiences from ULTIMATE: Industry Water-utility Symbiosis for a Smarter Water Society	KWR







## 2.5. Contributions to (local, regional) events dedicated to industries

ULTIMATE partners have contributed to many local and regional events to share experiences with industrial and professional stakeholders. The table gives an overview of events organised in The Netherlands, France, Greece, Italy, Germany, Spain and Denmark. The uptake of experiences in the local and regional environment is considered very important to secure the understanding and applicability of technologies and WSIS approaches.

Event	Location and date	contribution	Partners involved
Cycl'eau Orléans	Orleans (FR), October 2024	Attendance to conferences about REUSE	STRANE
Seminar on Water to the Danish EPA	Kalundborg (DK), October 2024	Presentation on Kalundborg symbiosis	KALUNDBORG
WATER-ENERGY NEXUS ENERGY FOR WATER, WATER FOR ENERGY	Madrid (SP), October 2024	Oral presentation. The true value of water: innovation in sustainable energy resources	AQUALIA
Journée de l'ASTEE	Saintes (FR), October 2024	Discussion about REUSE regulation and discussion with industries	STRANE
Séminaire REUT - Production eau potable indirecte	Sables d'Olonnes (FR), September 2024	Attendance to conferences about REUSE, discussion with industries and municipalities	STRANE
Carrefour de l'eau	Dijon (FR) September 2024	Attendance to conferences about REUSE, discussion with industries	STRANE





Event	Location and date	contribution	Partners involved
		and municipalities	
Intervention NEWASYS lors du GT Eaux Non Conventionnelles Eau du Cluster Eau Milieu Sol	Paris (FR), July 2024	Presentation about REUSE, discussion with industries and municipalities	STRANE
Water Reuse Seminar Samsø Energy Academi	Samsø (DK), June 2024	Presentation on Kalundborg symbiosis for the	KALUNDBORG
103e congrès ASTEE	Quimper (FR), June 2024	Contribution on WSIS opportunities	STRANE
Kalundborg Business Council	Kalundborg (DK), June 2024	Presentation on Kalundborg symbiosis	KALUNDBORG
Journée Technique HYDREOS - Industrie & Eau	Strasbourg (FR), May 2024	Presentation of NEWASYS activities, discussion with industries	STRANE
Intervention NEWASYS – lors du GT Eaux Non Conventionnelles Eau du Cluster Eau Milieu Sol	Paris (FR), April 2024	Presentation about REUSE, discussion with industries and municipalities	STRANE
Business Day SEV & Coca-Cola Hellenic Bottling Company S.A.	Coca-Cola Hellenic Bottling Company Factory, Schimatari (HE), April 2024	Presentation (Business Day SEV & Coca-Cola Hellenic Bottling Company S.A.)	GTG





Event	Location and date	contribution	Partners involved
Wasserwerkstatt	Berlin (GE), April 2024	Presentation on “Wasserwiederverwendung für die industrielle Symbiose Kalundborg? Ergebnisse aus dem EU-Projekt ULTIMATE”	KWB
EU Project Seminar - Zealand Municipalities	Copenhagen (DK), March 2024	Presentation on Kalundborg symbiosis	KALUNDBORG
Board meeting De Vlot	’s Gravenzande (NL), March 2024	Presentation on Potential for recovery and reuse of wastewater in Dutch greenhouse industry.	KWR
Journée Technique "Gestion de l'eau des sites industriels" organised by Axelera, an industrial platform close to Lyon	Lyon (FR), March 2024	Contribution to meeting	STRANE
BUSINESS DAY SEV & EYDAP	EYDAP HQ, Athens (HE), March 2024	Presentation (BUSINESS DAY SEV & EYDAP)	GTG
EGG Investor Day	EGG Accelerator - Eurobank, Athens (HE), February 2024	Presentation (EGG Investor Day)	GTG
Webinar for industries part of INSPIRA platform	Online (January 2024)	Presentation of ULTIMATE and the methodology of analysis	STRANE





Event	Location and date	contribution	Partners involved
EGG Business Day NEOTEX	EGG Accelerator - Eurobank, Athens (HE), December 2023	Presentation (EGG Business Day)	GTG
Circular Economy and Industrial Symbiosis as growth vehicles in the food processing sector	SEV - Hellenic Federation of Enterprises - HQ, Athens (HE), December 2023	Presentation (Circular Economy and Industrial Symbiosis as growth vehicles in the food processing sector)	GTG
Amsterdam International Water Week - seminar	Amsterdam (NL), November 2023	Presentation on Kalundborg symbiosis	KALUNDBORG
Aachener Tagung Wassertechnologie	Aachen (GE), October 2023	Vergleich verschiedener Membranen als Vorbehandlung für Umkehrosmose bei Abwasser mit hohem Anteil an schwer abbaubaren organischen Stoffen	KWB
Waterman Interreg Steering Committee	Kalundborg (DK), September 2023	Presentation on Kalundborg symbiosis	KALUNDBORG
Carrefour de l'eau	Dijon (FR), September 2023	Attendance to conferences about REUSE, discussion with industries and municipalities	STRANE
Olive oil mill by product exploitation	Literary Society Parnassos, Athens (HE), July 2023	Panel discussion (Filaios)	GTG
Seminar to the Samsoe Municipal Council	Kalundborg (DK), June 2023	Presentation on Kalundborg symbiosis	KALUNDBORG





Event	Location and date	contribution	Partners involved
Helix Lab Fellows	Kalundborg (DK), May 2023	Presentation on Kalundborg symbiosis	KALUNDBORG
Klimatorium seminar in Kalundborg	Kalundborg (DK), May 2023	Presentation on Kalundborg symbiosis	KALUNDBORG
InnoReady - Industrial Symbiosis & Green Energy	SEV - Hellenic Federation of Enterprises - HQ, Athens (HE), April 2023	Presentation (InnoReady - Industrial Symbiosis & Green Energy)	GTG
Water Talks: Tractament d'aigües residuals (CWP)	Lleida (SP), January 2023	Oral presentation. Innovative techniques for treatment of waste water.	AQUALIA
Green Entrepreneurship - Combating climate crisis	Eugenides Foundation, Athens (HE), December 2022	Panel discussion (WeFor Green Entrepreneurship - Combating climate crisis)	GTG
Food Tech, Herning Denmark Exhibition	Herning Exhibition Center (DK), November 2022	Presentation on Kalundborg symbiosis	KALUNDBORG
CircLean open innovation workshop	Rotterdam (NL), September 2022	Presentation	KWR
Meeting Distretto Rurale Val di Cecina, 15/07/2022	Agriturismo Il Catrino (IT), July 2022	Consorzio Aretusa - link fra territorio e progetti europei	ARETUSA
Water sustainability in	Lleida (SP), July	Oral presentation. Guided Tour of	AQUALIA





Event	Location and date	contribution	Partners involved
times of climate change. Step by Water Alliance	2022	the facilities	
Webinar "Economie Circulaire de l'eau dans l'industrie" by HYDREOS	Online, June 2022	Presentation in session about circular economy of water	STRANE
Webinar "Eau dans l'industrie Agroalimentaire " by HYDREOS	Online, April 2022	Presentation of 1 session about "recovery of valuable nutrients in agrofood industry and reuse of purified water", based on Greener Then Green technologies solution and ULTIMATE project	STRANE
Webinar "Eau et Industrie" by HYDREOS	Online, March 2022	Presentation of 1 session about good practices, based on ULTIMATE case studies	STRANE
Watersmart Industrial Symbiosis Activities in ULTIMATE	Saltoftegaard (DK), March 2022	Presentation on Kalundborg symbiosis	KALUNDBORG
Smart Water for Resilient Cities	Online, February 2021	How to support circular economies with innovative wastewater treatment	KALUNDBORG





## 2.6. Publications in professional journals for industrial stakeholders

ULTIMATE partners have published on WSIS in professional journals aimed at industrial stakeholders.

Event	Location and date	contribution	Partners involved
NPT Proces-technologie	Journal article, 2023	Slimmer (her)gebruik van water; Circulaire symbiose tussen de industrie en de watersector	KWR
The Source	Journal article, 2023	Article EU project advances industrial symbiosis	KWB
Biorefine Cluster Europe	Online article, 2022	International water research networks offer solutions for water stress	KWR
The Chemical Engineer	Journal article, 2022	Food & Water: Using Water Smarter	KWR, UNIVPM
Discover IFAT, Industry Insights	Online journal article, 2022	Wastewater from the juice industry serving as a source of raw materials	GTG, KWR
Smart Water Magazine	Journal article, 2021	Towards water smart industrial symbiotic systems	KWR
Water Online	Online journal article, 2020	Turning wastewater into a resource: A new European initiative to create a Water Smart Industrial Symbiosis	KWR
Smart Water Magazine	Online journal article	4 Lessons From A Dutch Utility Circular Collaboration	KWR
Phys-Org	Online Journal article, 2020	Turning wastewater into a resource	KWR,







<b>Event</b>	<b>Location and date</b>	<b>contribution</b>	<b>Partners involved</b>
Water & Waste Water Asia	Online journal article, 2020	Why water is key to unlocking a circular economy between utilities and industries	KWR, NTUA
Smart Water Magazine	Online journal article, 2020	Water circular economy solutions	KWR





### 3. Conclusions

ULTIMATE has successfully shown the potential of water smart industrial symbiosis based on nine case studies in different industrial settings. The uptake of WSIS, however, is strongly dependent on the availability of wastewater and the opportunities for reuse of water, energy and resources, as well as a positive business case and governance and legal arrangements in place. ULTIMATE partners have committed to put significant efforts in sharing their experiences with WSIS with water industry and industrial stakeholders across Europe and beyond, and identify opportunities for WSIS in different industrial settings.

To reach out to water industry and industrial stakeholders, the following activities have been carried out:

- *Matchmaking events for water industry and interested industrial stakeholders*  
Water Europe has hosted events for water industry and interested industrial stakeholders (primary members of Water Europe). These include Water Market Europe (as well as other Water Europe) events (generally organised in Brussels, but also in connection to other events aiming to extend to other interested stakeholders, with support and/or contributions by ULTIMATE (partners) aimed to promote interaction and matchmaking with industrial associations, industrial stakeholders and other interested parties. In addition two Water Market Europe roadshows have been organised back to back to important international events selected according to their calendar and matching with the ULTIMATE project work plan.
- *Other international events for water industry and industrial stakeholders*  
In addition to events organised by consortium partner Water Europe, ULTIMATE has also contributed to events organised by the EC and different organisations stimulating interaction and exchange of knowledge and experiences with industrial parties. These also include interactions with clusters (Biorefine and Hubs4Circularity), other projects and initiatives that have a focus on a variety of circular economy aspects related to one or more industrial sectors. These contributions gave the opportunity to discuss and share results with additional industrial stakeholders and industrial sectors and settings, not covered by ULTIMATE. Finally, ULTIMATE has contributed to a significant number of international events (beyond those of the IWA) sharing knowledge and experiences on water smart industrial symbiosis. These include Amsterdam International Water Week (AIWW), ECOMONDO, Blue Planet Berlin Water Dialogues, Water Reuse Europe, and the European Sustainable Nutrient Initiative (ESNI).
- *International learning and action alliances with regions with high replication potential*  
ULTIMATE has identified a number of regions with potential for replication in which focused activities have been organised focussing on the development of learning





and action alliances (also building on the Watershare platform and its partners and regional hubs). The first region encompasses Romania, Greece and selected Western Balkans and Eastern Partnership countries through the WaterWise Excellence Hub. The second region includes The Netherlands and Flanders through the Water in the Circular Economy collaborative research programme with public water utilities and industrial partners. Also, two EU funded projects incorporate results and outcomes from ULTIMATE and further promote the concept of WSIS by stimulating adoption and implementation of innovative technologies and further development and incorporation of new insights in the Water Europe Marketplace.

- *International conference & exhibitions for water industry and industrial stakeholders*  
To profile project experiences and solutions to industries ULTIMATE has actively contributed to international professional conferences. ULTIMATE has also contributed to the UN Water Conference in New York in 2023 promoting the concept of WSIS to support the transformation to a circular economy.
- *Contributions to (local, regional) events dedicated to industries*  
In addition to international conferences and exhibitions, ULTIMATE has organised and contributed to dedicated events for industrial sectors with a combination of exhibition stand, stakeholder dialogue meetings, networking attendance and formal speaking slots.
- *Publications in professional journals for industrial stakeholders*  
Finally, ULTIMATE partners have published articles on water smart industrial symbiosis, approaches, and project outcomes in professional journals targeting industrial stakeholders.

