

Danube Hazard m³c

Progress during implementation period #1 (July - December 2020)

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❖ Introduction

The INTERREG project Danube Hazard m³c (*Tackling hazardous substances pollution in the Danube River Basin by Measuring, Modelling-based Management and Capacity building*) officially kicked off with an online meeting on 23rd of September 2020. It attracted nearly one hundred water specialists from thirteen countries and different interest groups (academia, national and regional authorities, sectoral agencies).

Two keynote speeches opened the meeting. Bernd Gawlik from the European Commission, DG Joint Research Centre spoke about “Water quality – the forgotten challenge?”, while Jos van Gils from DELTARES presented “The SOLUTIONS EU FP7 project about emerging chemicals in water resources management”, which Danube Hazard m³c will capitalize on.

For more information on this event see the project website: <http://www.interreg-danube.eu/approved-projects/danube-hazard-m3c>

Until December 2022, 11 Project Partners from 9 countries will work together with the aim to improve the knowledge and understanding of the status quo of hazardous substances (HS) water pollution in Danube River Basin (DRB), by integrating and harmonizing available existing data of HS concentration levels and modelling emissions at catchment scale in pilot regions.

Lead partner: TU Wien/Austria

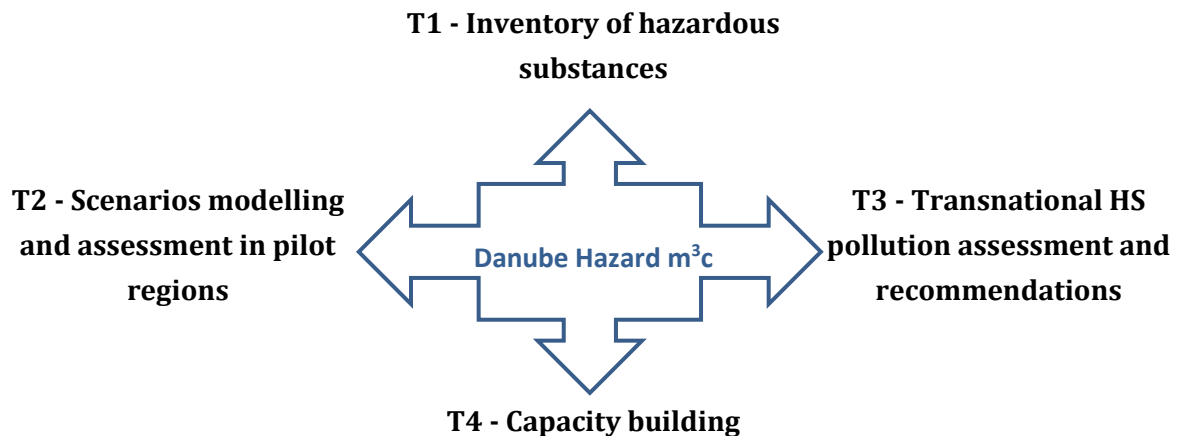
<ul style="list-style-type: none"> ✚ National Administration "Romanian Waters"/Romania ✚ Bulgarian Water Association/Bulgaria ✚ International Commission for the Protection of the Danube River/Austria ✚ University of Zagreb/Croatia ✚ Jozef Stefan Institute/Slovenia 	<ul style="list-style-type: none"> ✚ Environment Agency/Austria ✚ Budapest University of Technology and Economics/Hungary ✚ Water Research Institute/Slovakia ✚ Center for Eco-Toxicological Research Podgorica/Montenegro ✚ Institute of Chemistry/Moldova
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In the frame of the project targeted measurement campaigns need to be carried out to fill critical gaps needed to provide a robust basis for modelling and management.

A further goal is to enhance the transnational management of HS water pollution, through:

- i) coordinated prioritization of transnational measures with consideration of territorial needs, pursued through basin-wide emission modelling, assessment of management scenarios and elaborating recommendations for the DRB Management Plan;
- ii) tailor-made training activities.

The content-wise project activities are organized in four thematic work packages:



7 pilot regions have been chosen in the project:

- **Wulka** and **Ybbs** catchments in Austria
- **Koppány** and **Upper Zagyva** catchments in Hungary
- **Someşul Mic** River and **Vişeu** River catchments in Romania
- **Vit** River catchment in Bulgaria

The first work package will provide a solid database on HS concentration levels in surface waters and in pathways of emissions into surface waters within the DRB: atmospheric deposition, soil, groundwater, combined sewer overflows, storm water and treated wastewater. HS relevant for the DRB, i.e., industrial chemicals with wide dispersive use, pharmaceuticals, herbicides, fungicides and metals, will be analyzed in this step.

The second work package will help to increase significantly the system understanding of HS pollution and of the potential of strategies for pollution control in different regions across the DRB. In this work package HS emission modelling will be performed with MoRE (Modelling of Regionalized Emissions). It will be applied to the 7 pilot regions mentioned previously.

Specific activities are: i) detailed system analysis by model application, ii) optimization of the model according to territorial characteristics, and iii) elaboration of a catalogue of measures to mitigate HS pollution, combined with the evaluation of their effectiveness to meet the environmental quality standards for surface water bodies.

In the **third work package** pollution assessments and recommendations for management interventions shall be developed at the scale of the transnational basin. SOLUTIONS model (developed in the EU 7th Framework Programme) will be used for a spatial and temporal assessment of HS water pollution risk in the DRB. The model will be:

- extended to substances relevant for the DRB and until now not included;
- adapted to specific territorial needs and to the deeper system understanding derived from WP T2;
- validated.

The new version of the model will be applied to provide a transnational HS pollution assessment and to produce harmonized recommendations for management interventions for the DRB as a whole, which also consider territorial needs. In parallel, current policies and management plans in the DRB will be reviewed to identify major challenges, problems and common needs for harmonization and transnational coordination.

Finally, building on the results of the other work packages, the **last one** will:

- improve the capacity of efficiently measuring and inventorying HS pollution, via 8 national and 1 regional training courses held in 9 official languages of the DRB;
- extend the capacity for model application and scenario assessment, via 3 transnational training courses held in English;
- enhance the capacity of quantifying, managing and mitigating HS pollution, via the elaboration of a technical manual on HS pollution management to be presented at a final international workshop.

Find up-to-date information, news and photos on our Danube Hazard m³c website:
<http://www.interreg-danube.eu/approved-projects/danube-hazard-m3c>

In the first six months a number of project activities have already been conducted:

❖ Activities and progress in WP T1 - Inventory of hazardous substances

In WPT1 intensive preparatory work was carried out to support pilot measurements which will be starting next year. The first step was the finalization of the selection of the 7 pilot catchments. The methodological approach for the measurements was documented, including a detailed description of the proposed sampling programmed for all compartments. The work progressed with the elaboration of the SOP document. This material provides protocols for sampling, by

giving clear instructions how to manage composite samples, e.g., required sample volumes depending on the measured substances and special requirements which are important for storage and transport the samples, as well as the cleaning procedures for the vessels.

The tender for an external laboratory was successfully conducted and the winner will be sub-contracted soon.

A key activity of WPT1 was setting online stations in order to establish continuous flow and turbidity measurements in each pilot regions (Fig. 1). Procurement processes and installation works were conducted by all relevant partners.

The work related to the technical establishment of the inventory database started with the setup of the data frame structure. This structural development raised many aspects of the data collection, in addition to defining the substances, time periods and matrixes involved, as well as the quality criteria, connection to existing database systems (e.g., WISE compatibility) and confidentiality issues had to be handled, too. The short test-phase of data collection will be starting next year with the involvement of all partners.

Fig. 1: Setup of online monitoring stations (Photo assembly the Hungarian team)



❖ Activities and progress in WP T2 - Scenarios modelling and assessment in pilot regions

The work on the **model setup in pilot regions**, applying the emission Model MoRE has started with a **recalculation of the**

delineation of the sub-catchments in the 7 pilots (Fig. 2) to establish comparable modelling units based on a harmonized

delineation procedure. The new sub-catchments take into account aspects such as uniform land use, differentiation at historical gauging stations and/or quality monitoring points, correspondence with SOLUTIONS catchments as well as equable catchment

areas. The actualized delineation is a precondition to provide differentiated insights in system behavior, guarantees its reasonable interpretation and builds a proper base for a sound comparison of model results of all project pilot regions.

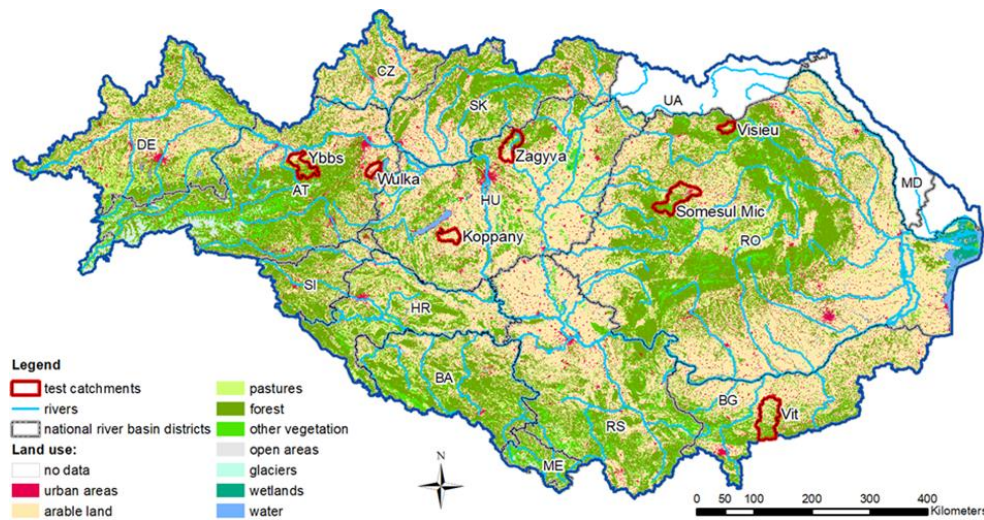


Fig. 2: Selected pilot regions in Bulgaria, Romania, Hungary and Austria (map – land use)

The **elaboration of datasets containing basic input data** (like land use, soil loss, etc.) is another key task to provide a sound model setup (Table 1). Emission modelling requires a huge amount of partly simple and easily available, partly comprehensive and already pre-processed datasets with different formats and different sources. All partners responsible for a pilot region evaluated and tested availability, plausibility

and suitability of national or even international data bases based on a prescribed procedure including a detailed requirement analyses to guarantee a harmonized procedure. Basic input data were presented and discussed, possibilities to close data gaps or improving input data were coordinated and possible alternatives are under further evaluation.

Table 1: Data availability for aggregated topics in the seven pilot regions

	Wulka AT	Ybbs AT	Koppány HU	Upper Zagyva HU	Vit BG	Visieiu RO	Someșul Mic RO
Land use	+	+	+	+	+	+	+
Soil loss	+	+	+	+	-	-	-
Drainages	+	+	+	+	+/-	+	+
Meteorological data	+	+	+	+	+/-	+	+
Hydrological data	+	+	+	+	+	+/-	+/-
Sewer systems	+	+	+	+	+	+	+
UWWTP	+	+	+	+	+	+	+
Industrial Wastewater	+	+	+	+	+	+	+

+ available; - not available; +/- further evaluation necessary

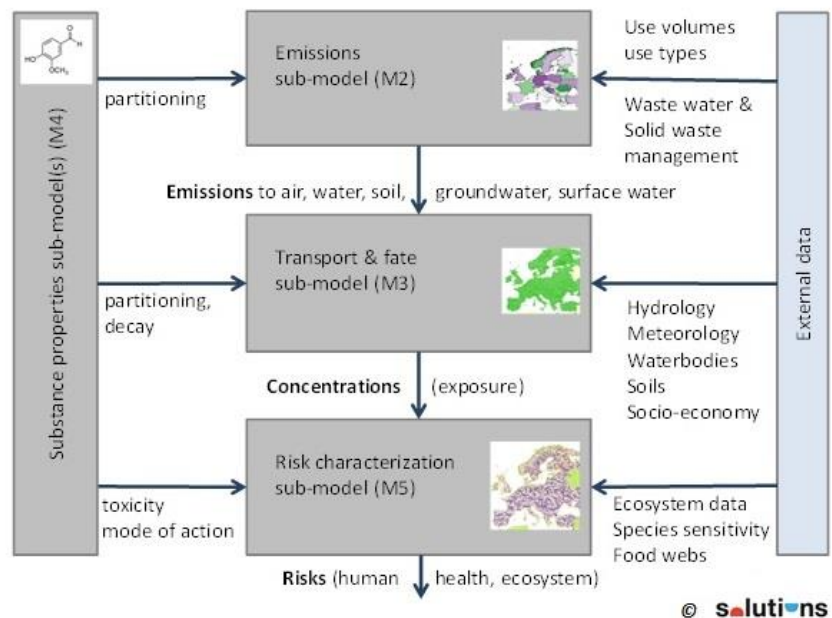
❖ Activities and progress in WP T3 - Transnational HS pollution assessment and recommendations

The work in WP T3 started with the elaboration of a detailed questionnaire to investigate the existing national policies on managing HS pollution. The questionnaire provides a common structure for reporting on the national situations and covers a range of aspects including regulatory framework, river basin management plans, monitoring, pollution sources, measure implementation, etc. The answers will be collected by spring 2021 and will then be critically compared and analyzed to identify main challenges and needs for policy harmonization towards an effective transnational management of HS water pollution.

The model will be extended to substances of interest, improved considering the outcomes of sub-regional case studies and adapted to the conditions of the DRB.

Accomplishing the modelling task needs specific experiences and capability therefore an open tender has been announced to find a suitable scientific institute. The tender will be evaluated in January 2021 and the winner will be sub-contracted to perform the modelling.

Fig. 3: Scheme of the integrated water quality model system



A key activity of WP T3 is the assessment of basin-wide HS water emissions and fluxes, for which an integrated water quality model developed in the framework of the SOLUTIONS project will be used (Fig. 3).

❖ WP T4 - Aiming to a capacity building

Regarding Technical Work Package 4 – Capacity Building, according to implementation plan of the project, the activities will start on the beginning of second half of 2021 and will last till the end of the project, building on the outcomes of the other technical WPs.

For the **first activity** on enhancement of the capacity in the Danube Basin for scoping, inventorying and monitoring of HS pollution, 9 training courses will be organised in the format of two-day events with maximum 30 participants for ensuring active involvement and interaction.

The **second activity** will be focused on learning different approaches for HS emission modelling, practically on understanding models structures and getting basic skills in models handling and on scenario development and evaluation and defining and assessment measures for HS pollution reduction. Also, 3 transnational training courses will be organised in Bucharest, Budapest and Vienna based on a

documented learning material developed in the frame of this activity, but build on the WPT2 and WPT3 outputs.

In the **third activity** long-lasting guidance and practical support to stakeholders through a learning tool - a technical guidance manual on HS pollution management will be provided.

The **fourth activity** will deal with organisation of an international workshop which will be held in Vienna at the end of 2022, back-to-back with the final conference. In the frame of this workshop best practices in selecting, evaluation and application measures for HS reduction will be shared together with an exchange of knowledge gained from project outcomes.

❖ BRIEF INFORMATION ON THE DANUBE TRANSNATIONAL PROGRAMME

The Danube Transnational Programme is a financing instrument of the European Territorial Cooperation (ETC), better known as Interreg. ETC is one of the goals of the [European Union cohesion policy](#) and provides a framework for the implementation of joint actions and policy exchanges between national, regional and local actors from different Member States.

The Danube Transnational Programme¹ (DTP) promotes economic, social and territorial cohesion in the Danube Region through policy integration in selected fields. In order to achieve a higher degree of territorial integration of the very heterogeneous Danube region, the transnational cooperation programme acts as a policy driver and pioneer to tackle common challenges and needs in specific policy fields where transnational cooperation is expected to deliver tangible results. Considering its geographical coverage, this highly complex programme provides a political dimension to transnational cooperation which is unique in Europe, successfully facing challenges such as ensuring good mechanisms to contract partners who receive funding from different EU instruments.

The Danube Transnational Programme finances projects for the development and practical implementation of policy frameworks, tools and services and concrete small-scale pilot investments. Strong complementarities with the broader [EU Strategy for the Danube Region](#) (EUSDR) are sought. The Danube Transnational Programme defines itself as a “financing

¹ The programme area covers nine Member States (Austria, Bulgaria, Croatia, Czech Republic, Hungary, the states of Baden-Württemberg and Bayern in Germany, Romania, Slovakia and Slovenia) and five non-EU Member States (Bosnia and Herzegovina, Moldova, Montenegro, Serbia and 4 provinces of Ukraine).

instrument with a specific scope and an independent decision-making body. It supports the policy integration in the Danube area ... below the EU-level ... and above the national level in specific fields of action.”²

The DTP cooperation is structured across four priority axes:

- Innovative and socially responsible Danube region
- Environment and culture responsible Danube region – the priority axis that includes the DanubeSediment project
- Better connected and energy responsible Danube region and
- Well-governed Danube region.

For more information on the European Territorial Cooperation (ETC):
http://ec.europa.eu/regional_policy/de/policy/cooperation/european-territorial/

For more information on the Danube Transnational Programme:
<http://www.interreg-danube.eu/>

❖ EVENTS

PROJECT EVENTS DURING PERIOD #1 (01.07.2020 – 31.12.2020):

- 1st Project Partners Meeting, online, 22 September;
- 1st Steering Committee Meeting, online, 22 September;
- Danube Hazard m³c Kick-off conference, online, 23 September (find presentations and more info [here](#));
- 1st Advisory Board Meeting, online, 24 September.

❖ INTERESTING LINKS

- Download our project [Poster](#) (also, you will find there our initial leaflet (in 8 national project languages))
- Find photos from projects events and meetings in the [Gallery](#)
- Guidance documents and technical reports that assist stakeholders in implementing the WFD can be found on the [EU Commission website](#)
- You may also check out the sites of our partner project: [“The SOLUTIONS EU FP7 project about emerging chemicals in water resources management: lessons learnt and questions remaining”](#)

THIS NEWSLETTER WAS COORDINATED BY (based on PPs contributions):

National Administration “Romanian Waters” (NARW), Bucharest, Romania, <https://rowater.ro/>

For questions or comments, please send us an e-mail @: danubehazard@tuwien.ac.at

² See the DTP cooperation programme, pg. 4: <http://www.interreg-danube.eu/uploads/media/default/0001/08/81e933247b2bb1449c467f4cd1bd55cf0e734948.pdf>