
Groundwater Monitoring



Annex 12 of the DRBM Plan



Table 1: List of nominated transboundary groundwater bodies (GWBs) and groups of GWBs

Name	MS_CD	Size (km ²)	National size (km ²)	Aquifer characterisation		Main use	Overlying strata (m)	Criteria for importance	Bilaterally agreed with
				Use	Typ. Confined:				
1: Deep Groundwater Body – Thermal Water	DEGK1110	5900	4250	K	Yes	SPA, CAL	100 – 1000	Intensive use	AT, DE
	ATGK100158		1650						
2: Upper Jurassic – Lower Cretaceous GWB	BG1G0000J3K051	24 465	13 034	F, K	Yes	DRW, AGR, IND	0 - 600	>4000 km ²	RO, BG
	RO_DL06		11,427						
3: Middle Sarmatian - Pontian GWB	ROPR05	21,626	11,964	P	Yes	DRW, AGR/DRW, AGR, IND	0 - 150	>4000 km ²	MD, RO
	MDPR01		9662						
4: Sarmatian GWB	RODL04	5486	2178	K, F-P	No	DRW, AGR, IND	0 - 60	>4000 km ²	BG, RO
	BG1G00000N1049		3308						
5: Mures / Maros	RO_MU20	7699	2710	P	No/ Yes	DRW, IRR, IND	2 - 30	Important GW resource, protection of DRW res.	RO, HU
	RO_MU22		4989						
	HU_sp.2.13.1								
	HU_p.2.13.1								
	HU_sp.2.13.2								
HU_p.2.13.2									
6: Somes / Szamos	RO_SO01	275	1440	P	No/ Yes	DRW, IRR	2 - 30	Important GW resource, protection of DRW res.	RO, HU
	RO_SO13		1035						
	HU_sp.2.1.2								
	HU_p.2.1.2								
	HU_sp.2.3.2								
HU_p.2.3.2									
7: Upper Pannonian – Lower Pleistocene /Vojvodina/ Duna-Tisza köze deli r.	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_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_sp.1.15.1		7098						
	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									
8: Podunajska Basin, Zitny Ostrov / Szigetköz,	SK1000300P	3363	2211	P	No	DRW, IRR, AGR, IND	2 - 5	Important GW resources, protection	SK, HU
	SK1000200P								

	HU_sp.1.1.1 HU_p.1.1.1 HU_sp.1.1.2 HU_p.1.1.2		1152						
9: Bodrog	SK1001500P HU_sp.2.5.2 HU_p.2.5.2	2216	1466 750	P	Yes	DRW,IRR	2 - 10	Important GW resource	SK, HU
10: Slovensky kras / Aggtelek-hgs.	SK200480KF HU_k.2.2	1090	598 492	K,F K	Yes/ No	DRW, OTH	0 - 500	Protection of drinking water resources, GW depend. ecosystems (springs, caves)	SK, HU
11: Komarnanska Vysoka Kryha / Dunántúli-khgs. északi r.	SK300010FK SK300020FK HU_k.1.2 HU_kt.1.2 HU_k.1.4	3811	250 313 3248	F,K K	Yes/ No	DRW, SPA, CAL	0 - 2500	Thermal water resource	SK, HU
Name	Name of the important transboundary groundwater body. Max. 100 digits, no restrictions concerning language, central European encoding (CEE), different national names divided by slash.								
MS_CD	Member State Code which is a unique identifier. ISO-Code 2-digits & max. 22 digits. National codes from all countries sharing the GWB have to be named to identify the bodies in the respective part B (National Reports).								
Size: km²	Whole area of the transboundary groundwater body covering all countries concerned (in km ²).								
National size: km²	Each country indicates size of national territory (in km ²).								
Aquifer characterisation	[Aquifer Type: Predominantly P = porous; K = karst; F = fissured]. Multiple selections possible: Predominantly porous, karst, fissured and combinations are possible. Main type should be listed first. [Confined: Yes / No]								
Main use	[DRW = drinking water; AGR = agriculture; IRR = irrigation; IND = Industry; SPA = balneology; CAL = caloric energy; OTH = other] Multiple selections possible.								
Overlying strata: m	Range in metres. Indicates a range of thickness, minimum and maximum (in m).								
Criteria for importance	If size <4000 km ² criteria for importance of the GWB should be listed; they have to be bilaterally agreed upon.								
Bilaterally agreed with	Country which has been bilaterally agreed with should be indicated: two digit country code (after ISO 3166).								

Table 2: Number of monitoring stations and density per GWB

Trans-boundary GWB	Country	Area (km ²)	Chemical			Quantity			Associated with	
			Sites	Area / site (km ²)	No. of sites bilaterally agreed upon for data exchange	Sites	Area / site (km ²)	No. of sites bilaterally agreed upon for data exchange	Drinking water protected areas	Eco-systems
1. Deep Thermal	DE	4250	4	1063		5	850			
	AT	1650	4	413		1	1650			
	TOTAL	5900	8	738		6	983			
2. Upper Jurassic – Lower Cretaceous	BG	13,034	6	2173		13	1103			
	RO	11,427	13	879		13	879			
	TOTAL	24,461	19	1287		26	941			
3. Sarmatian – Pontian	RO	11,964	35	342		35	342			
	MD	9662								
	TOTAL	21,626								
4. Sarmatian	RO	2178	7	311		7	311			
	BG	3308	4	827		6	551			
	TOTAL	5486	11	499		13	422			
5. Mures/Maros	RO	2710	56	48	5	56	48	5		
	HU	4989	138	36		109	46		56	3
	TOTAL	7699	194	40		165	47	5	56	3
6. Somes/Szamos	RO	1440	44	33	3	44	33	3		
	HU	1035	27	38		19	54		7	2
	TOTAL	2475	71	35		63	39	3	7	2
7. Upper Pannonian – Lower Pleistocene /Vojvodina/ Duna-Tisza köze deli r.	RO	11,408	40	285		40	285			
	RS	10,506	16	656		39	269			
	HU	7098	150	47		147	48		44	10
	TOTAL	29,012	206	141		226	128		44	10
8. Podunajska Basin, Zitny Ostrov / Szigetköz, Hanság-Rábca	SK	2211	63	35		283	8			
	HU	1152	54	21		101	11		38	15
	TOTAL	3363	117	29		384	9		38	15
9. Bodrog	SK	1466	30	49		102	14			
	HU	750	10	75		17	44		5	3
	TOTAL	2216	40	55		119	19		5	3
10. Slovensky kras /Aggtelek-hsg.	SK	598	4	150		35	17		11	
	HU	492	14	35		17	29		8	9
	TOTAL	1090	18	61		52	21		19	9
11. Komamans	SK	563	0			0				
	HU	3248	24	135		37	88		17	9

			Chemical			Quantity			Associated with	
ka Vysoka Kryha / Dunántúli-khgs. Északi r.	TOTAL	3811								

Table 3: Parameters and frequency for the surveillance monitoring programme

	AT / DE	BG	RS	HU	MD	RO	SK
Transboundary GWB	1	2, 4	7	5, 6, 7, 8, 9, 10, 11	3	2, 3, 4, 5, 6, 7	8, 9, 10
CHEMICAL (with estimation of frequency)							
Oxygen	1/a	>1/a	1/a	1/6a		1/a	1/a
pH-value	1/a	>1/a	1/a	1/a		1/a	1/a
Electrical conductivity	1/a	>1/a	1/a	1/a		1/a	1/a
Nitrate	1/5a ¹	>1/a	1/a	1/a		1/a	1/a
Ammonium	1/a	>1/a	1/a	1/a		1/a	1/a
Temperature	continuous	>1/a	1/a			1/a	>1/a (selected stations)
Further parameters e.g. major ions	x	x	x	x		x	x
Operational		x		x		x	x
QUANTITY							
GW levels/well-head pressure	x	x	x	x		x	x
Spring flows		x				x	
Flow characteristics							
Extraction (not obligatory)	x						
Reinjection (not obligatory)	x						

Notes:

Transboundary GWB: Number code of transboundary GWB according to chapter 5 of the WFD Roof Report 2004.

>1/a: More than 1 per year.

x: Parameter is measured.

¹ Both a yearly programme and a five-year monitoring programme were established.