

# Theme 3: Transboundary aquifers in Europe

icpdr iksd

International  
Commission  
for the Protection  
of the Danube River  
Internationale  
Kommission  
zum Schutz  
der Donau

## Managing Transboundary Groundwater Bodies in the Danube River Basin



Andreas Scheidleder  
Berlin, 22 August, 2013

---

# Content

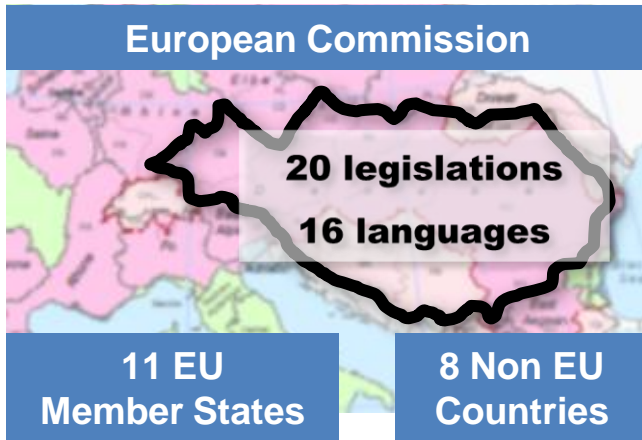
---



- International coordination  
Danube Convention/Commission
- Importance of groundwater in the Danube Basin
- GW-bodies of basin-wide importance
- GWB management

# Danube River Protection Convention

in force since 1998



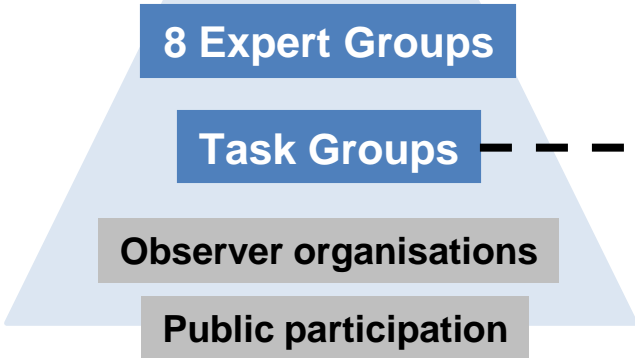
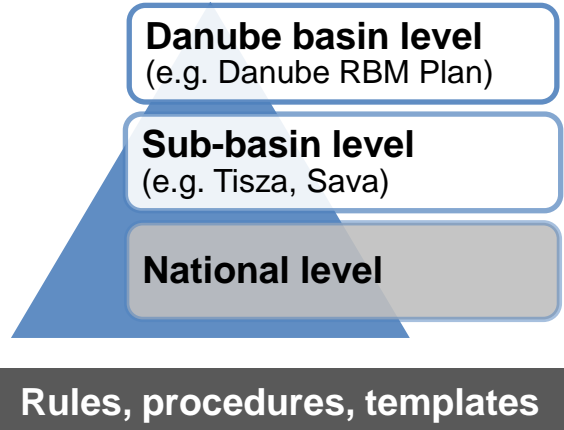
**15 Heads of Delegation**



Coordinates the implementation of **WFD & Floods Directive** throughout entire Danube Basin

**Secretariat**

**established 1999**  
**situated in Vienna**

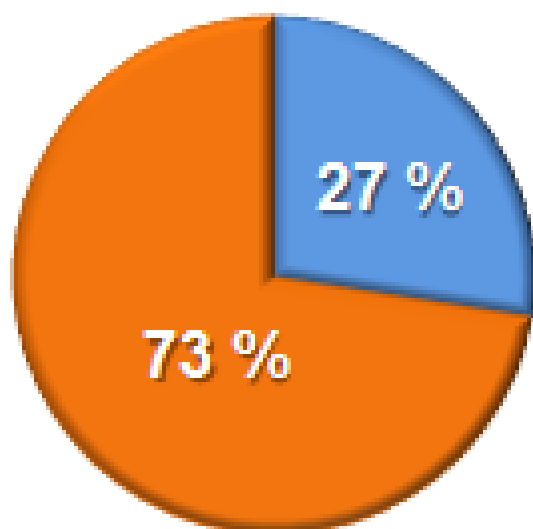


# Importance of Groundwater in the Danube Basin

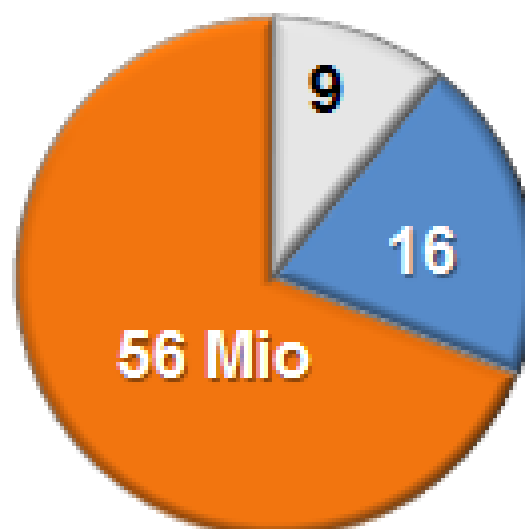
icpdr iksd

International  
Commission  
for the Protection  
of the Danube River  
Internationale  
Kommission  
zum Schutz  
der Donau

## Drinking water abstraction by source



## Population served by source (in Mio)



■ Surface water ■ Groundwater ■ unknown

# Groundwater Task Group

- Supports international co-ordination and transboundary harmonisation of WFD implementation
- Deals with **GW related issues of Danube Basin-wide concern**
- Establishes harmonised criteria, procedures and templates which are also used in Danube Sub-basins (Tisza, Sava)
- Intensive dialog - exchange of experience, best practice, data, information
- **GW Guidance Document** – transparency of principles and decisions

# GW-bodies of Danube basin-wide concern



## Transboundary

## Important due to:

- Size GW-body > 4,000 km<sup>2</sup>;

or

- Bilaterally agreed criteria e.g. importance, uses, impacts, pressures, interaction with eco-systems.

## → 11 ICPDR GWBs nominated

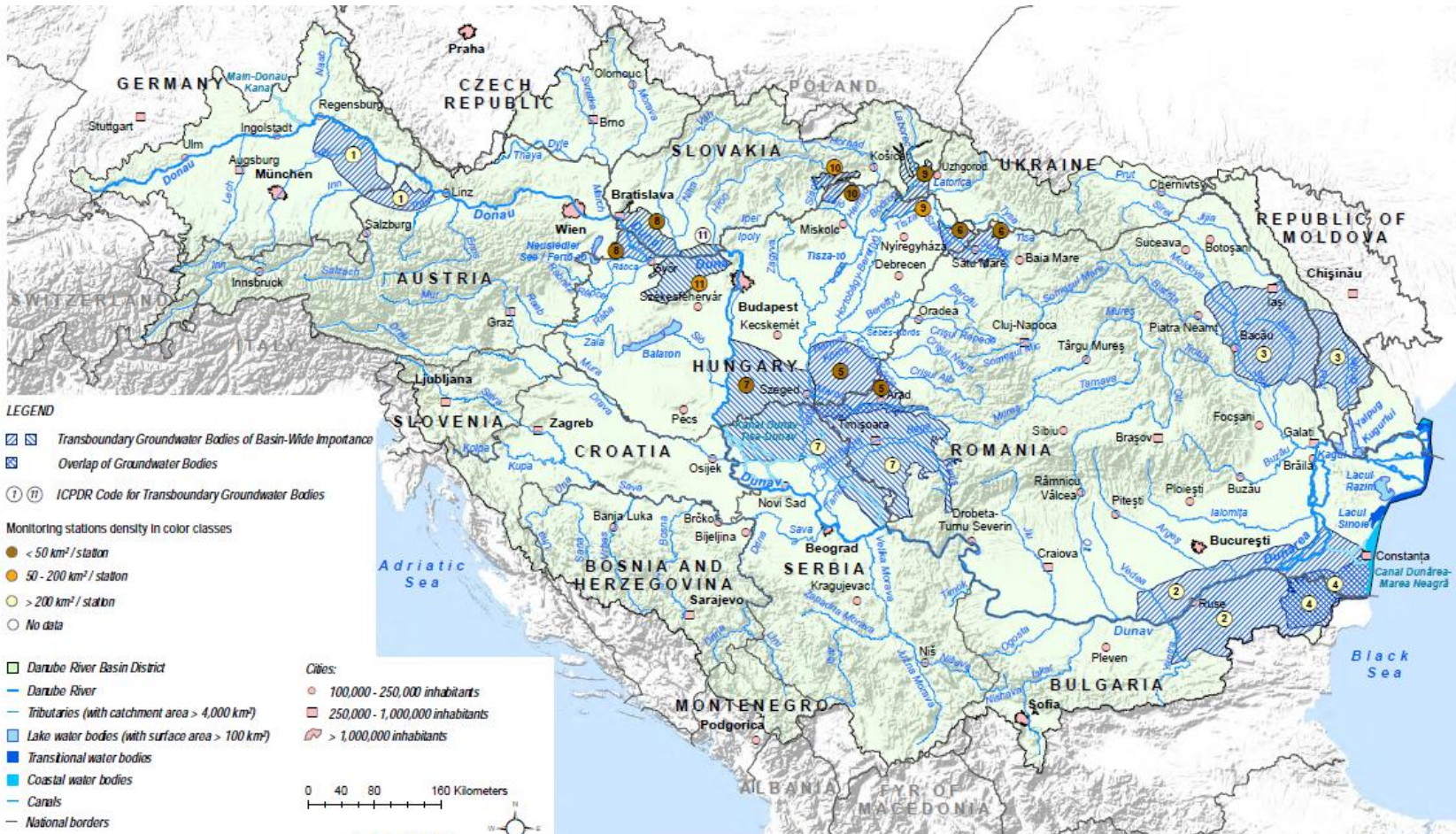
- Bi-(tri-)lateral agreement on nomination
- Bi-(tri-)lateral harmonisation of boundaries
- Regular update



# GW-bodies of Danube basin-wide concern

icpdr iksd

International Commission for the Protection of the Danube River  
 Internationale Kommission zum Schutz der Donau



# GW-bodies of Danube basin-wide concern

icpdr iksd

International  
Commission  
for the Protection  
of the Danube River

Internationale  
Kommission  
zum Schutz  
der Donau

Code	Size [km <sup>2</sup> ]	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 <sup>2</sup>	Good	Good
3-RO-MD	21,626	0-150	> 4000 km <sup>2</sup>	Good	Good
4-RO-BG	7,027	0-10	> 4000 km <sup>2</sup>	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 <sup>2</sup> , 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 iksd

International  
Commission  
for the Protection  
of the Danube River

Internationale  
Kommission  
zum Schutz  
der Donau



# Groundwater Management

icpdr iksd

International Commission for the Protection of the Danube River  
Internationale Kommission zum Schutz der Donau

Joint Programme of Measures

Identification of transboundary GWBs

Criteria & Multi-lateral agreement

Common characterisation and risk assessment

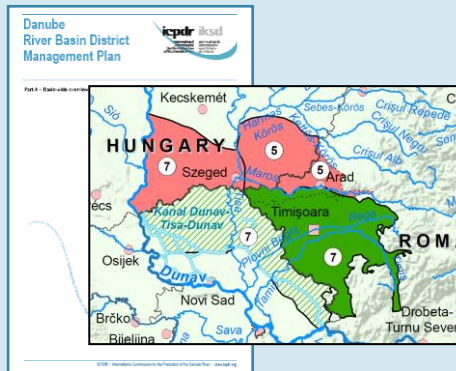
Templates

Significant water management issues

Nutrient Pollution

Hazardous Substances Pollution

Reporting RBMP, Yearbooks



Basin-wide Vision and management objectives

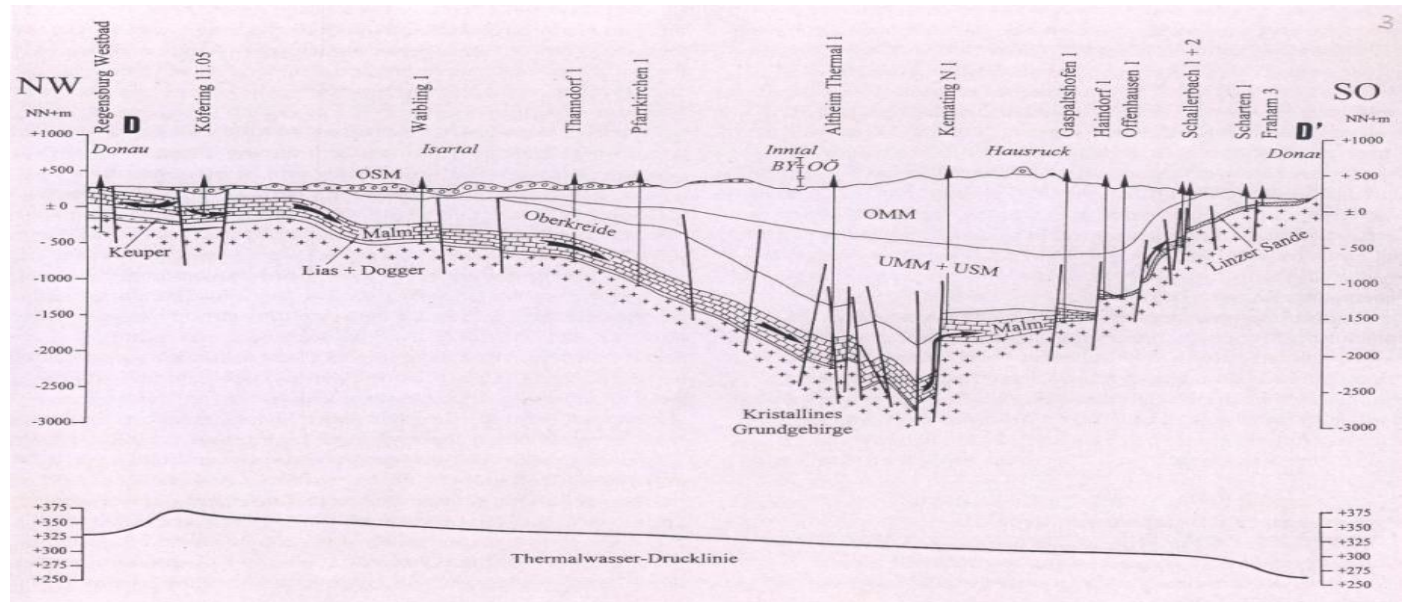
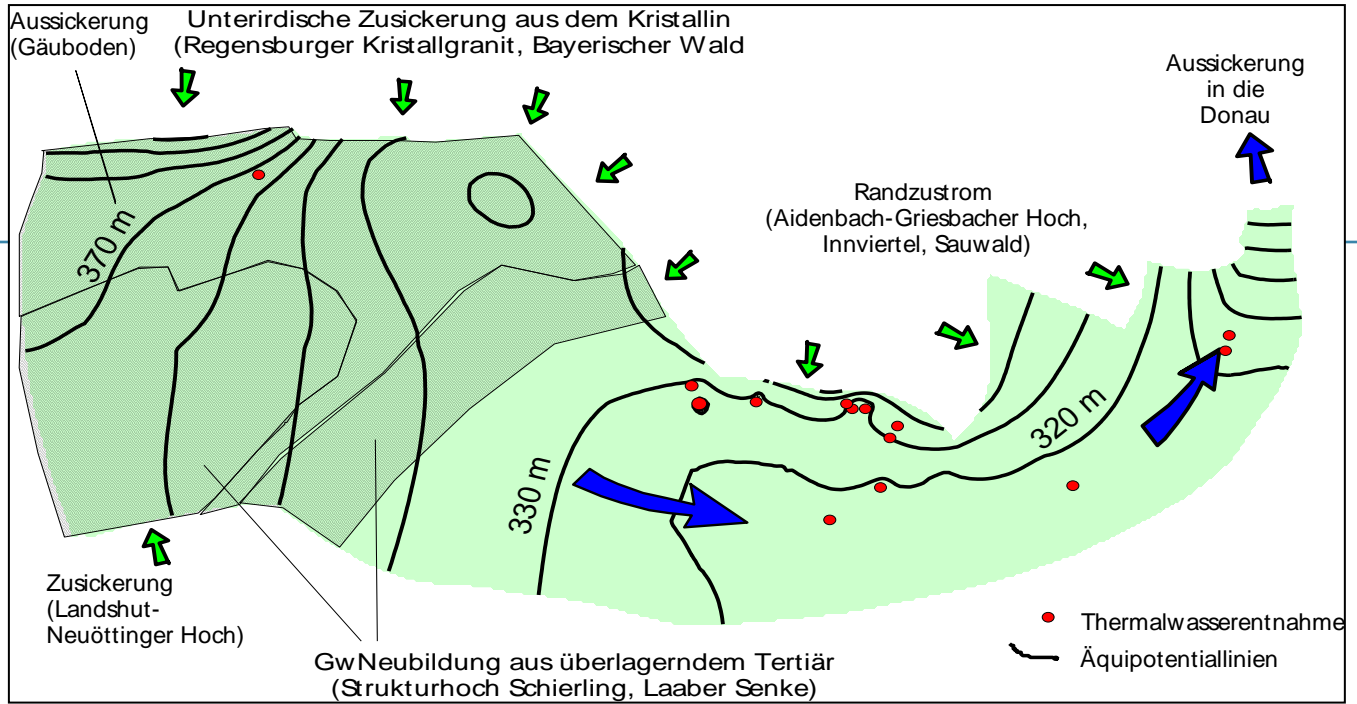
Data analysis & Status presentation

Criteria, Rules, Templates

Coordinated monitoring (data exchange)

Templates

# AT-DE

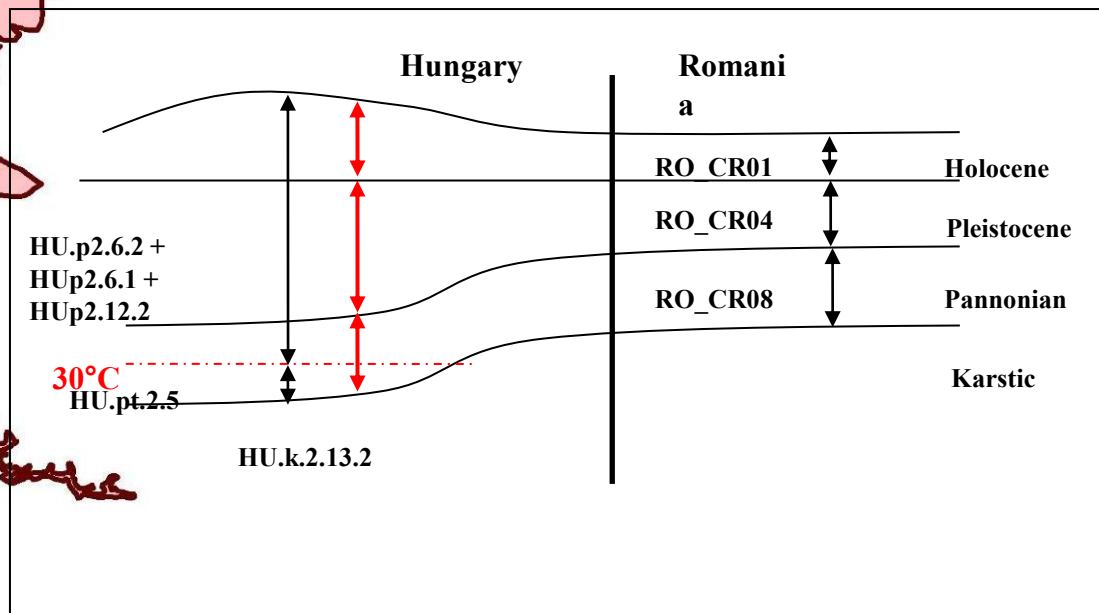
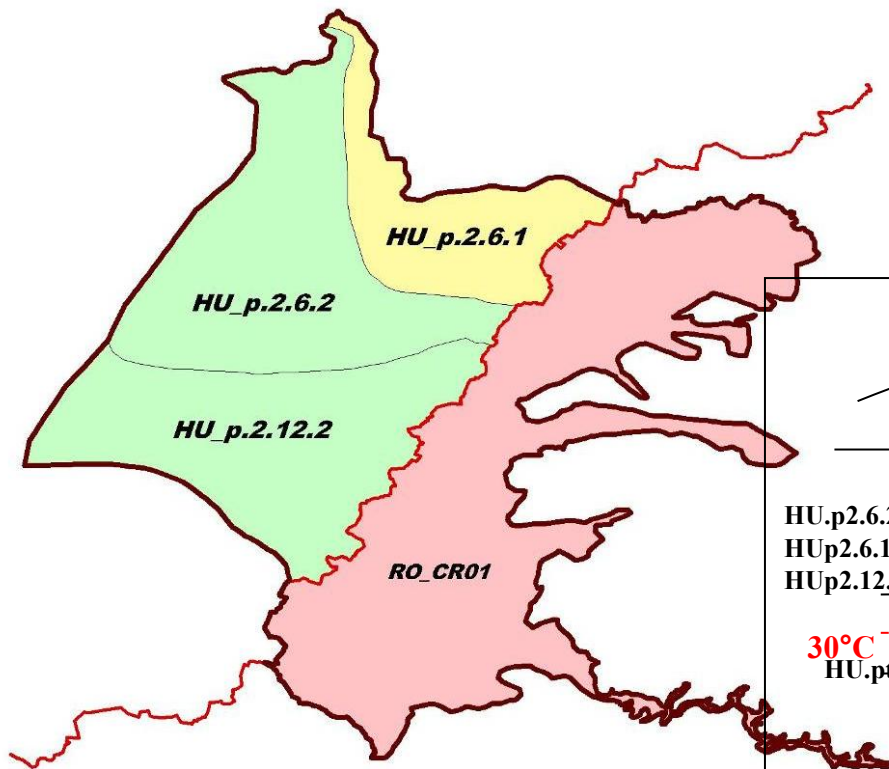


# Delineation of Hungarian-Romanian transboundary Holocene porous GWBs in the Körös/Crisuri River Basin

# HU-RO

icpdr iksd

International Commission for the Protection of the Danube River  
 Internationale Kommission zum Schutz der Donau



- Holocene\_GWBs\_RO\_HU
- HU-RO country border
- Holocene\_RO\_CR01
- Cold porous GWB\_HU\_Körös\_River\_Basin
- upward flow
- downward flow

1st Map of Annex 2





ICPDR GW-body Code/Name	National parts of ICPDR GW-body	National GWBs Codes
7:  Upper Pannonian – Lower Pleistocene/ Vojvodina/ Duna-Tisza köze deli r.	RO-7	ROBA18
	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
	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



*Transboundary Groundwater Bodies of Basin-Wide Importance*

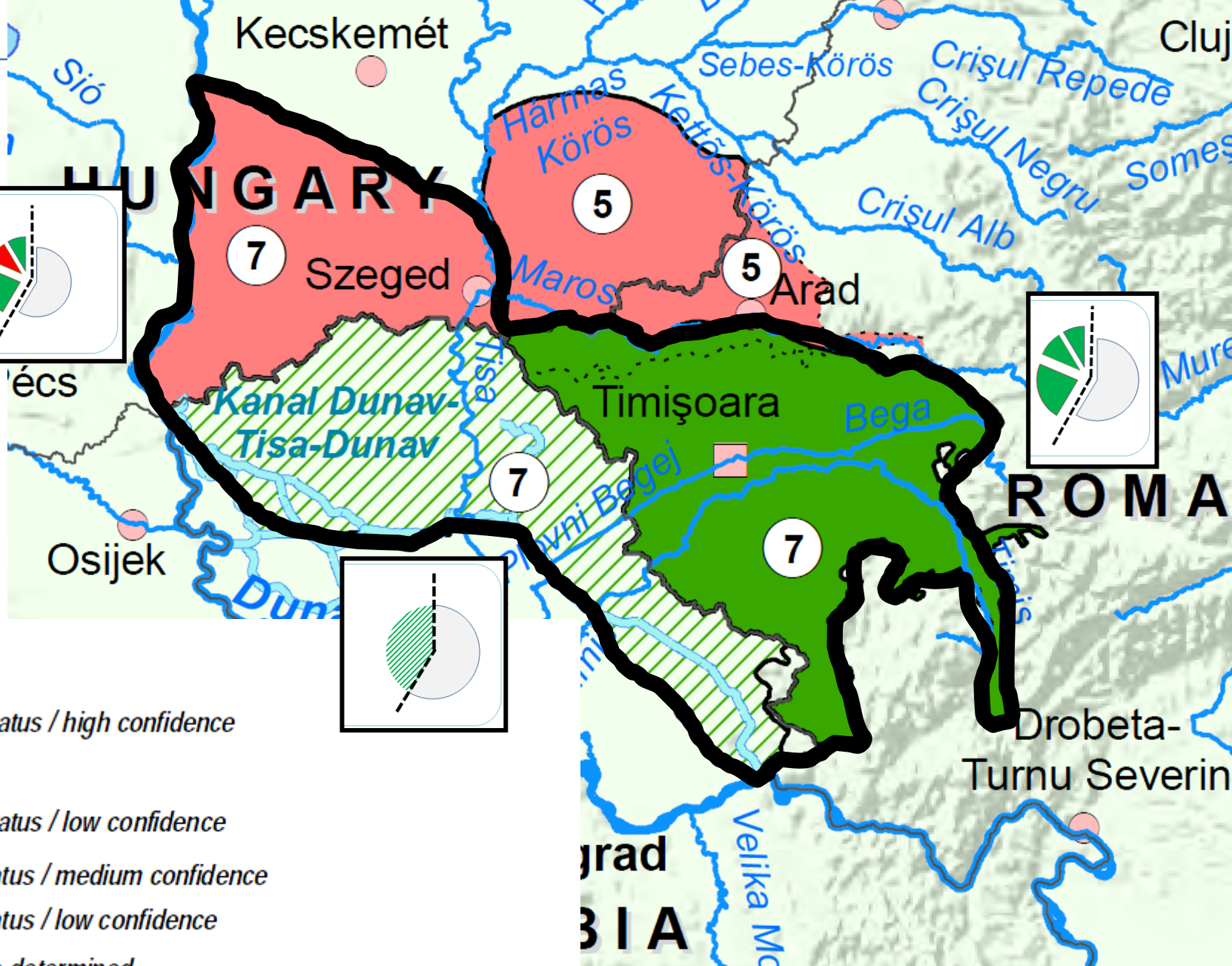
*Overlap of Groundwater Bodies*

*ICPDR Code for Transboundary Groundwater Bodies*

Monitoring stations density in color classes

- < 50 km<sup>2</sup> / station*
- 50 - 200 km<sup>2</sup> / station*
- > 200 km<sup>2</sup> / station*
- No data*



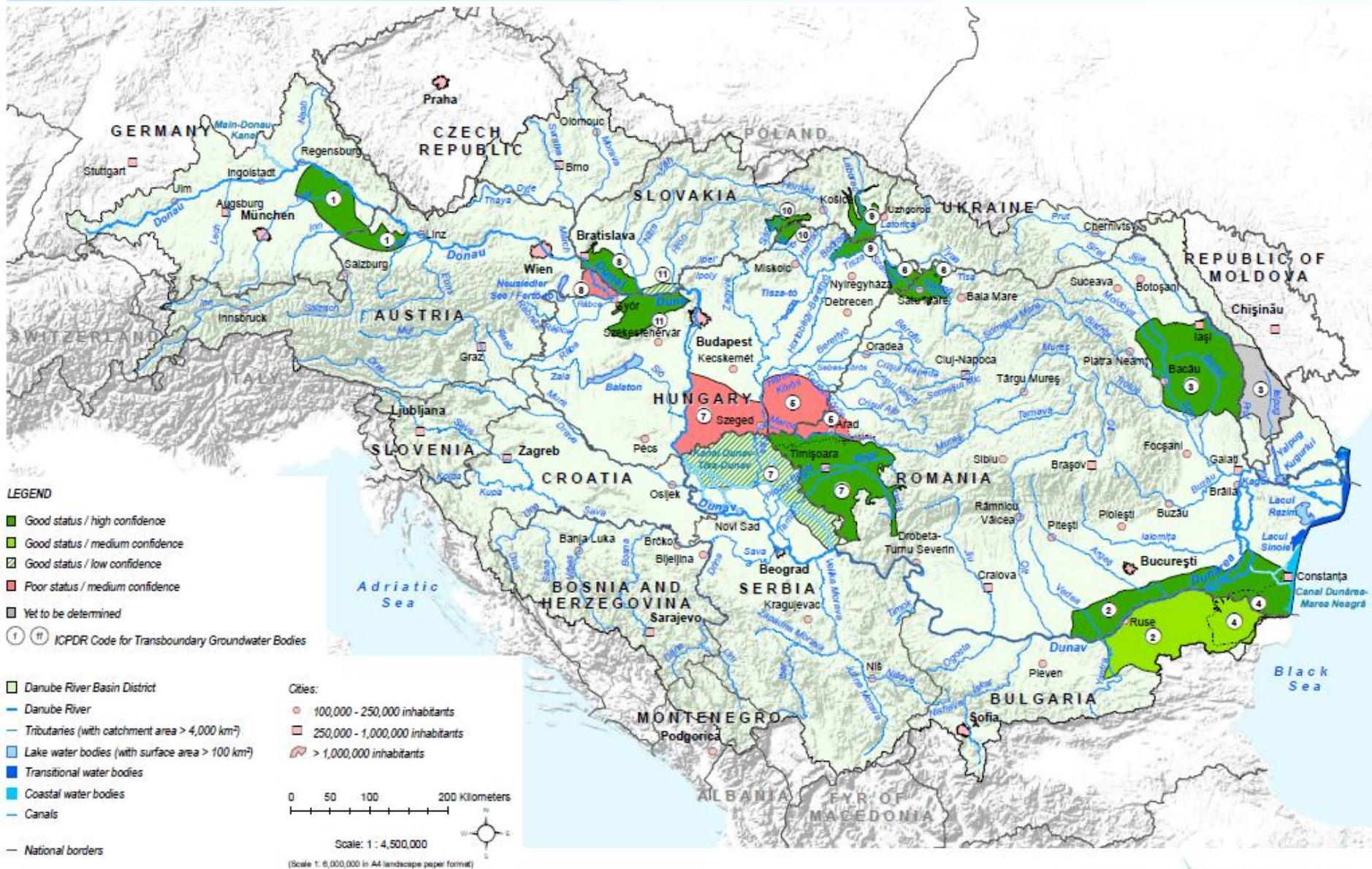


**LEGEND**

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

① ⑪ ICPDR Code for Transboundary Groundw.





# GW chemical status

## achievement of good status objectives



CODE	NAME of ICPDR GW-body	national part	ref. year	"at risk"	Status	if at risk or in poor status:	for which parameters	Failed general assessment of GWB as a whole	Saline or other intrusions	Failed achievement of Article 4 objectives for associated surface waters	Significant damage to GW dependent terrestrial ecosystem	Art 7 drinking water protected area affected	increasing trend exceeding starting points of trend reversal
				yes / possibly / no	good / poor / unknown		parameter	Yes / No / Unknown (parameter)	Yes / No / Unknown (parameter)	Yes / No / Unknown (parameter)	Yes / No / Unknown (parameter)	Yes / No / Unknown (parameter)	Yes / No / Unknown (parameter)
GWB-1	Deep Groundwater Body – Thermal Water	DE-1	2009	-	good		-	no	no	no	no	no	no
		AT-1	2009	-	good		-	no	no	no	no	no	no
GWB-2	Upper Jurassic – Lower Cretaceous GWB	BG-2	2009	-	good		-	no	no	no	no	no	no
		RO-2	2009	-	good		-	no	no	no	no	no	no
GWB-3	Middle Sarmatian - Pontian GWB	RO-3	2009	-	good		-	no	no	no	no	no	no
		MD-3	2009	-	good		-	no	no	no	no	no	no
GWB-4	Sarmatian GWB	RO-4	2009	-	good		-	no	no	no	no	no	no
		BG-4	2009	-	good		-	no	no	no	no	no	no
GWB-5	Mures / Maros	RO-5	2009	-	poor		nitrates	yes*	no	no	no	yes	unknown**
		HU-5	2009	-	poor		nitrates	yes	no	no	no	no	no
GWB-6	Somes / Szamos	RO-6	2009	-	good		-	no	no	no	no	no	no
		HU-6	2009	-	good		-	no	no	no	no	no	no
GWB-7	Upper Pannonian – Lower Pleistocene / Vojvodina / Duna-Tisza köze deli r.	RO-7	2009	-	good		-	no	no	no	no	no	no
		RS-7	2009	no	unknown		-	no	no	no	no	no	no
		HU-7	2009	-	poor		nitrates, ammonium	yes nitrates	no	yes nitrates	no	no	yes, nitrates, ammonium
GWB-8	Podunajska Basin, Zitny Ostrov / Szigetköz, Hanság-	SK-8	2009	-	good		-	no	no	no	no	no	no
		HU-8	2009	-	poor		nitrates	yes	no	no	no	no	no
GWB-9	Bodrog	SK-9	2009	-	good		-	no	no	no	no	no	no
		HU-9	2009	-	good		-	no	no	no	no	no	no
GWB-10	Slovensky kras / Aggtelek-hgs.	SK-10	2009	-	good		-	no	no	no	no	no	no
		HU-10	2009	-	good		-	no	no	no	no	no	no
GWB-11	Komarnanska Vysoka Kryha / Dunántúli-khgs. északi r.	SK-11	2009	-	good		-	no	no	no	no	no	no
		HU-11	2009	-	good		-	no	no	no	no	no	no

# Overall objective...

Visions and management objectives

Joint Programme of Measures

National Measures

**Good Groundwater Status**



---

# Outlook...

---



- Further **harmonise approaches** for delineation, characterisation, risk & status assessment.
- Promote common **conceptual models** for each GWB.
- Further adapt **monitoring** to fill data gaps and uncertainties.
- Permanent need for intensive bilateral co-operation
- Preparation of **next RBMP 2015-2021**  
(1. step: Danube Basin Analysis 2013)

[www.icpdr.org](http://www.icpdr.org)

**icpdr iksd**

International  
Commission  
for the Protection  
of the Danube River

Internationale  
Kommission  
zum Schutz  
der Donau

Thank you for your attention

Deutschland // Österreich // Česká republika // Slovensko // Magyarország // Slovenija // Hrvatska // Bosna i Hercegovina // Srbija // Crna Gora // România // България // Moldova // Україна

Andreas Scheidleder

[andreas.scheidleder@umweltbundesamt.at](mailto:andreas.scheidleder@umweltbundesamt.at)

Igor Liska

[igor.liska@unvienna.org](mailto:igor.liska@unvienna.org)

ENVIRONMENT  
AGENCY AUSTRIA

**umweltbundesamt**<sup>U</sup>

lebensministerium.at



**icpdr iksd**

International  
Commission  
for the Protection  
of the Danube River

Internationale  
Kommission  
zum Schutz  
der Donau