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TRB summary report on data collection Deliverable 4.5.1

This deliverable summarises activities implemented within the WP4 by the end of July 2019

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DANUBE REGION strategy

Acknowledgements

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Contents

Chapter 1 – background

The largest tributaries of the Danube River by catchment area are the Tisza River (157,186 km2) and Sava River (97,713 km2). The Tisza River ranks as the longest tributary (966 km) and the second largest tributary of the Danube River by flow volume, with an average discharge of about 830 m^3/sec, and Tisza River Basin (TRB) is the main water source for Hungary, a significant source for Serbia and an important source for western Romania and south-eastern part of the Slovak Republic. Additionally, the population is higher in the Tisza River Basin (14 Million) than in the Sava River Basin (8.5 Million). As a result, demand in water is higher in the Tisza River Basin, which raises concerns about the need to ensure a harmonised and sustainable water resource management in the Tisza River Basin. Furthermore, increase in extreme events (severe floods and draughts) in the recent years has adverse affects on water resources, ecosystems, human health, and economy within the region.

Water quantity is identified as relevant water management issue in Tisza River Basin (TRB) due to the over abstraction of groundwater (GW), increase in irrigation and surface water (SW) abstraction, and key integrated water management issues (excess water, droughts, and climate change). In addition, achievement of good status for both GW and SW is obstructed by different sources of pollution. As a result, interlinkages between water quantity and water quality management issues are identified as relevant for the TRB.

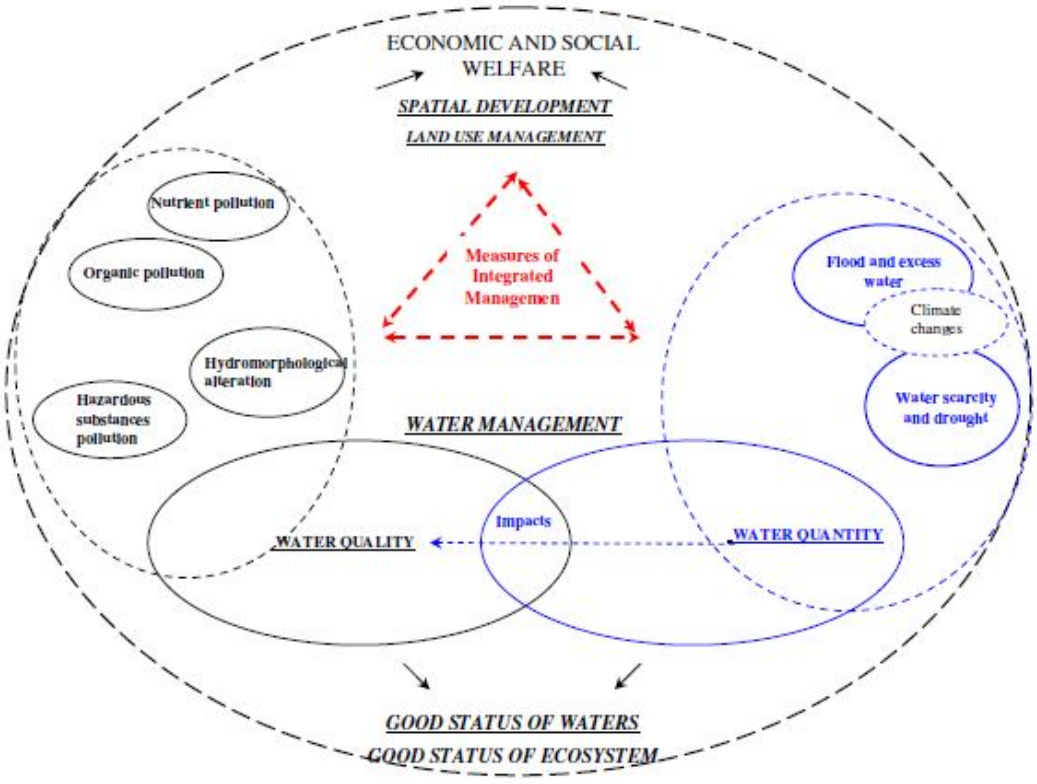

Figure I-1 Interlinkages between water quantity and quality related management issues identified by ICPDR Tisza Group (Source: The First Integrated Tisza River Basin Management Plan)

The main objective of this WP is to evaluate water demand, GW status and measures that will sustain balanced water quantity management and achievement of good water bodies' status. In addition, the pilot URBAN HYDROLOGY was implemented and generated useful guideline and manual.

Chapter 2 – scope of the work

Given the water use that will very likely extend (Tisza Analyses Report -TAR, 2007) due to increase in water demand and foreseen climate change adverse effects comprehensively assessment of water use and demand and groundwater bodies' status within the TRB was mandatory. Further, data and information on groundwater and integration measures are collected. For groundwater bodies these measures are compared with these reported in the ITRBMP (2011), while for integration measures (horizontal, drought and water scarcity, solid plastic waste, and climate change) are reported for the first time and represent solid base for comparison on their implementation in the next ITRBMP (for the planning period after the 2021).
All deliverables and maps developed during the project implementation are based on Tisza countries reports developed in line with requirements defined in templates for data collection. All templates are approved by Tisza countries. Examples of data information and data collected are:

- Water resources – surface water: flow data and water storages ;
- Water use: present water use and consumption (period 2013 - 2015) for: Irrigation, other agricultural use (livestock farms, fish production, etc.), Public water supply, water supply of industry - including thermal power plant cooling, hydropower, navigation, hydrological requirements for good ecological status, other uses, and preservation of hydraulic regimes and ecological conditions in canal network;
- Water demand: present water use and consumption (period 2013 - 2015) for: Irrigation, other agricultural use (livestock farms, fish production, etc.), Public water supply, water supply of industry - including thermal power plant cooling, hydropower, navigation, hydrological requirements for good ecological status, other uses, and preservation of hydraulic regimes and ecological conditions in canal network;
- In addition to water use and demand water source (surface and groundwater) are identified;
- Updated information and data with respect to TAR 2007 for GWBs >1,000 km^2 and of basin-wide importance;
- Shape files relevant for GWBs (updated on the DanubeGIS) and shape files for present water use.

Pilot Urban Hydrology is implemented in Debrecen (Hungary)and Oradea (Romania).

Chapter 3 – activities summary

Activities relevant for data collection started at the begging of project implementation and are completed at the beginning of the 2019. The first step was review of the background studies and reports to asses and evaluate all relevant to be consider. The next step was development of templates for data collection. All templates include chapter General instructions and info where comprehensive explanations are provided to sustain uniform data and information collection and reporting. For all maps developed by ICPDR data and information are collected and verified by Tisza countries in line with protocols and guidelines for DanubeGIS (International Commission for the Protection of the Danube River Basin).
There were number of corrections and checking by Tisza countries (Ukraine, Romania, Slovakia, Hungary and Serbia)of each deliverable and map to meet quality requirements with respect to accuracy. As a result, over 85 % of deliverables generated within the WP4 are included in the Draft Update ITRBMP.
All activities completed within WP4 are divided in following main sub activities groups:

- Data Collection on SW quantity and GW quantity and quality
- Water quantity and GW status assessment
- Data collection on the measures within the TRB relevant for SW quantity, GW quantity and quality
- Pilot Activity: Urban Hydrology Management
- Summary of the outcomes of activities 1-4

Chapter 4 – List of deliverables and maps

Joint efforts and dedication by Tisza countries and international institutions that participated in project implementation resulted in deliverables, maps and Annexes listed is subsequent part of this chapter.

DELIVERABLES:

- **D 4.1.1**: Standardized joint check-list as a basis for the data collection;
- **D 4.1.2:** Country reports (templates, shape files, other information) – 5;
- **D 4.1.3:** TRB Summary report on data collection reports;
- **D 4.2.1:** TRB report on water quantity;
- **D 4.2.2:** TRB Report on GW status assessment;
- **D 4.2.3:** TRB Report on monitoring results evaluation;
- **D 4.2.4:** TRB Report on environmental objectives and exemptions;
- **D 4.2.5:** TRB Synopsis Report on data analyses (TRB wide);
- **D 4.3.1:** Template for data and information collection;
- **D 4.3.2:** Country reports based on template for measures data and information collection - 5 reports (country reports);
- **D 4.3.3:** Catalogue of existing measures evaluation;
- **D 4.3.4:** Map of selected measures and their performance;
- **D 4.3.5:** Summary report on TRB measures data collection;
- **D 4.4.1:** Knowledge development tools and knowledge transfer in urban hydrology;
- **D 4.4.2:** Process oriented spatial decision supporting tool in urban hydrology for middle sized cities in CEE based on the reference sites;
- **D 4.4.3:** Evaluation report of the pilot activities with a strong focus on the feedback and learning process of the stakeholders after the training-sessions for stakeholders in the pilot area(s);
- **D 4.5.1:** TRB Summary report on WP4 implemented activities and main outcomes.

MAPS THAT ARE INTEGRAL PART OF DRAFT UPDATE ITRBMP:

- Map 6. Groundwater Bodies of Basin-Wide Relevance - Overview
- Map 7. Groundwater Bodies – Water Quality Monitoring Stations
- Map 8. Chemical status of Groundwater Bodies of Basin-Wide Importance
- Map 9. Quantitative Status of Groundwater Bodies of Basin-Wide Importance
- Map 10. Groundwater Bodies – Water Quantity Measures Comparison (2010-2019)
- Map 11. Groundwater Bodies – Water Quality Measures Comparison (2010-2019)

MAPS THAT ARE INTEGRAL PART OF TRB REPORT ON WATER QUANTITY (DELIVERABLE 4.2.1):

- TRB Annual Hydrological stations spatial distribution
- TRB Inter-Annual Hydrological Stations Spatial distribution
- TRB Irrigation
- TRB Reservoirs-purpose
- TRB Reservoirs-volume
- TRB Water Supply

ANNEXES THAT ARE INTEGRAL PART OF DRAFT UPDATE ITRBMP:

- Annex 5. Groundwater bodies of the Tisza River Basin: pressures and measures;
- Annex 8. Groundwater bodies status assessment methodologies in Tisza countries;
- Annex 13. Report on Tisza River Basin reservoirs, discharge, water use and demand;
- Annex 14. Catalogue of groundwater and integration measures evaluation – additional data and information;

Chapter 5 – WP4 interlinkage with other WPs and contribution to Draft Update ITRBP

The figure bellow exhibits schematic of the interlinkage among the implemented activities within the WP and activities, deliverables and outputs implemented and generated within the other technical work packages.

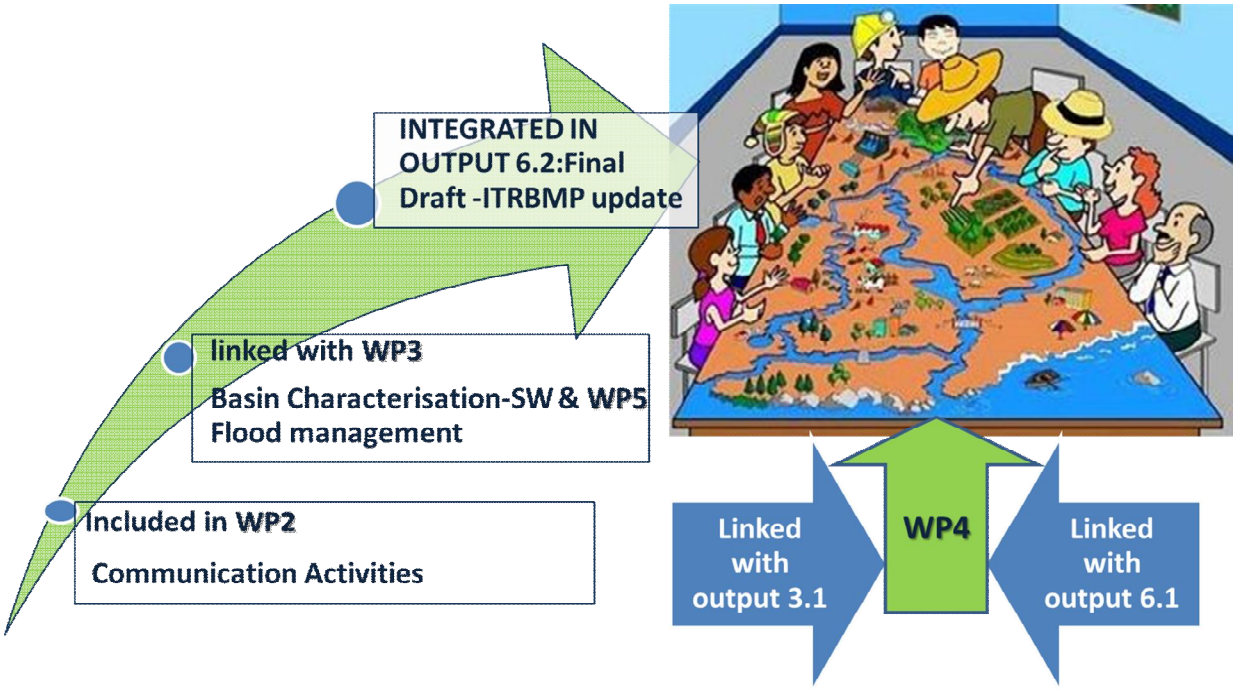

Figure V-1 WP4 and other WPs

In addition to maps and annexes information, data and results from work package 4 are integral part of Draft Update ITRBMP chapters listed bellow:

- 1. INTRODUCTION
- 2. SIGNIFICANT PRESSURES IN THE TISZA RIVER BASIN
- 3. MONITORING NETWORKS AND STATUS ASSESSMENT
- 4. ENVIRONMENTAL OBJECTIVES AND EXEMPTIONS
- 5. JOINT PROGRAMME OF MEASURES
- 6. INTEGRATION OF WATER QUALITY AND WATER QUANTITY ISSUES

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