

3rd International Conference on

# Sustainability in Hydropower



**SUSHP 2025**

Sustainability in Hydropower

Solutions for Global Sustainability in Hydropower –  
Balancing Water Use, Ecology, and Community Benefits

2–5 September 2025

BOKU University

Vienna, Austria

## Conference Program

3rd International Conference on  
Sustainability in Hydropower (SUSHP)

2-5 September 2025, Vienna, Austria  
BOKU University

## Welcome to Vienna

We are delighted to welcome you to the 3rd International Conference on Sustainability in Hydropower (#SUSHP2025), taking place from 2-5 September 2025, at BOKU University in Vienna, Austria.

As the global energy landscape evolves, hydropower remains a cornerstone of the energy transition by providing renewable and flexible electricity generation and storage. Balancing economic efficiency, ecological integrity, and community benefits is more critical than ever. SUSHP2025 will bring together experts, researchers, policymakers, and industry leaders to explore solutions that advance ecologically sustainable hydropower, support biodiversity conservation, and address the governance challenges of sustainable development, particularly in developing regions.

The conference will focus on three key themes:

- Promoting an integrated approach in planning, operation and re-powering of hydropower plants that maximizes environmental and community benefits while ensuring economic and operational efficiency.
- Advancing innovations, adaptive management, and technologies by highlighting best practices, environmental measures, and cutting-edge technologies to assess hydropower impacts.
- Strengthening governance for global sustainability by exploring frameworks for sustainable hydropower development, with specific focus on policies and practices in developing countries.

Set in Vienna, a historic hub for international collaboration, SUSHP2025 offers a unique platform for interdisciplinary dialogue, knowledge exchange, and networking. Whether you are an academic, practitioner, or policymaker, this conference will provide an opportunity to engage in meaningful discussions and contribute to shaping the future of sustainable hydropower.

We are happy to welcome you to Vienna for an inspiring and impactful event!

Sincerely,



**Gisela Ofenböck**



**Franz Greimel**



**Daniel S. Hayes**



**Christoph Hauer**



**Adrian Lindermuth**



**Martin Schönberg**

**Thanks to our Co-Organizers and Support-Networks**

## Table of contents

|                                                                                     |    |
|-------------------------------------------------------------------------------------|----|
| Welcome to Vienna.....                                                              | 2  |
| 1 Venue – BOKU University Vienna .....                                              | 4  |
| Overview .....                                                                      | 4  |
| Public Transport to Conference Venues .....                                         | 4  |
| Registration on site.....                                                           | 4  |
| 2 Program Overview .....                                                            | 5  |
| 3 Floorplan .....                                                                   | 6  |
| 4 Pre-Conference Workshops .....                                                    | 7  |
| Workshop: Women in Hydropower .....                                                 | 7  |
| Workshop: Videomonitoring.....                                                      | 8  |
| 5 Guided City Tour Vienna .....                                                     | 9  |
| 6 Detailed Conference Program .....                                                 | 10 |
| DAY 1 – Tuesday - 02 Sept 2025.....                                                 | 10 |
| DAY 2 – Wednesday - 03 Sept 2025.....                                               | 16 |
| DAY 3 – Thursday - 04 Sept 2025 .....                                               | 22 |
| DAY 4 – Friday - 05. Sept 2025: Field Trips .....                                   | 25 |
| 1. Large-Scale River Restoration - Hosted by Verbund .....                          | 25 |
| 2. LIFE-Boat-4-Sturgeon .....                                                       | 26 |
| 3. Alpine Hydropower: Flagship facilities in western Austria - Hosted by TIWAG..... | 27 |
| 7 Post-Conference Workshop .....                                                    | 29 |
| Post-Conference Workshop: PIT tag technology and tagging training.....              | 29 |
| 8 Sponsors .....                                                                    | 30 |
| 9 Committees.....                                                                   | 31 |
| Local Organizing Committee .....                                                    | 31 |
| International Scientific Committee.....                                             | 31 |
| 10 Green Meeting Information .....                                                  | 32 |

## 1 Venue – BOKU University Vienna

### Overview

The conference will take place at the BOKU University, Vienna.

1. The **Pre-Conference Workshops** on 01. Sept 2025 will be held at the
  - Institute of Hydraulic Engineering and River Research, located directly on the banks of the Danube River (Am Brigittenauer Sporn 3, 1200 Wien).  
Further Information concerning the location on: <https://iwa.boku.ac.at/en/river-lab/>
2. The **Scientific Conference** from 02. to 04. Sept 2025 (including Keynote presentations, Parallel Sessions and the Welcome Reception) will be held at the following closely connected locations:
  - Ilse-Wallentin-Haus (ILWA, Peter-Jordan-Straße 82, 1190 Wien)
  - Wilhelm-Exner-Haus (Peter-Jordan-Straße 82, 1190 Wien) and
  - Franz-Schwackhöfer-Haus (Peter-Jordan-Straße 82, 1190 Wien)

For more details, please refer to the conference sitemap as well as the detailed program – which you both find in this document further below.

3. **Conference Dinner** on 03. Sept 2025 will take place at the Vine-Tavern Fuhrgassl-Huber (Neustift am Walde 68, 1190 Wien), which is not far from the conference venue and easily accessible by public transport

4. The **post-conference workshop** will take place at the Life-Boat 4 Sturgeon on the Danube Island, right next to “Inselinfo-Informationszentrum” (Reichsbrücke 215, 1020 Wien).

### Public Transport to Conference Venues

Public transport in Vienna is fast, affordable, and eco-friendly. The well-connected network saves you from traffic jams and parking hassles. If you plan to use public transport, we recommend purchasing a **7-Day Vienna Ticket**, available online and at all ticket machines for **€22.60 (€19.70 if you buy it online)**. All conference sites including social program and starting location for the guided city tour are easily accessible by public transport.

Near BOKU University, there are several bus stations, with a tight departure schedule. Buses, which arrive at and departure from BOKU University are: 40A, 37A, 10A

Google Maps can help you find the most convenient public transport connection to each conference venue.

### Registration on site

Registration & Help Desk to Pick up your badge and to last-minute register for Conference Dinner and Field Trips are in Franz-Schwackhöfer-Haus in the Aula.

**Registration & Help Desk has the following opening hours:**

2 Sept 2025: 08:00-19:00  
3 Sept 2025: 08:30-17:30  
4 Sept 2025: 08:30-15:15

## 2 Program Overview

Tuesday, September 2, 2025

|               | ILWA-SR29                                                       | EXNH-EH01 - GF                                              | EXNH-EH03 – 1. Floor |
|---------------|-----------------------------------------------------------------|-------------------------------------------------------------|----------------------|
| From 08:00    | Registration desk open                                          |                                                             |                      |
| 09:00 - 10:20 | <a href="#">Opening Ceremony &amp; Keynotes</a>                 |                                                             |                      |
| 10:20 - 10:50 | Coffee break                                                    |                                                             |                      |
| 10:50 - 12:30 | <a href="#">Governance, policies, and management approaches</a> | <a href="#">Connectivity trends and sediment management</a> |                      |
| 12:30 - 13:45 | Lunch                                                           |                                                             |                      |
| 13:45 - 15:15 | <a href="#">Modeling and managing hydropower 1</a>              | <a href="#">Reconnecting rivers and floodplains 1</a>       |                      |
| 15:15 - 15:45 | Coffee break                                                    |                                                             |                      |
| 15:45 - 16:45 | <a href="#">Modeling and managing hydropower 2</a>              | <a href="#">Reconnecting rivers and floodplains 2</a>       |                      |
| 16:45 - 19:00 | <a href="#">Poster Session &amp; Welcome Reception</a>          |                                                             |                      |

Wednesday, September 3, 2025

|               | ILWA-SR29                                                                             | EXNH-EH01 - GF                                                         | EXNH-EH03 – 1. Floor                                  |
|---------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------|
| From 08:00    | Registration desk open                                                                |                                                                        |                                                       |
| 09:00 - 10:00 | <a href="#">Keynote Presentations</a>                                                 |                                                                        |                                                       |
| 10:00 - 10:30 | Coffee break                                                                          |                                                                        |                                                       |
| 10:30 - 12:30 | <a href="#">Hydropeaking: balancing increasing flexibility with ecosystem needs 1</a> | <a href="#">Gas supersaturation: ecological effects and monitoring</a> |                                                       |
| 12:30 - 13:45 | Lunch                                                                                 |                                                                        |                                                       |
| 13:45 - 15:15 | <a href="#">Hydropeaking: balancing increasing flexibility with ecosystem needs 2</a> | <a href="#">Innovation in fish passage technology and monitoring 1</a> | <a href="#">Reservoirs: innovation and management</a> |
| 15:15 - 15:45 | Coffee break                                                                          |                                                                        |                                                       |
| 15:45 - 17:30 | <a href="#">Plenary Session</a>                                                       |                                                                        |                                                       |
| From 19:00    | <a href="#">Conference Dinner</a>                                                     |                                                                        |                                                       |

Thursday, September 4, 2025

|               | ILWA-SR29                                                                 | EXNH-EH01 - GF                                                         | EXNH-EH03 – 1. Floor             |
|---------------|---------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------|
| From 08:00    | Registration desk open                                                    |                                                                        |                                  |
| 09:00 - 10:00 | <a href="#">Keynote Presentations</a>                                     |                                                                        |                                  |
| 10:00 - 10:30 | Coffee break                                                              |                                                                        |                                  |
| 10:30 - 12:30 | <a href="#">Advances in hydro-morphological river habitat restoration</a> | <a href="#">Innovation in fish passage technology and monitoring 2</a> | <a href="#">Smart hydropower</a> |
| 12:30 - 13:45 | Lunch                                                                     |                                                                        |                                  |
| 13:45 - 15:15 | <a href="#">Plenary Discussion &amp; Closing Ceremony</a>                 |                                                                        |                                  |

## 3 Floorplan



### 4 Pre-Conference Workshops

#### Workshop: Women in Hydropower

01 Sept 2025 – 09:30-12:00

##### Meeting Point

Institute of Hydraulic Engineering and River Research,  
Am Brigittenauer Sporn 3, 1200 Wien, Room: [WBLB | SR 01](#)

##### Women in hydropower - facts, figures and actions to progress the sector

This workshop will not only present latest data about where in hydropower women work and what they experience as females in a male-dominated working place; it will explain why it is so important to grow the share of women in the sector and also present role models plus provide for exchange with the audience. This will include gender-related perspectives, gained over years from women in the sector and how they built their individual career paths.

Participants will be able to get an overview on the current status of women in the sector and get insights into practical gender work in various organizations of the industry. They will also learn about possible action based on sets of recommendations from the ESMAP-World Bank study report on gender in hydropower. A view on the variety of options on how to get encouragement and support from specific mentoring programs, build a career, and find and join women networks will add up to the experience reports of highly motivated and competent women from the sector.

##### Speakers

Barbara Fischer-Aupperle  
*Co-Founder, Board Member GWNET - GWNET, Austria*

Ana-Marija Autischer  
*Director Strategic Projects Hydropower global - ANDRITZ Hydro, Austria*

Yiying Xiong  
*Research Program Director, UW-Madison, USA; International Advisory Board member, GWNET*

Natália Weber  
*Project Manager, Gender Coordinator - GWNET and COST, Austria*

Susanne Thum PhD  
*Owner - Hydro Consulting, Germany*

Marie-Pierre Gosselin, PhD  
*Research Scientist (Hydro) - NINA, Norway*

## Workshop: Videomonitoring



01 Sept 2025 13:00-17:30

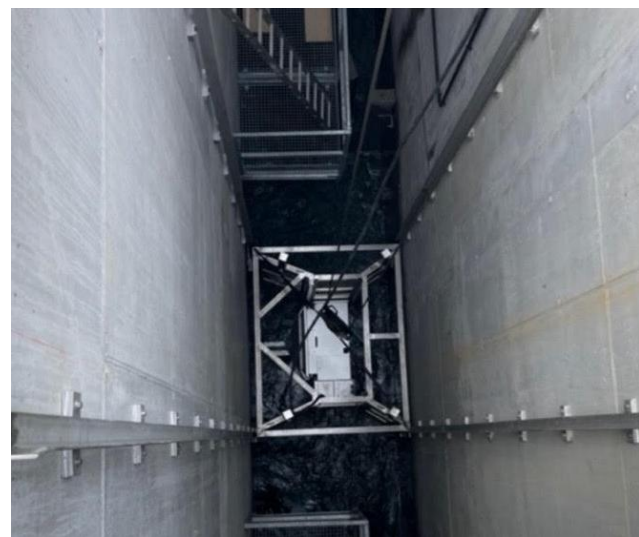
### Meeting Point

Institute of Hydraulic Engineering and River Research,  
Am Brigittenauer Sporn 3, 1200 Wien, Room: WBLB | HS 21

### Implementing Video Monitoring for Fish Passage Assessment – Tools, Techniques, and Troubleshooting

This hands-on workshop is aimed at hydropower operators, environmental consultants, researchers, and regulatory staff who are planning to implement or improve video monitoring at fish passes or in migration corridors. Based on over 14 years of real-world experience in designing, deploying, and operating camera systems in diverse freshwater environments, the workshop will deliver a broad range of practical knowledge directly from the field.

Participants will learn how to choose and configure suitable hardware (cameras, lighting, enclosures), design monitoring strategies tailored to site-specific conditions, and overcome common challenges such as poor visibility, power constraints, or false triggers. Through concrete examples from projects in Germany, Switzerland and beyond, we will explore best practices. The focus is not on theoretical concepts, but on giving participants the practical tools, know-how, and confidence to successfully plan and carry out their own video monitoring projects. As part of the workshop, a compact video monitoring system will be set up and demonstrated in a vertical slot fishway, offering participants the opportunity to experience the full process of practical implementation.



## 5 Guided City Tour Vienna

**Date & Timing:** 01 Sept 2025 – 18:30-20:30

### Meeting point

Backside of Wiener Staatsoper, Philharmonikerstrasse, opposite of Hotel Sacher,  
U-Bahn Station Karlsplatz (Lines U1, U3, U4) – Exit Opera

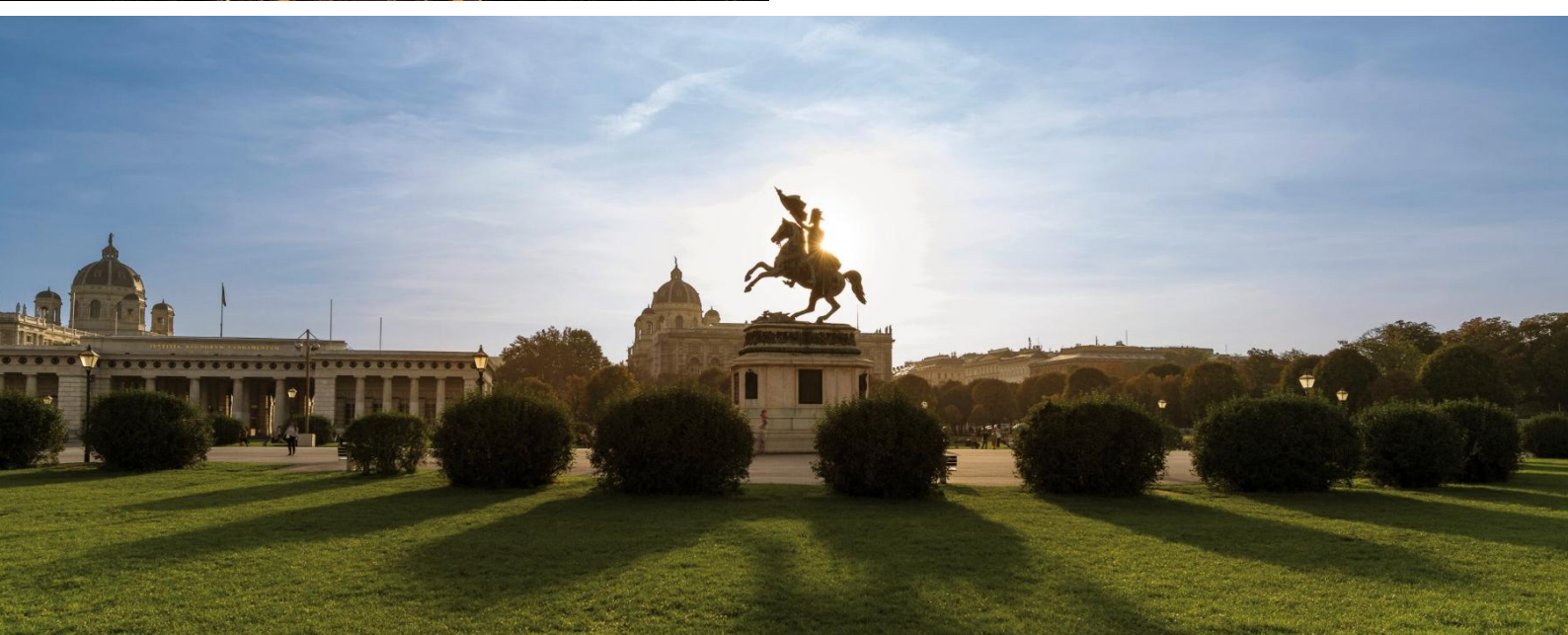
### Guided City Tours through the heart of Vienna

Enjoy a guided city walk in the historical centre of Vienna, the First District and the famous Ringstraße. You will not only see a selection of impressive historical buildings but also enjoy the ambiance of late-summer Vienna and hear interesting stories and tales of outstanding Austrian personalities – from the time of the emperors to the present day. After the walk, there will be an opportunity to stop at a traditional inn (*Gasthaus*) to bring the evening to a pleasant close in good company.

### Public Transport

The meeting point is easily accessible by public transport – take U1, U2 or U4 subway line to Station Karlsplatz, Exit Opera.

We recommend that participants purchase a [weekly ticket from Wiener Linien \(7 Tage Wien\)](#) for convenient travel throughout the city.



## 6 Detailed Conference Program

DAY 1 – Tuesday - 02 Sept 2025

09:00-10:20 Opening ceremony & keynotes

[ILWA-SR29](#)

### Welcome

Ursula Nopp-Mayr, Monika Mörth, Franz Paul Horn

Moderators: Daniel S. Hayes & Gisela Ofenböck

### Global hydropower development to achieve climate sustainability goals

Matteo Bianciotto

### From conflict to collaboration: The Common Path for Hydropower and Ecology in Austria

Monika Mörth & Karl Heinz Gruber

10:20-10:50 Coffee Break

[SCHW-Aula](#)



## 10:50-12:30 Parallel Sessions

### Governance, policies, and management approaches

ILWA-SR29

Moderators: Maria Alp & Anders Skarstedt

**Good Ecological Potential: Sustainable Solutions for Competing Public Interests, Illustrated by Hydropeaking**

Franz Greimel

**Fun-facts, sad-facts and sustainability dilemmas in river protection and management of hydropower impacted water bodies in Norway**

Jo Halvard Halleraker

**Good ecological potential in large rivers used for Hydropower – a new methodology for quantifying hydromorphological measures**

Martin Mühlbauer

**Austrian hydropeaking assessment method**

Bernhard Zeiringer

**Sustainable modernisation of hydropower**

Atle Harby

### Connectivity trends and sediment management

EXNH-EH01

Moderators: Kurt Pinter & Giuseppe Roberto Pisaturo

**Trends in the loss of longitudinal connectivity of the Nile River Basin due to hydropower dams**

Anthony Basooma

**River network connectivity in Austria: A detailed status quo assessment, changes over time, and implications for more sustainable hydropower generation**

Johannes Kowal

**Fragile river systems in a changing climate: governance and sediment management in the Alps**

Rolf Rindler

**Field assessment of fine sediment dynamics in an alpine stream after controlled sediment release from a hydropower reservoir**

Giuseppe Roberto Pisaturo

**Monitoring and management of sediments and bedload at alpine hydropower plants – case studies from Tyrol (Austria)**

Robert Reindl

**Fish-Ecological Effects of Reservoir Flushing in an Inner-Alpine Stream**

Kurt Pinter

**12:30-13:45 Lunch Break & Buffet**

[SCHW-Aula](#)

**13:45-15:15 Parallel Sessions**

**Modeling and managing hydropower 1**

[ILWA-SR29](#)

Moderators: Martin Schletterer & Mattia Pergher

**Challenges and limits in the development of a fish-friendly turbine**

Siegfried Jank

**Closed-Loop Pumped Storage Hydropower: Environmental Impacts and Mitigations**

Dana McCoskey

**End of Life Options – A Discussion of Hydroelectric Project Decommissioning**

Demian Ebert

**Engineering design of turbine runner replacements for improved fish survival at a hydropower facility in the Northeastern United States**

Abe Schneider

**WEF Nexus Modelling in System Dynamics:**

**Water Management in Major River Basins of the Aral Sea Basin.**

Sara Pérez

**Reconnecting rivers and floodplains 1**

[EXNH-EH01](#)

Moderators: Ana T. Silva & Anthony Basooma

**Radio telemetry on snowtrout (*Schizothorax eurycephalus*) unravels seasonal migrations and habitat use with implications for hydropower development in Central Asia**

Erkin Karimov

**Stream-dwelling trout movements in a headwater river**

Laurence Tissot

**The FishPath Project: A Novel Approach to Fish Guidance Through Turbulence**

Ana T. Silva

**North American Review of Upstream and Downstream Fish Passages at Large-Scale and High-Head Hydroelectric Dams**

Vincent Autier

**Remedial measures at a hydropower dam improve Atlantic salmon downstream passage efficiency, a case study for future restoration actions**

Emilie Zimmer

**15:15-15:45 Coffee Break**

[SCHW-Aula](#)

15:45-16:45 Parallel Sessions

## Modeling and managing hydropower 2

[ILWA-SR29](#)

Moderators: Martin Schletterer & Mattia Pergher

### The Role of Effective Mitigation Measures for Low Impact Hydropower— A Review from Europe and the United States

Jo Halvard Halleraker

### RivOpt: a tool to improve river connectivity for fish and optimize barrier management within a river network

Daniel Mameri

### Introducing the DANUBElifelines project: safeguarding migratory fish species in the Danube River Basin and beyond

Florian Borgwardt

## Reconnecting rivers and floodplains 2

[EXNH-EH01](#)

Moderators: Ana T. Silva & Anthony Basooma

### Fishcon lock – Monitoring results and operational experience of a new fish pass

Bernhard Mayrhofer

### A multi-scale approach for prioritizing the reconnection of rivers and floodplains in the Danube-Carpathian Region

Carina Seliger

### Review of Pacific Northwest Trap-and-Haul Facilities for Managing Anadromous Salmonids and Other Species

Vincent Autier



16:45-19:00 Poster Session & Welcome Reception

[SCHW-Aula](#)

### Poster Session

The poster sessions and presentations will take place at the same time as the welcome reception, offering an opportunity for engaging exchanges in a more personal setting.

**Developing a System Dynamics Model to Evaluate Hydropower-Focused Power Development Policies for Achieving SDG 7 in Central Asia by 2050**  
Patricia Osuna Fuentes

**Impacts of Large-Scale Hydroelectric Dams on Community Livelihoods in the Global South: A Comparative Analysis of Capital Changes**  
Kwadwo Appiahene

**Wooden fish passes in France: review of applications and suggestions for future constructions**  
Martin Schletterer

**Comparative Assessment of Water Quality Indices in Monitoring Small Hydropower Plant Effects**  
Paweł Tomczyk

**Organizing Environmental Flow Frameworks to Support Hydropower Mitigation Strategies**  
Saviour Mensah-Edmund

**HP:CA – An Open Hydropower Database Supporting Regional Studies and Cooperation in Central Asia**  
Patricia Osuna Fuentes

**VÖU - Association for Ecology and Environmental Research: Bridging Energy and Ecology Across Disciplines for more than 40 years**  
Ines Leobner

**Using drones in radiotelemetry studies – a methodological concept and framework for future applications**  
Martin Schletterer

**Hydro4U: Demonstrating European small hydropower technology and methods in Central Asia**  
Bertalan Alapfy

**Interactions of multiple stressors with the cumulative effects of hydropower production in riverine ecosystems**  
James Nxytubase Nkhoswe

## Reception

Following the first day of the conference, we warmly invite all participants to a relaxed Welcome Reception held directly at the conference venue.

Enjoy a variety of small bites and culinary specialties, along with a selection of local beers and wines, produced and provided by BOKU.



## Getting to know

This evening is designed to create space for informal conversations, personal introductions, and networking – a chance to connect with fellow participants and colleagues from around the world.

A sociable and enjoyable start to our international congress – in hopefully warm autumn weather and true Viennese *Gemütlichkeit*.



## DAY 2 – Wednesday - 03 Sept 2025

**09:00 - 10:00 Keynote Presentations**

**ILWA-SR29**

Moderators: Jo Halleraker & Stefan Schmutz

**Global perspectives on hydropower: Addressing ecological, social, and economic trade-offs in different regions**

João Costa

**Hydropower and freshwater ecology in South America – a Brazilian perspective**

Marcos Callisto

**10:00-10:30 Coffee Break**

**SCHW-Aula**

**10:30-12:30 Parallel Sessions**

**Hydropeaking: balancing increasing flexibility with ecosystem needs 1**

**ILWA-SR29**

Moderators: Isabel Boavida & Daniel S. Hayes

**Habitat Use and Migration Behaviour of European Grayling (*Thymallus thymallus*) in an Alpine Hydropeaking Stream**

Moritz Wolf

**Evaluating hydropeaking mitigation measures on fish habitat: CASiMiR model-based assessment**

Nusrat Jahan Bipar

**Nervous Habitats: How Hydropeaking Frequency Drives Habitat Dynamics and Ecological Risk**

Nico Bätz

**Hydropeaking-Induced Habitat Instability and Algal Community Shifts: A Case Study from the River Salzach (Austria)**

Elisabeth Bondar-Kunze

**Evaluating Hydropeaking Effects on Macroinvertebrate Communities Using a Field Screening Method**

Alexander Auhser

**Impact of Simulated Hydropeaking on Flow Responses and Refuge Use Behaviour of Invasive Common Carp (*Cyprinus carpio*)**

Isabel Boavida

**Hydrodynamic habitat selection of two Iberian cyprinids following pulsed flow events**

Maria Costa

## Gas supersaturation: ecological effects and monitoring

EXNH-EH01

Moderators: Roy Langåker & Luiz Silva

Tolerance to total dissolved gas supersaturation in Atlantic salmon, brown trout, rainbow trout and European minnow

Rowan John Hamper

Advancing knowledge about the effects of gas supersaturation in Amazonian fish

Luiz Silva

Monitoring of gas supersaturation in rivers, methodology and lessons learned

Martin Enqvist

A novel probe for monitoring gas supersaturation

Sebastian Stranzl

Risk assessment of gas supersaturation in Sweden

Ida Vartia

Mitigation of Total Dissolved Gas Supersaturation downstream hydropower plants: Gas Bubbling and Power Ultrasound

Wolf Ludwig Kuhn

Mitigating gas supersaturation caused by dams and hydropower plants

Ulrich Pulg

12:30-13:45 Lunch Break & Buffet

SCHW-Aula



13:45-15:15 Parallel Sessions

Hydropeaking: balancing increasing flexibility with ecosystem needs 2

[ILWA-SR29](#)

Moderators: Maria João Costa & Franz Greimel

**Management of Hydropower and Hydropeaking in India:  
Data Scarcity Hampers the Assessment of Ecosystem Impacts**  
Anushruti Kukreja

**Flow Tradeoff Tool: A New Tool for Quantifying and  
Comparing Potential Hydropower Environmental Flows**  
*Dana McCoskey*

**Definition of Hydropeaking Measures to Define the Good  
Ecological Potential at Alfenz River, Austria**  
Ines Leobner

**Hydropeaking Effects on Macroinvertebrates:  
Habitat-Specific Responses and Implications for Patch-Scale Management**  
Nico Bätz

**Evaluating a Hydropeaking Mitigation Measure:  
Effects of a Hydropeaking Diversion Power Plant (GKI) on Young-of-the-Year Fish**  
Kevin Merl

**The effects of temporal data resolution in analyzing hydropeaking hydrology**  
Daniel Mameri



Moderators: Vincent Authier & Falko Wagner

Ethohydraulic experiments on downstream fish guidance efficiency of *Alburnoides kosswigi*.  
Serhat Kucukali

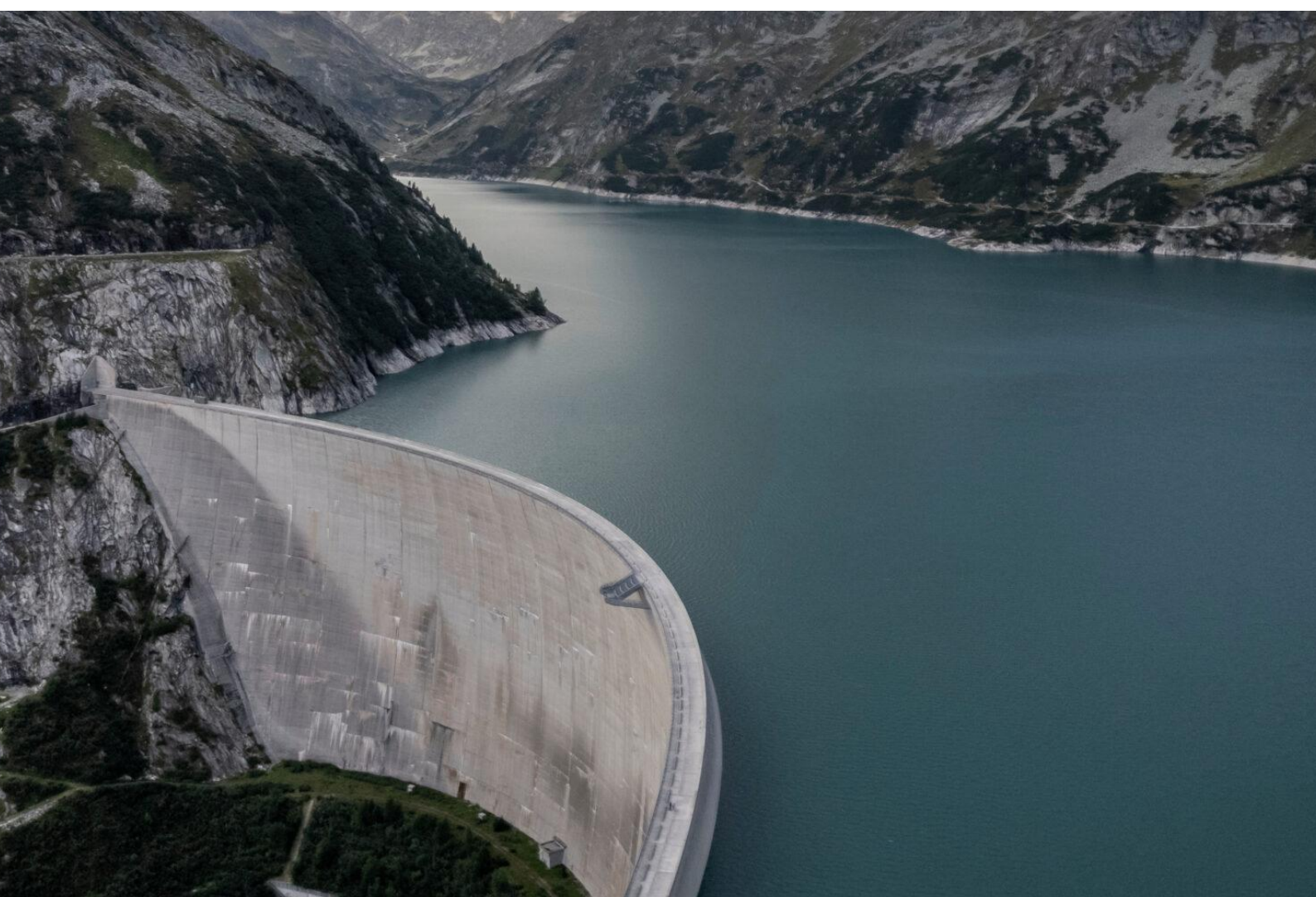
The „Optical slot“ combining hydraulic and optical constraints –  
AI automated video monitoring integrated in vertical slot fish passes (VSP)  
Damien Sidler

Hydraulic Optimization of the Bypass Entrance Design for  
Downstream Fish Migration: Insights from Laboratory and Field Studies  
Falko Wagner

Comparative Investigation of Fish-Relevant Hydraulic Magnitudes  
through Two Kaplan Runners at a Low-Head Hydropower Plant  
Pedro Romero-Gomez

FishLab Innsbruck: a new experimental facility  
to test hybrid barriers for fish protection  
Felix Unterberger

A Novel Approach: Integrating Fish Swimming Activity into Turbine Fish Mortality Predictions  
Matthias Schneider



## Reservoirs: innovation and management

EXNH-EH03

Moderator: Florian Borgwardt

**Lakes under pressure: How hydropower regulation may impact benthic invertebrate communities**

Hanne B. Krogstie

**Hydropower regulation of lakes can shift emergence timing of aquatic insects**

Christianne Dalsbotten Solvåg

**Managing cyanobacteria with a water quality control curtain in Iron Gate Reservoir, California, United States**

Demian Ebert

**Emptying of the Zoggler/Zoccolo reservoir due to damage in the tunnelsystem. Procedure and challenges involved in relocating the fish population.**

Mattia Pergher

**Integrating in-situ and remote sensing data for water quality assessment: A step toward better GHG emission modelling**

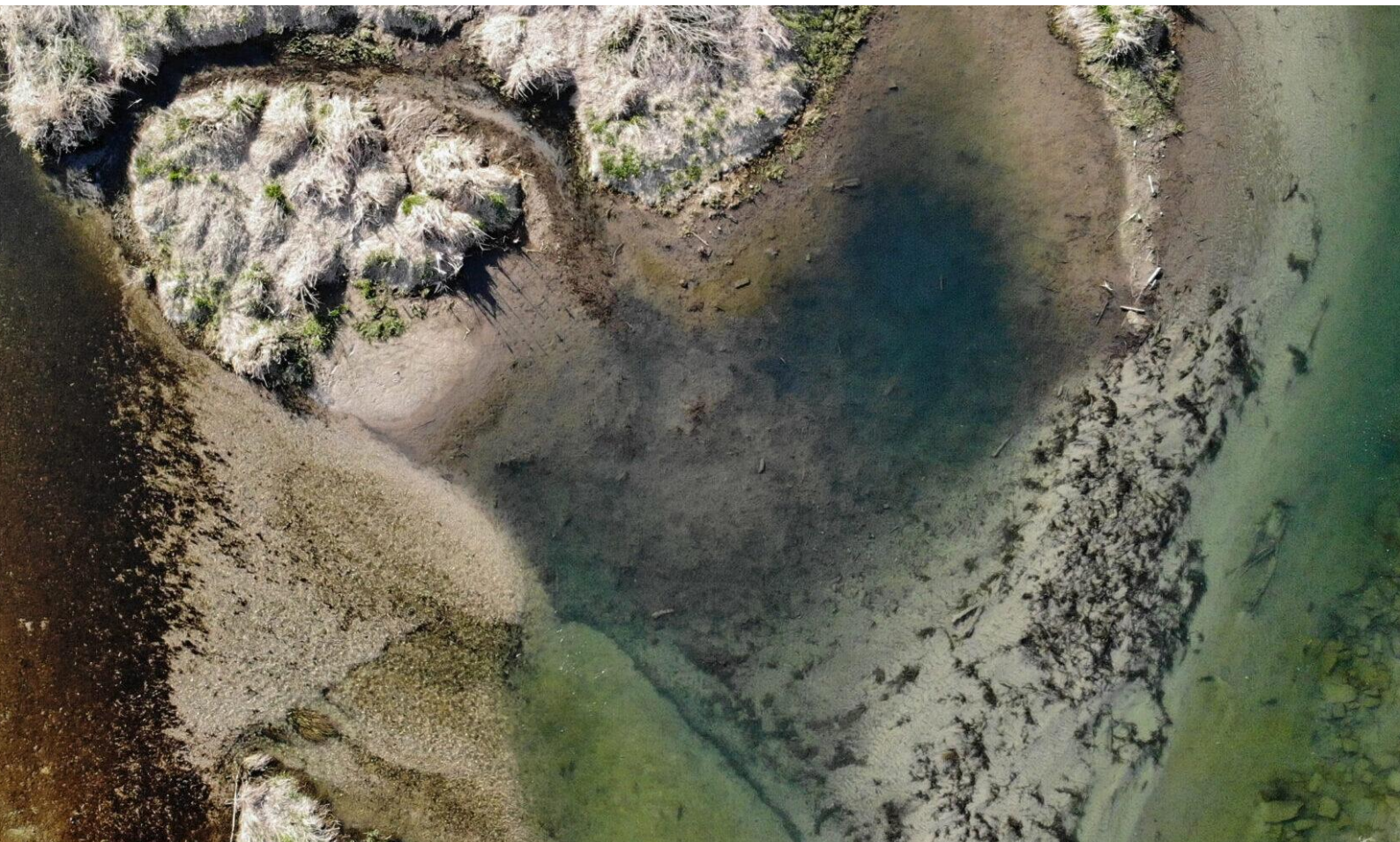
Melissa Sondermann

**Smart Forecasting for Reservoir Management in Hydropower using Ensemble Machine Learning Models**

Edwin González Querubín

15:15-15:45 Coffee Break

SCHW-Aula



15:45 - 17:30 Plenary Session

ILWA-SR29

Moderators: Gisela Ofenböck & Daniel S. Hayes

## Sustainable Hydropower in a Water Resilient Europe

Wouter van de Bund

## Hydropower dams and other ecological stressors variably affect river catchments in Europe

Anthony Basooma

## Exploring new ecological indicators of hydropowering impacts: how much dewatering can a mayfly egg withstand?

Maria Alp

## How hydropower peaks impair fish: Disentangling multiple factors affecting young fish

Stefan Schmutz

## Technology Showcase: Innovation for Improved Hydropower Environmental Performance, Operations and Modernization

Dana Mccoskey

## Implementing the NRR: Austria's Model for Prioritizing and Restoring Free-Flowing Rivers

Helena Mühlmann

19:00-23:00 Conference Dinner

Fuhrgassl-Huber

The Conference Dinner will take place at a traditional Viennese wine tavern (*Heuriger*), nestled in the vineyards of Vienna and located not far from the event venue. All participants will enjoy a buffet featuring a selection of traditional dishes and fine wines. Vegetarian options and non-alcoholic beverages will also be available. The Heuriger places great emphasis on high-quality, regional, and seasonal foods and products, working closely with small local suppliers and farmers who personally guarantee the highest standards. During the dinner, there will be plenty of opportunities for both professional and personal conversations.

**Public Transport:** The restaurant can be reached from BOKU by taking bus line 35A (direction Salmannsdorf) from the “Flotowgasse” stop to “Neustift am Walde” in just 18 minutes.

Buy your ticket here: [weekly ticket from Wiener Linien \(7 Tage Wien\)](#).



## DAY 3 – Thursday - 04 Sept 2025

**09:00 - 10:00 Keynote Presentations**

**[ILWA-SR29](#)**

Moderators: Günther Unfer

**Future challenges in hydropower's environmental and social sustainability**

Isabel Boavida

**The Swedish Hydropower fund: from concrete barriers to common ground**

Anna Jivén

**10:00-10:30 Coffee Break**

**[SCHW-Aula](#)**

**10:30-12:30 Parallel Sessions**

**Advances in hydro-morphological river habitat restoration**

**[ILWA-SR29](#)**

Moderator: Daniel Nyqvist & Stefan Schmutz

**Impact of weirs and hydropower regulation on brown trout population genetics**

Line Elisabeth Sundt-Hansen

**Hybrid Modelling for Integrated River Restoration and Hydropower:**

**A Multifunctional Cross-Structure on the Lower Salzach River**

Christian Jähnel

**SfM-based high resolution modelling and Froude Number for describing gravel spawning sites**

Matthias Schneider

**A Novel River Typology for Post-Glacial Rivers:**

**A Key to Understanding Ecology, Hydropower Potential and Mitigation Measures**

Ulrich Pulg

**The Dwarf bulrush as indicator for the success of river restoration –**

**Case study at the river widening Stams-Rietz (Austria)**

Martin Schletterer

**Reviving Europe's Rivers: Enhancing Fish Populations through Strategic Restoration Efforts**

Ulrike Drabek

## Innovation in fish passage technology and monitoring 2

[EXNH-HS 01](#)

Moderators: Herman Wanningen & Falko Wagner

**Direct experimental comparison of white sturgeon passage through innovative and conventional turbines**  
Sterling Watson

**Effect of brush block on the passage efficiency of Chondrostoma beysehirense in a pool-weir fish pass: ethohydraulic experiments**  
Serhat Kucukali

**Long-Term Assessment of NEPTUN Electric Barriers for Fish Protection in Upstream and Downstream Migration**  
Krzysztof Niezabitowski

**Assessing the risk of injury and mortality in hydropower turbines using live fish and sensors**  
Jeffrey A. Tuhtan

**Applied techniques for AI-based video monitoring of downstream migration in Switzerland**  
Damien Sidler

**Monitoring Fishway Efficacy: Seasonal Usage and Bidirectional Passage in the Danube and Inn Rivers' Hydropower Systems**  
Barbara Grüner

**Towards Standardised Video Monitoring in Fishways: Challenges, Protocols and Ecological Relevance**  
Christian Haas

## Smart hydropower

[EXNH-EH03](#)

Moderators: Atly Harby

**Digital Twins for Hydro Plants: A Catalyst for Sustainable Energy Solutions**  
Thomas Nemetz

**Turbid Water and Human Errors: Practical Insights into Real-World ML for Fish Monitoring**  
Aleksandr Ivanov

**12:30-13:45 Lunch Break & Buffet**

[SCHW-Aula](#)

13:45 - 15:00 Plenary Discussion

[ILWA-SR 29](#)

Moderators: Franz Greimel & Stefan Schmutz

## Hydropower in the Energy Transition – Towards Sustainable, Inclusive, and Collaborative Pathways

This session explores how hydropower can meet rising energy demands while safeguarding ecosystems and ensuring global equity.

Panelists from authorities, science, industry, and NGOs will discuss innovation, governance, and collaboration — with interactive polls engaging the audience in shaping sustainable pathways.

15:00 - 15:15 Closing Ceremony

[ILWA-SR 29](#)



## DAY 4 – Friday - 05. Sept 2025: Field Trips

### 1. Large-Scale River Restoration - Hosted by Verbund



**Departure by Bus:** Friday, 5.9.2025, 8:00, Duration: ca. 8 hours

**Meeting Point:** BOKU University, Peter-Jordan-Straße, 1190 Vienna

This day trip takes you upstream along the Danube into the UNESCO World Natural Heritage Site of the Wachau – one of the last free-flowing sections of the Danube in Austria. Accompanied and guided by experts, you will visit the large-scale bypass channel in Altenwörth as well as two fascinating LIFE projects. These examples will serve to illustrate and discuss dynamic river restoration and habitat enhancement measures of ecological significance on site.

#### LIFE Project Traisen

Austria's largest river restoration project has transformed the lower course of the Traisen River near the Altenwörth Danube power plant into a diverse floodplain landscape. Between 2009 and 2019, a completely new, near-natural river course with a variety of shoreline habitats was created. Many animal and plant species have already colonized the area, including numerous endangered species that have found a new home here. The river landscape will now continue to develop naturally and undisturbed

#### LIFE Project Wachau

As part of the project, the main channel of the Danube was restructured: gravel dredged from the navigation channel was used to create gravel banks and islands near the shore. The former side arms at Grimsing, Aggsbach, Rührsdorf, and Rossatzbach were reconnected to the Danube. New secondary channels were created to ensure continuous year-round flow from the main river. The newly established gravel structures and side arms provide vital spawning, nursery, and refuge habitats for Danube fish species, as well as breeding sites for wetland and waterbirds.

#### VERBUND Fish Passage Altenwörth

With a construction period of two years and a total length of 12.5 kilometers, the new bypass channel at the Altenwörth Danube hydropower plant is the longest of its kind in Lower Austria. In total, € 14.5 million has been invested over the past two years to improve river connectivity and biodiversity in the area surrounding the Altenwörth and Greifenstein hydropower plants—€ 11.5 million of which was dedicated solely to the fish migration aid.



## 2. LIFE-Boat-4-Sturgeon

**Meeting time & date:** Friday, 5.9.2025, 10:00, Duration: 2 hours

**Meeting Point:** [Donauinsel – Inselinfo, Informationszentrum](#).

Tube line U1, Station „Donauinsel“, 5 minutes walk to „Inselinfo“ where the Life-Boat is located.

Please Note that following the Life-Boat tour **at the same location**, the **Pit-tag workshop** will take place and can be attended after the tour. There is a one-hour break in between, which can be pleasantly spent directly by the Danube in the area near the Lifeboats.

**Guided Tour within an internationally unique floating sturgeon hatchery in Vienna**

**LIFE-Boat 4 Sturgeon** is a unique floating hatchery recently established on the shores of Danube Island in Vienna, Austria. It serves to house and breed broodstock and rear juvenile sturgeons. Alongside additional hatchery sites on the Körös River in Hungary and a hatchery container on the banks of the Mur River in Slovenia, the project aims to help save Danube sturgeon populations. The EU LIFE project seeks to establish a living gene bank, preserve the remaining four sturgeon species in the Danube River Basin, and strengthen wild populations by releasing juvenile fish from the hatcheries back into their natural habitats.

**Come on board**, take a guided tour led by scientists involved in the project, and gain insight into one of the largest biodiversity and species conservation programs in Austria.

**Facts and Figures:** The former stone transport ship MS Negrelli—now known as *LIFE-Boat 4 Sturgeon*—was converted into a floating rearing station for the project. It is 66 meters long and 10 meters wide and contains several tanks for broodstock and juvenile fish. By 2030, approximately 1.6 million juvenile sturgeons are expected to be raised on board and released into various sections of the Danube.



### 3. Alpine Hydropower: Flagship facilities in western Austria - Hosted by TIWAG



**Departure:** Thursday, 4.9.2025, 15:15 (right after the closing ceremony),

**Meeting Point:** BOKU University, Peter-Jordan-Straße, 1190 Vienna

**Return:** Saturday, 6.9.2025, arrival in the late evening at [Vienna main train station](#)

This 2-Day-Overnight-Trip (Thursday afternoon – Saturday evening) crosses the entire country of Austria, heading into the mountainous west, where alpine hydropower takes advantage of favorable topographical conditions. We will visit the largest hydropeaking retention basin in Europe, an innovative fish lift, river widening measures on the Inn River, one of the largest hydropeaking-diversion power plants, the high alpine reservoirs of Vermunt and Silvretta, as well as two outstanding pumped-storage hydropower plants (Kopswerk II & Obervermuntwerk II).

#### Day 1 – Friday, September 5, 2025

##### **TIWAG: Visiting Center and Hydropowerplant Silz, Hydropeaking Retention Basin Silz**

TIWAG has implemented a mitigation measure in connection with the power plant expansion in Kühtai. With a capacity of 300,000 cubic meters, the Hydropeaking Retention Basin Silz is the largest facility of its kind in Europe.

##### **River Restoration Stams–Rietz**

At the Inn river between Stams and Rietz (Tyrol, Austria), the river was widened up to 75 meters over a length of 3 km. This restoration project included the removal of bank protection and the creation of a dead branch and a side channel.

##### **Fish Lift Runserau**

Based on a literature review, the solution “fishlift Runserau” was implemented as the optimal solution from both an ecological and technical-economic point of view.

##### **GKI Diversion HPP & Mitigation Measures**

Mitigation includes buffering the flow (impoundments or retention basins) or diverting the flow to a larger catchment. This is exemplified by the hydropeaking diversion HPP GKI, which consists of a weir at Ovella creating a 416,000 m<sup>3</sup> impoundment and a 23 km headrace tunnel leading to the hydropower plant (HPP) with two 37.5 m<sup>3</sup>/s Francis turbines.

##### **Silvretta High Alpine Road & Reservoirs Vermunt and Silvretta**

The Silvretta-Hochalpenstraße is one of the most beautiful and popular mountain roads in the Alps, with 34 hairpin bends. The road passes directly by the Vermunt and Silvretta reservoirs with the spectacular mountain backdrop of the Silvretta.

Day 2 – Saturday, September 6, 2025

## Pumped-Storage HPP Kopswerk II (illwerke vkw)

- The pumped-storage plant Kops II was designed for the successful integration of volatile renewable energy sources such as photovoltaics and wind energy, especially in Germany.
- It's the largest plant of illwerke vkw and provides peak load and balancing energy with a total capacity of 525 MW in turbine mode and 480 MW in pump mode.
- No additional water resources were needed to implement Kops II, as the plant uses the existing Kops Reservoir as the upper reservoir and an existing balancing reservoir as the lower reservoir. With a storage volume of 43 hm<sup>3</sup> in the upper reservoir and a head of over 800 m, it provides an equivalent energy storage of 127 GWh.

## Obervermuntwerk 1

The power plant is situated in Austria's westernmost federal state, Vorarlberg, at an elevation of 1,743 meters above sea level on the shore of Lake Vermunt. It is part of the Obere Ill-Lünersee power plant group.

## Reservoirs in the Piz-Buin/Silvretta Region

We are visiting three high-alpine reservoirs near the Silvretta High Alpine Road: the Silvretta Reservoir, the Vermunt Reservoir and the Kops Reservoir.

**Lunch & Return home:** After lunch (provided by illwerke vkw), we will travel to Vienna, where we arrive at the main train station.



### 7 Post-Conference Workshop

**Meeting time & date:** Friday, 5.9.2025, 13:00

**Meeting Point:** On board of Life-Boat 4 Sturgeon, Tube line U1, Station „Donauinsel“, 5 minutes walk to „Inselinfo“ where the Life-Boat 4 Sturgeon is located.

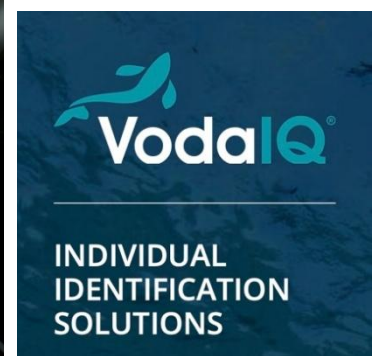
Please Note that the Pit-tag workshop will take place and can be attended after the Life-Boat tour. There is a one-hour break in between, which can be pleasantly spent directly by the Danube in the area near the Lifeboats. It is possible to attend the workshop after the LIFE-Boat-4-Sturgeon fieldtrip.

#### Post-Conference Workshop: PIT tag technology and tagging training

This hands-on workshop is aimed at fish biologist, hydropower operators, environmental consultants and researchers who are planning to start or desire to implement their knowledge on PIT tag technology for short- and long-term fish monitoring programs. PIT tag telemetry developed in the USA during the 80s but, it has been introduced in Europe as a useful tool for fish monitoring only in the most recent years. PIT tag technology combines the benefit of mass marking with individual identification and the deploy of PIT tag antenna arrays, along rivers or fish passages, allows real time monitoring of fish migration.

The starting point of each PIT tag telemetry project is the proper tagging of the fish. Therefore, this workshop is aimed to provide participants with the best PIT tagging practice techniques to mark fish in relation to their size, shape, and morphology. The final purpose of a proper tagging session is to have the tagged fish to perform exactly as the untagged fish.

The first part of this workshop will have a preliminary introduction on how PIT tag technology works followed by a combination of PIT tagging techniques and fish anatomy presentation. The second part of the workshop will be a „hands-on“ demo, and each participant will have the opportunity to practice on PIT tagging fish and to evaluate the proper tag implant. During the „hands on“ session, dedicated software for data collection will be used.



### 8 Sponsors

Many thanks to our Sponsors and Supporters for their generous contribution to this conference.

 Federal Ministry  
Agriculture and Forestry, Climate  
and Environmental Protection,  
Regions and Water Management  
Republic of Austria

**Swedish Agency  
for Marine and  
Water Management**



**Verbund**



**e oesterreichs  
energie.**

**energieAG** | Erzeugung

## 9 Committees

### Local Organizing Committee

Franz Greimel, BOKU University & LimnoSolve  
Daniel S. Hayes, BOKU University & LimnoSolve  
Franz Paul Horn, LimnoSolve  
Gisela Ofenböck, Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management (BMLUK)  
Jan Hochhauser, BOKU University  
Theresa Schauppenlehner, COLUMBUS Congress & Events  
Christoph Hauer, BOKU University

### International Scientific Committee

Daniel S. Hayes, BOKU University, Austria  
Franz Greimel, BOKU University, Austria  
Isabel Boavida, Instituto Superior Técnico, Universidade de Lisboa, Portugal  
Haakon Bakken, Norwegian University of Science and Technology (NTNU), Norway  
Halvard Halleraker, Chief Engineer, Norwegian Environment Agency, Norway Guest scientist, Norwegian University of Science and Technology (NTNU), Norway  
Christoph Hauer, BOKU University, Austria  
Adrian Lindermuth, Verbund Hydropower AG, Austria  
Gisela Ofenböck, Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management, Austria  
Brenda Pracheil, Pacific Northwest National Laboratory, USA  
Emanuele Quaranta, European Commission, Joint Research Centre, Italy  
Martin Schönberg, VÖU & AGAW, Austria  
Anders Skarstedt, Analyst, Environmental Audit, Swedish Agency for Marine and Water Management, Sweden  
Martin Schletterer, TIWAG - Tiroler Wasserkraft AG, Austria & BOKU University, Austria  
Steffen Schweizer, Kraftwerke Oberhasli, Switzerland

### 10 Green Meeting Information

We are pleased to announce that this event is certified as a **Green Meeting**, meaning that sustainability is at the heart of our planning.

This includes:

- **Eco-friendly travel options:** We encourage public transport within Vienna and provide tickets where possible.
- **Waste reduction:** Minimal printed materials and efficient waste management.
- **Regional & sustainable catering:** Locally sourced food and environmentally friendly packaging.
- **Energy efficiency:** Use of sustainable venues with responsible energy consumption.

By participating, you contribute to a greener future—thank you for your support!

#### Sustainable Travel to the Event

We encourage all participants to choose an environmentally friendly way to travel to the event. If you plan to use public transport, we recommend purchasing a **7-Day Vienna Ticket**, available online and at all ticket machines for about **€22.60 (€19.70 if you buy it online)**. Below, you will find detailed information on how to reach the meeting venue using public transportation.

##### Arrival from Vienna International Airport (VIE)

Take the City Airport Train (CAT) or S-Bahn, subway U4 and bus 40A. You arrive in about 1 hour at Boku University.

##### Arrival from Vienna Central Station (Hauptbahnhof)

You can take subway U1, U2 and bus 40A and be in under 1 hour at Boku University.

##### Arrival from Vienna West Station (Westbahnhof)

From Westbahnhof take subway U6 and bus 40A to be at the event in under 30 minutes.

##### Local Public Transportation & Accessibility

- The venue is well connected to Vienna's efficient **public transport network**, including metro, tram, and bus services.
- **Barrier-free access:** Most public transport lines are accessible for participants with disabilities. Please check the Wiener Linien website or the WienMobil app for detailed information.
- If you require assistance to participate barrier-free in the event, please contact us at: [sushp2025@columbus.at](mailto:sushp2025@columbus.at)
- The **walking distance** from the nearest bus station to the venue is short and easily manageable. (Borkowskigasse 50m, Dänenstraße 150m)

### Sustainable Practices During the Event

As part of our **Green Meeting** commitment, we ask all participants to help minimize waste and dispose of it responsibly. Here's how you can contribute:

- **Waste Separation:** Dispose of waste in the **designated recycling bins** available at the venue.
- **Lanyard Return:** After the event, please return your **lanyard** so it can be hygienically cleaned and reused for future events.
- **Bring Your Own Bottle:** Reduce plastic waste by using a **refillable water bottle**—water stations are available.
- **Minimal Paper Usage:** We keep printed materials to a minimum—please refer to e-mails.
- **Save Energy:** Set your devices to energy-saving mode and charge them only when necessary.
- **Mindful Consumption:** Enjoy the sustainable catering and help reduce food waste by taking only what you need.

### Questions or Feedback

If you have any questions regarding the Green Meeting, please contact our Green Meeting officer, Jan Hochhauser, at: [sushp2025@columbus.at](mailto:sushp2025@columbus.at)

[We appreciate your feedback on our Green Meeting after the event!](#)

