Interreg
Danube Transnational Programme

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Newsletter

Danube Hazard m³c

Project progress in the period of January to June 2021

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❖ Introduction

11 project partners and 13 associated strategic partners together covering all 14 danubian countries gathered in the Interreg Danube Hazard m³c project (starting from July 2020) with the aim of determining the current situation and gaining a better insight into water pollution in the Danube River Basin (DRB). Their intention is to integrate and harmonize the available data on hazardous substances (HS) in the basin waters, to increase system understanding of sources and pathways of HS emissions and to develop a model applicable to support HS management on river basin level. Within the Project, some targeted measurements have to be carried out to supplement the missing data for valid modelling and management. More details about the Project plan and the first 6 months of its implementation can be found in the 1st project newsletter at:

http://www.interreg-danube.eu/news-and-events/programme-news-and-events/5827.

This Newsletter provides an update regarding the progress in the Project implementation made in the period between January and June 2021. A number of activities was undertaken and successfully completed. Within the Work Package T1 "Inventory of hazardous substances" a database on HS concentration levels was created monitoring activities have been initiated. Continuous river-monitoring began in the first half of the year, and the first sampling was successfully carried out in all catchment pilot-plants. Within the WP T2 "Scenarios modelling and assessment in pilot regions", a model was developed and set at TU Wien server. The progress was done also within the Work Package T3 "Transnational HS pollution assessment and recommendations". Here, a detailed questionnaire on national policies on HS pollution management was filled by partners from all nine countries, which provided an insight into the current state of the pollution management.

Guided by excellent Project leadership and encouraged by current achievements, Danube Hazard m³c project team is enthusiastically entering the third phase of the Project implementation.

For more information, news and photos from different Project activities, see our Danube Hazard m³c website: http://www.interreg-danube.eu/approved-projects/danube-hazard-m3c.

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

Structural design and setup of the inventory database was completed and now it is running at the server hosted by the Lead Partner, TU Wien. The database was programmed in PostgreSQL system and powered by DBeaver. To establish communication between the database and the data supplier, input data request sheets (DRs) were elaborated and distributed within the consortium (to be filled by each PP). DRs have uniform structure for all compartments, for which we want to obtain data about the hazardous substances (HS) concentrations and loads: surface water (rivers), wastewater (municipal and industrial), stormwater outlets, atmospheric deposition, and soil. The first step was to compile a checklist of data availability; the work progressed with the intensive data collection. The first draft version of the database, containing pre-existing data on HS in the majority of DRB countries will be available by the end of June. Information about concentrations in surface waters and other environmental and anthropogenic matrixes, including relevant metadata will provide input for other work packages (T2 and T3).

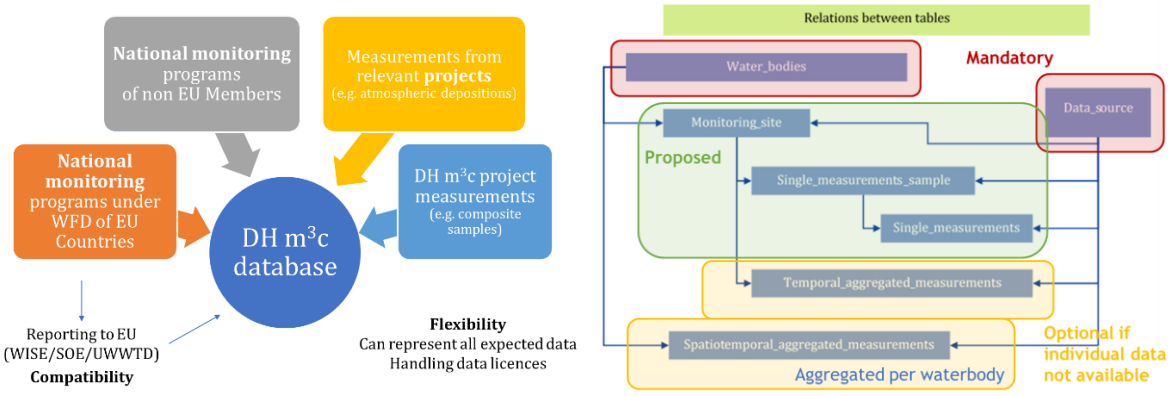

Figure 1. Main structure of the Danube Hazard m3c database (left) and data request sheets (right)

The core of the work focused on monitoring activities. Within the first half of the period the continuous river monitoring has started and the first sampling campaigns have been successfully implemented in all pilot catchments. Many samples from rivers (both high flow events and low flow composites), wastewaters, rainwater (representing atmospheric deposition) were collected and delivered to the labs. The laboratory WESSLING Hungary Ltd., which joined the consortium after winning the call for tender, will be responsible for the chemical analysis, together with partners Jozef Stefan Institute (JSI) from Slovenia and National Administration "Romanian Waters"(NARW. Based on the lessons learned from the first sampling of composites and performing lab experiences, the sampling protocol has been continuously revised and improved.

Online stations for establishing continuous flow and turbidity measurements are installed in each pilot region. Additionally,

the first soil sampling campaign was executed and samples were delivered to the partner, who is performing the lyophilisation of the soil composites.

Figure 2. Sampling on the Someşul Mic river, Romania, photo NARW)

Figure 3. Soil sampling in the Koppány catchment, Hungary (photo: BME)

Figure 4. Stations for atmospheric deposition sampling
(photos: UBA, BWA, TU-Wien, NARW, BME)

Figure 5. Monitoring stations in Bulgaria, Vit catchment (photo: BWA)

Figure 6. Monitoring stations in Austria, Wulka catchtment (photo: TU-Wien)

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

An English version of the emission model "Modelling of Regionalized Emissions (MoRE)" as ""Danube Hazard m³c" version was installed on the TU Wien server and roles and rights of use were established. Connection for authorised partners is processed via VPN connection and Remote desktop. The model prepares a regionalised pathway analysis of substance inputs into surface waters based on sub-catchments with around 100 km². The emissions of different substances from various sources that reach surface waters via different input pathways are calculated with the help of empirical approaches (see Figure 7).

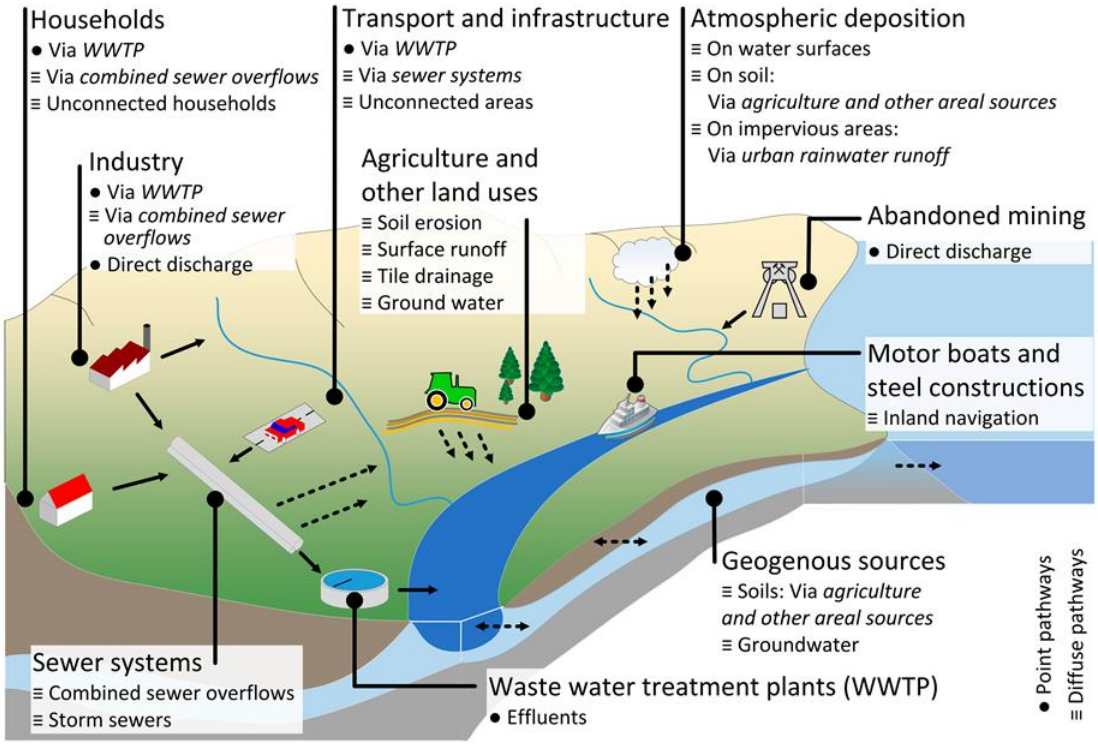

Figure 7. Substance emission pathways of MoRE, arranged by source type (Fuchs et al., 2017)

The delineation of the sub-catchments in seven pilot areas was finalized, which guarantees an optimal basis for model validation and comparison with the SOLUTIONS model used in Work Package T3 (examples of an Austrian and Bulgarian pilot, Figure 8.).

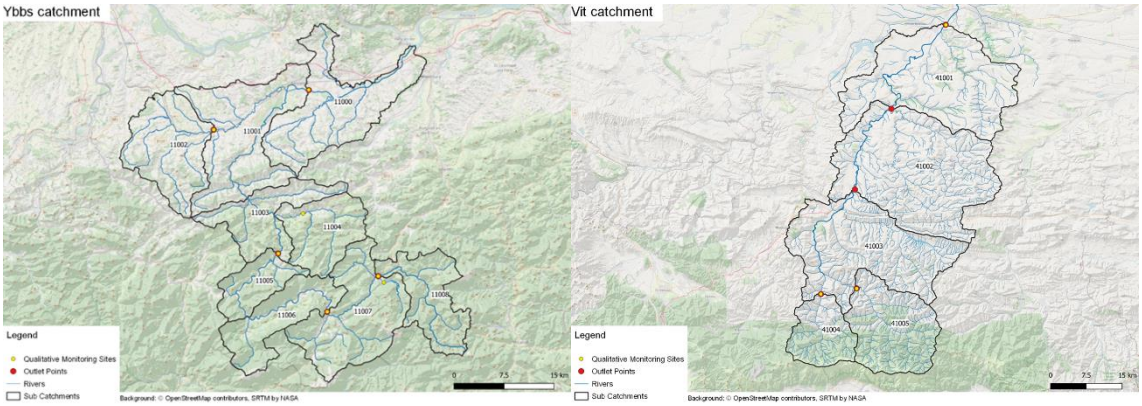

Figure 8. Examples of two Pilot regions and their sub-catchments in the Northern Limestone Alps, Austria (Ybbs) and in Central Northern Bulgaria (Vit)

The delineation process in the seven pilots resulted in 34 sub-catchments with a total area of around 7.900 km². The mean altitude in the sub-catchments varies from 1.363 m.a.s.l in the Romanian Somesul headwaters in the Apuseni Mountains to 170 m.a.s.l in the Wulka catchment in the Pannonian Plain near Lake Neusiedl. In general, the steep gradients characterizing different regions within the Danube catchment are well represented by the pilot regions.

The **elaboration of datasets containing basic input data** (like land use, soil loss, etc.) was another key task in this period. After the evaluation and selection of best available data sources in the pilot areas by all responsible partners in the pilot regions, the data are processed to the sub-catchments. The data collection is flanked by a detailed documentation of a bundle of master variables, which guarantees the transparent, sustainable and transferable use of the later model results. Furthermore, a first estimate of basic input data quality by the project partners builds the fundament of a critical review of further data needs or improvements.

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

In this Work Package a science-policy making interface will be provided (see Figure 9.). On the scientific side, a comprehensive basin-wide emission modelling is being carried out for selected HS to identify emission hotspots, evaluate emission source and pathways, quantify river loads and assess management scenarios. The basin-wide model will make use of the outcomes of Work Package T1 (inventory & monitoring) and Work Package T2 (pilot catchment modelling). On the policy making side a critical comparison and review of the current national policies on managing HS pollution is being carried out to identify main challenges, implementation gaps of national policies and needs for harmonization. Moreover, the review aims at defining priority measures and preparing draft recommendations for revising, adapting and improving the current policies within the DRB. Based on both the modelling

work and the policy review, specific policy recommendations will be worked out. The outcomes will feed the activities of Work Package T4 (capacity building).

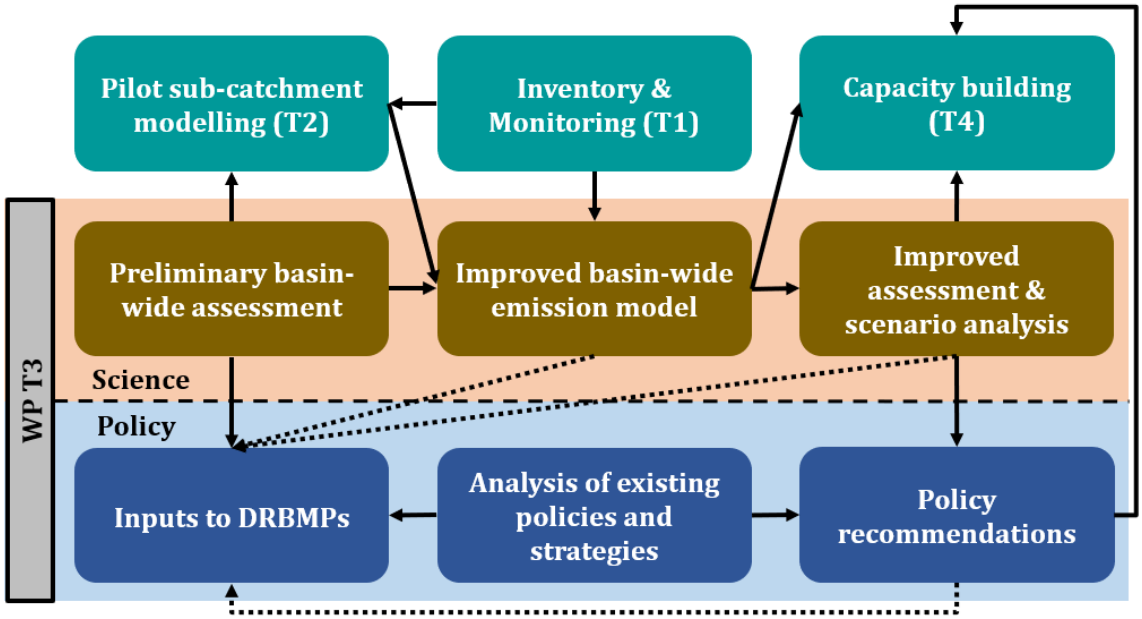

Figure 9. Activities and products of WP T3

In the frame of an open tender procedure for the basin-wide modelling activity the company Deltares was subcontracted to undertake the required tasks. Deltares is applying an updated and improved material flow type model chain from substance properties to ecosystem risks that was previously developed within the EU FP7 project SOLUTIONS. In spring 2021, the model structure, the parametrization for the target substances and the input database were set up to be followed by preliminary modelling and assessment in summer 2021.

The policy review leader the Bulgarian Water Association developed a detailed questionnaire on national policies on HS pollution management by January 2021. The questionnaire consists of 4 main question groups covering the legislative background, river basin management aspects, point source emitters and diffuse pollution. By June 2021 all project partners filled the questionnaire. Efforts are being made to reach ASPs in order to gather information from those countries, which are not represented by a partner. From summer 2021 the questionnaires will be analysed, compared and critically assessed.

The interim outcomes of the policy analysis and the modelling work will provide direct inputs to the Danube River Basin Management Plan Update 2021 by autumn 2021.

❖ WP T4 - Aiming to a capacity building

The activities in this work package will start in the second half of 2021 and will last till the end of the project, building on the outcomes of the other technical Work Packages.

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 WP T2 and WP T3 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's 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 Programme[1] (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

[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).

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 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 and Danube Hazard m3c projects
- 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 #2 (01.01.2021 – 30.06.2021):

- 2nd Project Partner Meeting, online, 21st – 22nd April
- 2nd Steering Committee Meeting, online, 22nd April

UPCOMING EVENTS

- 3rd Project Partner Meeting, 23rd – 24th September 2021
- 3rd Steering Committee Meeting, 23rd September 2021
- 2nd Advisory Board Meeting, 23rd September 2021

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

❖ Interesting links

- Download our project Poster and 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):

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