

Transboundary GWBs of Danube RBD importance

Methodology for delineation, assessing and presenting the status

This ICPDR product is based on national information provided by the Contracting Parties to the ICPDR (AT, BA, BG, CZ, DE, HR, HU, MD, RO, RS, SI, SK, UA) and CH, except for the following: EuroGlobalMap v2.1 from EuroGeographics was used for national borders of AT, CZ, DE, HR, HU, MD, RO, SI, SK and UA; ESRI data was used for national borders of AL, ME, MK; Shuttle Radar Topography Mission (SRTM) from USGS's Seamless Data Distribution System was used as topographic layer; data from the European Commission (Joint Research Center) was used for the outer border of the DRBD of AL, IT, ME and PL.

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ICPDR Groundwater Task Group

- During Water Framework Directive (WFD) implementation - many technical questions arose - e.g. identification of transboundary GWBs of basin-wide importance, bilateral agreements and harmonisation of the activities.
- GW TG established in 2004
- deals with groundwater related issues of basin wide concern

ICPDR Groundwater Task Group

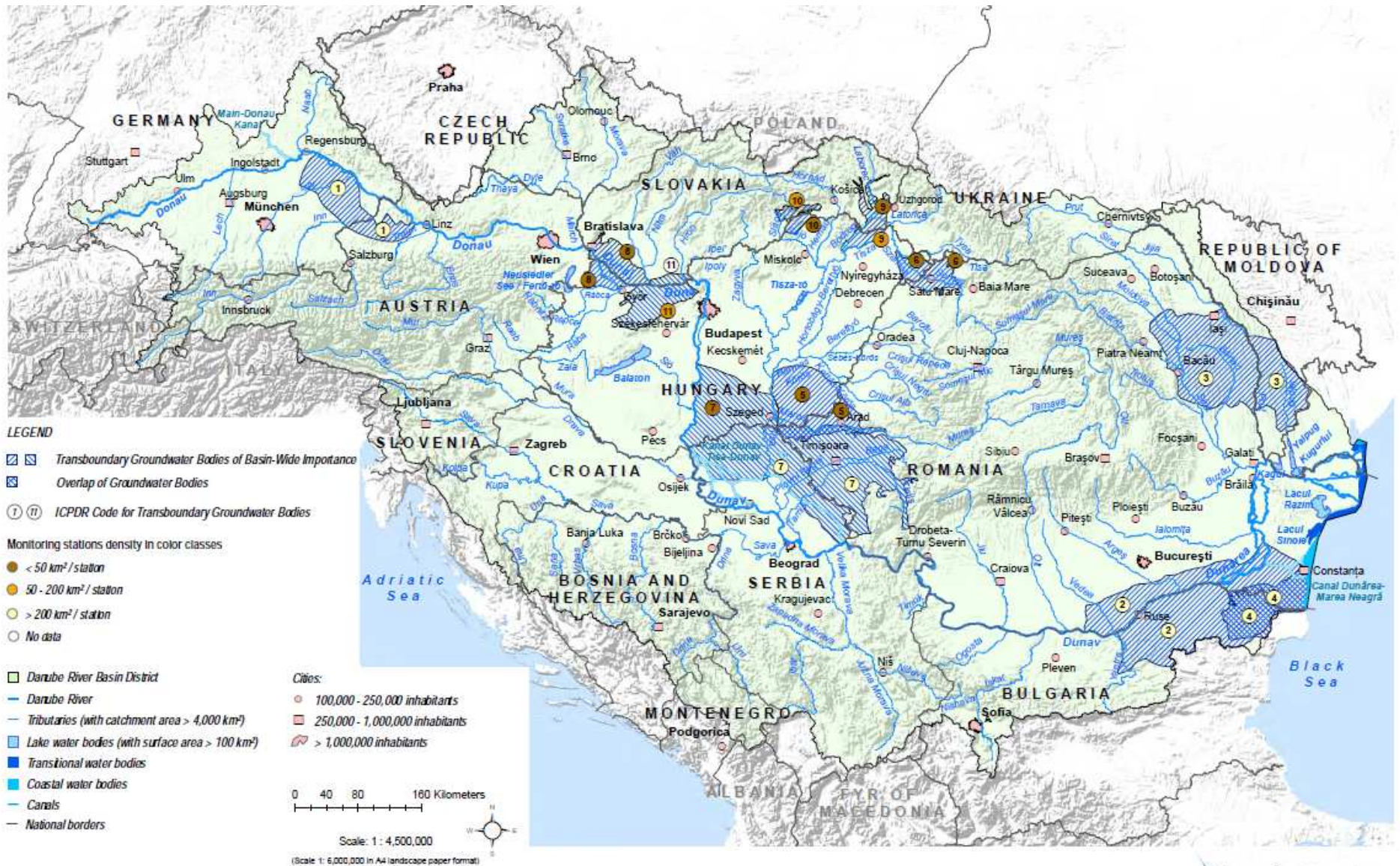
Overall objective of the GW TG

- Support the **implementation of the EU WFD** in the Danube RBD for groundwater (quantitative & chemical / pressures and measures).
- Enable and support **international coordination** (required by WFD) and contribute to **transboundary harmonisation** of implementation.
- Provide ICPDR with **information on state** of GWBs of basin-wide importance, in line with the Danube River Protection Convention (DRPC) and the relevant EU legislation.
- Coordinate the **monitoring programmes** necessary to ensure that the appropriate information is available.
- Provide the ICPDR with all further groundwater related information necessary for preparation of **future Danube-level reports** to come.

ICPDR GW-bodies = GW-bodies of basin wide importance

Criteria:

- Important **transboundary** GW-bodies in the Danube River Basin
 - Important due to:
 - **Size:** GW-body > 4,000 km²;
 - or**
 - **Various criteria:** e.g. socio-economic importance, uses, impacts, pressures, interaction with aquatic eco-system.
 - Criteria need to be agreed bilaterally.
- 11 GWBs nominated



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ICPDR GW-bodies = GW-bodies of basin wide importance

Code	Size [km ²]	Overlying strata [m]	Criteria for importance	Status	
				Quality	Quantity
1-DE-AT	5,900	100-1000	Intensive use	Good	Good
2-BG-RO	30,147	0-600	> 4000 km ²	Good	Good
3-RO-MD	21,626	0-150	> 4000 km ²	Good	Good
4-RO-BG	7,027	0-10	> 4000 km ²	Good	Good
5-RO-HU	7,699	2-30	GW resource, DRW protection	Poor	Good
6-RO-HU	2,475	5-30	GW resource, DRW protection	Good	Good
7-RO-RS-HU	29,012	0-125	> 4000 km ² , GW use, GW resource, DRW protection	G/G**/P	G/P**/P
8-SK-HU	3,363	2-5	GW resource, DRW protection	G/P	Good
9-SK-HU	2,216	2-10	GW resource	Good	Good
10-SK-HU	1,090	0-500	DRW protection, dependent ecosystem	Good	Good
11-SK-HU	3,811	0-2500	Thermal water resource	Good	G/P

ICPDR GW-bodies = GW-bodies of basin wide importance

	AT	BA	BG	RS	CZ	DE	HR	HU	MD	RO	SI	SK	UA
AT				0	1		0				0	0	
BA			0				0						
BG				0						2			
RS							0	1		1			
CZ						0						0	
DE													
HR								0			0		
HU										3	0	4	0
MD													0
RO													0
SI													
SK													0
UA													

Matrix of common borders and number of connected and bilaterally nominated transboundary GW-bodies of basin wide importance

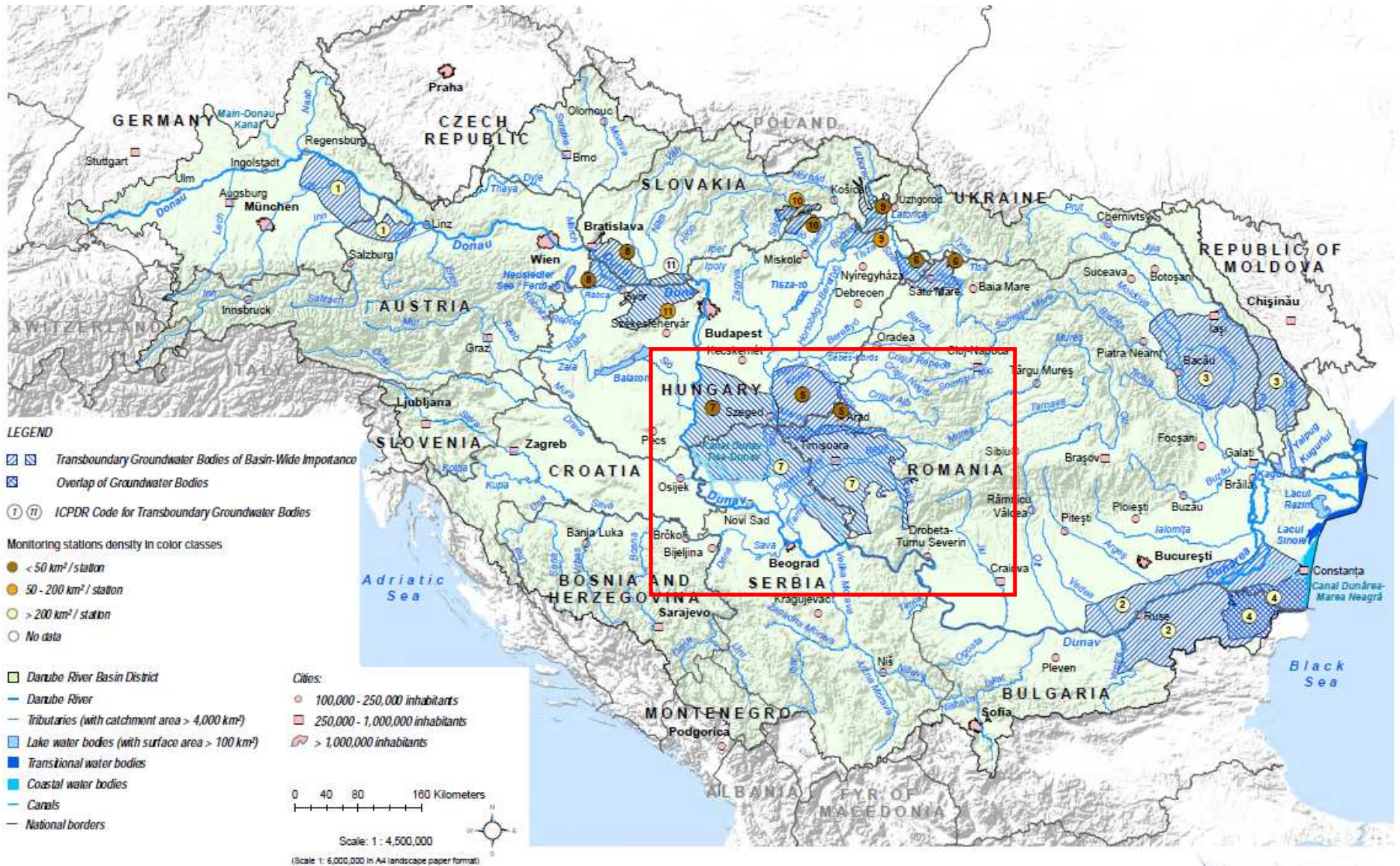
Identification / Delineation

1. Horizontal and vertical delineation of national GWBs
 2. Identification of connected national GWBs
 3. Application of ICPDR criteria
 4. Bilateral agreement on nomination
 5. Bi-(multi-)lateral harmonisation of boundaries
- Very helpful: common conceptual models (understanding) for each transboundary GW-body (as a whole)
 - Regular update of nomination

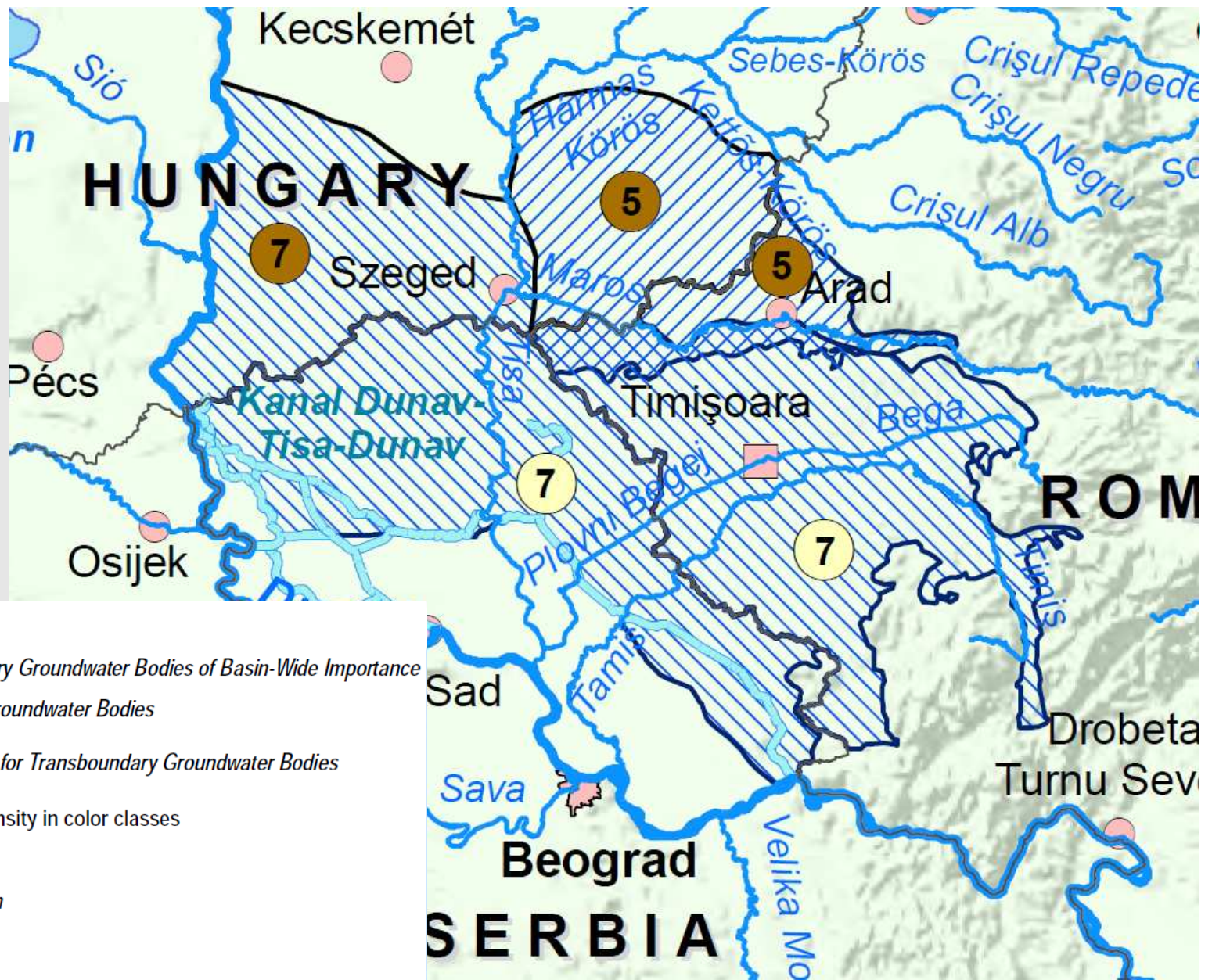
Delineation

- Transboundary GW-bodies of basin wide importance (ICPDR GW-bodies) are divided into national parts of ICPDR GW-bodies which can furthermore consist of a number of individual national GWBs.


GWB-1	AT-1 & DE-1	GWB-9	SK-9 & HU-9	HU_sp.2.5.2 HU_p.2.5.2
<p>ICPDR GW-body: Transboundary GW-body of basin-wide importance (e.g. GWB-1). ICPDR GW-bodies are divided into national parts of ICPDR GW-bodies (e.g. AT-1 & DE-1)</p>		<p>If the whole national part of an ICPDR GW-body (e.g. HU-9) consists of several individual national GW-bodies, it is called aggregated GW-body.</p> <p>“Group of GW-bodies” = terminology of WFD</p>		






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LEGEND

 *Transboundary Groundwater Bodies of Basin-Wide Importance*

 *Overlap of Groundwater Bodies*

  *ICPDR Code for Transboundary Groundwater Bodies*

Monitoring stations density in color classes

-  *< 50 km² / station*
-  *50 - 200 km² / station*
-  *> 200 km² / station*
-  *No data*

Example: ICPDR GW-body 7

ICPDR GW-body Code/Name	National parts of ICPDR GW-body	National GWBs Codes	Size (km ²)	National size (km ²)	Aquifer characterisation		Main use	Overlying strata	Criteria for importance	bilaterally agreed with
					Aquifer Type	Con-fined				
7: <u>Upper Pannonian – Lower Pleistocene/ Vojvodina/ Duna-Tisza köze</u> deli r.	RO-7	ROBA18	29,012	11,408	P	Yes/ Yes/ No	DRW, AGR, IND, IRR	0–30, 4–190, 2–125	> 4000 km ² , GW use, Important GW resource, Protection of DRW res.	RO, RS, HU
	RS-7	RS_TIS_GW_I_1 RS_TIS_GW_SI_1 RS_TIS_GW_I_2 RS_TIS_GW_SI_2 RS_TIS_GW_I_3 RS_TIS_GW_SI_3 RS_TIS_GW_I_4 RS_TIS_GW_SI_4 RS_TIS_GW_I_7 RS_TIS_GW_SI_7 RS_D_GW_I_1 RS_D_GW_SI_1		10,506						
	HU-7	HU_sp.1.15.1 HU_p.1.15.1 HU_sp.1.15.2 HU_p.1.15.2 HU_sp.2.11.1 HU_p.2.11.1 HU_sp.2.11.2 HU_p.2.11.2 HU_sp.2.16.1 HU_p.2.16.1	7,098							

Characterisation / Risk Assessment

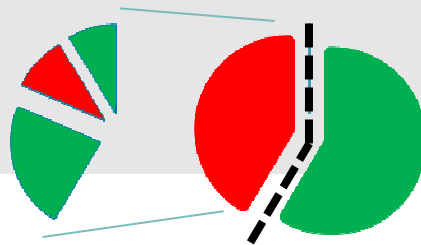
- Common characterisation for ICPDR GW-body as a whole.
- Templates developed to collect harmonised data.
- The risk assessment is performed on national criteria both for quality and quantity.
- Hence the approaches are different and the result may differ for the national parts of ICPDR GW-bodies.
- Regular update of characterisation & risk assessment

Assessment of GWB status

- The status assessment is performed on national criteria and on national methodology both for quality and quantity
- Status assessment for each national GWB.
- Hence the approaches and criteria are different and the results may differ.

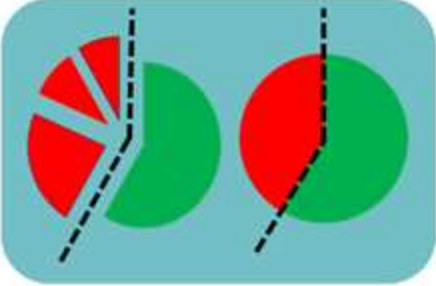

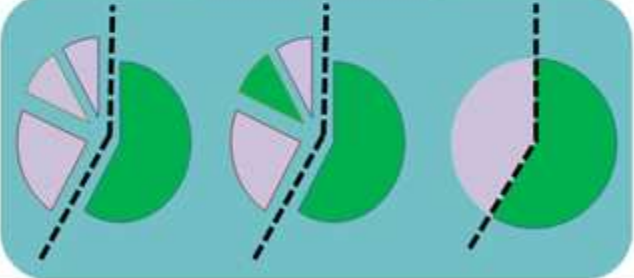
„Aggregation“ and presentation of GWB status

- The result of the status assessment is solely to be provided for the whole **national part of an ICPDR GW-body**.
- ➔ Need for ‘aggregation’ of status of individual national GWB to status of national part of ICPDR GW-body.
- No status aggregation to the whole ICPDR GW-body!
- **Principle: 1 out, all out:** If a national part of an ICPDR GW-body consists of several individual national GW-bodies the poor status of only one national GW-body causes poor status for the whole national part of an ICPDR GW-body.



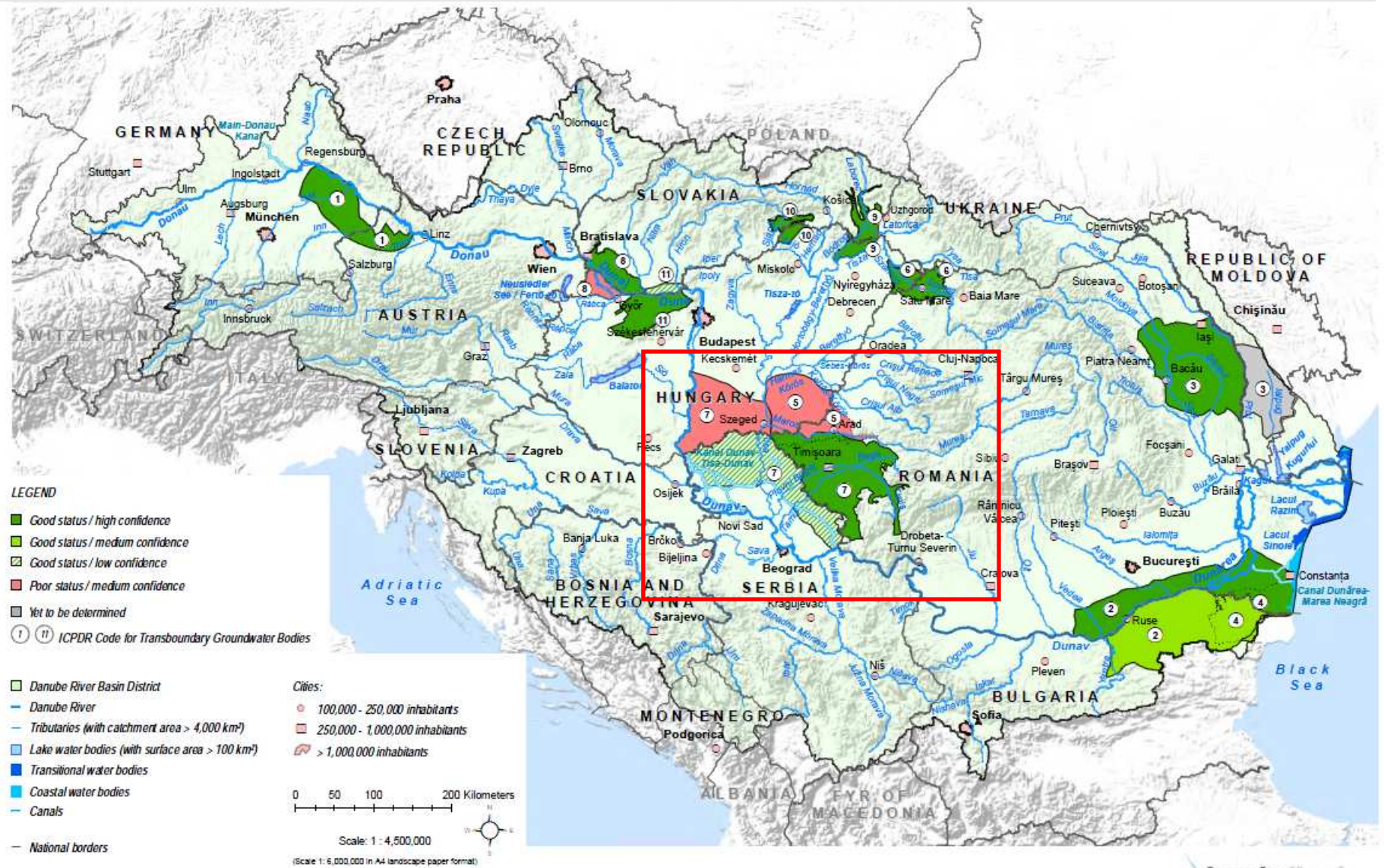
Confidence in the status assessment

Confidence is indicating the (in)homogeneity of the status within an aggregated GW-body

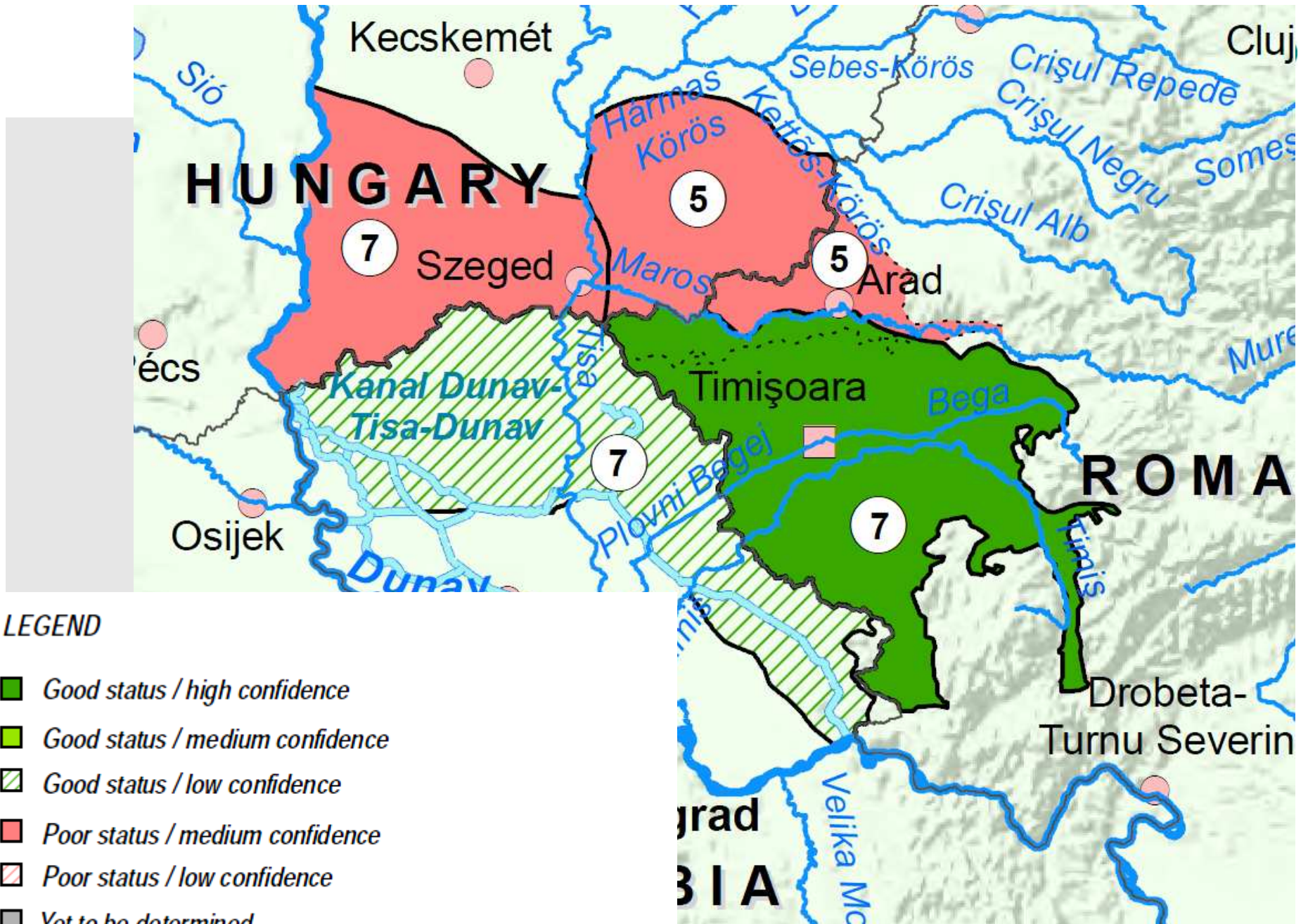
<p>High confidence</p> <ol style="list-style-type: none"> 1.) Status assessment is based on WFD compliant monitoring data. 2.) If the national part of an ICPDR GW-body (the aggregated GW-body) is formed by more than one GW-body or groups of GW-bodies, all have the same status. 	
<p>Medium confidence</p> <ul style="list-style-type: none"> - If the national part of an ICPDR GW-body is formed by more than one GW-body or groups of GW-bodies, the status assessment is based on WFD compliant monitoring data and not all have the same status. 	
<p>Low confidence</p> <ul style="list-style-type: none"> - Status assessment is based on risk assessment data. 	

Poor status
 Good status
 Risk

[Status of discussion: 7th Meeting of the GW TG in October 2008]



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LEGEND

- Good status / high confidence*
- Good status / medium confidence*
- Good status / low confidence*
- Poor status / medium confidence*
- Poor status / low confidence*
- Yet to be determined*

① ⑪ *ICPDR Code for Transboundary Groundwater Bodies*

Outlook

- Contribute to harmonise different approaches for delineation, characterisation, risk assessment, establishment of threshold values and status assessment.
- Promote development of common conceptual models for ICPDR GW-bodies as a whole.
- Adapt monitoring to fill data gaps and uncertainties.
- Need for intensive bi- and multilateral co-operation to achieve a harmonisation of data sets for transboundary GW-bodies.
- Pay attention to the interactions of GW with surface water or directly dependent ecosystems.
- Aspect of different groundwater horizons needs further discussion and clarification.
- Contribute to regular WFD reporting

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