

DANUBE WATCH

1/2021

THE MAGAZINE FOR THE DANUBE RIVER
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Home to a Painting by Friedrich Brand:
“Danube at Vienna about 1870”





Dear readers,

The participation of different stakeholders in water resources management is enshrined as Principle Two of the 1992 Dublin Statement on Water and Sustainable Development, which the Global Water Partnership (GWP) took as one of its guiding principles, upon its creation in 1996. That principle implies that all users, planners, and policy-makers, at all levels, should be involved in relevant water management decisions. Now almost 30 years later, how well we are really doing in terms of engaging key stakeholders in water resources management?

Since Integrated Water Resources Management (IWRM) has been formalised as Sustainable Development Goal (SDG) 6.5, countries around the world periodically ask themselves that very question. Based on the last round of global data collection on the status of SDG 6.5 conducted in 2020, the average global score for public participation in water resources, policy, planning and management at the national level was 63%, whereas at the sub-national level it was 57%. For context, overall global status of SDG 6.5 was put at 54%, compared to the 49% recorded in 2017. These two of the 33 questions countries answer to evaluate their progress on SDG 6.5, both on the subject of public participation, show that much more still needs to be done to reach full implementation of IWRM.

This stock-taking exercise takes place within the context of multi-stakeholder consultations. Since the 2020 data

collection occurred during the global pandemic, countries conducted those consultations either online, in-person or in hybrid models, according to the recommendations of their national health bodies. Accordingly, the SDG 6 IWRM Support Programme, coordinated by GWP with the United Nations Environment Programme, UNEP-DHI Centre and UNDP-Cap-Net, worked with governments of 61 countries to convene over 2,400 stakeholders to discuss the status of IWRM. Those stakeholders were from civil society and NGOs (54%), national and local governments (37%), academia (6%), international organisations (2%) and the private sector (2%).

The online and hybrid consultation models fostered greater innovation, as demonstrated in the ICPDR's own Stakeholder Consultation Workshop in June, which was coordinated with assistance from GWP-CEE. Both the number of stakeholders engaged and the means of engagement broke fresh ground for the Danube, and showed that it is feasible to give voice to more stakeholders in a new form, and that doing so can improve the common understanding of shared water challenges, as a basis for collective action. Initiatives like the SDG 6 IWRM Support Programme and the ICPDR's 2021 Public Consultation Process are inviting all interested stakeholders to help improve implementation, as a means of reaching local, national, regional and global goals.

We wish the readers happy reading, and congratulations to the ICPDR for sharing our enthusiasm for Public Participation and being a beacon in the world of IWRM.

- Colin Herron is Global Coordinator, Water Solutions for the SDGs at the Global Water Partnership (GWP).
- Find out more on www.gwp.org/en/sdg6support and iwrmdataportal.unepdhi.org.



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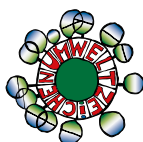
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The ICPDR accepts no responsibility or liability whatsoever with regard to information or opinions of the authors of the articles in this issue.



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News & Events

#DiscoverDanube at Danube Day 2021

VIENNA, 29th June 2021 – For Danube Day 2021, the ICPDR again invited more than 80 million people across 14 Danube countries to celebrate, to learn about the waters, to experience the river, and to #DiscoverDanube. Events were held partially online this year with only a small number of outdoor events taking place.

While still more subdued than in previous years due to the pandemic, Danube Day 2021 happily coincided with the ICPDR's Stakeholder Consultation Workshop, *Our Opinion – Our Danube*, as well as the results from JDS4 – the Fourth Joint Danube Survey – which were published just a few weeks ahead of the day.

Regarding the 2021 edition of Danube Day, the ICPDR's 2021 President, Momčilo Blagojević of Montenegro made the following statement: "It has been an unusual time for the ICPDR and the citizens of the Danube River Basin, just like everywhere in the world. However, the strength of this international cooperation has bolstered the ability of our shared river basin to cope with unprecedented circumstances. It's a tribute to the ICPDR



© Danube Day 2021

that during such a difficult time, we have been able to coordinate the process of drafting, revising, and consulting the public during the formulation of the all-important updates to our Danube River Basin Management Plan and Danube Flood Risk Management Plan. They will inform our activity until 2027, and the process has proven the ingenuity and flexibility of our dynamic institution."

ICPDR Launches its Public Consultation Process for the DRBMP & DFRM Updates 2021



© Barbara Jaumann

March 2021 – the ICPDR officially launched the Public Consultation Process for the drafting of the Danube River Basin Management Plan (DRBMP) and Danube Flood Risk Management Plan (DFRMP) Updates 2021.

Running at the turn of each management cycle, these plans will guide the ICPDR's work programme for the next six years, thus

in keeping with its aims to ensure the active involvement of stakeholders and civil society on all levels of its work, the ICPDR is giving the public the chance to #HaveYourSay and provide input towards these all-important plans. These plans aim to make the waters of the Danube River Basin **cleaner, healthier, and safer**. They will further protect and enhance the status of all waters and to ensure the sustainable, long-term use of water resources as well as the sustainable management of flood risks.

As of 31st March 2021, the ICPDR published draft versions of both the DRBMP & DFRMP Updates on its website, freely available to the public. Until September 2021, the ICPDR has been managing a variety of channels through which consultation can take place and citizens of the Danube can have their say in the drafting process. This includes a public consultation workshop (*Our Opinion – Our Danube* – held online via Zoom due to the pandemic), a Public Consultation Questionnaire hosted on the ICPDR website, and the collection of written comments from individuals and organisations throughout the Danube River Basin via email or post. The latter can be addressed to the ICPDR's Secretariat address or sent to wfd-fd@icpdr.org.

“Workshop on Sludge management in the Danube Region for a greener EU”, co-hosted by the ICPDR

© Sludge story



ONLINE, 10th June 2021 – In cooperation with the Priority Area 4 (Water Quality) of the European Union Strategy for the Danube Region, the Danube Water Program run by the World Bank and the International Association of Water Service Companies in the Danube River Catchment Area, and the International Sava River Basin Commission, the ICPDR is co-organized an online workshop on sewage sludge management.

The workshop set the scene on the situation, mapped trends, and above all raised awareness on this important, but thus far

relatively neglected topic. This workshop was intended to kick off the discussion on sewage sludge management in the Danube Region and pave the way towards more in-depth policy and technological dialogue on this issue.

The highly informative event provided an opportunity to hear the latest developments from EU DG Environment experts regarding the evaluation process of the Sewage Sludge Directive and the revision of the Urban Waste Water Treatment Directive, with 103 registered attendees representing 17 countries at the workshop.

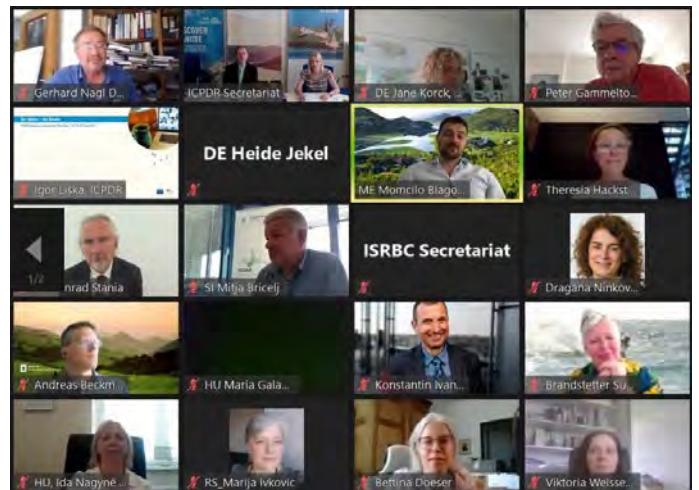
Of heightened relevance due to the European Green Deal, the workshop highlighted the high energy content of sludge, and underlined the variation in relevant management across the Danube Region. Key messages taken away from the event included pleas for improvements to source control, resource efficiency, better sustainability, and sludge-drying reed beds. Find out more at www.danube-region.eu.

19th Standing Working Group Meeting of the ICPDR Successful Heads Online

ONLINE – 23rd-24th June 2021. The ICPDR held its 19th Standing Working Group Meeting online, once again due to the pandemic.

A variety of key issues were discussed over the course of the two-day meeting, uninterrupted by the switch to an online format. Topic ranged from expert group reports to fresh upcoming projects, drafting and consultation for the DRBMP & DFRMP Updates 2021 (see above), outputs from the ICPDR Hydropower Workshop held in March 2021, ongoing coordination of the Sturgeon Issue, and much else. The expert and task group reports included renewed focus on a myriad of projects, including the PM EG’s collaboration with EUSDR PA4, the FP EG’s appreciation of the DAREFFORT project, the RBM EG’s work with the DSTF on sturgeon conservation issues, the APC EG’s taking note of a successful test of the DRB’s AEWS (Accident Emergency Warning System), plus much else.

Despite shifting to an online format, the Standing Working Group delivered a focussed and lively series of fruitful discussions, demonstrating the resilience and focus of the ICPDR. The cooperation



© 19th StWVG

mechanisms in place were clearly shown to have withstood the challenges of the pandemic, and have boldly kept the ICPDR’s work between its contracting parties going strong in 2021.

Time for the Public of the Danube River Basin to...

Public Consultation Continues on the ICPDR's two 2021 Management Plan Updates

Every six years, the ICPDR undertakes one of its most important tasks: redrafting its management plans. Two extremely important documents get drafted and made available to the public, with the ICPDR offering a variety of opportunities for the Danubian public to make their contributions and comments throughout the year. Here in 2021, the ICPDR finds itself right in the middle of this very vital process, as we rework both the Danube River Basin Management Plan (DRBMP) and Danube Flood Risk Management Plan (DFRMP) for their respective 2021 updates.

The outcomes of this Public Consultation process will go towards guiding all of the work the ICPDR undertakes throughout the Danube River Basin for the next six years – before coming up for review once again in 2027. While the ICPDR is passionate about supporting the active involvement of stakeholders and civil society every single day, this process truly marks the most direct and powerful part of the ICPDR's public participation programme. It's also indicative of the ambitious new approach being prioritized by organisations working with the EU's Water Framework and Floods Directives, seeking to evolve the policy process in Europe towards an increasingly transparent and publicly-led form, ready for the era of the European Green Deal.

The most basic and standardized side of our Public Consultation Process sees partners, observers, and interested members of the public simply sending us their comments on the draft text of both the DRBMP and DFRMP Updates 2021, either as an email to wfd-fd@icpdr.org or by address-

ing their written comments in the post to the ICPDR Secretariat in Vienna. The name of the communications game in 2021 however, is most definitely about providing more channels and more chances to reach the Danubian public – not to mention for them to reach out to us!

In the six years since the last Public Consultation process for ICPDR management plan updates, the variety of channels and sheer potential of public participation has gone through a great deal of change. For starters, the ICPDR launched its own social media presence in November of 2018, ushering in an altogether new era for our organisation. These new digital channels have meant engaging in dialogue and interactions with a wider public audience than ever before, and constantly disseminating key information among all members of the internal ICPDR family throughout the Danube River Basin. It has meant bringing our Basin closer together, and closing the communication gaps throughout the region, Black Forest to Black Sea. Essentially, it has meant being able to strengthen our understanding of common interests throughout the Danube River Basin, and how the citizens of the Danube want to move forward together into a bold new (and green) future where fresh solutions to lingering questions have to be found, together.

While social media alone already greatly improves the potential reach and impact of this Public Consultation Process, the process has been 'going digital' in more ways than one this time around. Building

upon a process began in 2015, the ICPDR is hosting an extensive and educational online questionnaire as part of the process, gathering vital opinions about plans and enabling the people of the Danube to #HaveTheirSay, even when they can't attend a workshop, send a detailed letter, or even read the full text of the draft plans. This online questionnaire has already received hundreds of responses since going online in March of 2021, and thanks to the efforts of the entire ICPDR family throughout the Danube River Basin, has been made available in 10 different Danubian languages (in addition to our working language of English).

The continued evolution of this online questionnaire also saw the plans brought together under one questionnaire (previous years saw two separate DRBMP/DFRMP questionnaires distributed, which was deemed less effective this time around). Combining these two was the next logical step, especially given the synergies between the two EU directives behind the two plans, the Water Framework Directive (WFD) and the Floods Directive (FD), as was to bring the questionnaire into a more informative and educational focus in 2021. This has meant favouring feedback regarding public satisfaction with the work over more complicated and open-ended questions, all designed to locate gaps and work out the extent to which the public are pleased with the direction in which we at the ICPDR are headed.

#HaveYourSay#
#HaveYourSay

HAVE YOUR SAY 2021!

DRBMP & DFRMP Updates 2021



Last, but by no means least, the ICPDR hosts a workshop as part of the Consultation Process. It's a unique way for us to get engaged directly with the public and stakeholders throughout the basin, and one of the major highlights of the ICPDR's six-year management cycle. The event proved a special challenge in 2021 too, considering the limitations put upon all our events in the times of the COVID-19 pandemic. You can find out more about the challenges, successes, and outcomes of our tremendous 2021 Public Consultation Workshop – *Our Opinion—Our Danube* – on pages 8 to 10 of this issue of Danube Watch.

The next steps after this multi-channel, multi-pronged, and multi-faceted Public Consultation Process see our experts taking every single comment into account as they review and finalise the text of both the Danube River Basin Management Plan and Danube Flood Risk Management Plan Updates by the end of this year. In a year of unprecedented floods and extreme weather events in Europe, at a time when international cooperation across the continent has faced its biggest ever challenge in

the form of a pandemic, and at a moment when private-public sector innovations are changing the outlook for a new and greener Europe, these plans are more important than ever before. We at the ICPDR remain proud of our ability to work with a huge range of partners, and to bring together the shared concerns of our members, from the Black Forest to the Black Sea. Though still far from over, our 2021 Public Consultation Process already ranks as the most effective and far-reaching in our history.

Hélène Masliah-Gilkarov is the ICPDR's Technical Expert for Public Participation & Communication and Executive Editor of Danube Watch

Why Public Consultation?

◆ ◆
It's a legal requirement of the European Water Framework Directive (WFD) and Floods Directive (FD).

◆ ◆
Both the DRBMP and DFRMP lie at the core of the ICPDR's central work programs – so they really should be developed with strong involvement of civil society and stakeholders from the beginning.

◆ ◆
As an international institution, we support stakeholder and public involvement at all possible levels.

◆ ◆
“This action was made possible wby funding provdied by the LIFE Programme of the EU. The LIFE Programme is the EU's funding instrument for the environment and climate action created in 1992. As members of the LIFE family of the European Commission – and under LIFE's 2019 preparatory programme – the ICPDR is able to develop and disseminate the DRBMP & DFRMP Updates 2021.”
◆ ◆

Have Your Say
#HaveYourSay
our Say
#HaveYourSay
DANUBE WATCH 7

Our Opinion – Our Danube



Thematic Area 1:

Organic, Nutrient and Hazardous Substances Pollution of Surface and Groundwater



Thematic Area 2:

Hydromorphological Alterations & Integration Issues
(Flood Risk Management, Hydropower, Nature Protection, Navigation, Agriculture)

In the midst of the COVID-19 pandemic, the future of the ICPDR's flagship Public Consultation Workshop looked uncertain. During the last Public Consultation on our management plans back in July of 2015, the event took place across 1½ days at the beautiful Croatian State Archives in Zagreb, offering participants a chance not only to socialize in the capital city of an ICPDR member country, but also to interact face-to-face when discussing the future of our precious shared river basin. Dubbed *Voice of the Danube* in 2015, the event was a memorable milestone for the ICPDR, including consultation on the very first Danube Flood Risk Management Plan. How could the 'Zoom era' of 2021 hope to live up to such an event?

The Stakeholder Consultation Workshop comprises the jewel in the crown of the ICPDR's Public Consultation Process, which takes place every six years when we update our management plans. It's an irreplaceable chance for so many of the ICPDR's most

important and most experienced voices to gather and talk shop – so cancelling, delaying, or reducing the event in the face of a pandemic was simply not an option. Furthermore, the scale and complexity of the event left us with the reality that a run-of-the-mill video conference simply couldn't live up to the task.

Living up to the challenge of adapting our Public Stakeholder Consultation Workshop into an entirely digital – and COVID-safe – event wasn't something we'd foreseen during the initial preparations for the Public Consultation Process as both management plans were first getting drafted. Luckily, expert assistance from the team at GWP-CEE, along with the adaptability and experience already accrued by the ICPDR swapping every single meeting to digital formats in the early days of this pandemic, gave us something of

an edge. Speeches from ICPDR President Momčilo Blagojević, ICPDR Executive Secretary Ivan Zavadsky, and President of the Sava Youth Parliament Tana Bertić were given remotely from their respective bases in Montenegro, Austria, and Croatia. The zenith of the meeting, our Danube Café workshop turned from a revolving series of round-table discussions with participants physically moving from topic to topic in a conference hall, into a



Our moderator (Steve Chaid, ORF) and participants at the



Thematic Area 3:

Objectives and measures of Flood Risk Management Plans



Thematic Area 4:

Support to implement both plans, Financing of the measures



Thematic Area 5:

Communication and Public Participation

series of Zoom breakout sessions, with facilitators dynamically moving from virtual meeting room to virtual meeting room, bringing fresh topics to participants for discussion.

As both a seasoned American broadcaster and long-since-adopted Danubian, journalist and moderator Steve Chaid was a natural choice to moderate this event. Chaid guided more than 200 participants,

including experts, stakeholders and members of the public, through the first virtual conference of this scale for the ICPDR. It was a new kind of digital event where they could all #HaveTheirSay towards the future of our uniquely diverse and international river basin, shared by over 80 million people. Following a series of fruitful discussions on our variety of thematic areas, the outcomes from all sessions were gathered and delivered on the second day of the event – *We Discussed Danube*. Naturally,

ICPDR President Momčilo Blagojević opened and closed the unique two-day event with a congratulatory intervention for our many participants:

"There is of course a legal requirement behind a public consultation like this. In essence, it is articles 14 of the European Union's Water Framework Directive and both articles 9 and 10 of the Floods Directive that require us to conduct some level of public consultation during this process.

However, besides being a legal requirement, it's also just an unbeatable tool for us here at the ICPDR, and it ensures that all stakeholders have their say and get to give us their input directly."

Tristan Bath is a British consultant and editor of Danube Watch, who has been calling the Danube home for several years.



ICPDR's 2021 Stakeholder Consultation Workshop.

Our Opinion – Our Danube

What Our Stakeholders Said

One of the most important sections of this workshop came in the form of a series of nine statements from key stakeholders on the first day. As much as anything, the ICPDR is a family of organisations spanning a huge variety of interests in an aim to represent the public's shared concerns for the Danube. These stakeholder statements are a key moment for some of our most valued participants to address the DRBMP and DFRMP Updates directly, and they were able to inform the remaining audience about their findings, their point of view regarding the relevant issues, and to look ahead to the next six years in the Danube River Basin. In general, the statements threw full support behind the steps being laid out by both the DRBMP and DFRMP – and as ever there is always room for future growth, and for the aims of future actions to get bolder, bigger, and better.

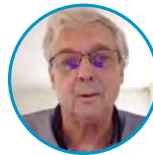
Irene Lucius of WWF-CEE

“We believe that the need and potential for river and wetland restoration is much higher than what is in the plan. More larger scale projects are possible and needed. The focus should divert to integrated solutions such as flood management, drought mitigation, water quality improvement, or biodiversity objectives.”



Peter Gammeltoft of the Danube Sturgeon Task Force

“We think that the DRBMP update covers all relevant water management issues and provides impressive analysis in breadth and depth. It is an excellent umbrella for national plans. However, more commitment to action in particular in the area of sturgeon habitat restoration is much needed”.



Balázs Horváth of Priority Area 4 of the EU Strategy for the Danube Region (EUSDR PA 4)

“We at the Danube Strategy are able to give political support to fulfil the objectives of the river basin management plans. In the next EU financing period, it will be already visible that we have tried to help embedding the objectives into the EU financial programs so money can be better targeted.”



Gerd Frik of VGB Powertech e.V.

“There are still considerable knowledge deficits in the scientific basis of measures, monitoring, and best practices. In addition, there are also strategic deficits throughout the general European approach. Sound knowledge must be created in order to find sustainable measures and to implement them.”



Gerhard Nagl of the Danube Environmental Forum

“One of our goals is bringing back the beluga sturgeons... Our proposal is to use 20% of the recovery funds from the EU budget on biodiversity and ecosystems to meet the climate change goals. Out of those 20%, 10% should be used on river restoration.”



László Balatonyi of Priority Area 5 of the EU Strategy for the Danube Region (EUSDR PA 5)

“Flood risk management is also a significant topic for PA 5. In order to achieve a reduction of flood risk events, EUSDR PA 5 provides continuous support to the implementation of the DFRMP. We also support assessment of disaster risk, and civil protection activities in the Danube Region.”



Theresia Hacksteiner of the European Barge Union

“We welcome the integration with other sectors that will create synergies and avoid potential conflicts. The Inland Waterway Transport sector is ready to contribute to the consultations and intensify the discussions with the ICPDR stakeholders.”



Cristina Sandu of the International Association for Danube Research (IAD)

“If climate targets are not met, according to the current climate models, dramatic changes will occur in summer by the end of the century. The most affected region will be the South-Eastern part of the Danube Basin, where, according to the worst-case scenario, the precipitation level is expected to decrease up to 30%, the temperature is projected to rise up to 7 degrees Celsius, and the Danube discharge is expected to decrease up to 75%. As nature is our main ally in the fight against the impact of climate change, nature-based solutions for adaptation to climate change need to be implemented urgently.”

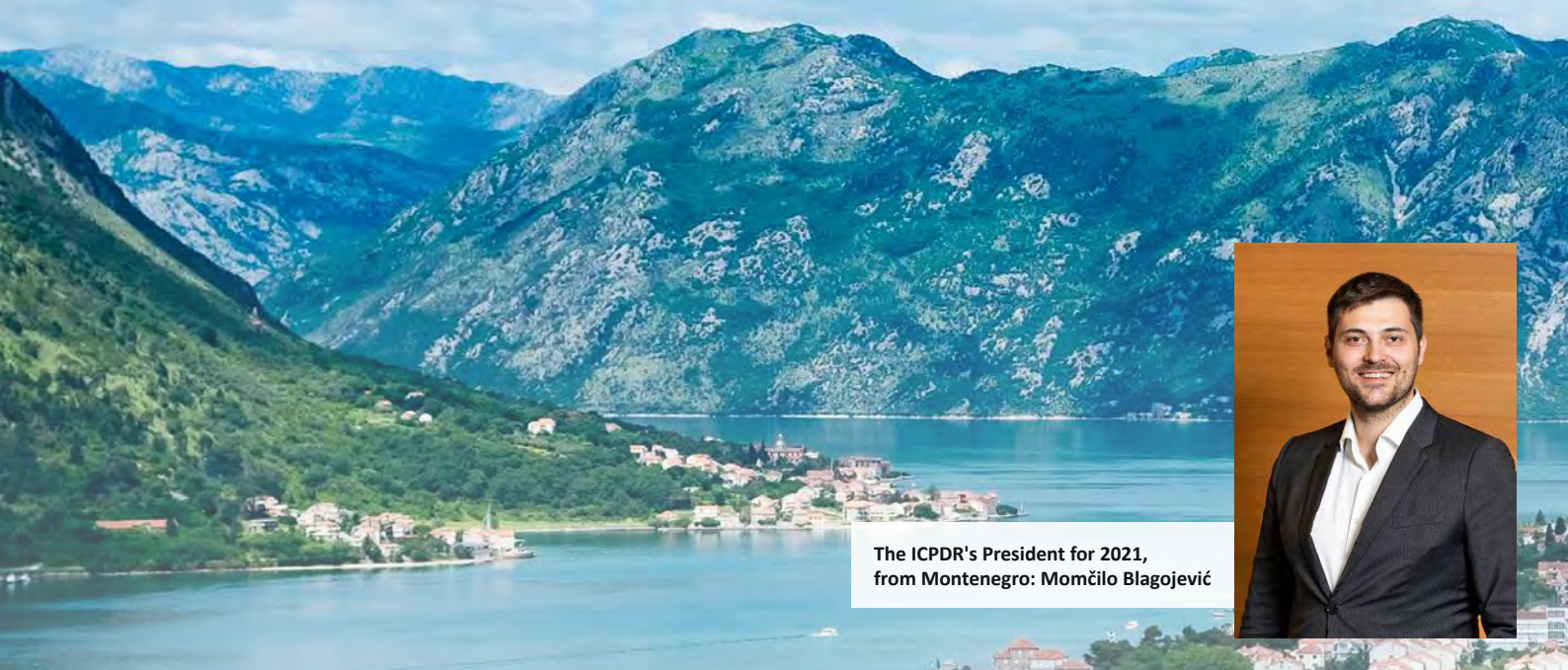


Prof. Dr. Wolfram Mauser of Ludwig-Maximilians-University of Munich.

From a scientific point of view, Prof. Mauser urged the ICPDR and others to take assessments from outside of the water sector into account – particularly regarding changing demands upon water resources – before it becomes a real conflict of interest and consequences arise.



ICPDR Presidency 2021



The ICPDR's President for 2021, from Montenegro: Momčilo Blagojević

On the 26th of January 2021, Montenegro took over the annual Presidency of the International Commission for the Protection of the Danube River. Incoming President Momčilo Blagojević described the bold aims for his forthcoming term at the presidency-handover event that was held online this year. Among these were finalizing the Danube River Basin and Flood Risk Management Plan Updates, emphasizing the public consultation process which supports both plan updates, plus focusing on strengthening Montenegro's involvement in ICPDR expert and task groups.

Another aim of ICPDR President Blagojević has been to lead the development of the Ministerial Declaration endorsing the updated management plans, due to be presented at the beginning of the Romanian presidency in February 2022. Overall, Montenegro's presidency will mark a special era of cooperation throughout the Danube River Basin, fuelled by the lessons learned in 2020 and 2021 during the global pandemic, which has required, and continues to require, special measures at all levels of management throughout the Basin.

Held both in-person in Vienna and over video conferencing, the presidency transfer event saw representatives from the Montenegrin and Moldovan missions in Austria handing over a bottle of Danube water on behalf of the respective incoming and outgoing Presidents, as is the tradition. Passed to every single ICPDR president since the mid-1990s, the bottle symbolises the way in which the President of the ICPDR holds the future of the basin's waters in their hands.

Unable to attend, due to the ongoing pandemic, incoming President Blagojević spoke remotely at the event. "It is strange to be taking over the ICPDR Presidency during the difficult period of the COVID-19 pandemic, at a time when all Contracting Parties to our Convention are struggling with different sets of restrictions and economic hardships. While Montenegro is a smaller member of the Danube family, it is a strong country, and we see this Presidency as an opportunity to expand the role of Montenegro and engage more fully in the work of the ICPDR's Expert Groups". The President also emphasised a new focus on Montenegrin efforts regarding the operation of the Trans-National Monitoring Network, flood protection efforts and the ICPDR's Accident Emergency Warning System (AEWS).

Previously having long served as Montenegro's head of delegation to the ICPDR, Momčilo Blagojević is acutely aware of the commission's achievements and acknowledged its ongoing success. "The ICPDR remains a beacon of international river basin management and a champion of transboundary cooperation", said President Blagojević.

Outgoing President Dorin Andros from Moldova, received warm acknowledgements at the event for his successful tenure as ICPDR President, steering the commission through unprecedented times in 2020. Mr. Andros bestowed his best wishes upon his successor and extended his deepest gratitude to his team for all their hard work throughout his presidency.

To be certain, the work to be done in 2021 has not been easy, either in terms of the looming issues which President Blagojević hopes to tackle, or in accomplishing the work during the continued Covid-19 pandemic. However, with his expressed clear vision and dedication, there is little doubt that Mr. Blagojević will build upon the success of past ICPDR presidents, and will continue to steer the ICPDR into the future of Danube protection.

Join the Danube Floodplain Online Course

100% free and accessible to everyone, a new Danube Floodplain Online Course is an incredible opportunity to help you better understand the concept of Floodplain Management, show you examples of floodplain restoration measures, and explain how to apply tools and knowledge developed by the project itself.



DANUBE FLOODPLAIN ONLINE COURSE

AVAILABLE ON  / TUMx

Opens by the end of
September

more information
and registration:

[www.interreg-danube.eu
/danube-floodplain](http://www.interreg-danube.eu/danube-floodplain)

Contribution to better floodplain management

Throughout history, floodplains have been a vital part of landscapes where different land management was harmonized with regular flooding. With growing land use intensification, floodplains have diminished, been drained, settled on, or even replaced with heavily polluting factories. On top of this, an already precarious situation is exacerbated by building infrastructure to prevent overflowing. The risk of flooding has become a serious hazard with the potential to cause loss of property – and even human casualties. Both aspects are increasing under climate change.

On the other hand, according to recent management and scientific evidence, bringing rivers to their natural pattern of

flooding is in fact one of the best possible solutions to help tackle the multiple water, drought, biodiversity and land management related challenges of our time.

The Danube Floodplain project is focusing on showing how this is possible, with its brand-new online course. It is designed to help explain how flood mitigation and floodplain restoration are compatible, and how we can manage floodplains to preserve habitats and improve ecosystems using cross-cutting management tools developed for the Danube region, and applicable across its boundaries. The course will tackle the historical floodplain loss, current flood risk, and applicable case studies during which we'll discuss a variety of such win-win measures.

The Danube Floodplain Online Course is the first course offered on edX by an EU Interreg project and offers dynamic and engaging lectures that will increase your understanding of approaches to floodplain management.

With this course, our project partners want to address junior and mid-level professionals from local, regional, or national water authorities in the area of disaster risk reduction; SMEs focused on floods; professionals from the water management sector; and students – the managers of the future. Everyone and anyone interested in developing their competences in floodplain management is warmly invited to join.



Danube Floodplain Online Course

Module 0:
Introduction to the course

Module 1:
Flood Risk Management

Module 2:
Floodplain management and lessons learned

Module 3:
Technical aspects of floodplain restoration studies

Module 4:
Supporting decisions in floodplain management

Module 5:
Decision support tools

Module 6:
Conclusions

What you will learn

After the course, you will be able to:

- ◆ explain the concept of floodplain management approach
- ◆ understand application of measures for floodplain restoration from multiple perspectives
- ◆ distinguish practical examples where the Danube Floodplain Tools can be applied to support floodplain management

Course logistics and requirements

The course launches end of September 2021. Participants can start and complete the course materials at their own pace, but no later than the end of 2021.

The course will be linked with the Danube Floodplain Winter Online School (planned in November), where participants can deepen their knowledge under the supervision of lecturers.

Structure

The content remains accessible for the duration of the course, consisting of an introductory module plus six content modules.

- ◆ **Introductory Module:** you will get to know the challenges and importance of floodplain management.
- ◆ **Module 1:** will give you a better understanding of flood risk management and different policy frameworks influencing flood management.
- ◆ **Module 2:** you will learn about the practical examples of the win-win measures.
- ◆ **Module 3:** goes deeper into the technical aspects of floodplain restoration. Concepts of hydrology and hydraulics theory of habitat modelling, importance of riparian vegetation and ecosystem services will be explained.
- ◆ **Module 4:** focuses on the restoration planning and decision-making aspects of floodplain management.

- ◆ **Module 5:** provides an overview of the principles and objectives of Floodplain Management and a method for floodplain evaluation, the so-called Floodplain Evaluation Matrix (FEM). It also introduces Floodplain GIS.

The course includes reading materials to supplement the lectures and different engaging assignments and progress check questions throughout.

For more information and registration please visit: www.interreg-danube.eu/danube-floodplain



Shaping The Future Of Europe's Waters European River Symposium 2021: A Report

While progress is constantly being made in the battle for Europe's rivers, surface waters across the continent continue to endure harmful pollution and long-term environmental damage. According to the European Environmental Agency's 2018 report on European waters, only around 40% of surface waters in the continent are in 'good ecological status', and a mere 38% in good chemical status. Whatever the solutions may be, the involvement of key economic actors in a broad range of sectors, like agriculture, hydropower, wastewater, and industry is going to be necessary – and sooner rather than later.

Since 2013, the European River Symposium (ERS) has become one of the key events when players across this very broad range of fields can get together and put the issues facing Europe's surface waters under the microscope. On the 26th and 27th of May, the fourth such meeting – ERS 2021 – took place as an online event, hosting 256 river and wetlands professionals from 38 European countries and beyond. ERS 2021 certainly keeps up the spirit of previous symposia with its aims of strengthening

river management in the region, but with a renewed sense of urgency. This all comes in light of the reverberations still echoing throughout the water management world since EU Biodiversity Strategy 2030 and EU Green Deal became realities, not to mention the ongoing importance of the Water Framework Directive.

The scale of the task at hand is no doubt large. For example, according to the EU Biodiversity Strategy 2030, at least 25,000 km of rivers are going to have to be restored into free-flowing rivers in the next 9 years. How, though, to go about this in such a diverse region with as many varying concerns as the continent of Europe? Over two busy days, a variety of keynote speeches at the ERS 2021 underlined common ground cropping up across the European continent when it comes to approaching the restoration of surface waters.

Notably fresh energy is being directed towards communication, public participation, and youth involvement. "We should make sure that everybody is involved and heard and nobody is left behind," said Colin Herron of the Global Water Partnership

(GWP) during his speech on the growing importance of stakeholder involvement. "The question," according to Sophie Trémolet of the Nature Conservancy (TNC), "is how we inspire the passion [in] the rest of the society for water funding and financing." Former ICPDR President Péter Kovács extended this call to Europe's youth, highlighting the necessity of bringing more young professionals and young people generally into the breach via boosting new youth networks and events.

The heightened urgency of the situation facing invaluable floodplains and wetlands, not to mention the double dividend to be found in restoring such areas, was also a key topic under discussion at the symposium. Especially in light of ongoing extreme flooding events in Europe throughout 2021, the benefits that come with restoring such regions make focusing on them a no-brainer policy. Such regions are powerful flood defences. According to those in attendance at ERS 2021, there's a need to obtain an overview of such wetland ecosystems, assess their degradation, prioritize restoration costs, and



ERS 2021: Symposium partners

- ◆ International Association for Water services in the Danube Basin (IAWD)
- ◆ International River Foundation (IRF)
- ◆ European Centre for River Restoration (ECRR)
- ◆ World Wildlife Fund Central and Eastern Europe (WWF CEE)
- ◆ International Commission for the Protection of the Danube River (ICPDR)
- ◆ International Commission for the Protection of the Rhine (ICPR)
- ◆ Ramsar Convention, (Ramsar Bureau)
- ◆ Global Water Partnership Central and Eastern Europe (GWP CEE)
- ◆ Wetlands International (WI)
- ◆ United Nations Economic Commission Europe (UNECE)
- ◆ International Network of Basin Organisations (INBO)
- ◆ The Nature Conservancy (TNC)
- ◆ Alliance for Water Stewardship (AWS)

make clear the economic benefits thus created. Focusing on the most effective areas is projected to substantially reduce restoration costs – which are likely covered within 4-5 years already through restoration benefits created from restoring such regions.

As on display across ERS 2021, this additional question of economics – of the ways in which financing for river restoration can be secured – is being radically rethought for the new, greener age. Pre-existing barriers to securing the kind of investment necessary to hit the Water Framework Directive's (WFD) and other directives' goals has often been a simple lack of information on how climate risks are synonymous with business risks, and a resultant perceived risk-reward imbalance of investing in climate and development projects. The estimated financing need of at least €20 billion a year needs to be unlocked to spend on nature through private and public funding at both the national and EU levels. A significant proportion of the EU budget (30%) is going to be dedicated to such climate actions, including investment in biodiversity and nature-based solutions.

When it comes to the Danube, over 80% of floodplains on the Danube and its major tributaries have already been lost, and our shared river basin has faced similar key obstacles to the rest of Europe, namely the difficulties in aligning the interests of different stakeholders – from landowners and communities to industry and government. A shining example of success came in the form of the Living Danube Partnership (read more on page 18), a pioneering cross-sectoral partnership between the WWF-CEE, ICPDR, and Coca-Cola Foundation that sought to demonstrate and promote river and wetland restoration across six countries of the Danube River basin.

As can be expected, the outcomes and conclusions of the fourth European River Symposium leave a mixed taste. On the one hand, the gathering was a cry for urgency amongst many of Europe's leading voices on the subject of river restoration. The imminent impacts of climate catastrophe naturally cast a long shadow atop every discussion. However, the speeches and common ground to be found at ERS 2021 leaves little space for doubt that Europe's river restoration experts are rising to

the occasion, and implementing the smart, integrated, and dynamic programme our rivers so sorely need. As Laurice Ereifej of WWF-CEE and the Living Danube Partnership put it: "a trustful group of experts is the guarantee for effective results".



■ **Hélène Masliah-Gilkarov**

is the ICPDR's Technical Expert for Public Participation & Communication and Executive Editor of Danube Watch

Can River Basin Organizations be effective in managing shared basins in light of all the challenges they face?

Lessons from River Basin Organizations around the world

Rivers are a natural resource that have been a focal point of transboundary governance for centuries. It is challenging to manage them for the benefit of riparian communities – especially if they are transboundary. This requires the development of a water infrastructure to harvest the socioeconomic benefits, while at the same time protecting the ecosystem for future generations. River Basin Organizations (RBOs) have been established in many of the world's basins to better coordinate different stakeholders' actions and foster cooperation instead of conflict. Based on the experiences of several RBOs worldwide, several key characteristics for their effectiveness can be identified.



River Basin Organizations (RBOs) fulfill a variety of functions – ranging from water allocation to the management of fisheries, from addressing water pollution to the promotion of navigation. The main goal of these efforts is to ensure that cooperation prevails over competition, or even conflict, over shared resources, and that problems that individual states alone cannot address, are nonetheless managed in a sustainable manner.

However, RBOs have not always been successful at this. And they have been called paper tigers at times – with journalists, policy makers and academics criticizing them for not living up to the high expectations that some had towards them. Sometimes, conflicts between riparian states persist. Sometimes, ecosystem deterioration continues. Sometimes, the potential for water resources development, and

the subsequent socioeconomic benefits for riparian communities, is often not fully utilized.

So, what are the key characteristics that make RBOs effective?

In a study* conducted by the International Commission for the Protection of the Danube River (ICPDR) in collaboration with other RBOs, a number of features have been identified that determine whether an RBO can effectively fulfil its work. These features relate to the legal framework an RBO is based on, and the mandate it's been given by its member states, the way it is set up, the way in which decisions are taken and joint perspectives are achieved, the way and the extent to which they share data and information as a basis for informed management, as well as the financial means RBOs have at hand to conduct their work.

The first feature is the legal framework upon which an RBO operates. Often the legal framework is rooted in international water law or a broader legal framework, thus founding the RBO and its work on a sound basis of principles, rules, rights and obligations for all actors involved. Equally important is the mandate of an RBO, which determines the parameters it covers, such as water quantity and quality, fisheries, environmental protection, or hydropower development. Mandates can range between a narrow or broad scope. While the narrow-scale RBOs can be swift and highly efficient, the broader-scale RBOs can address challenges in a more comprehensive matter. The ICPDR is an example of an RBO with a narrow scope, focusing mainly on the water status and the flood protection of the Danube River Basin. The mandate of the OMVS (Organisation pour la Mise en Valeur du Fleuve Sénégal) however, is very



“A cardinal function of an RBO is to build a common understanding of the particular water resources challenges faced in that river basin and forms the foundation for unravelling the desired shared destiny.”- Lenka Thamae (ORASECOM)



broad and has a strong focus on using water resources for socio-economic development. Only when the mandate of an RBO covers the key river basin management issues in the basin, can its work be effective.

Also essential to any effective RBO is its organizational set-up. Usually, an RBO has a governance or decision-making body (Council or Commission) through which member states’ representatives regularly meet to jointly decide on the usage, the development, and the protection of the basin’s resources. Often, RBOs also have lower-level technical bodies that translate more general political guidance into actionable tasks. The ABN (Niger Basin Authority) consists of a variety of organizational bodies, the highest level being constituted by a Summit of Heads of State and Government – a governance level rarely found with RBOs. ORASECOM (Orange-Senqu River Commission) on the other hand, has a rather lean organizational structure. In this context, good links between the basin-level and the national level in the member states are also required. The functioning of this set-up within and between individual organizational body largely determines how smoothly decisions can be made, and work implemented.

Decision-making processes are vital for effectiveness. Only if riparian states in the basin are able to make joint decisions about how to manage, develop and protect the basin and its resources, can long term sustainable and cooperative development be possible. This concerns the prin-

ciples of how decisions can get made (by majority, consensus, or unanimity) and the timeframes of these processes. Of particular importance to a solid decision-making structure is having dispute-resolution plans in place, through which member states of an RBO aim at overcoming differences and arriving at a shared decision.

Managing shared basins requires a sound understanding of the state of water resources, the key water management issues they are facing and the effects of management actions. Data and information – and their sharing among states – is therefore crucial. The ICPDR for example coordinates the Trans-National Monitoring Network (TNMN), providing information on the Danube River Basin’s waters based on many parameters, a well-known example for how data can be shared in a well-established manner, providing all states with the same understanding of the challenges and the solutions available.

The last key feature of an effective RBO is solid financing. The lack of necessary financial means can significantly impede an RBO’s effectiveness. Moreover, the way the financial burden is shared among members can influence their commitment to the RBO and cooperation overall.

The effectiveness of an RBO thus depends on a combination of different factors, which need to be considered as a whole

and in their entirety. The way individual factors influence each other when, for instance, a lack of effective decision-making leads to shortcomings in data availability or insufficiently clear dispute-resolution mechanisms, cannot help when solving disputes that arise over an RBO’s mandate. While this isn’t a formula for any RBO, it’s definitely a good place to start.

*** Read the ICPDR’s full publication on RBOs, “Shared Basin – Shared Destiny” at**



www.icpdr.org/main/publications/general-publications

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“The Power Of Partnership”:



While Danube countries have committed to conserving and restoring freshwater habitats and ecosystems, achieving this in practice has proven to be challenging. It has required overcoming technical challenges as well as painstaking alignment of local landowners and interests.

That's where the Living Danube Partnership (LDP) comes in. Over the past eight years (2014 – 2021), the unique cross-sectoral partnership has harnessed the mandate of the ICPDR, the capacity and resources of Coca-Cola and The Coca-Cola Foundation, and the facilitation and expertise of WWF-CEE to promote river and wetland restoration in the Danube basin for people and nature alike.

Key results

To date, the Partnership has undertaken wetland restoration in nine projects in six countries, including Austria, Bulgaria, Croatia, Hungary, Romania and Serbia, focused especially on support for two transboundary initiatives: the Mura-Drava-Danube Transboundary Biosphere Reserve and the Lower Danube Green Corridor. The restoration projects have varied from improving the water level of the unique soda lakes at Neusiedlersee in Austria to reconnecting river sidearms in Croatia, breaching dikes and restoring supply channels to reconnect former

floodplains at Gârla Mare and Vrata in Romania, and removing barriers and initiating installation of best practice fish passes to restore connectivity along the Rusenski Lom river in Bulgaria.

River and wetland restoration funded through The Coca-Cola Foundation alone (\$4.1 million over the eight years of the partnership) will total approximately 5,462 hectares with a volume of approximately 13.45 million m³ of water. The overall results are considerably greater however, including efforts funded by oth-

er sources leveraged by the LDP: It has helped wetland conservation and restoration directly, by co-financing EU-funded projects; and indirectly, by providing, for example, staff time and support for development of further restoration initiatives. Direct and indirect support leveraged by the Partnership for river and wetland restoration totals over €20 million.

The LDP has also promoted a global movement for wetland conservation and restoration in the Danube River Basin. Traditional and social media, including a special

The Living Danube Partnership

By Andreas Beckmann, H el ene Masliah-Gilkarov and Sofia Kilifi



Google Earth application, have reached a combined more than 70.7 million people to date. Through the Living Danube tour travelling exhibition and other events such as the Big Jump we reached more than 87,000 people directly in the Basin.

In 2020, the LDP was awarded Partnership of the Year at the Reuters Responsible Business Awards for its unique model of cross-sectoral cooperation, long-term commitment, and complex approach.

Lessons learned

Coming to the end of the LDP, we are proud of what we have achieved over the past eight years. A final publication summarizes the key solutions, challenges and lessons learned from implementing nine restoration projects across six countries as well as the partnership overall.

Restoring rivers and wetlands depends on cooperation between a broad range of different stakeholders, from local landowners and users, to relevant authorities, government officials and interest groups. Indeed, the LDP has been above

all about partnership – both across the Danube River Basin and within the individual projects and initiatives implemented across six countries. It has involved not only our own cooperation, but also close work with a myriad of local stakeholders and authorities. Both private and public partners from a range of backgrounds and perspectives, from water management to nature and forest management, municipalities and county governments, landowners and land users, local anglers and hunters as well as entrepreneurs, have joined forces to restore rivers and wetlands for the benefit of people and nature.

Furthermore, water connects: it is important for many economic, social and environmental activities and conditions, and is often challenged by conflicting needs of different actors (when it comes to water utilisation). Thus, essential water needs have to be brought into balance through cross-sectoral efforts. This partnership between public and private sectors promoted knowledge and awareness, built trust and gave inspiration that will be carried forward in future in-

itiatives, and provide inspiration for similar cross-sectoral initiatives around the world.

Partnership

If there is one key lesson that we have learned over the past eight years, at the basin level and through individual projects, it is the power of partnership – that by working together we can achieve more than working alone. Together possible.

Further information:

Final publication with results and lessons learned: Thank You Water site, with links to video and information about the different projects:

www.wwfcee.org/livingdanube



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Biodiversity: “At The Collapse”

by Helmut Belanyecz



In days gone by, fish stocks were once to be found in incredible masses in our waterbodies. Freshwater fish were a hugely important part of people’s nutrient intake. In his unpublished studies, E. Weber recorded catches in the Danube from the city of Vienna to the town of Hainburg in Austria. Until the last quarter of the 19th century, 166 tons of fish were caught on average annually along that stretch. This was no overexploitation – though of course, the stream looked absolutely different than it does today. In those days, our Danube consisted of hundreds of islands, plus many smaller and bigger sidearms. All the well-known anthropogenic pressures eventually changed our water-world completely.

Our fish stocks were affected massively too. Notable scientists have estimated a biomass-loss of our fish stocks of about 90 already before 1950. Where previously millions of fish had once thrived, by the middle of the 20th century only tens of thousands remained. But destruction of the environment went on. The Living

Planet Index by the Zoological Society of London showed how from 1970 to 2012 – a mere 43 years – 81% of all vertebrates in freshwater died off, and vertebrates in freshwater means mainly fish.

Austria lies in the middle of Europe. In our country, the distribution range for the species of both West- and East-Europe meet. Therefore, we’ve got more than 70 species of fish in the Danube, along with 74 species of fish and 3 species of lampreys in its tributaries – far more than in any other river system in Europe. In any case, we find ourselves in the Danube, in a very fortunate situation, with only one species having gone extinct. The European sturgeon (*Acipenser sturio*). But don’t forget, that’s only just at the moment. All fish species in the Danube are endangered. Most of them are heavily endangered.

In around 1980, the scientists Fritz Schiemer and Hubert Keckeis at the University of Vienna began their famous investigations on spawning-behaviour of riverine fish in the Danube, east of Vienna near the town

of Fischamend. Today the stretch comprises the Nationalpark Danube-Wetlands, and every single fish has been tagged. At the start, tens of thousands were registered. Nase (*Chondrostoma nasus*) comprised about 50% of the biomass, just as it had in the old days. However, year by year the stocks became lower and lower. In the years 2003 and 2004, only 3,000 Nase could be counted. By 2011, not a single Nase was detected at the generations-old spawning places. Within 3 decades the Nase had gone from mass-fish to an extremely endangered species. Especially noteworthy, in the Nationalpark, where everybody thinks the world should still be in closer to its natural order.

Today, we can see the same in the recently published results of the Joint Danube Survey 4. Biomass of Nase is at the present about 2% in the Danube; a fish, which had once amounted to the quantity of all other Danubian fish species combined. Nase was the “bread-fish” for commercial fishery and now it’s in danger of extinction. Alas, this goes for all of our fish species.

Two Vienna professors electro-fishing in the Danube: Herwig Waidbacher (left) and Friedrich Schiemer (right)



Painting by Friedrich Brand "Danube at Vienna about 1870", currently on display at Dresdnerstraße U-bahn station in the city.



Species
Chondrostoma nasus

Destruction of environment and hand in hand destruction of biodiversity is happening right before our eyes, and it's high time to notice it. Styrian magazine *Natur & Land* wrote in its 2/2021 edition that "84% of Styrian fishes are endangered". The same goes for every other federal state in Austria. To protect biodiversity is now an important target in the EU. It's imperative to find ways to protect our environment beneath the water's surface, and achieving the aims of the Water Framework Directive and protecting biodiversity have to be seen as interdependent tasks.

max. length
60 cm

preferred food
plants

spawning season
Mar–May

migration distance
medium

cross section
oval

spawning substrate
gravel fine / coarse

preferred water velocity
medium - strong

Helmut Belanyecz

is President at the Österreichisches Kuratorium für Fischerei und Gewässerschutz, Vienna, and a member of the European Anglers Alliance, Brussels – and self-describes as "a fisherman, through and through"

IN 2019, JDS4 WAS THE MOST COMPREHENSIVE INVESTIGATIVE SURFACE-WATER MONITORING EFFORT IN THE WORLD.



The fourth of its kind, the purpose of this Joint Danube Survey (JDS) is to gather vital data on elements of water status across the entire 2,857km of the Danube River and its major tributaries, covering 10% of continental Europe, and territory in 19 countries – that makes it the most international river basin in the world!

The results of this survey will help us assess the future of all Danube species, including the many fish that call our river basin their home.



FISH OF THE DANUBE

IT IS IMPORTANT TO KNOW OUR DANUBE FISH SPECIES

The more than 70 species of fish in the Danube are well adapted to the specific environment of aquatic ecosystems. Some species in the Danube live near the bottom of the river, while others prefer to be in the shelter of water plants near the banks, swim in fast-flowing waters, or prefer slow-flowing zones. Different species have different sizes and diets, and different migration abilities and spawning needs.

These cards provide information about the characteristics of selected species. Due to a variety of pressures on aquatic habitats, many of our Danube fish are endangered. On each card, the status of the fish species on the Red List of the International Union for Conservation of Nature (IUCN.org) is given. Fish are therefore ideal indicators of the ecological quality of the ecosystem – the diversity and biomass of the total fish community show the ecological quality of the waterbody. For this reason fish are one of the biological quality elements defined in the Water Framework Directive of the European Union (WFD), together with invertebrates, water plants, algae and plankton.

DESCRIPTION OF THE FAMILIES

WWW.DANUBESURVEY.ORG

The following cards introduce the fish families of the Danube. Explanation of technical terms and more detailed information can be found on the JDS4 website.



FISH FAMILIES - COLOR CODES

- TRUE LOACHES (Cobitidae)
- STURGEONS (Acipenseridae)
- STONE LOACHES (Nemacheilidae)
- SCULPIN (Cottidae)
- SALMON (Salmonidae)
- ROCKLINGS (Lotidae)
- PIKES (Esocidae)
- PERCHES (Percidae)
- MUDMINNOWS (Umbroidae)
- LAMPREYS (Petromyzontidae)
- GOBIES (Gobiidae)
- EELS (Anguillidae)
- CATFISH (Sisoridae)
- CARP FISH (Cyprinidae)



Federal Ministry
Republic of Austria
Agriculture, Regions
and Tourism

Federal Agency
for Water Management



DISCOVER OUR DANUBE FISH

Spot & Identify 60 Danube Fish Species



CARP FISH (CYPRINIDAE)

are the most diverse native fish family with many species from very small to very large. Furthermore, carp is one of the most popular edible fish in the region.

CHARACTERISTICS no teeth in mouth, fifth gill arch shaped as pharyngeal teeth, round scales, no or one to two pairs of barbels



see all 60 Danube Fish Species



Species **SABRE CARP**
Pelecus cultratus



max. length
50 cm

Species **SPIRLIN**
Alburnoides bipunctatus



max. length
20 cm

Species **SUNBLEAK**
Leucaspius delineatus



max. length
10 cm

Species **TENCH**
Tinca tinca



max. length
60 cm

Species **VIMBA BREAM**
Vimba vimba



max. length
50 cm

Species **WHITE BREAM**
Blicca bjoerkna



max. length
30 cm

Species **WHITE-FINNED GUDGEON**
Romanogobio vladkovi



max. length
15 cm



CATFISH (SILURIDAE)

are the largest exclusively freshwater dwelling fish in Europe, with one species in the Danube. They are predators active at night and twilight.

CHARACTERISTICS large and broad head, scaleless skin, long anal fin, 6 barbels, two of them very long

Species **WELS CATFISH**
Silurus glanis



max. length
300 cm



EELS (ANGUILLIDAE)

are not originally native to the Danube and have been introduced. Eels are long distance migrators travelling from fresh water to the sea for spawning.

CHARACTERISTICS snake-like shape; dorsal fin, tail fin and anal fin fused to a single ribbon; no pelvic fins, the pectoral fins are well developed, one gill opening per side, two nostrils

Species **EEL**
Anguilla anguilla



max. length
150 cm

GOBIES (GOBIIDAE)

live on the river bottom, some species are native to the lower Danube, but are considered invasive species in the upper Danube.

CHARACTERISTICS two dorsal fins, first dorsal fin made of hard spines, pelvic fins fused to a suction disc, large mouth, scales present

Species **BIGHEAD GOBY**
Ponticola kessleri



max. length
20 cm

Species **MONKEY GOBY**
Neogobius fluviatilis



max. length
16 cm

Species **RACER GOBY**
Babka gymnotrachelus



max. length
10 cm

Species **ROUND GOBY**
Neogobius melanostomus



max. length
20 cm

Species **TUBENOSE GOBY**
Proterorhinus semilunaris



max. length
8 cm

LAMPREYS (PETROMYZONTIDAE)

are not actually fish at all, but close relatives. They spawn in the upper reaches of streams and rivers. Their larvae (ammocoetes) live up to 7 years buried in the mud before reaching maturity.

CHARACTERISTICS snake-like shape, no bilateral fins, seven gill openings, only one nostril

Species **DANUBE LAMPREY**
Eudontomyzon mariae



max. length
15 cm

MUDMINNOWS (UMBRIDAE)

live in plant-rich and shallow waters with muddy floors and are threatened with extinction.

CHARACTERISTICS no barbels, long dorsal fin, scaly gill cover and cheeks, jaws with teeth, elongated body

Species **EUROPEAN MUDMINNOW**
Umbra krameri



max. length
10 cm

PERCHES (PERCIDAE)

are mainly predators, large species feed on other fish.

CHARACTERISTICS two dorsal fins, first dorsal fin made of spines, anal fin with 1-2 spines, ctenoid scales

Species **DANUBE RUFFE**
Gymnocephalus baloni



max. length
18 cm

Species **PERCH**
Perca fluviatilis



max. length
50 cm

Species **PIKEPERCH**
Sander lucioperca



max. length
120 cm

Species **RUFFE**
Gymnocephalus cernua



max. length
18 cm

Species **SCHRAETSER**
Gymnocephalus schraetser



max. length
20 cm

Species **STREBER**
Zingel streber



max. length
20 cm

Species **VOLGA PIKEPERCH**
Sander volgensis



max. length
60 cm

Species **ZINGEL**
Zingel zingel



max. length
60 cm

PIKES (ESOCIDAE)

are efficient predators, lurking for smaller prey fish.

CHARACTERISTICS anal and dorsal fin far back on the body, duckbill-shaped mouth

Species **PIKE**
Esox lucius



max. length
140 cm

ROCKLINGS (LOTIDAE)

belong to the marine group of cod with one species found in fresh water.

CHARACTERISTICS ventral fins located in pharyngeal area, one single barbel on the lower jaw

Species **BURBOT**
Lota lota



max. length
80 cm

SALMON (SALMONIDAE)

prefer cold oxygen-rich water, feed on insects and other fish, they spawn in fresh water over gravel or pebble.

CHARACTERISTICS adipose fin is present, no barbels, at spawning season millers develop a kype ["spawning hook"]

Species **BROWN TROUT**
Salmo trutta fario



max. length
70 cm

Species **DANUBE SALMON**
Hucho hucho



max. length
150 cm

SCULPIN (COTTIDAE)

are poor swimmers and bottom feeders whose diet largely comprises river bottom invertebrates.

CHARACTERISTICS two dorsal fins, first dorsal fin made of hard spines, pelvic fins separated, large mouth, no scales, swim bladder missing

Species **BULLHEAD**
Cottus gobio



max. length
15 cm

STONE LOACHES (NEMACHEILIDAE)

live hidden in slow-to-moderately fast flowing river zones.

CHARACTERISTICS two pairs of barbels on the upper jaw, one pair of barbels on the lower jaw, degenerated air bladder

Species **STONE LOACH**
Barbatula barbatula



max. length
15 cm

STURGEONS (ACIPENSERIDAE)

feed on invertebrates along the river bottom, and are long-distance migrators, living in the sea but swimming up rivers to spawn (exception: Sterlets live only in rivers). Maturity is reached only after many years, and these species can become very old.

CHARACTERISTICS shark-like shape, large bony scales, pentagonal cross-section, unsymmetrical caudal fin.

Species **DANUBE STURGEON**
Acipenser gueldenstaedtii



max. length
240 cm

Species **GIANT STURGEON**
Huso huso



max. length
800 cm

Species **SHIP STURGEON**
Acipenser nudiventris



max. length
220 cm

Species **STARRY STURGEON**
Acipenser stellatus



max. length
250 cm

Species **STERLET**
Acipenser ruthenus



max. length
125 cm

TRUE LOACHES (COBITIDAE)

are small bottom feeder fish that feed on invertebrates.

CHARACTERISTICS some species have a fold-out spine in a skin fold below the eyes, 6-10 barbels, long and laterally compressed body, tiny scales

Species **BALCAN LOACH**
Sabanejewia balcanica



max. length
15 cm

Species **SPINED LOACH**
Cobitis elongatoides



max. length
15 cm

Species **WEATHERFISH**
Misgurnus fossilis



max. length
30 cm



**ICPDR – International Commission
for the Protection of the Danube River**

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