Pre-conference workshops

2025 IWA Resource Recovery Conference: From novel concepts to business

The 2025 IWA Resource Recovery (IWA RR) Conference is a dynamic platform for sharing best practices, driving scientific progress, and unveiling cutting-edge innovations and real-world case studies in resource recovery from water. Join the pre-conference workshops, exploring resource recovery through diverse topics, including technology, logistics, business models, and the artistic interpretation of resource recovery.

Date: Monday, 19 May 2025
Time: 13:15 – 16:15 CEST
Cost: €30
Registration: Please register using the online registration form here.
Location: The five parallel workshops will be held in De Harmonie (Ruiterskwartier 4, 8911 BP Leeuwarden), the main venue for IWARR25 and Wetsus building (Oostergoweg 9, 8911 MA Leeuwarden).

In this document, you will find the detailed description of each pre-conference workshops:

Any questions related to the pre-conference workshops or 2025 IWA RR conference can be directed to rr2025@wetsus.nl

Workshop 1: Clean products from waste? Leveraging biotechnology to turn complex waste streams into high-purity products

Organizer(s):
This workshop is organized by the Centre for Microbial Ecology and Technology, Ghent University, in collaboration with the AgriLoop and Manurefinery HEU projects.
Contact person: Ángel Estévez, angel.estevezalonso@ugent.be

Location:
Bovenzaal, De Harmonie, Ruiterskwartier 4, 8911 BP Leeuwarden

Description:
The circular bioeconomy envisions wastewater as a critical raw material, with growing interest in focusing on converting organic compounds in wastewater into usable chemicals and biomaterials. This pre-conference workshop will cover advanced biological and physico-chemical technologies to transform complex streams into high-purity products, from innovative concepts to full-scale applications. The workshop combines keynote presentations and hands-on activities to equip researchers from diverse fields with the tools to tackle challenges in biological resource recovery from complex streams.

Participants will learn how to transform complex feedstocks into valuable products through mixed culture bioprocesses, integrate these processes for in-situ product separation, explore the integration of these technologies with other materials recovery, and apply insights from biological recovery technologies that are currently being scaled-up.

This workshop is limited to 40 attendees.

Program:

13:15 – 13:20 h	Welcome	
13:20 – 13:35 h	Cristiana Torres	Universidade NOVA de Lisboa
13:35 – 13:50 h	Martin Struk	Ghent University
13:50 – 14:05 h	Marianna Villano	Sapienza Università di Roma
14:05 – 14:20 h	Jelmer Tamis	Paques Biomaterials
14:20 – 14:35 h	Korneel Rabaey	Ghent University
14:35 – 14:50 h	*Break*	
14:50 – 15:00 h	Setting up the group activity	
15:00 – 15:30 h	Group discussions	
15:30 – 15:45 h	Preparation group pitches	
15:45 – 16:00 h	Group pitches	
16:00 – 16:15 h	Concluding remarks	

Workshop 2: Resource recovery by phototrophic organisms

Organizer(s):
This workshop is organized jointly by Dr. Emine Kayahan (TU Delft) and Prof. Dr. Tania Vasconcelos Fernandes (IHE Delft Institute for Water Education)
Contact person: Emine Kayahan, e.kayahan@tudelft.nl

Location:
Room 2.02, Wetsus, Oostergoweg 9, 8911 MA Leeuwarden

Description:
As the need for sustainable wastewater treatment grows, biotechnologies like microalgal systems, purple non-sulfur bacteria (PNSB), and photogranules offer promising solutions. This workshop brings together experts to discuss these systems' strengths, challenges, and potential for resource recovery and commercialization. Through a panel discussion, we aim to outline key strategies and research priorities that can drive innovation and adoption in wastewater-based resource recovery.

Workshop objectives:

1. Compare technologies and scale-up challenges
    - Assess the strengths and limitations of algae, PNSB, and photogranule systems.
    - Discuss benchmarks to compare different technologies in terms of productivity, light utilization, land area, or reactor volume, etc.
    - Explore how reactor design affects scalability and performance.
2. Evaluate reactor downtime and land use
    - Discuss cleaning requirements and their impact on productivity.
    - Consider how downtime influences land use efficiency.
3. Open vs. closed systems
    - Weigh the pros and cons of non-sterile and sterile cultivation systems.
4. Light management strategies
    - Evaluate artificial vs. natural light use
5. Commercialization requirements
    - Define key parameters like biomass volume, product quality, and consistency.
    - Assess how culture form (suspended vs. granular) affects market readiness.
6. Process integration and optimization
    - Identify synergies across systems to boost efficiency.

Harmonize operational strategies like light management and cleaning schedules

Program:

13:00–13:15 – *Dr. Emine Kayahan & Prof. Tânia Vasconcelos Fernandes* – Welcome and Introduction
13:15–13:40 – *Prof. Maria Barbosa* – Technoeconomic analysis of microalgal systems & the biorefinery concept
13:40–14:05 – *Dr. Gabriel Capson-Tojo* – Purple phototrophic bacteria for resource recovery: how to generate value?
14:05–14:30 – *Prof. Chul Park* – Photogranules for wastewater treatment
14:30–14:45 – *Coffee Break*
14:45–16:15 – *All Speakers & Audience* – Panel Discussion: Potential for resource recovery

Workshop 3: Logistics and business models for resource recovery

Organizer(s):
This workshop is organized by BlueTech Research
Contact person: Rhys Owen, rhys.owen@bluetechresearch.com

Location:
Stadzaal, De Harmonie, Ruiterskwartier 4, 8911 BP Leeuwarden

Description:
Although existing technologies are functional, scaling them up presents challenges, primarily due to the lack of suitable market models and partnerships for recovered resources, which are often obtained in small volumes. To effectively advance resource recovery, a diverse skill set is essential, including expertise in business, negotiation, marketing, and communication, in addition to technical capabilities.
The workshop will focus on identifying these skill gaps and discussing key issues related to various technologies and markets. It will feature case studies, particularly on phosphorus recovery from municipal wastewater and brine mining from desalination processes. Participants will engage in presentations, skill gap identification, group discussions, and co-creation exercises aimed at designing market strategies and addressing challenges related to market and communication failures to achieve an integrated supply chain that meets market demand.

Program:
Introduction (10 minutes)
13.15: Start of workshop, welcome participants. BlueTech Research Facilitator 1: (TBC) Introduce the presenters, introduce BlueTech (short presentation). BlueTech Research **Facilitator 2 (Rhys Owen):** Introduction to learning objectives and agenda for the workshop, and setting the context for the workshop by framing the opportunities and challenges in matching resource recovery to market demands.

Case studies on creating markets: Presentations and interactive Q&A (45 minutes – each expert presents for 10 minutes with 5 minutes Q&A)
Attendees submit questions via a real-time polling app, and questions are addressed by the presenters, allowing for dynamic engagement with the audience. Goal: Understand what has already succeeded in terms of creating markets for resource recovery and learn practical considerations from real-world applications.
Each 10-minute presentation will have a framework focussing on three overall main components:

- Value chain (economic model, concentrating volumes, etc.)
- Organisation and logistics (distribution, scaling up sales and commercial efforts, collaboration with other partners)
- Legal (certifications, regulations, liability and insurance

13.25: Case study presentation 1: Olaf van der Kolk, Managing Director, Aquaminerals.
AquaMinerals is at the forefront of resource recovery of material streams that are generated in water treatment processes. Bringing residuals to the functional market presents a significant challenge that requires careful consideration of volume, quality, supply chain issues and legal matters. Given the relatively small size of this market, collaboration is essential for developing a viable business. The organisation was initially established for all drinking water companies in the Netherlands, but has also become active for a Belgian drinking water company and for a number of Dutch Water Authorities.

13.40: Case study presentation 2: René Rozendal, Managing Director, Paques Biomaterials.
Paques Biomaterials is pioneering a new route to developing PHA, a biodegradeable plastic from industrial wastewater. The company recently signed an MOU to construct the first full-scale plant producing polyhydroxyalkanoate (PHA) from paper process water.

13.55: Case study presentation 3: Frank Rogalla, Director of Innovation, Aqualia.
Building a circular economy across Europe is a unique challenge, and one in which Frank is playing a significant role through a variety of EU-funded projects, as well as his role in developing the All-gas project, which demonstrates the sustainable large-scale production of biofuels based on low-cost microalgae cultures using municipal wastewater.

14.10: Case study presentation 4: Christos Charisiadis, Founder & Principal Consultant, Brine Consulting
Christos will focus on the economics and logistical challenges of brine resource recovery, drawing on his experience at NEOM and other ZLD projects.

Skill Gap Identification and Group Discussions (30 minutes)
14.15: BlueTech facilitator to introduce the session.

- **Format:** Small group activity with facilitated discussions
- **Activity:**
  Attendees will be divided into small groups (5–7 people) to discuss the following questions:
  - What are the main skill gaps in business, negotiation, and marketing for scaling resource recovery?
  - How can the water industry better integrate commercial expertise to boost resource recovery?
- **Facilitator role:**
  Each group will have a facilitator to guide the discussion, ensure everyone participates, and take notes.
- **Outcome:**
  Groups will identify and list top skill gaps, as well as suggestions on where the water industry can improve its approach.

14.45: Networking and coffee break (15 minutes)

15.00: Co-Creation Exercise: Designing the Perfect Market Strategy (30 minutes)

- **Format:** Interactive workshop using collaborative tools (e.g., digital whiteboards, post-its, breakout discussions)
- **Activity:**
  - Groups will be tasked with developing a strategic framework to bridge the gap between resource recovery and market demand for a specific recovered material (e.g., Phosphorus or brine mining products).
  - Elements to include: quality control, market demand, off-take partners, communication strategies, and collaboration models.
  - Groups will use prompts to guide their discussions:
    1. **Gauging Market Value**: What is the total addressable size of the market? How can we measure this effectively?
    2. **Building Partnerships**: What kind of market partners are needed, and how can they be attracted?
    3. **Communication Strategy**: How can we better communicate the value of recovered resources to stakeholders, regulators, and consumers?

- **Group Sharing:**
  After 20 minutes of group work, each group will share their strategy with the wider workshop, presenting key insights and creative approaches.
- **Goal:** Facilitate collaboration among participants to co-create actionable strategies that could be applied in the real world.

15.30: Panel Discussion: Overcoming Market and Communication Failures, Celebrating Successes (30 minutes)

- **Panelists:**
  - Experts in resource recovery and business development from various sectors (industry, technology providers, market experts).
- **Format:** Open-panel discussion followed by participant-driven Q&A.
- **Content:**
  - What has worked and failed in the past when it comes to communication strategies for integrated supply chains?
  - Case studies where resource recovery initiatives struggled or succeeded in finding markets.
  - Discussion on creating effective collaboration between technology providers, industry, and market players.
- **Q&A:** Participants submit questions via the polling app or raise questions directly.
- **Goal:** Uncover lessons from past failures and success stories that can inform future strategies for market integration.

16.00: Wrap-Up and Key Takeaways (15 minutes)

- **Facilitator:** Workshop lead
- **Format:** Presentation and open floor for final comments.
- **Content:**
  - Summarize key insights from the workshop: skill gaps identified, successful strategies, market creation approaches.
  - Next steps: How participants can apply the lessons learned in their own organizations or projects.
- **Goal:** Ensure that participants leave with actionable knowledge, clear next steps, and a better understanding of how to address the business and market side of resource recovery.

Workshop 4: Unlocking circular innovation in the water sector: Navigating End-of-Waste

Organizer(s):
This workshop is organised jointly by BIOAZUL, KWB, and AquaMinerals. The workshop is supported by BOOST-IN project (GA 101135239), funded by the European Commission under the Horizon Europe programme.
Contact persons: Rafael Casielles Restoy, rcasielles@bioazul.com or Jouke Boorsma, boorsma@aquaminerals.com

Location:
Boekenzaal, De Harmonie, Ruiterskwartier 4, 8911 BP Leeuwarden

Description:
A key bottleneck for circular innovation is the regulatory transition from waste to product. End-of-Waste (EoW) criteria play a fundamental role in enabling research and innovation outcomes to reach the market, ensuring that recovered resources can legally be used, traded, and scaled up for widespread adoption. However, the implementation of EoW rules remains complex, inconsistent, and highly dependent on national regulations, slowing down the commercialization of innovative circular solutions.

Relevant speakers from various sectors will share their practical experiences, while policy experts from the European Commission (DG ENV), the Joint Research Centre (JRC), and leading networks such as Water Europe will explore barriers, opportunities, and potential pathways for improving the EoW process.

Furthermore, this workshop will not be a traditional, one-way event where only speakers present their views. Instead, it will bring hands-on experience in EoW implementation and key policy actors to create a meaningful, two-way dialogue. Through a structured participatory exercise, participants will map out the EoW process, identify the most challenging steps, and collaborate on practical solutions. This interactive approach ensures that real-world challenges are directly discussed with policymakers and experts, helping to align regulatory frameworks with practical needs and foster a more effective, harmonized EoW process.

Beyond the workshop itself, we aim to strengthen connections between participants, recognizing that the complexity and specialized nature of EoW require ongoing collaboration. A valuable outcome will be the formation of a network where professionals can continue sharing experiences, exchanging insights, and maintaining direct contact with each other, as well as with key institutional players such as the European Commission and the Joint Research Centre. By building these connections, we facilitate long-term support, knowledge-sharing, and collective progress toward more efficient EoW implementation across Europe.

Program:
13:15 – 13:20 | Welcome by Organizers
Opening remarks by BOOST-IN and Aquaminerals (AqM)
13:20 – 13:35 | Introduction of Participants
Interactive round for all attendees to introduce themselves.
13:35 – 13:45 | Water and Circular Economy: Perspective from the European Commission
Speaker: Representative from DG ENV (tbc)
13:45 – 13:55 | Harmonization of End-of-Waste Criteria: The Work of the JRC
Speaker: Joint Research Centre (JRC)
13:55 – 14:05 | Water Europe's Contribution and Working Groups

Speaker: Andrea Rubini, Water Europe
14:05 – 14:15 | Boosting the Uptake of Innovative Solutions in Water and Circular Economy: The BOOST-IN Project
Speaker: Rafael Casielles, BIOAZUL
14:15 – 14:30 | Coffee Break
14:30 – 14:40 | Outcomes of the First Expert Meeting on EoW in BOOST-IN + Next Steps
Speaker: Christian Remy, KWB
14:40 – 14:50 | Netherlands' Initiatives on EoW Harmonization
Speaker: Aalke de Jong, AqM
14:50 – 15:00 | Harmonization of EoW for Water Products
Speaker: EUREAU (tbc)
15:00 – 16:00 | Participatory Exercise: Mapping Barriers and Solutions in the End-of-Waste Process

- Analysis of key steps in the EoW process
- Identification of major bottlenecks and challenges
- Co-development of practical recommendations for better EoW implementation

Moderators:

- Christian Remy, KWB
- Rafael Casielles, BIOAZUL
- Jouke Boorsma, AqM

16:00 – 16:15 | What's Next? Follow-Up and EoW Community of Practice
Discussion on next steps and future activities for ongoing collaboration.

Workshop 5: Seeing through the dark side of extracellular biopolymers from waste sludge in an artistic way

Organizer(s):
This workshop is organized jointly by Yuemei Lin (TU Delft) and Nesie Wang (a freelance artist)
Contact person: Yuemei Lin, yuemei.lin@tudelft.nl

Location:
Room 1.02, Wetsus, Oostergoweg 9, 8911 MA Leeuwarden

Description:
Extracellular biopolymers (EPS) recovered from waste sludge represent a remarkable and underappreciated resource. Often dismissed due to their dark color, which makes people doubt their potential applications. This workshop aims at explaining the multifaceted nature and value of EPS, showcasing its significance not only from a scientific standpoint but also through an artistic aspect.

In this workshop, participants will discover how the unique characteristics of EPS can inspire creativity and innovation through presentation, group discussion and hands-on trial. **Especially, during the hands-on session, participants can print out their own designed picture on canvas bag by using Kaumera® (one example of EPS) as a material for silkscreen printing.** By exploring the interplay between art and science, attendees will appreciate the value of EPS, viewing its dark color as a symbol of transformation and creativity rather than a barrier.

This workshop is limited to 20 attendees.

Program:
13:15 start of the workshop
13:15-13:45 Presentation: Extracellular polymeric substances and its potential application
13:45-14:15 Group discussion: what are the hurdles in EPS application
14:15-14:30 Coffee break
14:30-14:45 Explanation of the hands-on trial
14:45-16:05 Each group makes design of a picture and printout on the canvas bag by using Kaumera® (one example of EPS)
16:05-16:15 Wrap up the workshop
16:15 end of the workshop