

Preparing FAIRway 2 works in the Rhine-Danube corridor

MINUTES (draft)

Stakeholders' Forum Meeting 05 (SHFM05)

Date	27.09.2023
Time	08:30 – 13:30 <i>(followed by the field trip to Kopacki Rit National Park from 14:30 – 16:30)</i>
Place	Hybrid meeting (Kopacevo, Croatia & online via <i>GoTo Meeting</i>)
Participants	See List of Participants (LoP)
For the minutes	Lidija Hubalek, Georg Rast, Ljubisa Mihailovic, Lucia Karpatyova

The presentations are available for download on the [Stakeholders' Forum website](#).

Welcome note

Welcome and introduction was done by Georg Rast (subcontracted by the project coordinator), the chairperson of the meeting.

Monitoring of the common Croatian/Serbian Danube section

Lidija Hubalek (MMPI) welcomed everybody to Croatia and provided a short summary on the contracted monitoring activities. The experts from the contracted consortium then presented the status of the monitoring activities.

Monitoring of parameters important for waterway maintenance

[Presenters: *Igor Tadić (Hidroing Ltd. Osijek)*, *Slaven Marasović (VPB Ltd. Zagreb)*. See the file 01_Technical parameters_v2.pdf]

At the request of WWF Austria, the results of the “Analysis of the existing waterway state” were briefly presented again. For details see also the presentation and the minutes of the previous SHF meeting. The scope of the monitoring activities is limited to the critical sections as presented (see slide n#3). The status of the following monitoring activities was presented:

- **Inventory of river regulation infrastructure** (Igor Tadić)
The project includes field work focused on the inventory and assessment of river regulation structures, digitisation of existing data, geodetic surveying, photographic documentation, and identification of the extent of damage (engineering assessment) to all river regulation structures. According to the existing databases, which date back to the 1970s and 1980s, there are between 160 and 170 structures on both banks of the river. Due to the higher water levels in the summer, most of the structures were not visible. Now that the water levels are lower, fieldwork will begin (early October 2023). All results will be elaborated in the next versions of the reports.
- **Riverbed measurement of cross sections of Danube river** (Slaven Marasović)
The first set of hydrographic measurements of the river bed (bathymetry measurements) was carried out from 05-07/2023 on 1374 control profiles at 100 meters intervals over a total length of ~140km. The second set of measurements is planned for 12/2023-04/2024 to see the dynamics of the changes. The data is currently being processed, i.e. the data is being cleaned of noise, such as erosion on the river banks, distortion in the telecommunications signal, projected onto the cross-section lines and used to create a 3D model of the river bed. Insights into the 3D model were shown.

- Monitoring and analysis of flow, velocity and sediment transport (Igor Tadić)

The Terms of Reference required three (3) sets of measurement campaigns; one for low, one for medium and one for high water levels at three (3) sites. Batina, Vukovar and Ilok were the sites where flow and velocity measurements were carried out (as the most upstream, midstream and downstream part of the common Danube section). As far as sediment transport is concerned, the section was divided by the Drava confluence, since there is an inflow of sediment from the Drava into the Danube, so the measurements upstream of the Drava confluence and downstream to Ilok allow a much cleaner and better analysis of sediment transport.

The measurement campaign for high and medium water levels has already been conducted, and in the coming days the campaign under low water conditions will be carried out. The high water level campaign was done in May (see the peak in the graph on the slide #9) and the medium water level in June. The thresholds were set on the basis of a hydrometeorological analysis of the available historical water levels, with 400 cm being set as the threshold for high water level and 100 cm for low water level. The year 2023 is a hydrologically rich year, so results covering for all water levels will be available. Intermediate results from the high water level campaign were presented, discussing flow, velocity and bedload sediment (slide #10). The data collected and processed from all campaigns will be summarised in the follow-up monitoring reports.

- Piezometer installation (Igor Tadić)

The piezometers were installed at 3 sites (Batina, Aljmas, Ilok) - adjacent to the Danube (within 100 m) & 15m deep, and will be used for continuous monitoring of water levels and temperature. Ease of access, land ownership, future safety of piezometer and equipment were criteria for the identification of sites. The activity has been completed.

Questions & Answers:

Q (Kerstin Böck, WWF Austria): Based on which criteria have the locations of the monitoring activities been defined? Can conclusions be drawn from the analyses of the selected sites for the entire common HR-RS section?

A (Igor Tadić): The prioritisation of critical sections on the common HR-RS Danube section were defined in 2014 and therefore included in the Terms of Reference. They represent the baseline areas on which the contracted monitoring activities are carried out. For the purpose of the "Analysis of the existing waterway state", the critical sections were analysed based on the following criteria: (1) fairway depth & width, (2) fairway radii (curvature), (3) width & height of bridge passes, or a qualitative criterion related to the bank erosion in the vicinity of the fairway (see slide #4).

Broader conclusions can be drawn from the monitoring data collected in these predefined areas, as these cover almost the entire HR-RS common Danube section. Obviously, the data would need to be deepened by further dedicated monitoring campaigns, for any defined measure before it could be implemented. Recommendations for such more targeted and focused monitoring campaigns will be derived from this project, e.g. what needs to be monitored and when. The data collected in this project, as well as any available historical data, will be used to assess the trends in both navigation and biodiversity characteristics.

Q (Kerstin Böck): Regarding the criticality (slide 4), do I understand correctly that dredging is already fixed for the critical sections?

A (Igor Tadić): Dredging is not a fixed measure to be applied to the critical sections. Dredging has not been carried out and is not currently planned. Look at the concrete example, e.g. the "fairway parameters": in order to achieve certain fairway parameters, such as 2.5 m of fairway depth or 200 m of fairway width, which are necessary for the navigation and required by the legislation and international agreements, the dredging (as a possible measure) may be necessary. The document provided to the Stakeholder Forum explains the mathematical analysis and modelling. This analysis also identifies the sections where insufficient fairway characteristics, such as depth and width, play a role. If the deterioration of the fairway parameters continues (e.g. due to the climate change and lowering of water levels), these sections with currently insufficient fairway depth or width, etc. will expand and become highly critical, failing to meet the

requirements set out in legislation and international agreements and endangering the transport/navigation on the Danube.

Q (Kerstin Böck): Does not the conclusion of the analysis of critical sections (slide #5) underline that there is no urgent need for measures, since navigation also works under existing conditions?

A (Igor Tadic): The focus of the monitoring activities was and is, among other things, on the technical parameters. The mathematical analysis and modelling has shown that there are no major traffic disruptions under favourable hydrological conditions to the navigation, and therefore no urgent mitigation measures are required at present. However, the waterway administrations should keep a close eye on the identified critical sections, especially the navigational (technical) parameters of these sections that do not comply with the legal requirements. The problems linked to the hydro-morphological occurrences in the Danube will continue to be exacerbated (due to climate change, lower water levels, etc.), and will likely increase.

Q (Kerstin Böck): Can we assume that no measures are planned for sections that are defined as non-critical?

A (Igor Tadic): The currently non-critical sections are not in the focus of the ongoing monitoring activities. Taking into account the criteria (explained on the slide #4), it is expected that these non-critical sections do not pose an obstacle to navigation. However, the inventory of the river regulation structures and the hydrographical survey are still ongoing. For example, an inventory of river regulation structures may reveal problems and lead to the identification of previously unknown critical spots. If so, these are more likely to be single “hotspots” and are not expected to cause the systematic problem. Therefore, it cannot be excluded that measures for these currently non-critical section will not be addressed in the future.

Q (Kerstin Böck): How will the results of the monitoring activities be integrated into the modelling if the final results are not available until late next year?

A (Igor Tadic): Monitoring activities are ongoing and some of the monitoring campaigns have already been completed. Basically, the high and medium water level campaigns have been completed and the incoming data is being processed; e.g. the results of the high water level campaign have just been presented (see PPT); the medium water level campaign is being processed and will be analysed (data cleaning, numerical & laboratory analysis...) from October onwards. As for the low water level monitoring campaign, the raw data (reflecting the hydrological situation) should be available in the coming weeks for the numerical and laboratory analysis, followed by modelling. The raw and cleaned data from the completed monitoring campaign are already available and those from future campaigns will also be made available to the modelling experts, so that the modelling activities can start immediately. The results will also be made available to the Stakeholder Forum and will be presented and discussed at the forthcoming meetings.

Q (Laszlo Galambos, Institute for Nature Conservation of Vojvodina Province) The question concerns to the inventory of the river regulation structures. What is the purpose of this inventory? Given that the historical data is available from the 1960s and 1970s, will there be an analysis of the existing river engineering structures, in terms of whether they serve their purpose or are already obsolete and should therefore be considered for removal; or those identified as damaged but are still needed will be proposed for reconstruction (taking into account the current changes in the river, river bank or fairway)? Will such a list be produced?

A (Igor Tadic) As explained, there is no uniform database of river regulation structures (at least on the Croatian side). There are Yugoslav databases which were quite detailed and obviously certain structures were built and also demolished in the past. However, there are also discrepancies in the existing data. Therefore, the first task (1) is to create a uniform database of the river regulation structures, adding geodetic surveys of all structures, including their characteristics, beginning and end of structures, type and extent of the damage, the height of the crown and photographs (etc.), all consolidated and stored digitally in one database. The second task (2) is to carry out an engineering analysis to assess the condition of these structures and whether they serve or have lost their purpose. The monitoring consortium will not look into whether or to what extent something should be reconstructed.

Inventory of biodiversity components – preliminary results

[Presenters: *Matija Kresonja, Ana Đanić, Ivona Žiža (Oikon Ltd.), Tibor Mikuška (HDZPP)*. See file 02_Biodiversity_monitoring.pdf]

Current status of the biodiversity monitoring together with preliminary results and the establishment and integration of the monitoring data into the geoinformation system (GIS) were presented.

- Fish fauna inventory (*Matija Kresonja*)
→ for details see presentation slides #3-27

The electrofishing fieldwork was carried out between Jul-Aug 2023 on all 17 defined critical sections, on a total of 43 transects (= monitoring points defined within critical sections at 500m intervals). Details of the data collected during the monitoring, the sampling sites and preliminary results monitoring were presented. The focus was on species in general, Natura 2000 target species and also invasive species. The distribution of species in all critical sections has been compiled into a table (see slide #26) which will be updated in the coming weeks and months with the results of the follow-up fish fauna monitoring fieldwork.

In terms of planning, night electrofishing, and electrified dredge monitoring will take place in Sep-Oct 2023, followed by the winter habitat monitoring with sonar from Dec 2023 - Feb 2024, which will complete the fish fauna inventory field work.

As for the monitoring activities on the Serbian side of the Danube, all permits are in place and the electrofishing is being carried out from Sep-Oct 2023.

- Habitat inventory (*Matija Kresonja*)
→ for details see presentation slides #28-32

The habitat inventory monitoring will map the target habitat types of the Danube floodplains in all critical sections on both sides of the river Danube, integrate the collected data into the GIS database and produce the habitat map (scale 1:5000). The collected data will become a part of the biodiversity catalogue. The fieldwork will focus on the mapping of 5 target habitat types, which are also Natura 2000 target habitat types, as explained in the presentation (slides #29-31).

In terms of the status of the work, desk research has been carried out and all existing data has been collected, the preliminary maps have been prepared for each critical section, which serves as a basis for the fieldwork (example of the map for the Batina critical section was presented → slide #32). The fieldwork started late in the vegetation season, due to the high water levels in spring and summer, after the water level had been stabilised (lowered).

All necessary permits for both sides, Croatia and Serbia, are in place and fieldwork is now underway and expected to be completed in autumn 2023.

- Bird fauna inventory (*Tibor Mikuška*)
→ for details see presentation slides #33-36

As for the bird fauna inventory, all activities were carried out as planned, covering the spring migration, the breeding season of several bird types, such as colonial water birds, marshland breeding birds and raptors, as well as the birds breeding along the Danube, on the key habitats such as sandbanks or steep banks. Bird monitoring will continue during the next period.

This season's bird monitoring was affected by some rather unusual weather. Firstly, a cold April with many of the migrating birds from Africa arriving very late, followed up by 3 high water levels events, much needed after last year's extreme drought. The first flood lasted from mid-April to early June, quite a long period, excellent for fauna and flora. The floodplain was flooded, which was good for the animals, but prevented researchers from moving around the area. This, along with other small floods in mid-August and early September, affected the bird monitoring results. The flooding in the floodplain is a perfect thing, but it has prevented the breeding of the birds that breed on the sandbanks of the Danube, and it has also affected the breeding of the birds that breed on the steep banks, if the steep banks are not high, let's say 3 to 5 metres, because those were also flooded. Some examples of bird species and the effects of the high water levels were presented:

- Little ringed plover (slide #35, first map), which breed on the sandbars, returned in July after the sandbars emerged. It is not sure if they bred successfully as it is late in the season.
- Sandpipers, on the other hand, breed in the floodplain on the steep banks, in the forest. Three colonies were recorded along Danube breeding in July, so probably some of them were able to nest successfully.
- For the Saint Martins (slide #35, middle map), which breed on the steep banks, this year may not be very favourable. Only three colonies were identified, with the biggest one near Šarengradska ada, with a very small number of pairs, which is a direct consequence of the floods in May that lasted until June (according to historical surveys made by WWF, there could be between 1 to 9 colonies on this stretch of the river)
- Kingfishers (slide #35, last map) have been found along the river. There are many kingfisher nests because they are less prone to flooding. However, the researchers saw very few actual birds, which could indicate not good breeding season.
- The location of heron and cormorant colonies and also raptor territories (white-tailed eagle) were marked on the map (slide #36)

Not all territories are plotted because the data is still being processed. The results presented are preliminary and more results (probably even full results for some of the species) will be available at the next Stakeholder Forum meeting.

- River benthos types inventory (Matija Kresonja)
→ for details see presentation slides #37-40

The main objectives are (1) to survey the river for macroinvertebrate community structure in the defined critical sections of the Danube, (2) to integrate the data into a GIS database and (3) to present macrozoobenthic communities in the Biodiversity Catalogue.

The sampling methodology follows the national methodology, which requires sampling between May and October, followed by the laboratory analysis and the determination of the ecological quality ratio for biological quality elements.

In terms of status, the fieldwork was carried out on all the 17 critical sections between June 2023 (upstream sites) and July 2023 (downstream sites) → see slide #39. At the moment, the laboratory analysis of the samples has started, i.e. the isolation of animals from all samples, followed by the determination of taxons (=species, etc.).

- Establishment and integration of the monitoring data into GIS (Matija Kresonja)
→ for details see presentation slides #41-45

There are three main activities, related to the Geo Information System (GIS):

(1) Setup and configuration of the server → see slide #42 for the technical details and configuration of the server. The procurement is underway and this activity is almost complete.

(2) Implementation of WebGIS system (user requirements, development & implementation) → see slide #43,44 for some screenshots of the future WebGIS. The architecture is finished, prototype with the user interface is available and is currently in in the test phase.

(3) Collection of monitoring data, systematisation and GIS database establishment → there is a constant communication with all teams conducting field work. The current prototype is filled with test data, but the fieldwork data is being collected, systematised and in the next steps will be integrated into the new WebGIS.

Questions & Answers:

Q (Laszlo Galambos): Does habitat monitoring include floodplains, up to the flood protection dykes, and does fish monitoring include floodplain backwaters (floodplains)? The reason behind the question is that the future potential measures to be implemented in the main course of the river may have a broader impact on the floodplain areas, thus the monitoring of biodiversity in floodplains is important.

A (Matija Kresonja): The size and boundaries of the critical sections where monitoring is carried out have been defined in the Terms of Reference. All monitoring activities are and will therefore be carried out within these defined boundaries. *[Comment] The critical areas can be checked on one of the slides of the presentation and in more detail in the document Annex_”Project_Area_Map“ provided on Tue11/07/2023 11:41 by Ms Lidija Hubalek.*

In the case of fish monitoring, the fish fauna is also monitored in smaller water bodies, which have much higher biodiversity than the main river. The fieldwork was mainly carried out on the Croatian side. Due to delays in obtaining permits and contracting of the Serbian experts, the fieldwork on the Serbian side has only recently started, but has already produced some interesting results.

Q (Arno Mohl, WWF Austria): According to the presentation, the fish monitoring was carried out in July and August. Are the results affected by the high water levels that occurred during this period?

A (Matija Kresonja): The fish monitoring was not carried out during the high water level periods, so the results are not affected by the high water periods that occurred in 2023.

Q (Arno Mohl): Were spawning grounds, both potential and known spawning grounds, also monitored?

A (Milorad Mrakovcic): Spawning grounds were not monitored because monitoring activities started later in the season. However, historical information (data) on spawning grounds is available. The consortium will still continue to monitor the spawning grounds during the relevant season.

Q (Helmut Kudrnovsky, Environmental Agency Austria): Will the project only map habitats or also assess their conservation status?

A (Matija Kresonja): Both will be done, the habitat mapping and the assessment of the conservation status.

Q (Georg Rast) Can you explain the electrified dredge and how it works?

A (Matija Kresonja): The electrified dredge is made of a steel frame of 2m x 1m (width x height). It is connected by the wire to the aggregator on the boat. It is pulled along the 500m transects, in the same way as electrofishing and collects the species that are present on the ground. In practice, this is not a very effective method, but it has to be done. Not many species or individuals are to be caught. The methodology will be described in the reports, it has been done in the past and has been taken from previous monitoring campaigns.

Q (Georg Rast): I understand that the observation and monitoring of different species is very much dependent on the hydrological conditions. You have some historical data available and are probably able to make a good assessment of which species are present, where they are and so on. Are you also able to describe a trend, whether the whole system is degrading for some species, or not? Something like a conservation status assessment. Is that feasible?

A (Tibor Mikuska): It will be possible for some bird species for which long-term data or previous studies are available. Out of 140 bird species that would (ir)regularly breed in the area, trends could be made for 20-30, including the most important species that are also monitored in this project and that could be affected by potential interventions in the riverbed, such as for sand martins, little-ring plovers or tern colonies (which are not present in this area) and for some raptors. As for marshland birds, there is good data for cormorants and herons. There is less good data for ducks, but good data for geese. It would be possible to clearly identify the most important sites on the river and in the floodplains, and to designate “no-go” areas, where interventions are not welcome, in order to protect these species.

Remark (Georg Rast): Asked the monitoring experts, particularly those carrying out the biodiversity monitoring, to consider the link between the potential interventions and the sites or species most sensitive to such interventions, and/or to identify no-go areas.

Insights into modelling components and methodology to be applied for future modelling activities

[Presenters: Ljubisa Mihajlovic. See the file 03_MODELLING - 6TH SHFM.pdf]

The presentation provided an update on the modelling activities and an insight into the modelling components & methodology to be used for future modelling activities.

Procurement & Contracting

The procurement for the modelling contract is still ongoing. The contract is being co-financed by a loan from the European Investment Bank (EIB), which is (the fact) contributing to the delays. The long procurement is due to the complexity of the procedures required by the “Guide to Procurement for projects financed by the EIB” and the approvals required by the EIB for different stages of the procurement.

Modelling approach

The modelling activity is expected to last 12 months once started, with some of the modelling activities running in parallel. The actual work is estimated to take 6-9 months, including time planned for the coordination with the Stakeholder Forum.

The presentation provides an overview of the modelling components and methodology that will be applied in the future modelling activities. The details of the expected inputs and outputs per modelling component were explained in more detail (see PPT & below).

- 1D hydraulic modelling - combining the existing data (e.g. ENR, hydrological data) with the latest data collected during the monitoring activities, e.g. hydrographic and hydrological data, geometry of bridges and river regulation structures, biodiversity data, etc. All data together with the 1D modelling software logic will provide the output: calibrated and running 1D model, updated low navigation water levels (ENR) but also, as far as possible, high navigation water levels; all being summarised in the technical report.
- Redefinition and prioritisation of navigational bottlenecks - with the current bottlenecks & their prioritisation, 1D model, updated ENR and hydrographic data, the bottlenecks (which are now some 10 years old) will be reviewed, redefined and prioritised; all being summarised in the technical reports on (a) redefined bottlenecks and (b) prioritisation of these bottlenecks.
- Definition of criteria for the Multi Criteria Analysis (MCA) - this is the most critical part and requires the active involvement and cooperation of the Stakeholder Forum. The first step is to define overall criteria, such as for example “navigation” (how effective the criterion is for navigation), “environment”, “feasibility” (usually cost or construction duration), or “social impact” (which would need further investigation), and assign a weight to each [← e.g. navigation receives weight 40%, environment 30%, etc.]. These criteria will be broken into sub-criteria in the next step, e.g. for “navigation” the sub-criteria may be fairway depth, the curve radius, flow velocity, etc. with weights assigned to each sub-criteria. Afterwards, the minimum thresholds will be defined, e.g. one option has to reach minimum 50 or 60% of the navigation criteria in order to be considered as an option for 2D modelling, or e.g. each option has to score at least 50 or 60% of each criteria. [← all numbers and (sub-)criteria mentioned during the meeting and in the minutes are just examples to provide a better understanding of the process. They will be agreed with the Stakeholder Forum..]
- 2D Hydrodynamic and Morphological Modelling - all the collected data and agreements on the MCA will feed the 2D modelling software. The outcome of this phase will be the calibrated and running 2D models, considering various variants (measures) for each bottleneck; all being summarised in the technical report on 2D modelling and application of the MCA.

Questions and answers:

Q (Dejan Trifunovic, Danube Commission): (a) What kind of potential measures are foreseen and is it planned to draw up a catalogue of measures? (b) What about the timeframe of the project? (c) How the project is fitting to the Article 4.7 of the WFD.

A (Ljubisa Mihajlovic): (a) As for the potential measures to be investigated on the common Serbian-Croatian Danube, the modellers will be optioning and modelling everything that will be on the table, what will be proposed and agreed by the experts in the Stakeholder Forum, waterway administrations of Serbia and Croatia, also those that will be contracted to carry out the modelling. All defined options for measures, particularly those selected for further in-depth modelling (with 2D hydrodynamic and morphological

model), will be listed in the Final Modelling Report. *[Follow-up email from Dejan Trifunovic on 25.10.2023: JASPERS checklist tool to determine whether the WFD Article 4.7.]*¹

(b) The project is planned to be extended from April 2024 to December 2024. The 12 months planned for modelling activities are feasible. It will be tight, but similar modelling activities can be done within 9 months.

(c) A (Georg Rast): This activity is a step prior to any procedure triggered by the Article 4.7 of the WFD. It is an integrated study. The environmentalists around the table (participating in the Stakeholder Forum) will say, for example, which are no-go areas, or extremely critical, or which measures cannot be implemented as planned, and the project team will look for alternatives. And these alternatives will have to be investigated with the 2D model again. Only then can the team assess what might be the real potential impact of a proposed solution. And then one could start the WFD Article 4.7 procedure. But there are still many steps ahead that are required anyway under the WFD Article 4.7, such as the habitat study. Project may reveal the potential impacts and the severity of the impacts, which will trigger the WFD Article 4.7 procedure, if such a procedure is necessary. However, this project is not at the level at which this procedure is carried out.

Q (Arno Mohl): *The conclusion of the first presentation on the status quo analysis was that “there is no current issue or a problem for the navigation”, so the question would be: (1) why is it necessary to plan certain measures at this stage for future issues that may come up in 5 or 10 years; and this leads to another question (2) what is the goal of the project from the navigation point of view?*

A (Ljubisa Mihajlovic): What the Croatian colleagues have done as part of the analysis based on the historical and newly collected monitoring data is something that will also be done in the modelling activities with the data that is now being collected.

Perhaps the real answer to this question is to be found in the presentation that follows, which relates to the impact of the hydrotechnical structures in Serbia. In short, there was a section in Serbia that had a problem about 10-15 years ago, which was dramatic. It was not a critical problem for navigation when the project started, but there was a need to implement a measure to avoid a repetition of the situation.

Therefore, at present, under optimal hydrological conditions, there may be no serious problems for navigation. However, as the river is a living object, this may change from one year to the next and worsen the situation. There are critical sections of the common Danube section, defined about 10 years ago, which require constant monitoring and, if necessary, the definition and implementation of measures.

That is why there is a need for this common integrated project, consisting of the monitoring of navigation and biodiversity characteristics and modelling activities based on the collected data. The results will serve as a basis for any future action, be it further pre-feasibility studies, preliminary designs or anything that follows after the project is completed. Last but not least, the project also provides a platform for discussion and exchange between navigation and environmental stakeholders, thus creating a common knowledge base for all stakeholders and a basis for future integrated (navigation + environment) follow-up activities.

A (amendment by Igor Tadic): Obviously, there are subsequent activities and steps in the modelling, particularly 2D modelling, which will provide further very valuable information. The analysis presented at the beginning of the meeting (see previous PPT) was carried out in order to gauge and investigate all defined bottlenecks on the whole common Danube section (with the criteria used for this analysis explained in the first presentation). This does not exclude the possibility that during the 2D modelling, certain hotspots or bottlenecks may emerge that will be an issue, in addition to water depth or width or other issues, that would require mitigation measures in the future. The modelling, as explained in the last presentation, is the final step in such assessment.

Q (Mislav Baric, Green Osijek Association): *Question on the inventory of the of river regulation infrastructure and possible future works as presented by Igor Tadic. Has a cost-benefit analysis been carried out for investment in works related to the river regulation infrastructure currently being inventoried, including e.g. the economic benefits of navigation?*

¹

<https://jaspers.eib.org/LibraryNP/JASPERS%20Working%20Papers/Water%20Framework%20Directive%20JASPE RS%20Checklist%20tool.pdf>

A (Igor Tadic) No CBA was carried out, as this is not a task defined in the project. The task is to make an inventory of all river regulation structures and to consolidate them into a single uniform database. This will be accompanied by an engineering assessment of the structures, meaning e.g. damages and their extent, and whether they serve or lost their purpose considering the river dynamics. It is not a task within the project, to address the extent of reconstruction required, the type of reconstruction proposed, or whether it is feasible. No works are planned as part of this project.

A (Georg Rast/Ljubisa Mihajlovic): The cost factor (not the CBA) will be included in the Multi-Criteria Analysis task within the modelling component; under the feasibility criteria, which is usually divided into financial, technical and construction time.

Q (Ljubisa Mijacic, WWF Adria): It was mentioned during the presentation that the high water caused some problems in data collection. How does that affect the project? Is it an opportunity or an obstacle for project objectives, both in case of monitoring and also modelling?

A (Igor Tadic) The Terms of Reference require the monitoring to cover 3 hydrological conditions: low, medium and high water levels. From this point of view, the current high water levels should be seen an opportunity in collecting the full set of data needed also in modelling activities. As far as the modelling is concerned, there will be certain scenarios for both low and high navigation water levels, with the necessary input data available from monitoring fieldwork. The modelling itself is not affected by the current hydrological situation. It is a mathematical and administrative process, no fieldwork.

Q (Georg Rast) Expanding on the previous question, the new ENR will be defined using 1D modelling and possibly additional data. Will you also include an assessment how it might be affected by climate change or what the potential implications are for modelling or fairway requirements if the ENR continues to decrease?

(Ljubisa Mihajlovic): Yes, we will discuss this topic with a contractor and with experts in that field (subject matter experts).

Q (Arno Mohl): What is the project's goal in terms of fairway requirements which will be a benchmark for the MCA? Do you know them already?

A (Ljubisa Mihajlovic, Igor Tadic, Georg Rast): The fairway requirements were defined in the first presentation (→ slide #4, PPT “Monitoring of parameters important for waterway maintenance”) which are based on the legal requirements like AGN agreement, Danube Commission. These are official requirements. Furthermore, revised TEN-T Regulation will set more precise requirements; it should be published in March 2024 by the European Commission.

Q (Kerstin Böck) When will the criteria be defined? Will there be a dedicated meeting of the Stakeholder Forum?

A (Ljubisa Mihajlovic): In terms of timing, a calibrated and running 1D model is required first (3-4 months), so a dedicated meeting on the criteria will probably be in Feb/Mar 2024. However, any input is welcome at any time. The plan is to go into more detail on the (sub-)criteria also during the first meetings with the modellers (after the contract is signed).

Q (Kerstin Böck) One suggestion would be to provide a kind of Gantt chart that combines monitoring and modelling in order to better understand the timeline and how monitoring will feed into modelling.

A (Lucia Karpatyova) The Gantt chart will be possible once having the modelling activities have been contracted. However, the discussions between the Croatian and Serbian partners on the data exchange (type, format, quality, etc.) have already started.

Q (Neven Trenc, MINGOR ZZOP) In the absence of precise monitoring data on the shallows and the (potential) spawning grounds, steep banks, and other critical habitats, how will this be incorporated into the biodiversity assessment and later into modelling (predictions in the model)?

A (Milorad Mrakovcic) The spawning grounds for the commercial fishing in Croatia are well known and can be provided.

A (Laszlo Galambos) On the Serbian side, there are known legally designated spawning areas, with GPS coordinates (*→ see the presentation “Protected areas and fisheries management on the Serbian side ...”*), and they can also be included in the biodiversity database and used in the model.

External presentations

The following presentations are part of the exchange on relevant projects, initiatives or expertise, either related to the area or to the activities carried out for the common Serbian - Croatian Danube section in the "Preparing the FAIRway 2..." project.

Effects of newly built hydrotechnical infrastructure on the Danube in Serbia

[Presenters: Ljubisa Mihajlovic. See the file 04_EFFECTS OF STRUCTURES - 6TH SHFM.pdf]

The presentation gave an insight into the project related to the river training and dredging works on selected sectors on the Serbian section of the Danube river, starting with the preparation of technical documentation for river training and dredging works, which would create conditions for safe navigation during periods of low navigation water levels and remove critical sectors for navigation. The first part showed preparatory works, similar to the ongoing monitoring and modelling activities on the common RS-HR section in the Preparing FAIRway 2 project. The next slides presented the actual implementation of the project on one selected critical section in Serbia (Futog), followed up by the analysis of the effects of the newly built hydrotechnical infrastructure.

Protected areas and fisheries management on the Serbian side of the common Croatian Serbian Danube section

[Presenters: Laszlo Galambos. See the file 05_Protected areas and fisheries management.pdf]

The presentation gave insights into the protected areas and fisheries management on the Serbian side of the common Croatian-Serbian Danube section, protection status of the region, threats to the ecosystem as well as data related to the fish fauna collected as part of various studies, fishing limitations (locations with permanent protection), etc. The following was highlighted as necessary factors to consider in the Prep.FW2:

- Analysis and assessment of the river engineering structures – do they serve the purpose or not (anymore)
- Effects of any future planned variants on the floodplains habitats and also fish spawning grounds
- Consideration of the active conservation measures.

Preparing Fairway 2 and the 5-country Biosphere Reserve Mura-Drava-Danube

[Presenters: Arno Mohl. See the file 06_TBR MDD_Navigation_27-09-2023.pdf]

The presentation gave an update on the first UNESCO 5-Country Biosphere Reserve, where the Croatian-Serbian Danube is the key area of this reserve. It recalled the objectives of the Reserve, which include efforts to prevent further embankments/other structures, to promote the removal of existing non-functioning river training structures, or to advocate a ban on sediment extraction and to promote only sediment redistribution.

Protection and preservation of water and water dependent ecosystems in Kopački Rit Nature Park as part of Naturavita Project

[Presenters: Ivan Tot. See the file 07_Forum_FAIRway 2_Tot_2023_EN_edit.pdf]

Presentation of the Naturavita project "Protection and preservation of water and water-dependent ecosystems in the Kopački Rit Nature Park". The project, which runs from June 2015 to Nov 2023, focused on the de-mining, restoration and protection of forests and woodlands in protected areas and Natura 2000 sites in the Danube-Drava region.

Details of the monitoring activities carried out over a period of 36 months were presented, including hydrological and hydraulic analyses, monitoring of the ecological status of surface water and additional biological indicators, chemical status of surface water, sediments, habitats and flora, birds, etc.

Collected data led to the elaboration of the study for the restoration of the Kopački Rit Nature Park floodplains, with e.g. revitalisation and restoration measures within the Danube channel.

Upcoming Meetings

Meeting	Date / time	Place
Stakeholders' Forum Meeting 07	12.2023 (date to be still agreed)	Online (?)

Attachments

- List of participants (separate file)
- Presentations (Stakeholder Forum website: <https://www.viadonau.org/en/company/project-database/preparing-fairway-2-works-in-the-rhine-danube-corridor-study/stakeholder-forum>)