## Joint Steering Group Meeting of EUSDR PA4 "Water Quality" and EUSDR PA5 "Environmental Risks"

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## Danube Hazard m3c Project progress



Danube Transnational Programme Danube Hazard m<sup>3</sup>c



Project co-funded by European Union funds (ERDF, IPA, ENI) and National Funds of the participating countries

### Danube Hazard m3c - Why and what



To achieve a **durable and effective management and control** of hazardous substances pollution

Building on the **three elements of water governance** (measuring, modelling and management) complemented by capacity building

Focusing on three main objective pillars:

- narrowing knowledge gaps and increasing system understanding by conducting pilot catchment investigations and compiling an inventory for hazardous substances pollution
- conducting basin-wide investigations by setting up and applying a water quality model for chemical emissions and by developing policy recommendations
- **ensuring capacity building** by organizing workshops on modelling and monitoring and elaborating a technical guidance

## Which chemicals?



Shift focus **from substances to pathways** (domestic wastewater, industrial wastewater, runoff in relation to land use, etc.)

"Marker substances" for specific pathways, "priority pathways" instead of priority pollutants

#### WHY

- Just too many substances out there (over 350,000 chemicals and mixtures of chemicals globally registered for production and use)
- Water management interventions directed at pathways, not primarily at substances
- Less impact on regulatory frameworks related to chemicals admission

#### **17 Target chemicals**

- Metals (As, Cd, Cu, Ni, Pb, Zn, Hg)
- 16 EPA PAH
- PFOS, PFOA, plus a range of short-chain PFAS
- Diclofenac & Carbamazepine
- 4-ter-Octylphenol, Nonylphenol, Bisphenol A
- Tebuconazole, Metolachlor

## Activities and products at basin-wide level





### Monitoring in the pilot regions



**Sampling** in rivers at low and high flow, in atmospheric deposition, soils, sediments, wastewater treatment plants and mining sites in 7 pilot areas

**Occurrence, patterns, dynamics and concentration levels** in surface waters and in different environmental and engineered compartments in the different pilot regions



# Database – Inventory of hazardous substances



**Pre-existing** information, complemented with project **monitoring results** 

Unique, large **transnational database** with harmonized structure and format of data and metadata



# Modelling in the pilot regions and at the DRB scale



#### Setting up a material flow type model chain for the DRB

Improved baseline knowledge on hazardous substances water pollution and on the relevance of different **emission pathways** 

Investigations on the **effectiveness of measures** by scenario simulations

## **pathway** oriented, detailed model tested in **pilot regions** using local data

Households Transport and infrastructure Atmospheric deposition • Via WWTP Via WWTP ≡ On water surfaces Sources ≡ Via combined sewer overflows ≡ Via sewer systems ≡ On soil transport ≡ Unconnected areas stormwater ≡ Unconnected households Via agriculture and other areal sources Impermeable & On impervious areas: Surfaces retention Air emissio Via urban rainwater runoff Agriculture and Industry processes • Via WWTP other land uses Separated stormwater Abandoned mining ≡ Via combined sewer ≡ Soil erosion Sewers Agriculture overflows ≡ Surface runoff Direct discharge Direct discharge ≡ Tile drainage Iransportation and Infrastructure CSOs ≡ Ground water Surface Construction materia Combined effluents **WWTPs** Motor boats and Waters Sewers Households steel constructions ≡ Inland navigation Industry ----Abandoned and historic mining erosion Inland navigation shallow drainage transport Soil System Geogenous sources oathway Natural background 8 ≡ Soils: Via gariculture Permeable deeper drainage retention and a Surfaces processes ≡ Gro Sewer systems MoRE DHSM surface runoff Waste water treatment = Combined sewer overflows **Effluents** ≡ Storm sewers

**source** oriented, conceptual model improved by **upscaling**, applied for the DRB

## **Policy recommendations**

#### **Critical review of national policies**

Identification of main **challenges**, implementation gaps of national policies and **needs for harmonization** 





#### **Policy paper**

Recommending **guiding principles** for policy making and source, emission and transport **control measures** 



## **Capacity building**



8 national/regional **trainings on monitoring and inventorying**, 20-80 participants Common **backbone**, but slightly adapted programme and focus in each country In some countries complemented by **demonstration on the field** or pilot regions

3 international **workshops on modelling**, 15-20 participants Goal and scope of **emission modelling** at catchment scale Data requirement, basic **principles**, **approaches and assumptions** behind the calculations



### Last steps

Symposium



Register here: https://forms.office.com/r/MKy1WLHe46

## **Follow-up project**



To develop and provide operational **tools and capacity** in the Danube countries:

- enabling a **comprehensive assessment** of the status quo and management scenarios of hazardous substances pollution
- can be used for **each cycle** of river basin management planning at both

#### Addressing remaining challenges the first project did not succeed

- Deficiencies of **monitoring data** in non-EU MS
- Lack of **institutional capacity** and intersectoral dialogue
- Uncertainties in the **chemical model**

#### Reflecting to emerging challenges with increasing importance

- Climate change impacts (heavy rainfall, drought and low flow)
- Changing **EU water legislation** with ambitious requirements

Proposal (EoI) submitted to the first call of the new **Danube Region Programme**, ICPDR as a partner