

Preparing FAIRway 2 works in the Rhine-Danube corridor

MINUTES (final)

Stakeholders' Forum Meeting 11 (SHFM11)

Date	20.11.2024
Time	10:00 – 13:00
Place	Online meeting (<i>Google Meet</i>): https://meet.google.com/eis-mqtd-wkb
Participants	See List of Participants (LoP)
For the minutes	Katarina Marinković, Predrag Živadinović

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

Welcome note

Mr. Ljubiša Mihajlović welcomed all to the 11th Stakeholder Forum meeting for the Project "Preparing FAIRway 2 Works in the Rhine-Danube Corridor," where the focus will be on critical aspects of hydraulic modelling and Multi-Criteria Analysis (MCA). He introduced himself as a representative of the Directorate for Inland Waterways. The Serbian Ministry (MGSI) is a project partner responsible for organising and coordinating the Stakeholder Forum in the project.

Ms. Marina Ilić, the chairperson of the forum meeting, provided an overview of the agenda and the presentations scheduled for the meeting.

Modelling & Multi-Criteria Analysis of the common Danube section

Hydraulic and morphological modelling of the SRB-CRO common stretch of the Danube River

(*Romeo Soare, Hidrozavod DTD, 2024-11-*

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Mr. Soare, responsible for management activities, gave an overview of project activities and current status.

1D hydraulic modelling: As highlighted in previous meetings, the 1D hydraulic model was developed, calibrated and is running. An updated values for the Low Navigable Water Levels (LNWL/ENR) for the selected gauges has been calculated. These updated values was used to create a revised list of bottlenecks for the critical navigation sectors¹. Technical reports were prepared², and prioritization³ of these bottlenecks was performed. The prioritised bottlenecks are those where variants are to be defined and modelled using 2D hydraulic models, which are addressed in subsequent activities.

Multi-Criteria Analysis (MCA): The criteria, indicators and values for the MCA were defined and presented in previous meetings. The MCA analysis will be applied to defined potential scenario variants, which will also undergo testing with 2D hydraulic models. The results will be documented in technical reports and incorporated into the integrated study.

Progress on 2D Modelling: In the next phase, the MCA will be applied in conjunction with the development of 2D models for selected variants. Initial steps in the 2D modelling process have begun, with preliminary test results currently under review.

¹ Report "Updated Bottlenecks Catalogue" sent to SHF on 15.10.2024.

² "Report on Hydrological Analysis and Update of ENRs" and "1D Modelling Report" sent to SHF on 15.10.2024.

³ "Report on the Prioritization of Navigation Bottlenecks" sent to SHF on 15.10.2024.

Summary of key outputs: The first milestone was reached in month 5 with the successful set-up, calibration and running of 1D model and the updated Low Navigable Water Level (LWNLs/ENR) values. The revised bottleneck catalogue, including a prioritized list for 2D modelling, was finalised and approved by both countries (HR & RS). The criteria for the multi-criteria analysis were defined and are in consultation process with Stakeholder Forum.

Upcoming Activities: The focus will be on finalisation of MCA, elaboration of potential alternative solutions with variants for prioritised bottlenecks, 2D modelling these solutions, application of MCA and integrating the results into the integrated study for the alternative solutions.

Multi-criteria analysis (MCA) and 2D hydraulic modelling

(Nikola Rosić, Hidrozavod DTD, 2024-11-20_PPT_PFW2_SHFM11_02_MCA_2D_Modelling_N.Rosic.pdf)

Consultants has received comments regarding the multi-criteria analysis (MCA) methodology. These comments are currently being integrated into the MCA, and an updated report on the MCA definition, together with the responses to the comments, will be provided by the consultant. Concurrently, the potential solutions and their variants (measures) to improve navigation conditions are being elaborated and analysed.

Regarding the MCA, most questions refer to the selection of criteria and indicators. Therefore, the consultant's proposal will be further elaborated upon in the presentation. It should be reminded that, according to the proposed methodology, the multi-criteria analysis presents the values of quantitative indicators along with points related to qualitative indicators. In other words, the value indicators are presented as justification for the scores.

Due to the predefined project framework and data availability for certain sub-criteria, some score can only be provided indirectly. Additionally, considering the consultant's pre-allocated resources, specific environmental protection or environmental objectives are not addressed comprehensively. Instead, these aspects will be considered in a more general manner.

One frequently mentioned indicator in the comments is the riverbed volume change. It is acknowledged that the project analyses the effects of measures locally on the selected sectors, but these measures will impact downstream factors. Given river dynamics and interactions with many users, sediment needs to be addressed on a larger scale and in an integrated way.

The concept of integrated sediment management planning means that, first, at the catchment level, goals for sediment management are defined by considering the needs of users and taking into account both ecological factors and requirements related to socio-economic activities, such as navigation or flood protection. It should, of course, be in line with the relevant water and biodiversity directives.

This study will present changes in the riverbed volumes in numerical form and compare them with the same volumes for natural sediment, without considering the position of biodiversity. As will be shown later, in the context of achieving a balanced solution regarding sediment dynamics, sedimentation in the position within the sector can be positively evaluated due to its ecological importance.

A special aspect, also frequently mentioned in the comments, is lateral connectivity, which is related to the domain of the measures' influence. A special aspect here is flood protection, where both lowering and increasing water levels can have both negative and positive effects. Another aspect is the impact on living organisms, which certainly benefits from the periodic flooding of the floodplain with lateral mass exchange. However, it is expected that the measures will not significantly affect flood capacity during a water event. Therefore, smaller increases in water levels, considering ecological aspects, can be positively evaluated, primarily because the implementation of nature-based solutions for reducing hydrometeorological risks is largely based on retaining water in areas designated for flooding.

2D Hydrodynamic and Morphological Modelling (→slides#9 &10)

The purpose of the model is to provide a simulation tool. The effects of different solution scenarios will be compared, including the do-nothing scenario, which will serve as the baseline scenario for evaluating the effects. Three scenarios are being considered: the do-nothing scenario, scenarios with structural-measures, and scenarios with non-structural-measures. Additionally, one hybrid scenario combining structural and non-structural measures will likely be considered. It should be noted that the measures will certainly be adjusted based on the results of the simulation process. Thanks are extended to the colleagues from Hidroing (Croatia), who shared their ideas for one scenario, and these ideas are being taken into consideration.

Measures under consideration (→slides#11 &12)

Along the sector near Apatin, the working principle is focused on avoiding structural intervention on the right bank, where bird habitats, including nesting areas for Sand martins and Kingfishers, have been identified. On the left bank, chevrons, sills, and lateral structures are proposed—measures already analysed in previous studies, such as the Hidroing studies from 2012 and the Witteveen Bos consortium study conducted about 10 years ago.

For the section immediately downstream of the Drava confluence, the proposal is to open smaller channels to create detached groynes. A system of groynes already exists here on the left bank. This approach aims to reduce the potential for erosion in the Aljmaš sector, which is not currently identified as a critical sector for navigation. By creating sediment deficits downstream, favourable changes in the riverbed geometry, from a navigation perspective, are expected to be achieved in the critical sector named Staklar. This proposal will undergo further analysis using 2D model simulations.

For the development of the 2D model, the basement model developed by ETH (Swiss Federal Institute of Technology Zurich) was used, which allows for the simulation of 2D flow with a relatively dense grid of computational cells along the entire selected area. Significant progress has already been made in the calibration process, and thanks are extended to colleagues from Hidroing for providing new data for calibration.

The calibration data refers to four velocity field measurements. Just yesterday, a good match was obtained for one set of the data.

For the first series of surveys, which pertains to the measurements taken in May 2023, the main problem with calibration was analysed, along with a second stable series regarding low navigable water levels. The results for the second series were not as good as those for the first series, probably due to the different riverbed geometry, as this location is problematic in terms of hydromorphological alterations.

The geometry from September 2023 is available, and it is related to the last survey campaign. However, the discharge recorded in that campaign has not yet been analysed. Other issues have also arisen, such as unsteady flow conditions during the measurements.

These are the next steps for the consultants, and it is hoped that the results from all these steps will be presented soon.

Questions & Answers:

Q (Mr. Georg Rast, consultant): These different scenarios you have developed have been discussed. It is essential for everyone to have a clear understanding of what these scenarios truly entail. Based on the current presentation, the understanding remains limited. Could you provide a more detailed explanation, particularly regarding the cross-sections and structures planned for each individual scenario, to offer a clearer picture of the implications should any of these scenarios be pursued?

A (Mr. Nikola Rosić, Hidrozavod DTD): Of course, the geometry for the proposed solutions is currently being developed, with the proposed geometry and measurements to be presented in upcoming technical reports and SHF meetings. The simulation process will provide valuable insights into the potential outcomes of each scenario, which might lead to adjustments. Initial concepts are available, but the simulations will help refine them further. The importance of clearly presenting each solution is understood. To address this, a catalogue

outlining the various measures in the context of the project will be provided, along with a map showing the relevant locations.

Q (Mr. Tibor Mikuška, Croatian Society for Bird and Nature Protection): Providing comments at this stage is challenging. While the forum's work has been transparent so far, we are now entering a phase that lacks clarity. Some activities seem to be occurring behind the scenes, and presentations are shared without the necessary documentation or context.

Regarding the Multi-Criteria Analysis (MCA), you mentioned we would receive responses to our initial comments. However, no follow-up has been shared yet. Without access to detailed documentation, it is difficult to form conclusions. This lack of information and transparency must be addressed if we are to provide meaningful input. Furthermore, reliance on expert judgment for evaluating indicators is concerning. Unless the best experts are part of the team, this approach risks scrutiny and complications in peer review processes.

A (Mr. Nikola Rosić, Hidrozavod DTD): All comments and responses will be shared in the coming days. Regarding the experts, the team is in place and is working within the framework of the project tasks as defined by the Terms of Reference (TOR). The general comment about the timing and content of the presentation is understood and agreed upon. It is acknowledged that the measures may not have been presented in the ideal manner, but every effort is being made to address this.

Additional information (Ms. Marina Ilić, Chairperson): Time constraints are a challenge, but it remains essential to share all the necessary information to the Forum members. Further information, explanations, and a more detailed description will be prepared over the next seven days.

Additional information (Mr. Siniša Špegar, TA): To remind the stakeholders, the consultant's contract is for 12 months, and the consultant has agreed to attempt finalise activities earlier to align with the official end of the project. Regarding Tibor's comments on modelling, potential solutions, or related issues, it is important stress that the proposals are still under development and will not be finalized at this stage.

The consultant has received numerous comments from the MCA. It is not easy to address all of them in a short period of time. Some comments are contradictory, and it is challenging to resolve them quickly. Despite this, I believe the consultant will do their best to provide any necessary information.

It is important to emphasize that any suggestion that the consultant is acting in secrecy or contrary to environmental principles, or any other project-related views, is completely unacceptable. This is something that cannot be tolerated. That is my perspective on the matter.

Q (Mr. Arno Mohl, WWF Austria): *I would like to offer a general comment regarding the process, as this is another issue we are facing and which presents a challenge when providing our feedback. It is clear that we are now in the final phase of the project, which is crucial because we are dealing with concrete proposals and measures. This phase is particularly significant, yet it also presents a major challenge for us.*

While we can offer comments, the lack of time for in-depth discussions and mutual understanding is a serious issue. The stakeholder forum has been established for quite a long time, but we are now entering a critical phase. In this phase, we are particularly challenged by the insufficient time for proper discussion, exchange, and clarification.

We can submit comments, but what comes next? There is no time left to receive feedback, engage in further discussion, or gain a deeper understanding of the issues. My question therefore concerns the expected outcomes of the project—what can we anticipate by the end of it? The stakeholder forum was created to provide input and recommendations, and to some extent, this has been achieved. However, what remains unfulfilled is ensuring that stakeholders, at least from our side, are truly on board with these proposed measures.

As has already been mentioned, this issue ultimately boils down to the need for appropriate exchange and discussion, in order to find a viable solution that is understandable and acceptable to all.

A (Ms. Marina Ilić, Chairperson): A final stakeholder forum meeting is planned for 11 December. Hopefully, by that time, a clear understanding will be reached, allowing for a productive discussion during the forum.

To conclude, it would be helpful to address at least some key points regarding the MCA, as this seems to be the main focus. It is advisable to start with that.

Additional comment (Ms. Lucia Karpatyova): As Sinisa mentioned, the contract covering the modelling activities will remain active for at least six months after the end of this year. This provides sufficient time for review and in-depth discussions on proposed potential solutions. The contractor has agreed to expedite the process (by end of this year), which has proven to be very challenging. Listening to the discussions, two main topics are repeating.

The first topic concerns the MCA feedback. Nicola has already presented the MCA within a broader framework, summarizing the feedback received. The key question is whether the stakeholders who raised concerns feel their issues have been adequately addressed. Given that some feedback has been contradictory (e.g., regarding navigation aspects where higher points were requested), it is difficult to draw definitive conclusions at this stage. If unresolved issues remain (not addressed in the upcoming report), a dedicated meeting can be organized to address these issues.

The second topic relates to future potential solution (measures). Nikola presented initial ideas and variants for potential measures, which consider also the outcomes of previous studies. He explained that all options are still being analysed, with simulations ongoing. emphasized the need for a more detailed explanation of each scenario—particularly regarding planned cross-sections and structures—to offer a clearer picture of the implications if any of these scenarios are pursued.

To move forward, it is suggested to address these topics separately. For the MCA feedback, the priority is to clarify whether stakeholders' concerns have been adequately addressed. Given, sometimes, contradictory feedback (e.g., navigation criteria suggested to receive higher scores), it is challenging to draw definitive conclusions at this stage. If concerns remain unresolved, a dedicated meeting should be organized to address these issues comprehensively. For the future measures, as soon as more information becomes available, we can either include this in the discussions scheduled for December 11th or arrange a separate meeting to address the topic in detail.

Q (Mr. Zoran Rašić, TA): I'm just thinking that if the modelling team send us, for example, the first iteration of the proposed measures or an initial alternative, and we discuss them and reach conclusions, they will have to implement those measures. However, after the modelling phase, they will have a new set of conclusions regarding these measures. The question is how we can link these two sets of conclusions. I believe we need to stay informed about their work, but we cannot allow it to influence every step, as that could complicate the process. It would be better to have one process completed first, and then the consultant can present the finalized analysis to us. At that point, we can discuss it and possibly suggest some fine-tuning. Once they have completed the entire process, they can engage in a discussion with us and provide valuable insights into the proposal. If they present us with just a draft or initial sketch, we will be more or less on the same level of understanding. They won't be able to defend it properly because they won't have enough information at that stage.

A (Mr. Nikola Rosić, Hidrozavod DTD): I share that feeling. However, I understand that the members of the stakeholder forum want to be involved in the process and included in each step of the work.

Q (Mr. Georg Rast, consultant): I would support the argument of Zoran. It's really not just to display the structures, the geometry of alternative scenarios, but also our first model run. That would really help a lot.

A (Mr. Nikola Rosić, Hidrozavod DTD): Yes, but we are facing challenges with calibration and the data related to the selected sectors. Currently, we only have data for the confluence. This data presents significant issues, including measurement problems, non-homogeneity of flow structures, intensive morphological changes, and unsteady conditions during the measurements. The data collection process was not as straightforward as anticipated, and there were unforeseen obstacles along the way. These challenges were not expected in our work, so please take this into account.

Q (Ms. Lucia Karpatyova, Viadonau): Nikola mentioned facing issues with the data, calibration, and other related factors. Will these problems impact the modelling process and the potential solutions?

Will they affect the process regardless of the time available? More specifically, if more time were available, could these issues be resolved?

A (Mr. Nikola Rosić, Hidrozavod DTD): We are satisfied with the results regarding the Drava confluence and the numerical simulation based on equations and physical laws. The uncertainties mainly stem from the model parameters. However, these parameters are not entirely hidden, and we can assume reasonable values. While additional data would certainly help improve calibration, we do not believe there is a lack of data for calibration purposes.

Q (Ms. Lucia Karpatyova, Viadonau): I understand the desire for more data, but based on the explanation I understand also that the available data is still sufficient to carry on with modelling. While there is always room for improvement in data quality, this could be a recommendation for future projects. For now, as explained by Nikola, having addressed most of the challenges, it seems the consultants are in a position to move forward with the modelling process.

A (Mr. Nikola Rosić, Hidrozavod DTD): It should be noted that the calibration process is presented in the reports. We have the riverbed geometry that will be used in the model simulation, but some data does not fully correspond to this geometry. However, qualitatively, we have achieved good agreements. From an expert judgment perspective, we can conclude that the model is providing good results.

We have created the model computation grid for the entire selected domain. However, for this purpose, we can modify the riverbed geometry to align with the measured geometry, for instance, in the upstream part, run the simulation, and present the results. This approach is feasible.

Next steps & AOB

- Stakeholder Forum meetings planning for 2024

Following the discussions among participants at the Forum, it has been decided that the next meeting will take place on **11th of December 2024**. Additionally, one more meeting, regarding MCA is scheduled. Further details will be provided as the dates approach.

Upcoming Meetings

Meeting	Date / time	Place
Stakeholder Forum Meeting #12	11 December in the morning	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>)