



WePass : Explained

**FACILITATING FISH MIGRATION
AND CONSERVATION AT THE IRON GATES**

2018 | 2019 | 2020 | 2021



This action has received funding
from the European Union

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An Introduction to We Pass

What?

The main objective of this project – which in full is named “*Study on environmental and ecological thematic in the framework of MRS and policy coordination with DG NEAR/ENV: Support for the implementation of the Feasibility Study analysing options for characteristic Danube fish migration at Iron Gate I & II*” – has been to improve biodiversity in the Danube region.

More specifically though, this project focused on the Iron Gates (aka Porțile de Fier/Đerdap), a hydropower plant complex located on the Danube River’s main course on the border between Romania and Serbia. This facility is shared between the two countries, and has been a vital source of low-carbon energy for the region for decades, though all such plants come with adverse ecological effects. The blockage of key migration corridors for Danube fish species is one of the most pressing issues. The Danube River isn’t, however, just a key migration route, it also represents a vital habitat for a variety of species. Constructing fish passes at the Iron Gate dams would open up 960 km of the Danube River, running all the way until the Gabčíkovo Dam in Slovakia, and granting migratory fish access to many long-inaccessible tributaries.

With coordinated studies and efforts such as We Pass, iconic fish species, including the various Danube sturgeon species, can still be saved from completely disappearing. Better yet, should we act swiftly, there’s a possibility we could see their numbers brought back up to healthy levels throughout the Danube River Basin and beyond.

How?

The aim of this initial step towards a feasibility study was to assess the background of and develop technical solutions for fish migration at Iron Gates I & II, the first large barrier for sturgeons and other migratory fish along this vital route.

In order to explore different options for fish migration facilities and fully analyse the current situation at the Iron Gates, it was necessary to collect data at the following sites:

- Iron Gate I: Main Dam
- Iron Gate II: Main Dam
- Iron Gate II: Romanian Ship Lock
- Iron Gate II: Dam on the Gogoșu Branch

Another key step in We Pass was the collection of data on fish passage facilities for migratory fish world-wide, and to assess the feasibility of bringing a comparable solution to the Danube River. This involved studies on fish passes that were specifically designed for sturgeons, as well as fish passes that were originally designed for other species, such as salmon. In general though, available information on sturgeon fish passes is scarce. Only few such facilities suitable for sturgeons have been built worldwide so far, and each case study represents a very specific solution, designed to suit the very specific characteristics of their location. Additionally, the available information is often incomplete and/or inconsistent, limiting in-depth comparisons between case studies. Nevertheless, for some criteria, it was possible to collect and analyse sufficient information.



A key part of the study comprised a field study to monitor migratory fish behaviour to assess how and where the vast majority of migratory species would approach the Iron Gate II, if they find their way through the reservoir between Iron Gates I & II, while also investigating the downstream migration at Iron Gate II.

Who?

This project was funded through a grant awarded by the European Commission (DG REGIO), and aspired to have a strong macro-regional character, focusing on its impact and the ramifications for the whole Danube Region. It is for this reason that a close and constant implementation of the EU Strategy for the Danube Region (EUSDR) was central to this project, while various other synergies are always explored.

We Pass was a joint effort of several partners:

- ICPDR (*International Commission for the Protection of the Danube River*)
- Jaroslav Cerni Water Institute, in Belgrade, Serbia
- DDNI (*Danube Delta National Institute*), in Tulcea, Romania
- CDM Smith in Bochum, Germany | OAK Consultants, in Utrecht, Netherlands
- NINA (*Norwegian Institute for Nature Research*), in Trondheim, Norway
- Subcontracted by DDNI, was IMSI (*Institute for Multidisciplinary Research, University of Belgrade*) in Belgrade, Serbia

...and its five key tasks were divided up between the partners, as shown below:

Task 1	Task 2	Task 3	Task 4	Task 5
Project Management	Analysis of Current Situation and Data Gathering	Monitoring Fish Behaviour at Iron Gates I & II	Communication Activities	Data Quality Assurance and Quality Checks, 3D Basis Model
ICPDR	Jaroslav Černi Water Institute	DDNI, NINA, IMSI	ICPDR	CDM Smith, OAK Consultants

Sturgeons are considered living fossils, having first appeared some 200 million years ago. The family comprises 27 species, of which 6 are native to the Danube. While two of these species are already considered extinct, the remaining population still represents a natural heritage of the Danube River Basin. They require different habitats at different stages of their life cycle, and due to their sensitivity to environmental pressures, sturgeons are a crucial indicator species for the ecological quality of rivers. This makes them the ideal candidate to represent the region’s various threatened migratory fish species, and general ecological well-being as a whole. Due to their role in the river system, the ICPDR has adopted the ‘living fossil’ and highly threatened sturgeons of the Danube as its flagship species.

References to sturgeon conservation activities can be found in the national River Basin Management Plans of the Danube countries, the ICPDR’s Danube River Basin Management Plans, and Danube Ministerial Declarations. Thus, advancing broad public awareness and political commitment for Danube sturgeon species – in addition to other characteristic migratory fish of the Danube – is a priority towards safeguarding the ecosystem of the entire Danube River Basin.

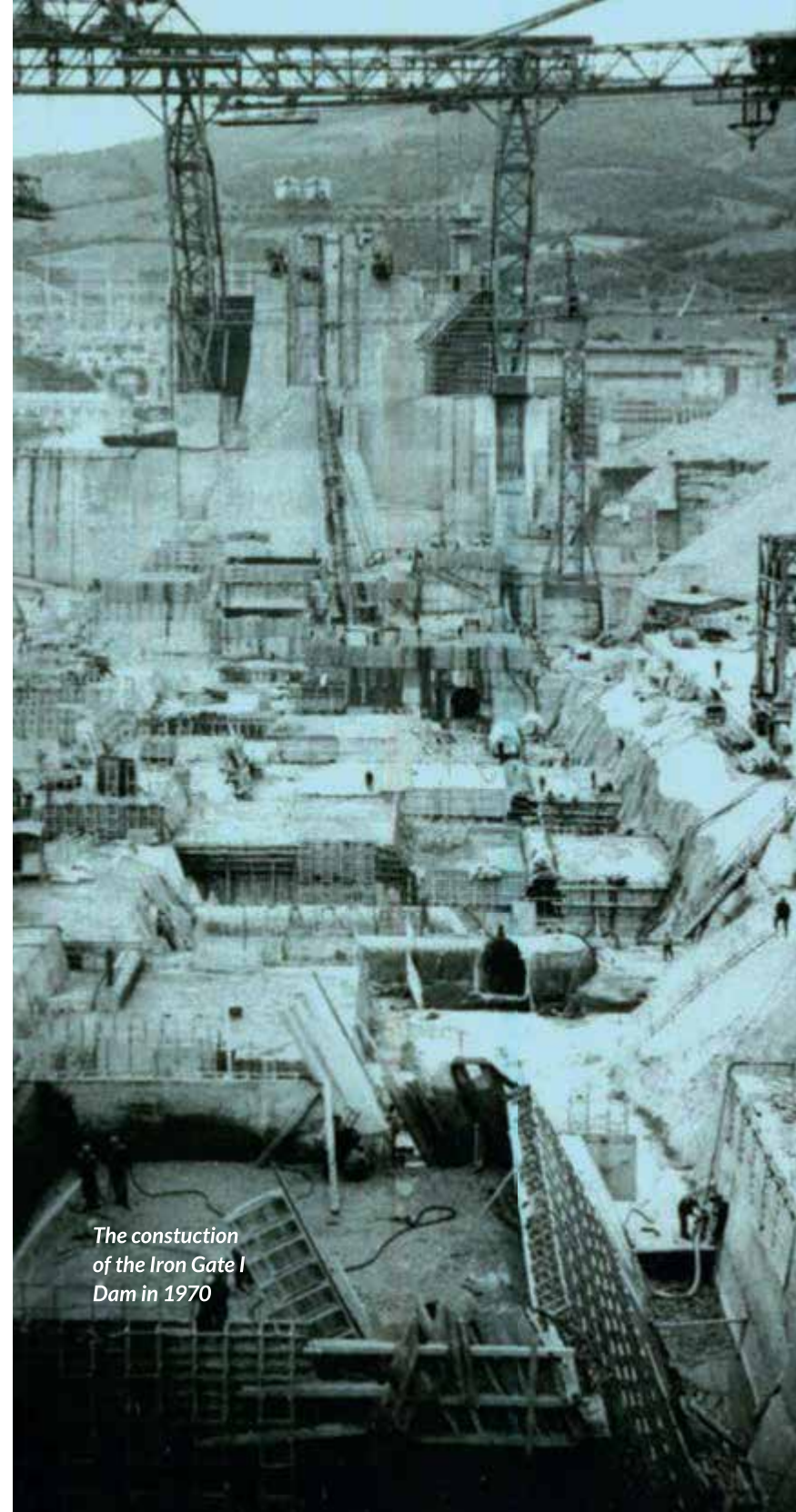
The Iron Gates: A History

The Iron Gate Hydropower and Navigation System (HPNS) is the largest on the Danube River, and indeed one of the largest engineering projects ever undertaken in Europe. The entire system was a joint project by the governments of Romania and Yugoslavia (today it is operated with the Republic of Serbia), aiming to provide cost-effective and permanent utilization of the hydropower potential, while at the same time creating suitable conditions for navigation through the Iron Gates stretch of the Danube River gorge, separating two countries – Romania to the East and Serbia to the West. In this sense, if a project born from international collaboration creates unforeseen side effects, further international cooperation could well hold solutions.

Before the Dam

The Iron Gates Gorge has long been a region of ecological and historical importance. The area is home to the Lepenski Vir archaeological site, an ancient settlement on the banks of the Danube in eastern Serbia. The site has evidence of an 8,000-year-old culture, making it one of the oldest planned settlements in Europe.

Much of the area was declared a UNESCO Global Geopark in July 2020, and both sides of the project are protected areas. The Romanian side of the gorge constitutes the Iron Gates Natural Park, whereas the Serbian part constitutes the Đerdap National Park.



The construction of the Iron Gate I Dam in 1970

Construction & Adverse Impacts

Construction of the project began in 1964, with the Iron Gate I Dam first becoming operational in 1972. The Iron Gate II Dam wouldn't open until 1984. Following the construction of Iron Gate I, the Danube valley downstream from Belgrade was transformed into a reservoir some 300 km long, with a 35-metre rise in water level in the headwater of the dam.

The old centre of the Romanian Danube port city of Orșova was flooded, while the Danube island of Ada Kaleh – a Turkish enclave with a unique history and story – was entirely submerged. At least five other villages and some 17,000 inhabitants were displaced. While the inhabitants were relocated, the settlements have been lost forever to rising waters.

If projects of this kind are designed and built without adequate attention to the importance of river continuity, dams effectively cut a river into separate, ecologically isolated compartments. This prevents the free movement of aquatic fauna, with fish particularly badly hit. Unable to move upstream or downstream between their essential habitats such as spawning and nursery grounds, populations are prone to decline and eventually are eliminated.

In the case of the Iron Gates project, impacts have been felt by a variety of local fauna and flora – exemplified by the Danube sturgeons, which have witnessed disruption of their spawning routes. Knock-on effects include economic impacts, such as inhibiting the productivity of Danube fisheries.

Today, as a result of both the construction of these dams and overharvesting of fish populations, sturgeons and other migratory species are threatened with extinction.

Positive Impacts

Aside from its massive adverse impacts, it can also be stated that, the Iron Gate Hydropower and Navigation System (HPNS) has lived up to its purpose as first intended by the Romanian and Yugoslav governments half a century ago. The average annual hydropower production is 13 TWh (equal to 13 billion kilowatt-hours). The project thus covers a 10% share of power demand in both Romania and the Republic of Serbia.

One effect of the damming of the river at the Iron Gates gorge was to ease navigation in this section of the Danube. A target that was on the agenda since the early 19th century. The Iron Gates gorge, however, hasn't always been navigable for large vessels. Works by the Hungarian administration (Orșova sat within the Kingdom of Hungary until the end of the First World War) took place from 1889, with rocks being cleared with explosions to try and render the notoriously difficult stretch navigable. The Sip Channel thus created (named after the nearby Serbian village of Sip on the right bank of the Danube), was so important, its opening in 1896 was attended by three heads of state: Emperor Franz Joseph of Austro-Hungary, King Carol I of Romania, and King Alexander I of Serbia. The area however, was subsequently found to still present a myriad of challenges to vessels. It wasn't until the creation of the artificial Lake -Đerdap during the construction of the Iron Gates dams that the gorge became easily – and safely – passable.

Today, both of the Iron Gate dams include 34-metre-wide navigation locks, enabling easy passage for vessels. More than 12,000 vessels pass through the Iron Gates gorge every year. That's some 35 cargo and passenger ships passing through every single day, bringing the people and economies of the Danube River Basin closer together.



A Guide to Danube Fish Migration

Why Do Fish Migrate?

A large variety of fish species migrate to spawn, while others do so to feed, and some to compensate for the drift that occurred at the early stages of their life. Migration is a vital part of a fish's life cycle, with some species migrating thousands of kilometres regularly.

Some migratory fish species are anadromous, meaning they live in the saltwater of seas and oceans, but migrate into the freshwater of rivers, lakes, and streams to spawn. Others are catadromous and live in freshwater but migrate into saltwater for spawning. When it comes to the Danube, the vast majority of migratory fish species are anadromous (only eels are catadromous), including a variety of shad (*Clupeidae*) and sturgeons (*Acipenseridae*) amongst others. A variety of river fish species, such as the much smaller sterlet, are in fact potamodromous, meaning they migrate but within the confines of the river.

Sturgeons: Our Flagship Species

Sturgeons belong to one of the oldest families of bony fish. Sturgeon fossils date back approximately 200 million years. The arrival of the Anthropocene and human activity has however, seen the sturgeons subjected to rapid and acute changes to their environment, with drastic

effects on sturgeon populations. Blockage of migration routes, such as the dams at the Iron Gates, have proven one such key problem. Additionally, as a key source of food—particularly caviar, which is processed from sturgeon roe – sturgeons have long been subjected to overfishing, diminishing their numbers over generations.

Sturgeons are very sensitive to environmental pressures. They are thus a key indicator and umbrella species of the ecological status of rivers and their environmental functionality. There are six sturgeon species native to the Danube River Basin. These were once present in large, viable populations, and would migrate as far as Regensburg in Germany on the Upper Danube, also contributing greatly to the stocks of the Black Sea.

Following their listing in the IUCN Red List of Threatened Species in 1996 however, urgent calls to seek adequate conservation and repopulation measures, have been on the rise. According to the IUCN Red List, of the six native Danube sturgeon species, *Acipenser sturio* (common sturgeon) is extinct, and *Acipenser nudiiventris* (ship sturgeon) is now considered functionally extinct. The *Acipenser gueldenstaedtii* (Danube/Russian sturgeon), once the most abundant sturgeon species of the Danube, has only been observed in single numbers over the past years.

There are 863 km of the Danube River in the Lower Danube Region available for largely unobstructed migration of the three remaining anadromous sturgeons: beluga (*Huso huso*), Danube / Russian sturgeon (*Acipenser gueldenstaedtii*) and stellate sturgeon (*Acipenser stellatus*) and their potamodromous relative the sterlet (*A. ruthenus*). However, construction of fish passages at Iron Gate I at rkm 863 and Iron Gate II at rkm 943 could open an additional 900 km for migration up to the Gabčíkovo dam at rkm 1,816. This reconnection would enable the sturgeons to reach the majority of their historical spawning and nursery habitats.

Sturgeon Facts

- All 27 sturgeon species inhabit the Northern Hemisphere
- They are long-lived animals reaching up to 170 years of age
- The Beluga sturgeon is one the largest bony fish species in the world, and can grow to over 7 metres in length and weigh over 1,000 kg!
- They are late maturing, reaching sexual maturity at an age of 6 to 25 years depending upon species and latitude
- Sturgeons have long been sought after in many countries, with monarchs claiming them as 'regalia' belonging to the crown
- They have in the past been harvested in large numbers in the Middle Danube by the blocking of their migration routes

What is the ICPDR?

The ICPDR (International Commission for the Protection of the Danube River) works to ensure the sustainable and equitable use of waters and freshwater resources in the Danube River Basin. It is the major legal instrument for cooperation and transboundary water management in the Danube River Basin comprising 14 Danube Basin countries and the European Union as contracting parties. Hydromorphological improvements including river continuity for fish migration at the Iron Gate I & II for sturgeons and other migratory fish species are one of the key objectives of the Danube River Basin Management Plan.



We Pass: Report of Activities

The division of work for We Pass took the form of five tasks. Given the outstanding role of the ICPDR (International Commission for the Protection of the Danube River) as platform for transboundary water management in the Danube River Basin, it was given the responsibility for Task 1: Project Management, including the monitoring of task implementation and reporting to the European Commission.

The ICPDR project manager supervised the project as a whole and coordinated the implementation of all tasks and activities to be carried

out. Project meetings with all task managers were organised by the ICPDR; Steering Committee meetings took place twice a year to discuss project progress and challenges with representatives from the ICPDR Secretariat and the European Commission services (DG REGIO and DG ENV), Romania, Serbia, DSTF, EUSDR PA6, academia and WWF.

The multi-organizational setup and interdisciplinary background of representatives of the ICPDR, Consortium partners and task leaders as well as Steering Committee members, was crucial for the successful project implementation.

Task 2: Analysis of Current Situation and Data Gathering



JAROSLAV ČERNI
WATER INSTITUTE

Activities were led by
Jaroslav Černi Water Institute,
based in Belgrade, Serbia.

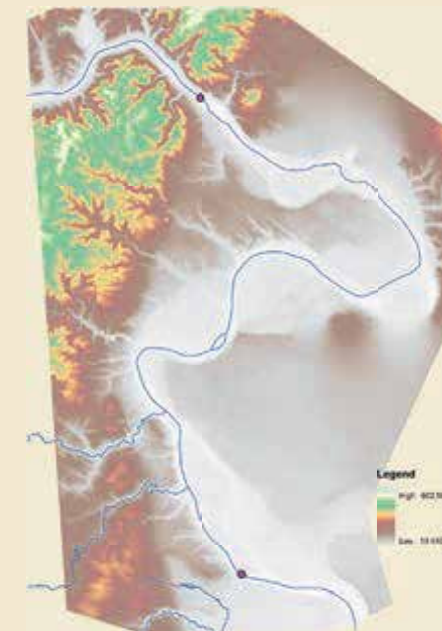
The key deliverables under Task 2 were both a report gathering all the hydrological and technical data on the Iron Gate I & II dams, and a review of sturgeon passage facilities in use throughout the world. Based out of the Jaroslav Černi Institute for the Development of Water Resources, the team went in depth on analysing a variety of data pertaining to the Iron Gate dams, including:

- Hydrological data
- Hydropower plants operational data
- Implementation of international conventions and strategies in Lower Danube Countries
- Technical details of dams and surrounding infrastructure
- Geotechnical data and maps
- Hydraulic data
- Detailed topographic map
- River morphology
- Study on sturgeon migration behaviour



Detailed Topographic Map

Basic Geological Map



Methodology

Technical details presented and assembled throughout the lifetime of the project included the structures of the dams (blueprints), geotechnical data, topographic mapping, river morphology and morphological changes in cross-section.

Some hydrological data, regarding the water regime along the Danube River, are available from as far back as 1974, provided by the Đerdap authority responsible for the Serbian side of the Iron Gates. A large amount of data presented, took into consideration seasonal variations in water levels at the Iron Gates and Gogošu dam.

The team created a “Literature Overview of Sturgeon Migration Behaviour And Analyses Of Current Legislative Framework In Relevant ICPDR Countries Including Multilateral Environmental Agreements Within The Scope Of We Pass”, comprising case studies from Russia, the USA, and Canada.

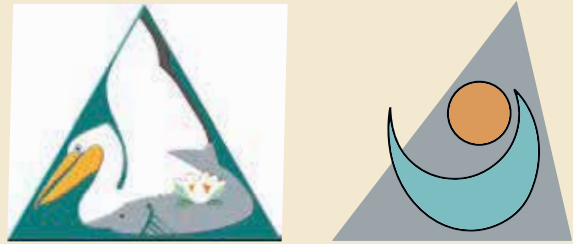
In the USA and Canada – where 9 species of sturgeon exist – fish passes have more often focused on optimising based on seasonality and time of day. Fish lifts are largely put to use during evening and night hours, which was seen as the most effective period. Additionally, the investigation on the effectiveness of fish ladders in North America showed that sturgeons prefer wide ladders and submerged orifices with a larger surface area.

The report also emphasized the insufficient enforcement of policies aiming to battle poaching and to establish a joint monitoring program for the Lower Danube countries (Romania, Bulgaria, Ukraine, Serbia) as well as Croatia, Hungary, and Slovakia.

Lessons From Fish Passage Evaluation

1. Information on sturgeon passage across dams is still very scarce.
2. In principle, various types of fish pass facilities, i.e., fish lifts, fish locks and conventional fish passes, provide upstream passage for sturgeons. However, specific solutions, adapted to the location is essential.
3. The report compared the different mitigation measures to facilitate fish passage at dams, such as ladders, lifts, bypass channels, and locks. The efficiency of fish passages varies considerably between the case studies analysed and depends on a number of factors. Detailed case-specific knowledge on both fish behaviour and topography at any potential pass sites is essential.
4. Pass entrances should be located at the parts of the river where sturgeons are expected to migrate and aggregate below the dam.
5. There is consistent information that attraction flow velocity should be within the range of 0.8 – 1.4m/s, which goes far beyond other, conventional fish passes.
6. Analysed examples show the importance of adaptive management based upon monitoring of efficiency over time to increase efficiency – so options for making technical adjustments need to be included in any proposed sturgeon pass.
7. Full-depth guidance structures leading to bypass channels are needed to be successful at protecting downstream migrant sturgeons.

Task 3: Monitoring Fish Behaviour at Iron Gates I & II



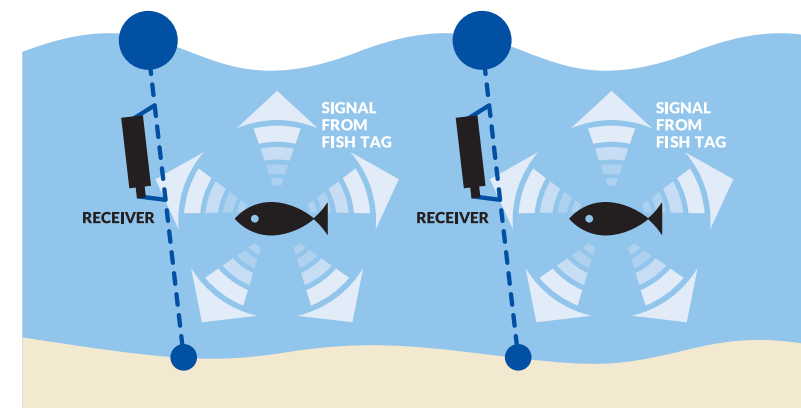
Activities were led by the Norwegian Institute for Nature Research (NINA) in Trondheim, Norway, "Danube Delta" National Institute for Research and Development (DDNI) in Tulcea, Romania, and the Institute for Multidisciplinary Research, University of Belgrade (IMSI)

As made clear by the findings in Task 2, there's no one-size-fits-all solution for fish passes. Not only is every location, every dam, and every river extremely different, but fish in different regions behave differently, and only by understanding these differences can efficient and effective fish passes be built and maintained. The team behind Task 3 went out into the field to gather new data from the river, utilising various methodologies to obtain data about fish movement and migration routes.

Assessing where migratory fish tend to aggregate at Iron Gate II was one of the key aims of Task 3, with the team deploying acoustic telemetry to to assess the behaviour of migrating fish. The Iron Gate II Dam is 1.7 km long, thus it's vital to identify the key locations at which passes would be most effective, and where fish could 'find' an entrance. Some additional sub-goals of the project included monitoring of fish migration behaviour in the reservoir of the Iron Gate II Dam (i.e., the north side), and to work out the mortality rate of fish swimming through the Iron Gates' turbines during downstream migration.

Fish Movement at the Iron Gates

Applying acoustic telemetry technology, our team caught and tagged a multitude of fish specimens, and released them both up- and downstream of the dams. This enabled them to later record where these fish were gathering and moving throughout the Iron Gates region. Which sides of the river do they prefer, or tend to favour? Which sections of the dam could work well for a pass?



Signal emission and detection in acoustic telemetry

- The behaviour of 185 individual fish (asp, barbel, common carp, common nase, pontic shad and vimba bream) was recorded; 61 in autumn 2019 and 124 in spring 2021.
- In the reservoir of Iron Gate II, many fish displayed extensive movements. A quarter of the fish reached the Iron Gate I Dam, 76 km upstream.
- Most of the individuals monitored, were recorded on both sides of the river, i.e., they appear to have no major preferences or tendencies with regard to location within the river.

Read the full report 'Restoration of Fish Migration in the Danube River at Iron Gate Dams in Romania and Serbia', online via this QR code:



Surviving the Turbines

Fish survival when moving through hydropower turbines is limited to small fish sizes and is restricted to cases where pressure differences above and below the turbine or cavitation are sub-critical. Turbine passage is of course by no means the standard method to facilitate movement of fish downstream. Survival rates vary among hydropower stations, due to such factors as target species (in particular, their size), along with the design of the turbines in use.

Due to the lack of an opportunity to test turbine passage directly, the movement data of fish tagged with acoustic transmitters which were transplanted from the downstream catch site to the reservoir upstream of Iron Gates II were utilized to verify passage routes and assess survival.

Of all the caught and tagged fish, between March and May 2021 a grand total of 62, ranging from 20cm – 65 cm in length, were transported and released above Iron Gate II (at Kusjak beach). Shortly after release:

- 59.01% of all specimens migrated downstream
- 41% stayed upstream of which a total of 40% moved further upstream.
- 3.28% migrated to the area around Iron Gate I and downstream below Iron Gate II

In summary, upon analysis of the movement of the fish after passing the Iron Gate II Dam, it can be stated that the survival of the fish when passing through turbines was very high. However, sturgeons are larger than most of the fish monitored, and further research is going to be necessary.

Bottom: The route swum by a nase (Chondrostoma nasus), tag id: 38836, released at Kusjak on 10 May 2021. This specimen spent 8h30m in the reservoir before migrating downstream through the Romanian navigaton lock on the same day (© Google Earth)



Task 4: Communication Activities



Besides the gathering of data, scientific analysis and formulation of vital first steps, a strong communications strategy is essential to any undertaking with the ambitions of We Pass. A wide variety of stakeholders – including the public themselves – have to be brought on board to ensure the long-term success and maintenance of our aims. Thus, our communications team, at the ICPDR Secretariat in Vienna, formulated several key aims to get the word out about We Pass:

- To inform our audience on the objectives, progress and results of the project.
- To ensure transparency of activities being implemented throughout the project.
- To provide a brand identity to the project, including graphic design.
- To maintain a consistent flow of information throughout the project.
- To raise awareness of the project, and increase public engagement.
- To bring together conflicting stakeholders by using cross-sectorial language.
- To offer content written in clear and understandable language.
- To reiterate the cultural and biological importance of the Danube Region.

Additionally, key communications deliverables such as design, branding, social media accounts, etc., will be synergised with future We Pass projects.

Naming the Project

We Pass

One of the most important jobs of communicating this project came right at its inception, namely, the task of coming up with a name. The Task 4 team shared a wide variety of name suggestions with the entire We Pass family, and after deliberation, “We Pass” was the ultimate winner. In short, sharp, and simple nature, the name brings together what matters most about this project’s aims:

- The “We” at the core of the entire project, referring to the citizens and countries that make up the Danube River Basin, as well as the fish most closely affected, that form a part of our shared ecosystem.
- The “Pass”: what it’s all about! Finding a way to pass those dams without disrupting their function.

Animated Video

At the beginning of the project, we wanted to create an animated clip with the power to explain what We Pass was all about in no more than 90 seconds. Our script hit several key points about the project in a short space of time – but we’re particularly proud of the characteristics the sturgeons have in this very informative video. The clip can be viewed on the ICPDR’s YouTube channel (youtube.com/icpdr).



Top: “Sturgeon Steve’s Danube Journey” a We Pass board game

Bottom: A screengrab from the We Pass animated video clip



Social Media & Website

Another key action within Task 4 was to use social media channels (on Instagram, Twitter, and Facebook) to increase the project’s presence and forge dynamic content for a variety of audiences. The team have uploaded relevant content and updates via these channels. See our Scrapbook section in this brochure for some screengrabs! Task 4 also oversaw the creation of the website we-pass.org, taking a mobile-friendly single-page setup. This brought all the relevant information onto one single scrolling page.

Board Game: Sturgeon Steve’s Danube Journey

The next generation of Danubians need to stay aware too, so we felt it was vital to create an effective way to illustrate how this issue works and can be solved – but for families. We brainstormed and ultimately landed on a ‘snakes-and-ladders’ style board game: *Sturgeon Steve’s Danube Journey*.

Most importantly, it’s a very positive and solution-oriented journey that our sturgeon takes on this game. It also educates any players about the Iron Gates and fish migration in general.

Events

Task 4 also oversaw the running of various We Pass events, including the spring 2019 Kick-Off Event held near the Iron Gates in Kladovo, Serbia, the Stakeholder Workshop held on the banks of the Danube in Vienna at the end of 2019, and the We Pass Final Conference held online in 2021. Find out more about these events on page 26 of this brochure.

Task 5: Quality Control & Modelling



Considering the paramount importance of data to We Pass, Task 5 (full title: "Data quality assurance and quality control and 3D basis model") had the essential job of specifying, thoroughly checking, and merging the huge variety of data provided by partners throughout the project. This included data on a variety of important aspects of the Iron Gates, including its structure, various types of terrain modelling (geological, terrain), geospatial data, outcomes of Tasks 2 & 3.

Task 5 chiefly set out to:

- Specify the technical data requirements for Task 2
- Analyse the collected available data and specify additional data needed for Task 3
- Check all data for plausibility and integrity

International Expert Workshop

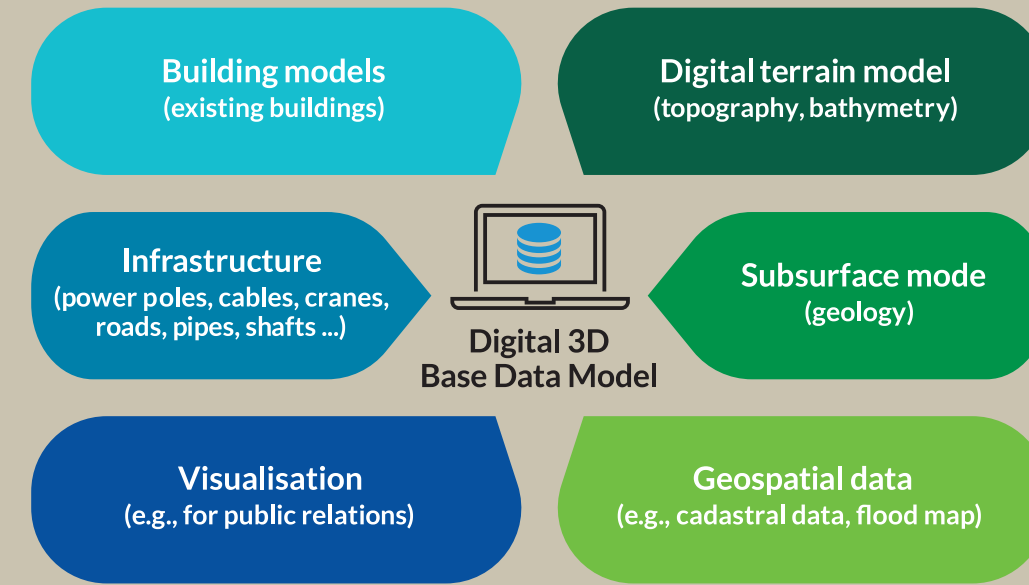
Taking place online on 5th – 6th October 2021, the Task 5 team held a workshop to obtain peer-review of actions completed thus far in We Pass, and their results.

Additionally, the workshop sought to:

- Establish and discuss requirements for the design of a fishway.
 - It was agreed that while feasible, any design suitable for sturgeons is going to have to be very site-specific and is currently without peers anywhere in the world.
 - Additionally, any planned pass should be future-proof, enabling adaptations to be easily made afterwards based on monitoring of functionality.
- Reflect on a potential fish passage implementation strategy for the Iron Gates.
 - It will be paramount to show stakeholders how facilities will be embedded into their structures, and how the operation of the fish passes will not interfere with their operations.
- Obtain input towards predesigning both up- and downstream fish passage facilities.
 - The workshop participants concluded that political commitments with concrete actions and timeframes (ambitious timelines too, not measured in decades) are of key importance.

Establishment of 3D Basis Model

Additionally, the team behind Task 5 created a 3D basis model of the current state of the barrages. Here essential information from the subsurface via construction to the water levels were brought together. This modelling will be usable for the engineering design of any future constructions stemming from the project. It formulates a vital output of the project, visualising the concept for the public and stakeholders alike.



The variety of data that went into building We Pass' 3D model of the Iron Gates.



Video still from a 3D model of the Iron Gates Dam © We Pass

Yet To Pass? Looking Ahead at the Iron Gates

What will the Iron Gates be like in 2050? This was one of the key questions posed to a panel of experts at the We Pass Final Conference in November of 2021. While, of course, far from an easy question, the expectations of our experts provide us with an insight into a variety of possible future scenarios.

Managing Expectations

It's going to be essential for any fish passage to enable free migration for fish in both directions – up- and downstream of the Iron Gates. This process will need to be accompanied by improvements for many years to come however, so we should already be aware of this condition from the outset. Poaching, sedimentary shifts in the river, and major habitat deficits will require special efforts to overcome. Additionally, these ancient species continue to exhibit a 'homing' instinct.

Further Obstacles

We Pass is only the beginning. The Iron Gates are the largest obstacle for fish migration in the Danube. Access to the Upper Danube is still blocked by the Gabčíkovo Dam in Slovakia, for example, and this needs to be examined as well, sooner rather than later. Any re-establishing population of migratory fish will require a network of ecological corridors. What's more, illegal fishing and black-market practices throughout the Lower Danube countries will also be essential to curb in parallel with any measures.

"If we go with the measures we have prescribed though, the picture in 2050 can be optimistic!"

Petra Repnik, ICPDR HYMO TG

"From a pessimistic point-of-view, if we don't finally implement the different strategies to improve habitats and species status already agreed upon, we could see some 50 fish species heading towards extinction."

Jörn Geßner, IGB Berlin

Time Delay

We Pass' experts are eager to underline that, even if we have established fish passages by 2030, we will not have the Danube River full of sturgeons by 2031! We will all need to be prepared for the lag time between taking the measures and having the results. In some sturgeon species, sexual maturity only occurs after 15 – 20 years, so there's always going to be a delay when waiting for repopulation to occur. While we will hopefully have a recovery of the population over time, it will in all eventualities take time.

With the combination of measures and the strategies already agreed upon it will be possible to bring the Danube River back to sustainability and resilience. Furthermore this will require the establishment of a network of ecological corridors. Due to the variety of serious economic questions, it is very important to convince various stakeholders of the benefits.

Ambitious Deadlines

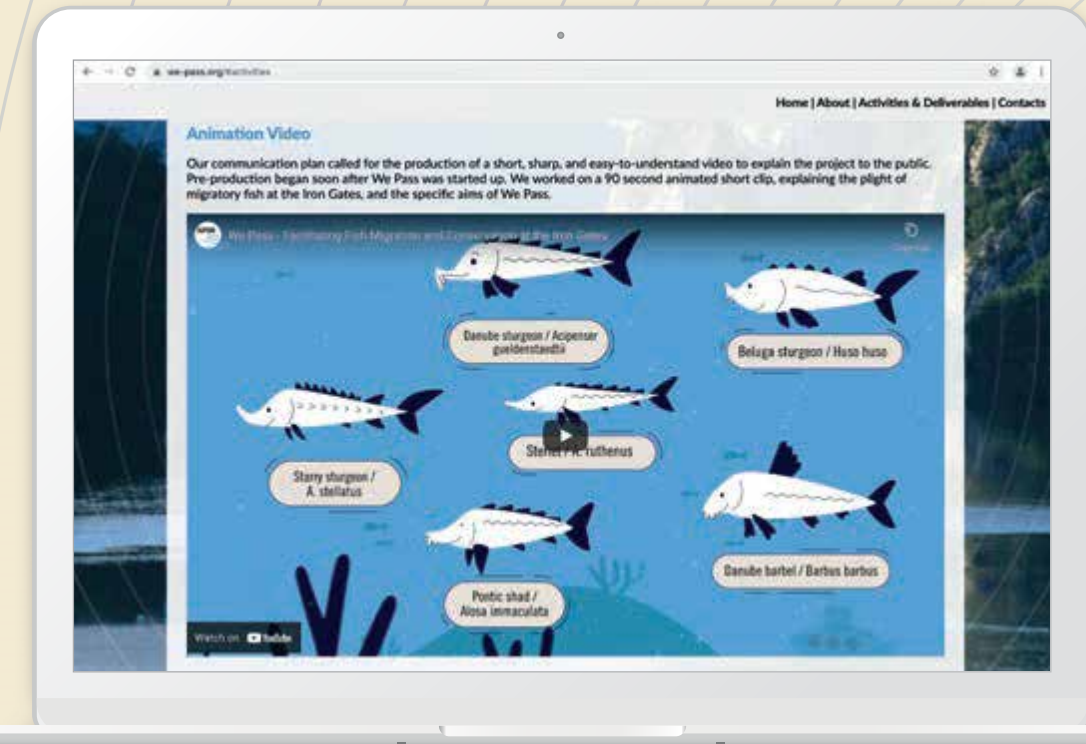
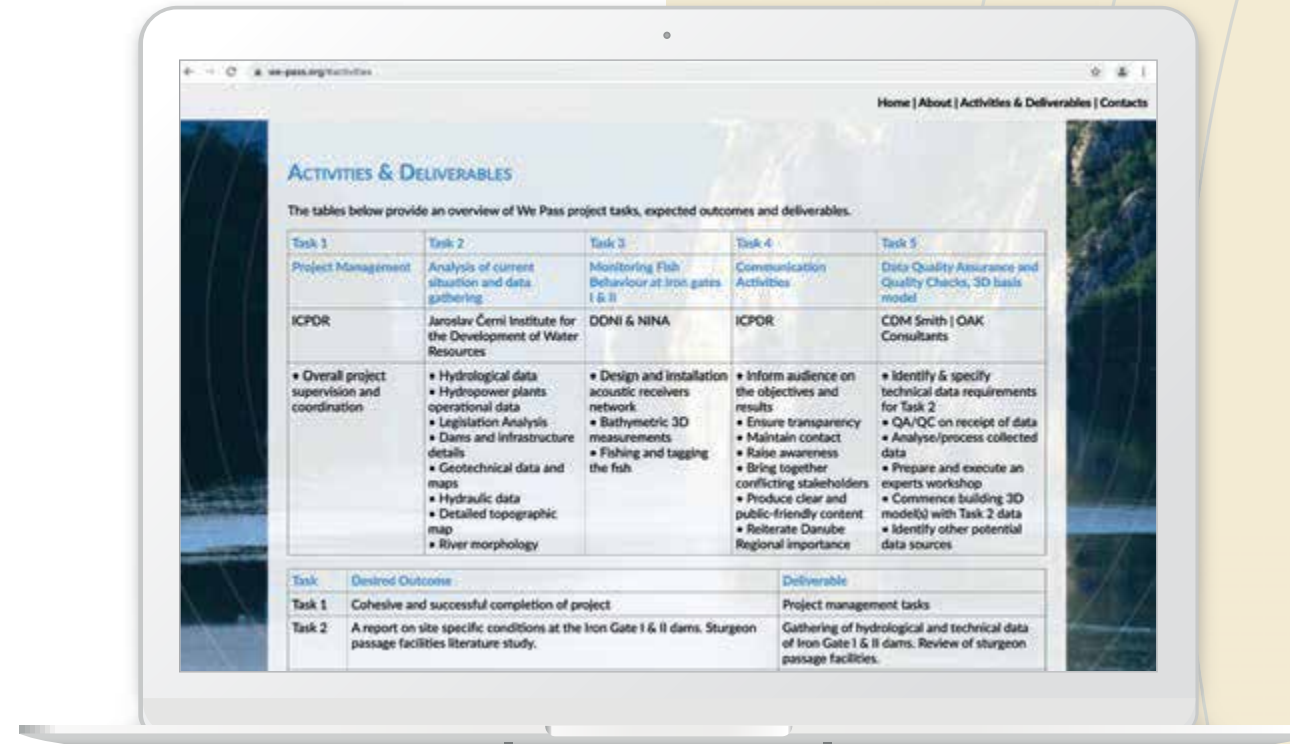
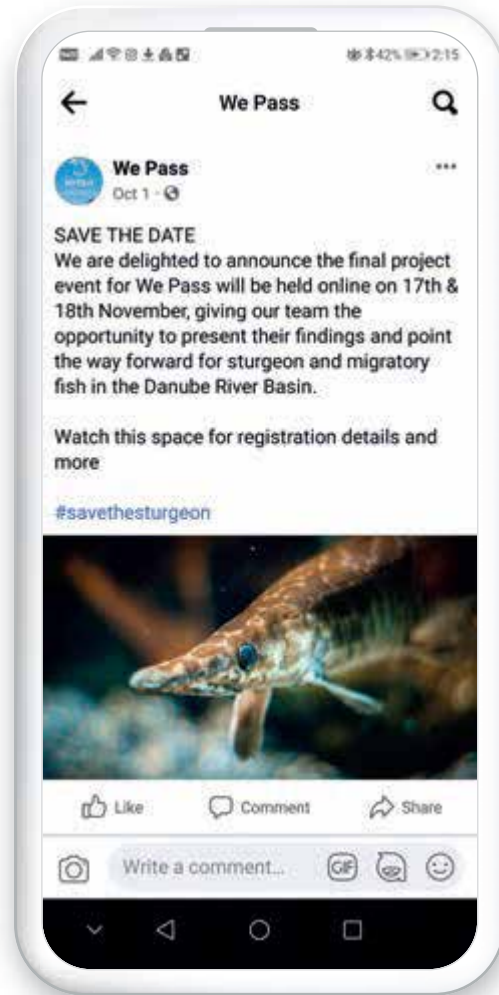
Perhaps 2050 is too far away? The EU's Water Framework Directive includes a deadline of 2027, while the Biodiversity Strategy looks to 2030. Besides, we can't be too ambitious when it comes to setting deadlines. If there's not a big step forward in the next decade, then there's a big threat of the picture in 2050 not being very optimistic, with some 50 fish species going extinct in the Danube River Basin. The flipside is, if we truly adhere to the measures being set out – or even exceed them – there's no reason 2050 on the Iron Gates can't come with an optimistic outlook for the Danube's migratory fish. All evidence points towards fish reacting positively to the proposed changes.

The Danube's biggest sturgeon species swimming in the river: the beluga sturgeon (Huso huso)





WePass Scrapbook



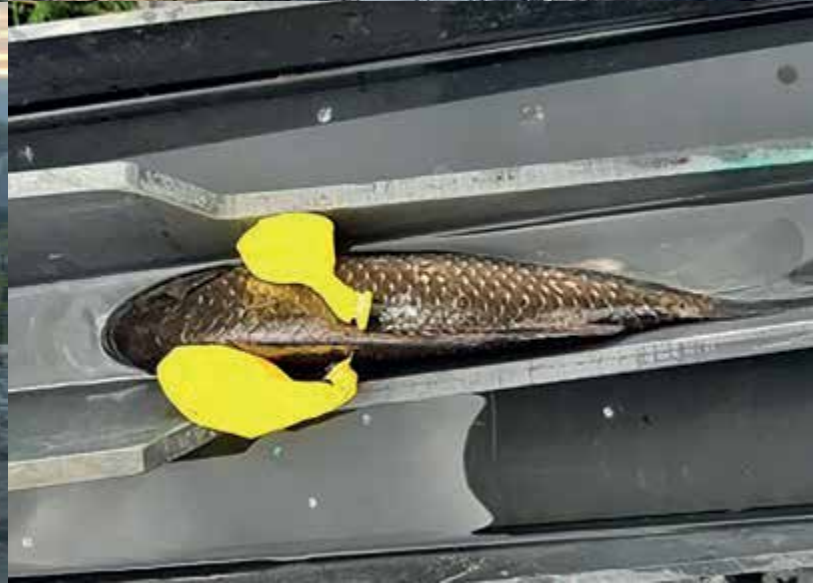
A screengrab of We Pass on social media



We-Pass.org was created as a simple, one-stop shop home page for the project



We Pass team visiting the Iron Gates in 2019



Experimenting with inflatable fish tags at the Iron Gates in 2019



Iron Gate II River Bathymetry



3rd Steering Committee Meeting (10th October 2019, Vienna)



Ever wondered how our experts tag fish in the Danube for scientific study? Check out this brand new footage of our scientists at work, tagging fish for essential monitoring in the Serbian section of the Danube River.



A sturgeon at the Donainsel Hatchery (2020, © Thomas Friedrich)





A visit to the Iron Gates during the We Pass Kick-Off Event (April 2019, © Andrea Vranovska)



Golubac Fortress during the We Pass Kick-Off Event (April 2019, © Andrea Vranovska)



Cover from Danube Watch, issue 1/2019, which focused on the Sturgeon Issue with various articles.



Article from page 10 of Danube Watch, issue 1/2019, discussing the future of sturgeons in the Danube.



Events

Kick-Off Event

Kladovo, Serbia

8th – 10th April 2019

While the project's Steering Committee had already begun discussions earlier in the year, the first major public event in the life cycle of We Pass was this kick-off event held on 8th – 10th April in the town of Kladovo in Serbia, ca. 10 km south of the Iron Gates.

At this meeting, key members of the international Steering Committee met and discussed the planned activities for the We Pass project, while also getting a chance to tour the Iron Gate hydropower plant itself! The event opened with a press conference, followed by a field visit to the Iron Gates at Đerdap, providing the attendees with a hands-on overview of the location at the heart of the project.

The visit was followed by a boat tour of the Iron Gates gorge – an opportunity to brainstorm and break the ice before the full discussions took place. A series of presentations from the various activity leaders then followed, introducing all of the proposed activities. Members of the public, key stakeholders and members of the press were also on hand, able to participate in an open session and series of 'World Café' round table sessions to both learn and share information and views pertaining to the planned project activities.



Stakeholder Workshop

Vienna, Austria

12th December 2019

The concept behind this Stakeholder Workshop held at 'Marina' on the Danube in Vienna on 12th December 2019, shifted away from its previously planned form of a variety of local meetings, and into one central meeting with a generally higher added value and return on investment expected in terms of reach. The focus of the workshop was to equip regional representatives with the tools necessary to use synergies within their own countries to, at the local level, disseminate We Pass activities to a broader audience under their own steam and with the use of local expertise and insider knowledge.

For this We Pass Stakeholder Workshop, a slightly different approach was taken to typical stakeholder workshops. We aimed to make the

event more of a 'training and brainstorming session', with a view towards equipping key project players with the tools necessary to conduct local/national workshops. For this purpose, we invited related projects from the region. In attendance were representatives from the following organisations addressing the plight of migratory fish and dealing with this dialogue and interaction between the environment and other sectors:

- Danube Sturgeon Task Force (DSTF)
- MEASURES
- LIFE Sterlet
- Ex-Situ/Hatchery facilities
- Plovput Stakeholder Forum
- EUSDR PA4

On a broader scale this workshop represented a next major step forward in raising awareness on the plight of migratory fish (in particular sturgeons) around the Iron Gates, and was a coming together of the key players able to move the project forward. This event, following the success of the kick-off event, was a resounding milestone, preparing the project for its final phase. It explored the crossover point between communications and science, and gave participants material and information to be able to exploit local synergies.

It is particularly important to highlight the ongoing support of the European Commission (EC), which was emphasised by their representative being in attendance and speaking at the event. The EC assured us of the importance of a project such as We Pass and positioning it in the wider goals of the EU.

opposite, left:
Peter Gammeltoft (DSTF, left) and
Karl Schwaiger (ICPDR Sturgeon Envoy, right)
speaking at the Stakeholder Workshop

opposite, right:
Colleagues at the Stakeholder Workshop split into
groups to discuss a key question: How do we get
the public to engage with the issues of disruption
to fish migration in the Danube River Basin?



Final Conference

Vienna, Austria

17th - 18th November 2021

Though held online as a result of the ongoing measures in place due to COVID-19, the Final Conference for We Pass was a fruitful exchange of findings that brought the initial phase of this project to a positive and energising close. Over 50 participants took part in the event via Zoom, including supportive words from both Bettina Doeser of the EC's DG ENV, and Johan Magnusson representing the EC's DG REGIO. "We have a very important future ahead of us," explained Ms. Doeser, "so we are extremely happy from the European side to be behind the second stage of this". Mr. Magnusson agreed: "We have the right to be proud, as a lot has been done – but there's still more to get done."

Spokespersons from each of the five tasks behind We Pass gave presentations explaining the outcomes and findings of their respective activities, showing tremendous progress and a broadening understanding of the issue. The general conclusion? Fish passage at the Iron Gates is absolutely feasible – but it will require ongoing concerted efforts, and guaranteeing the survival of migratory fish requires a broadening scope to tackle issues such as poaching, riverine habitat restoration, and further passage at the Gabčíkovo Dam in Slovakia amongst other things.

The ICPDR's Sturgeon Envoy, Karl Schwaiger, also chaired a panel discussion with four We Pass experts, exploring the big picture and discussing future best- and worst-case scenarios for the region in 2050. Additionally, representatives from WWF, Life Sterlet, and Measures shared their organisations' respective recent findings on the Sturgeon Issue.

The event took place over two mornings, on the 17th and 18th November 2021, and was moderated by Vienna-based journalist (and friend of the Danube), Steve Chaid (FM4/ORF).

Towards the close of the second day of the event, We Pass 2 was previewed by Marq Redeker (CDM Smith), who will be project managing this second phase of the project. ICPDR Executive Secretary, Ivan Zavadsky brought the Final Conference to a formal close with expressions of gratitude for the progress already made – and some tentative optimism about the next phase.



A thumbs up from the participants at the We Pass Final Conference on Day 2 (18th Nov 2021)

Introducing: We Pass 2

The second phase of We Pass has already begun: We Pass 2! This continuation of We Pass, funded by the European Commission, will see the aims and scope of the project extended and further analysed.

Key aims include:

- Development of a preliminary design for fish pass(es) at the Iron Gates, including all necessary technical elements
- A cost estimate for the construction of fish pass(es)

In terms of outlook, the project will see:

- A small change in We Pass' pre-existing management structure (albeit not very big change). CDM Smith taking over the project management side of things.
- Several key deliverables, some of which are already being worked towards, including the milestone of the Interim Report (due September 2022).
- A marked increase in hydrophone placement at Iron Gates I and II during We Pass 2, scaling up monitoring activity.
- Detailed fish movement study using cutting-edge 3D fish telemetry tracking technology.
- A meeting with EC DG ENV, relevant stakeholders, and specialists on fish migration facilities and sturgeon behaviour held, aiming to conclude on best fish pass option(s) that we shall elaborate further in the preliminary design (due December 2022).

The revised structure for We Pass 2





Visit we-pass.org



**European
Commission**

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D E S I G N

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