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TRB report on GW status assessment

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DANUBE REGION strategy

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Contents

Chapter 1 – Background

Introduction

Data presented in this report summarize relevant information for Tisza River Basin (TRB) for groundwater bodies. Tisza countries reported templates that follow approach applied for development of the First Integrated Tisza River Basin Management Plan (1st ITRBMP) and other studies and background documents relevant for Tisza River Basin within the scope of International Commission for the Protection of the Danube River (ICPDR) Tisza Group and other ICPDR expert groups. Within this Annex Tisza river countries reported national methodologies for groundwater status assessment.

Deliverable 4.2.2 Report on GWB's Status Assessment presents one of the base documents for developing part of Second Integrated Tisza River Basin Management Plan (2nd ITRBMP) concerning groundwater issues.

In order to successfully develop 2nd ITRBMP some basic documents had to be taken into account. As roof document WFD has been considered, as well as daughter directive – Groundwater directive. As main starting point the 1st ITRBMP plan was used. Brief description of mentioned documents will be given in following chapters.

Water Framework Directive

Water Framework Directive (Directive 2000/60/EC), as roof document, has purpose to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater, and prevent their further deterioration.

Monitoring of surface water status, groundwater status and protected areas is defined within Article 8 of WFD. In Article 8 is defined, inter alia, that:
Member states shall ensure the establishment of programmes for the monitoring of water status in order to establish a coherent and comprehensive overview of water status within each river basin district:

- For groundwaters such programmes shall cover monitoring of chemical and quantitative status

Based on the monitoring results, groundwater status will be defined. Total groundwater status is defined thru quantitative and chemical status. Groundwater body has a good status only if quantitative and chemical statuses are rated as *good*. In case that chemical and/or quantitative status are rated as poor, total status of GWB is poor.

Within Annex V of WFD detailed description of groundwater monitoring, as a starting point for status assessment, has been given. Groundwater monitoring is divided to monitoring of quantitative status and monitoring of chemical status. Chemical monitoring is further divided to surveillance and operational monitoring. Within this annex detailed instruction for performing of mentioned types of groundwater monitoring has been given. Based on monitoring results, quantitative and chemical status is defined and therefore overall status of GWB can be determined.

Groundwater Directive

In order to further institutionalize and organize protection of groundwater, Groundwater Directive has been adopted in 2006 (Directive 2006/118/EC). This Directive defines detailed procedures for assessing groundwater chemical status, identification of significant and sustained upward trends and definition of starting points for trend reversal and measures to prevent or limit inputs of pollutants into groundwater. All mentioned activities cannot be performed without results of groundwater monitoring, so that monitoring represents the basic "tool" for all further groundwater protection.

Introduction – 1st TRBM, and other background studies

The 1st Integrated Tisza River Basin (TRB) Management Plan was adopted in 2011. Plan was based on data provided by Tisza countries (Ukraine, Slovakia, Romania, Hungary and Serbia). Data have been delivered by September 2010, and the reference year was 2007 (The first Tisza Analyses Report was developed).
In comparison with the DRBM Plan, the ITRBM Plan took into account rivers with catchment size larger than 1000 km^2 instead 4000 km^2, natural lakes >10 km^2 instead 100 km^2, main canals and groundwater bodies >1000 km^2 and of basin-wide importance.

This mean that in comparison to the 11 identified transboundary groundwater bodies or groups of groundwater bodies of the Danube Basin-wide importance (so called "Roof level", presented in the DRBMPs), the Tisza countries have collected and evaluated information related to:

- ***85 national and transboundary groundwater bodies of importance to the TRB, according to agreed criteria for importance (all GW bodies >1,000 km ^{2} and those TB GW bodies <1,000 km ^{2} considered to be of basin-wide importance);***
- ***The assessment of pressures on the quantity of the groundwater bodies of basin-wide importance demonstrated following:***
    - Over-abstraction prevents the achievement of good quantitative status for twelve groundwater bodies;
    - For ten groundwater bodies, the most significant pressure on quantity is illegal abstractions and indirect abstractions, by drainage or gravel pits (in Hungary);
    - Other significant pressures include abstraction for agriculture, public water supply and industry.
- ***The assessment of pressures on the quality of the groundwater bodies of basin-wide importance demonstrated that main reasons for pollution of groundwater are:***

- Water pollution caused by intensive agriculture and livestock breeding;
- Insufficient wastewater collection and treatment at municipal level;
- Inappropriate waste disposal sites;
- Urban land use;
- Insufficient wastewater treatment at industrial enterprises.

Report on status assessment in 2010

Within the Scope of the 1st ITRBM development, each Tisza country reported on groundwater bodies status assessment based on templates for chemical and quantitative groundwater status assessment. Data and information submitted by Tisza Countries (Ukraine, Romania, Slovakia, Hungary and Serbia) on groundwater bodies status assessment are summarized in Table I.1. Methodology for groundwater status assessment for Romania, Slovakia and Hungary are included in the Annex X of the 1st ITRBMP.

Ukraine, Romania, Slovakia, Hungary and Serbia are countries within Tisza river basin. Romania, Slovakia and Hungary as EU members had obligation to develop and implement groundwater status assessment methodology. On the other hand, Ukraine and Serbia are not EU members and still did not develop groundwater status assessment methodology.

Table I.1: Overview of chemical and quantitative status of important GWBs in TRB

Status of GW bodies		UA		RO		SK		HU		RS		Total	
		Nat.	Tran.	Nat.	Tran.	Nat.	Tran.	Nat.	Tran.	Nat.	Tran.	Nat.	Tran.
Chemical Status	Good	3 no data	6	2	7	5	2	17	21	4	10	25	49
	Poor		0	1	1	0	0	2	4	0	0	3	5
Quantitative Status	Good	3 no data	6	3	8	5	2	14	18	2	5	24	39
	Poor		0	0	0	0	0	5	7	2	5	7	12
Total		**UA – 9 GWBs**		**RO – 11 GWBs**		**SK – 7 GWBs**		**HU – 44 GWBs**		**RS – 14 GWBs**		**85 GWBs**	

As it is exhibited in table, data on GWB status assessment were submitted for 82 GWBs and for 3 GWBs *no data* is reported by Ukraine.

Ukraine

Ukraine reported that all 6 transboundary GWBs were in *good* chemical and quantitative status, while for 3 national GWBs *no data* was reported.

Romania

Romania reported status assessment for all 11 groundwater bodies. 8 GWBs are transboundary and 3 are national. Regarding chemical status 2 national GWBs and 7 transboundary were in *good* status, while 1 national and 1 transboundary were in *poor* status. Regarding quantitative status all 8 transboundary and 3 national GWBs were in *good* status.

Slovakia

Slovakia reported status assessment for all 7 groundwater bodies. 2 GWBs are transboundary and 5 are national. Regarding chemical status all 7 GWBs were in *good* status. Also all 7 GWBs were in *good* quantitative status.

Hungary

Hungary reported status assessment for all 44 groundwater bodies. 25 GWBs are transboundary and 19 are national. Regarding chemical status 17 national GWBs and 21 transboundary were in *good* status, while 2 national and 4 transboundary were in *poor* status. Regarding quantitative status 18 transboundary and 14 national GWBs were in *good* status, while 7 transboundary and 5 national GWBs were in *poor* status.

Serbia

Since Serbia have not established threshold values for groundwater, in 2010 status assessment could not be performed. Instead of GWB`s status assessment, Serbia reported risk assessment for its 14 groundwater bodies. Regarding chemical risk all 4 national GWB`s and 10 transboundary are *not at risk*. When it comes to quantitative risk 2 national and 5 transboundary GWB`s are *not at risk*, and 2 national and 5 transboundary are *at risk*.

In Tisza river basin, in total 85 groundwater bodies have been delineated and reported. From that number 87% were in *good* chemical status, 9% were in *poor* status and for 4% *no data* was available (*), Figure I.1.

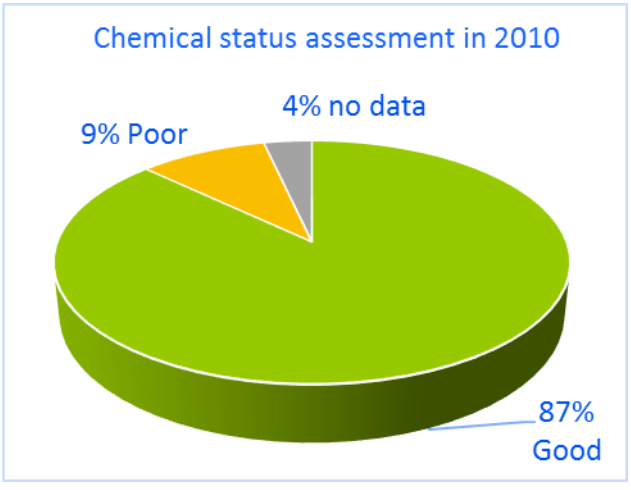

Figure I.1: GWB`s chemical status statistics in TRB

Regarding groundwater bodies quantitative status 74% were in *good* status, 22% were in *poor* status and for 4% *no data* was available (*), Figure I.2.

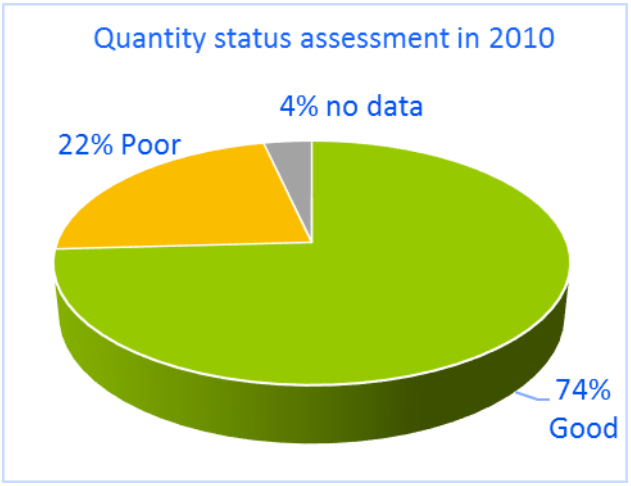

Figure I.2: GWB`s quantitative status statistics in TRB

*In order to perform statistical calculations, for Serbia GWB`s which are reported *not at risk* are calculated as in *good* status, and GWB`s *at risk* are calculated as *poor status*.

Data and information expected to be reported within the scope of JOINTISZA project

Each country checked/updated and completed the table: *JoinTisza template for GWB data collection_Act.4.1.xls* based on following instructions:

- Please check, correct and complete all the fields and indicate in color if pre-filled entries (based on data and information included in the 1st ITRBMP) have been changed;
- For each country: Please indicate number of monitoring sites for quantitative and chemical monitoring of GWB;
- For each country: Please indicate the reasons and the parameters for the risk of failing good CHEMICAL/QUANTITATIVE status in 2021 for the national shares of TRB GW-bodies;
- For each national share: Please provide the further characterization of the national shares of TRB GW-bodies. The descriptive text (characterization, methodology etc.) of the 2004 Article 5 report (Annex 12 of the Roof Report) might need to be updated as size, pressures and characteristics of GWB might have changed;
- For each national share: Please indicate the most important significant pressures on the national shares of TRB GW-bodies posing risk of failing good status in 2021.
- For missing data/information please insert NA (not available).

GIS Data expected to be reported within the scope of JOINTISZA project

It is necessary to update and verify the GIS data (shape files) on the DanubeGIS for the GW-bodies and monitoring stations, please consider the following:

- GIS data should be uploaded in the DanubeGIS in the WGS84/ETRS89 reference system or at least provide information about:

- Name of Reference System;
- Projection;
- Ellipsoid must be added.

- For point features provide position information in coordinates not in decimal notation (latitude and longitude).

Exported GIS maps (in digital formats such as .JPG or .TIFF) are expected to be attached.

Chapter 2- Information and data sets reported by Tisza countries

Data and information presented in this deliverable 4.2.2: Report on GWB`s status assessment are based on TRB countries reports submitted in 2017 within the scope of JOINTISZA project. The subsequent subchapters provides summary and most significant data and information for each TRB country with respect to GWBs status assessment.

Country reports

Ukraine

Ukraine reported risk assessment for all TRB relevant groundwater bodies (9) in 2017. Regarding quantitative risk, all GWB`s are reported to be *not at risk*. Based on reported data 1 GWB is *at risk* with respect to chemical status, while other 5 are *not at risk*. It is important to mention that certain discrepancy has been observed regarding GWB`s codes in 2010 and 2017. Data for risk (status) assessment for Ukraine 2010/2017 are summarized in Table IV.5

Table II.5: Summary for TRB GWBs status assessment in Ukraine 2010 / 2017

Status of GW bodies		UA-2010		UA-2017	
		Nat.	Tran.	Nat.	Tran.
Chemical Status	Chemical good	**3 no data**	6	3	5
	Chemical poor		0	0	1
Quantitative Status	Quantitative good	**3 no data**	6	3	6
	Quantitative poor		0	0	0

Romania

Romania reported status assessment for all 11 groundwater bodies of importance to TRB, according to agreed criteria. In 2010 Romania reported 8 GWB`s as transboundary and 3 GWB`s as national, and in 2017 4 GWB`s are reported as transboundary and 7 as national. GWB`s, ROCR08/, ROMU03 and ROMU24 were reported as national in 2010 but in 2017: ROBA01, ROCR01, ROCR06, ROCR07, ROCR08, ROMU03, ROMU24 are reported as national and ROMU20, ROMU22, ROSO01 and ROSO13 are reported as transboundary. Based on reported data, in 2017, 8 GWB`s are in *good* chemical status (ROCR01, ROCR06, ROCR07, ROCR08, ROMU22, ROMU24, ROSO01, ROSO13) while 3 are in *poor* status (ROBA01, ROMU03, ROMU20). All 11 GWB`s are in *good* quantitative status. Comparison for the TRB GWBs status assessment in Romania for 2010 and 2017 are presented in Table II.3.In summary, there is no changes in quantitative status but the number of GWBs with poor chemical status increased (from 2 to 3).

Table II.3: Summary for TRB GWBs status assessment in Romania 2010/2017

GWB Status		RO 2010	RO 2017
Chemical Status	Chemical good	9	8
	Chemical poor	2	3
Quantitative Status	Quantitative good	11	11
	Quantitative poor	0	0

Slovakia

Slovakia reported status assessment for all 8 groundwater bodies. In 2010 Slovakia reported in total 7 GWBs, 5 national and 2 transboundary. Slovakia reported in total 8 GWB`s, 6 national and 2 transboundary. The additional groundwater body - SK200280FK has been reported in 2017. According to data submitted within Country report, this GWB has area of 3049.8 km^2, and half of GWB is situated in the Tisza river basin. Data for status assessment for Slovakia 2010/2017 are summarized within Table II.4

Table II.4: Summary for TRB GWBs status assessment in Slovakia 2010. / 2017.

GWB Status		SK 2010	SK 2017
Chemical Status	Chemical good	7	8
	Chemical poor	0	0
Quantitative Status	Quantitative good	7	8
	Quantitative poor	0	0

As it can be seen from presented data, there are no change in TRB GWB`s chemical and quantitative in comparison to the previous planning period.

Hungary

Hungary reported status assessment for 51 groundwater bodies. In Hungary, 25 GWBs are transboundary and 26 are national of importance to the Tisza River Basin, according to agreed criteria. Based on country report, chemical status for 21 national and 22 transboundary GWBs is in *good* status, while 5 national and 3 transboundary GWBs have *poor* chemical status. Regarding quantitative status 15 transboundary and 14 national GWBs are in *good* status, while 10 transboundary and 12 national GWBs are reported to be in *poor* status. Comparison of status assessment for Hungary for 2010 and 2017 are summarized within Table II.2, and indicate that number of poor chemical and quantitative status increased by 1 and 10, for chemical and quantitative status, in a given order.

Table II.2: Summary for TRB GWBs status assessment in Hungary 2010/2017

GWB Status		HU 2010	HU 2017
Chemical Status	Chemical good	38	43
	Chemical poor	6	8
Quantitative Status	Quantitative good	32	29
	Quantitative poor	12	22

Serbia

Since Serbia did not have established threshold values for groundwater in 2010 status assessment could not be completed. Instead of GWB`s status assessment, Serbia reported risk assessment for its 14 TRB groundwater bodies. Since the threshold values have not been established by the end of 2017 risk assessment is reported. Regarding chemical risk all 14 GWB`s are not at risk. When it comes to quantitative risk 7 GWB`s are not at risk, 7 GWB`s are at quantitative risk. Comparison of data and information for status (risk) assessment reported in 2010 and 2017 are summarized in Table II.5.

Table II.5: Summary for TRB GWBs status (risk) assessment in Serbia 2010/ 2017

GWB Status		RS 2010	RS 2017
Chemical Status	Chemical good	14	14
	Chemical poor	0	0
Quantitative Status	Quantitative good	7	7
	Quantitative poor	7	7

Chapter 3 – Summary

Within the scope of JOINTISZA project, 93 groundwater bodies have been delineated and reported in 2017 with respect to status assessment. Table below summarizes status assessment reported in 2017 by countries.

Table III.1: Groundwater status assessment in 2017reported by countries

Status of GW bodies		UA		RO		SK		HU		RS		Total	
		Nat.	Tran.	Nat.	Tran.	Nat.	Tran.	Nat.	Tran.	Nat.	Tran.	Nat.	Tran.
Chemical Status	Good	3	5	5	3	6	2	21	22	4	10	33	42
	Poor	0	1	2	1	0	0	5	3	0	0	6	45
Quantitative Status	Good	3	6	7	4	6	2	14	15	2	5	25	32
	Poor	0	0	0	0	0	0	12	10	2	5	14	15
Total		**UA – 9 GWBs**		**RO – 11 GWBs**		**SK – 8 GWBs**		**HU – 51 GWBs**		**RS – 14 GWBs**		**93 GWBs**	

*In order to perform statistical calculations, for Serbia GWB`s which are reported *not at risk* are calculated as in *good* status, and GWB`s *at risk* are calculated as *poor status, same as for the Ukraine for 2017*.

Based on reported data regarding chemical status 87% of TRB GWB`s are in *good* status and 13% are in *poor* status as exhibited in Figure III.1.

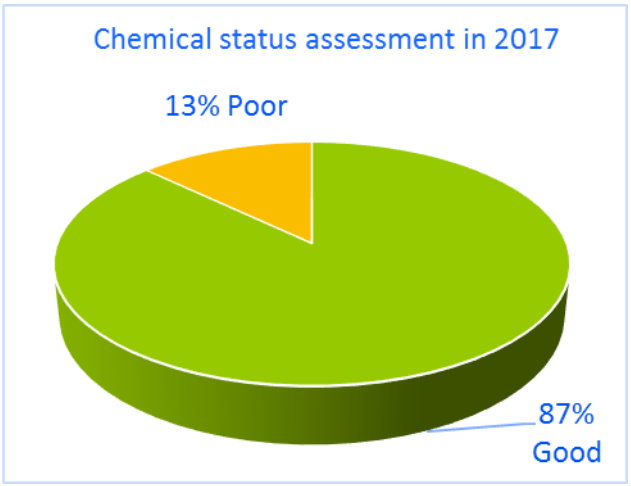

Figure III.1: GWB`s chemical status in 2017 statistics in Tisza basin

Data and information reported by Tisza countries for TRB GWBs status indicate that 66% of GWB`s are in *good* status quantitative and 34% are in *poor* quantitative status as presented in Figure III.2.

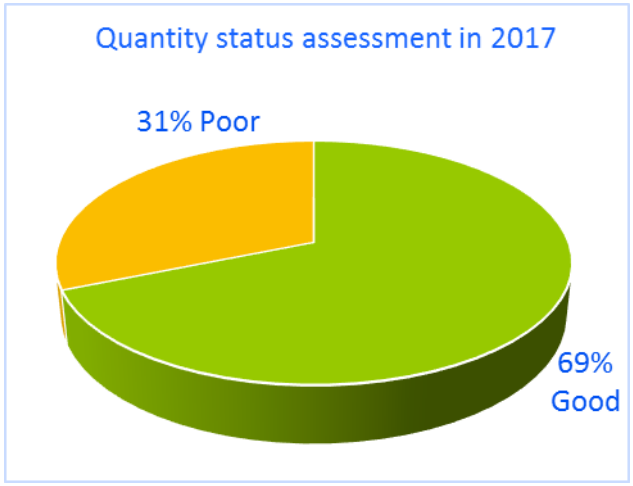

Figure III.2: GWB`s quantitative status in 2017 statistics in Tisza basin

Abbreviations

ITRBMP	Integrated Tisza River Basin Management Plan
GWB	Groundwater Body
WFD	Water Framework Directive
TRB	Tisza River Basin

References

Integrated Tisza River Basin Management Plan (ITRBM Plan) Data Collection - Groundwater

Implementation of the Joint Tisza Programme of Measures in the groundwater sector 2010.

https://www.icpdr.org/main/danube-basin/tisza-basin

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