

SOS-Water aims to create a holistic framework for the assessment of the SOS of water systems. The basis of this framework will be developed in four different case studies in close collaboration with local key stakeholders on the Rhine, the Danube, the Jucar Basin in Spain and the Mekong Delta.

SOS-Water will develop a set of indicators to assess the state of the water system, taking into account not only water values, but also biodiversity and even the interactions of society, policy and economy with water use and the environment. This assessment will be driven by a strong local stakeholder engagement process. At the same time, the project will develop a robust and diverse modelling infrastructure that will allow to examine the current state of the water systems in the case studies and make predictions for the future. Ultimately, this will allow to design a multi-dimensional SOS of policies and water management pathways, that will be evaluated across a wide range of future scenarios. The results of SOS-Water will contribute to a better understanding of water resource availability and facilitate water planning and management from local to regional scales, so that the allocation of water to societies, economies and ecosystems is economically efficient, socially equitable and resilient to socio-economic (e.g., financial crises) and climatic shocks (e.g., droughts and floods).

First stakeholders' workshop for the Danube case study

On November 22, 2022, the first SOS-Water project stakeholder workshop for the Danube basin was held in Vienna, Austria. A total of 29 people from five countries attended the workshop, including stakeholders representing a wide range of freshwater-related institutions in the Danube basin. The International Association for Danube Research (IAD) was

also present. The workshop was organized by researchers from the International Institute for Applied Systems Analysis (IIASA), the Norwegian Institute for Water Research (NIVA), the Romanian National Institute for Research and Development of Marine Geology and Geoecology (GeoEcoMar) and the IGB Leibniz-Institute of Freshwater Ecology and Inland Fisheries.

The aim of this first workshop was to establish an ongoing dialogue involving all significant interest groups related to freshwater in the Danube basin. Through interactive and engaging activities, stakeholders and researchers collectively identified which are the local water challenges in the Danube basin, as well as the needs and preferences of stakeholders. The participation of representatives from three institutions in Romania facilitated collaborative discussions addressing the distinctive issues faced by the Danube Delta in comparison to the rest of the basin.

It was a fruitful day of discussion and exchange, highlighting the importance of collaboration, especially in the framework of a transboundary basin, and emphasizing the need for coordinated efforts to address complex water management challenges.

The insights gained from the workshop will inform the formulation of a Safe Operating Space framework for water resources. Over four years the SOS-Water project will host a total of four workshops for the Danube basin that will culminate in a case-study-specific SOS-Water framework, which aims to illustrate diverse water futures depending on water allocations for human water use and the environment to support healthy ecosystems and ecosystem services.

More information on the project and the Danube case study can be found at www.sos-water.eu.

Link to IIASA pictures: <https://www.flickr.com/photos/iiasa/albums/72157648154449307>

Danube Congress Ingolstadt

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'Securing the Future of the Danube as a Habitat for People and Nature' was the topic of the 32nd International Danube Congress of the BUND Nature Conservation (Friends of the Earth) on December 2, 2023, in Ingolstadt. The central needs of today are: more restoration, more dynamics, more ecological connectivity across the Danube throughout Europe and thus more recreational space for the population.

The conference began with project ideas for the restoration of the Danube in Ingolstadt. Landscape architect Georg Kestel, together with Reglind Seyberth from the local group

BUND Ingolstadt, presented a concept for the development of more dynamics and closeness to nature on the banks of the Danube in the urban area: 'A natural Danube for people and nature'. Not only little ringed plovers and huchen (Danube salmon) should benefit from this, but also people through the increase in attractive and at least partially more accessible riverbanks. The talk was supplemented by the presentation of the development of a Danube city park in Ingolstadt as part of the EU Blue Green City project by Thomas Schneider from the Climate, Biodiversity & Danube Office of Ingolstadt. Elements include a jetty cafe, a Danube stage and riverbank flattening for restoration. The Danube is an indispensable building block for a climate-adapted and livable Ingolstadt. Improving the biotope



Presentation of the LIFE WILDIsland project by Siegfried Geissler, head of the district's nature conservation authority of Neuburg-Schrobenhausen/Germany. © Lena-Henrike Maly-Wischhof

network is a central goal of both the city's and BUND's concept.

The tour then moved from the urban Danube to the neighboring area of the extensive alluvial forests between Neuburg and Ingolstadt on the dammed Danube. Prof. Dr. Bernd Cyffka from the CU Eichstätt-Ingolstadt, Floodplain Institute Neuburg-Ingolstadt, presented the results of the monitoring of the dynamisation implemented here in 2010 by means of a bypass and ecological flooding. The results show that the organisms reacted very differently and at very different speeds to the measures. Water volume, dynamics, fluctuation range and the spatial scope of the measures were not sufficient to have an effect in the Danube floodplain; the effect is limited to the secondary floodplain of the bypass watercourse. Long-term monitoring is particularly important in the floodplain, which is why monitoring was repeated and supplemented in 2022. The explanations were supplemented by examples from the EU project 'DanubeFloodplain' (Reduction of Flood Risk by Restoring Floodplains along the Danube).

Siegfried Geissler from the nature conservation authority of the Neuburg-Schrobenhausen county then showed the potential and already realised measures for 'WILDIslands', also with examples along the entire Danube. The DanubeParks LIFE project 'WildIslands' aims to improve the habitat quality and biotope network of the 912 Danube islands. 34 islands are being revitalised through hydro-morphological or silvicultural measures. In addition, a Danube-wide protection concept has been developed, and a RAMSAR regional initiative has been launched. Examples of measures in the vicinity of Ingolstadt include the removal of stones and the restoration of a side arm on two islands at the Ussel estuary. As one of the measures is also an implementation project

of the Bavarian 'Masterplan for the development and selection of projects to implement the European Danube Region Strategy in Bavaria', Geissler also briefly presented the masterplan.

The presentation by Herman Wanningen from the World Fish Migration Foundation, who presented the 'Dam Removal' initiative as a contribution to achieving the objectives of the EU Biodiversity Strategy, provided a possible glimpse into the future of the Danube. More than 1.2 million dams fragment European rivers, blocking the path of fish and other species as well as the coarse material that is crucial for natural river dynamics and fundamentally changing the river and its floodplain. Impressive examples of dam removals and enthusiastic people from all over Europe showed the path to and the success of dam removals.

In addition to the focus on the Danube, Dr. Thomas Schwaiger from the Management Board of Ingolstadt's Municipal Undertaking focused on the need to pay more attention to urban water. He presented the flash flood risk management of the City of Ingolstadt, which was developed from 2020-2023, 75% of which was funded by the Bavarian Ministry of the Environment through the 'Integral concepts for municipal risk management' funding programme. After analysing the current situation and identifying hazards, measures were developed to provide information, precautionary land use, manage crises and improve monitoring as well as structural protection measures. The hazard map produced is publicly accessible.

All lectures as well as the '10-point Action Plan for Protecting the Danube' created from the conference, can be found in German language at <https://ingolstadt.bund-naturschutz.de/aktuelles/artikel/donaukongress-2923-nachlese>