Work Package 6 – Floodplain tools optimization, application and dissemination: Online course/capacity building course creation Activity 6.3 – **Summary Report**

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Content

The main objectives of Activity 6.3

- to increase understanding of developed tools, their usability
- to support better applicability in practice
- to make sure that the lessons learned, and the tools developed during the project are not going lost
- to show feasibility of the implementation of floodplain restoration measures to actors outside of the project itself

Activity 6.3 contained three deliverables, which had complemented each other and were didactically concepted as one package.

Firstly, three webinars were launched within activity 6.3.1

Secondly, an Online Course (6.3.2) has been launched on TUMx Edx platform, and freely available to anybody upon invitation link.

Thirdly, an Online Winter School (6.3.2) followed up and deepen the knowledge from Online Course and was linked to third webinar (6.3.1)

Together three webinars launched in Activity 6.3.1 had targeted wider audiences to the topic of the project and its specific goals and outcomes. First webinar has preceded the launch of Danube Online Course and served as promo for the activity 6.3.2 (Online Course) Second webinar was launched short after the beginning of Online course and attracted more participants to complete the course. The last webinar was at the end of the Winter Online School and enabled to explain the topics to WS students and external participants, and there common interactions.

Summary description about the activities 6.3.1 – 6.3.3

First webinar (6.3.1 /1) was organized by GWPCEE and BOKU on 28 June. Its principal topic was: "Floodplain under pressure: A natural system to preserve and restore". Key topics were:

- Floodplain losses over the last decades in the Danube region
- Raising awareness – the importance of the floodplains for flood protection, ecology, etc.
- Methods for floodplain evaluation

The webinar was organized as Panel discussion with following experts: Sorin Rindasu (NARW), Peter Tóth (KÖTIVIZIG), Petra Repnik (ICPDR), and Clemens Neuhold (ICPDR). Over 40 partcipants have joined the webinar, and participated in the disscussion. The webinar was not recorded in order to ensure the privacy of participants The key message of the webinar was: *„In the EU we have both the legal framework and the funding scheme to implement floodplain preservation and restoration. Floodplain Evaluation Method is available, its data need to be brought into life and adapted to the tributaries of the Danube, plus scaled down to smaller rivers."*

Figure 1: First Webinar promo card.

Second Webinar (6.3.1/2) was organized by GWPCEE and TUM. Its title was "Floodrisk management and Nature Based Solutions". Key topics of the panel discussion were:

- Showing examples of successful nature-based solutions for flood risk management
- Connecting different projects that deal with nature-based solutions for flood risk management
- Understanding challanges for the design and implementation of NBS for flood risk management

Figure 2. Second webinar promo card

The panellists in the discussion were: Prof. Markus Disse, Technical University of Munich, Prof. Aude Zingraff-Hamed, Technical University of Munich, and Zoran Vojinovic, UNESCO Institute for Hydrological Education. The webnar has attracetd over 50 participants. The webinar was not recorded in order to ensure the privacy of participants. The key message was, the willingness to use NBS, governance schemes to support NBS should be enhanced, and funding options to implement NBS should be created."

Third Webinar (6.3.1 /3) has attracted 43 participants. The webinar was focused on concrete application of project tool – the Danube Floodplain Geographic information system in practical management. It was tutorial, organized by GWPCEE and University of Szeged.

Figure 3. Third webinar promo card.

Lecturers have been Assist. Prof Boudewijn van Leeuwen, and Assist. Prof. Zalan Tobak from University Szeged.

Danube Floodplain Online Course

Dannube Flodplain Oniline Course (DFOC) is a Small Private Online Course freely available via an invitation link (https://edge.edx.org/courses/course-v1:TUMx+FP101+2021/about) on TUMx EdX platform.

Figure 4 Danube Floodplain Online Course

It is a free, by invitation link accessible 6-weeks online course published on EdX TUMx platfrom. It is a result of cooperation of 21 lecturers from 10 organization and 2 invited stakeholders. It presents results of DF Project and disseminates them in attractive, accessible and effective way. It addresses young and mid-level professionals from local, regional or national water authorities and disaster risk reduction area, the SMEs working in flood, water management sector, and students –the future managers.

The course has consisted of six modules: Introduction, Flood Risk Management, Floodplain Management and lessons learned, Technical aspects of restoration studies, Supporting decisions in floodplain management, Decision support tools, and Conclusion (Figure 5). Each module had several lecturers and has been coordinated by one or more cooperating partners. Figure 5 lists them in detail. Underlined are the names of the coordinators.

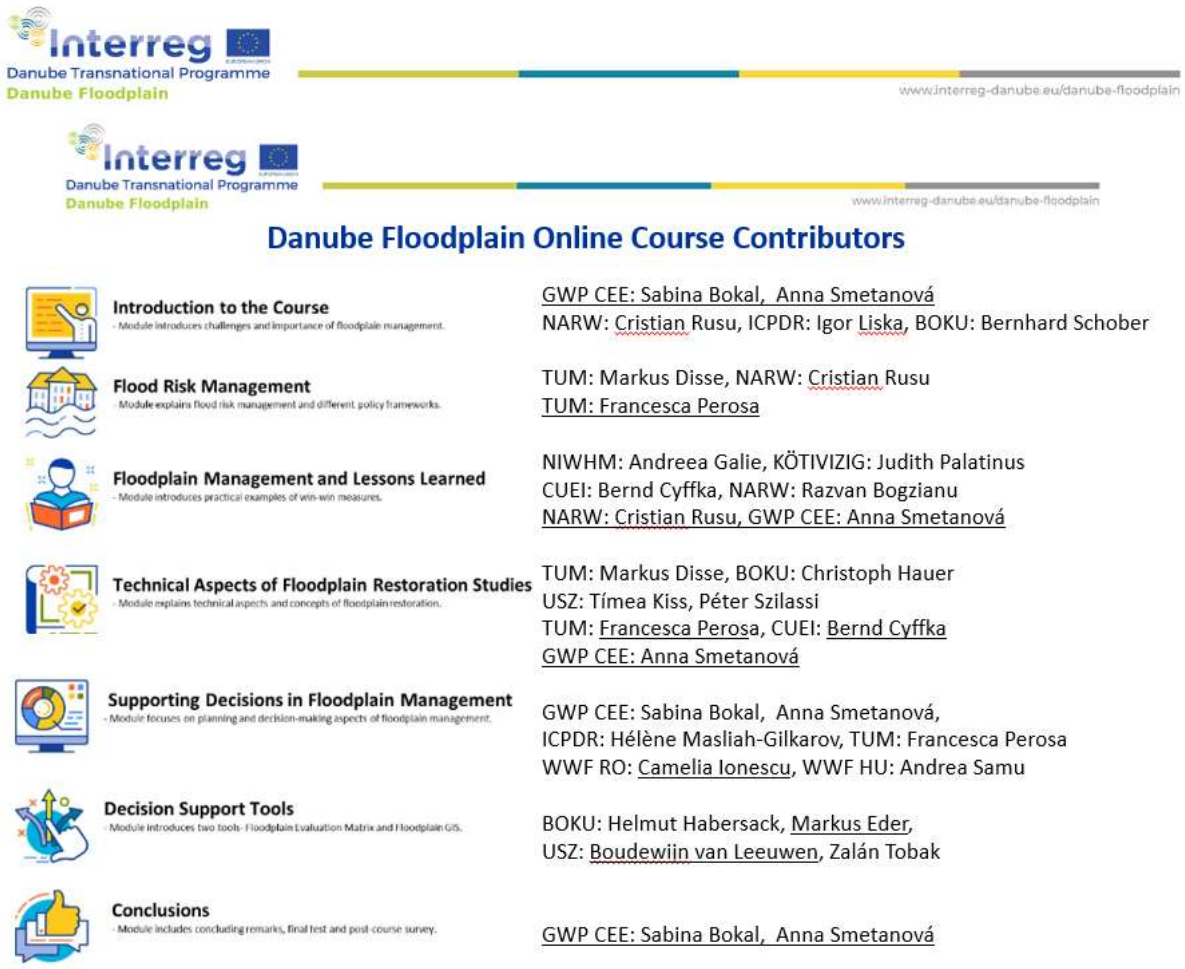

Figure 5. Contributors and coordinators (underlined) to the Danube Floodplain Online Course Modules

Each module has an interactive structure within the Online Platform, containing following sections: About, Lectures (3-5), Recommended Learning Materials (publications, videos, websites), Assignments, and Take Home Messages.

The About section contained following parts: Introduction, Motivation, Learning Objectives, and presentation of Lectures and Lecturers. The 3-5 lectures per module consisted of several video lectures. Table 1 contains the listing of video lectures in the modules.

Table 1 : Video Lectures in Danube Floodplain Online Course

Module	Module Title	Video Lectures
	Introduction to the course	Welcome to the course!
		Need for Danube Floodplain Project
		Floodplain Management
1	Flood Risk Management	Flood Risk & Risk Elements
		Flood Risk Management Cycle
		Steps of the EU Floods directives
		Flood hazard and flood risk maps
		Examples of Flood risk maps

		Water Framework Directive
		Other directives related to floodplain management
2	Floodplain Management and Lessons learned	Win-win measures
		Win-win measures in Bistret Pilot Area
		Win-Win measures in Tisza Pilot Area
		Environmental effects of Danube regulation in the past
		Neuburg restoration project
		Implemented technical measures
		Lessons learned: Setting up a restoration project
		Lesson learned in putting theory to practice
3	Technical aspects of restoration studies	The flood chain and its modelling
		Hydrological models
		1D and 2D hydrodynamic models
		Theory of habitat modelling and ecohydraulic assessment
		Efficiency and uncertainties in habitat modelling for large rivers
		Examples of habitat modelling in practice
		Effect of vegetation on flood levels
		Measuring vegetation density and using it as an input data in hydrological modelling
		The evaluation of the level of biological invasion in floodplains
		Ecosystem Services – Concept and Valuation
		Ecosystem services modelling
4	Supporting decisions in floodplain management	Active participation of stakeholders
		Benefits of participation
		Stakeholder engagement methods
		Decision-Making and Cost-Benefit Analysis
		Ecosystem Services Evaluation
		Examples of Extended Cost-Benefit Analyses
		Feasibility study of a floodplain restoration
5	Decision support tools	Floodplain Evaluation Matrix for floodplain management
		Scaling approach in FEM
		Parameters in FEM
		Floodplain evaluation in FEM
		Identification of active floodplains
		Identification of potential floodplains
		Floodpeak reduction in floodplains along Danube
		End product of FEM
		FEM-Tool
		Vizualization of Data in Danube Floodplain GIS
		Data in Danube Floodplain GIS
		How Can You Manipulate the Content of DF GIS?
		Danube Floodplain Inventory
		Using Danube Floodplain Data in QGis
		Using Spatial Dataset in QGis Part 1
		Using Spatial Dataset in QGis Part 2
		Using Spatial Dataset in QGis Part 3

		Performing Floodplain Analysis in QGis
		Layer Styling and Map Decoration
		VIsualizing Results and Map Layout
	Conclusion	Concluding words

Video lectures were followed by simple quizzes called Progress Check Questions, in which the participants interacted with the lecture and answered questions included in previous video to strengthen their learning. Each lecture contained Summary, in which the main lecture take aways were listed.

Together 57 video lectures, 3 assigments, mandatory readings, 50 progress check questions, 10 discussion forums, course take away, final test, and post-course survey made the Danube Online Course an attractive and appreciated capacity building product. Together 128 participants were enrolled in the first launch of the course.

Danube Online Winter School

Danube Online Winter School was designed as a follow-up and deepening of the content of Danube Online Course. It has been one week, 2 hours /day focused interactive exchange between the course participants and their lecturers. It main aim was to bridge theoretical knowledge, practical issues and link to policies in floodplain management (Figure 9).

Figure 9. Danube Floodplain Online Winter School promo-card

The Winter School content has been prepared by the lecturers in interactive format, following the Module structure of the Online Course.

Table 2. Winter School Programme

Day	Module	Format	Detailed content
1	WS Opening	Intro ppt Interactive warm up	
	Module 1	Input ppt – panellists Panel discussion Questions from audience	Floods directive, WFD 3 cycles experience, Birds Directive / Natura 2020
2	Module 2	Breakout room discussions Q and A plenary session – acilitated	Exchange of lessons learned and good/bad practices Lecturers facilitate Q and A
3	Module 3	Alternated (10 min) small and large group discussions (4 rounds), lecturers discuss in breakout rooms	Flood chain modelling, Habitat modelling, Effect of vegetation on Floods, Ecosystem services and their Modelling
4	Module 4	Presentation of real case conflict scenario and distribution of pre-defined roles. Facilitated role play of participatory process. Followed by reflection session on the group process.	Participants experience professionally facilitated participative processes in floodplain restoration. They learn to assess the group dynamics and reflect the facilitation process.
5	Module 5	Ppt and Q and A Interactive tutorial WS Closing and final feedback	Installing and working the FEM tool DF GIS (3rd Webinar)

Together 20 participants successfully completed the WS. Upon completion of 80% of the modules, the participants received a confirmation of participation upon request. The interactive engagement and close cooperation between scientist and participants from different countries, had led to fruitful exchange, experience sharing and knowledge dissemination.

Impact and permanent availability after the project end

Together 168 participants took part in the Activity 6.3 capacity building products. Some of the products were one-time and could not been recorded due to privacy issues. Others have long-lasting results and will be made available after the project end. Web articles about 2 webinars were published. The main capacity building product – the Danube Floodplain Online Course is permanently hosted on the TUMx platform, and since May 2022 open as self-paced course. The invitation link will be permanently published on the LP website. The re-opening of the course will be promoted in the GWPCEE and DF project partners network, who support the permanent relaunch of this course and will add it to their resource databases. The deliverables within WP 6.3 have led to risen awareness and increased understanding of developed tools, their usability and applicability in practice among Danube Region professionals. They demonstrated feasible implementation of floodplain restoration measures to actors outside of the project, and ensured continuous accessibility to dissemination products and lessons learned. Deliverables fulfilled the aims of WP and the overall project.