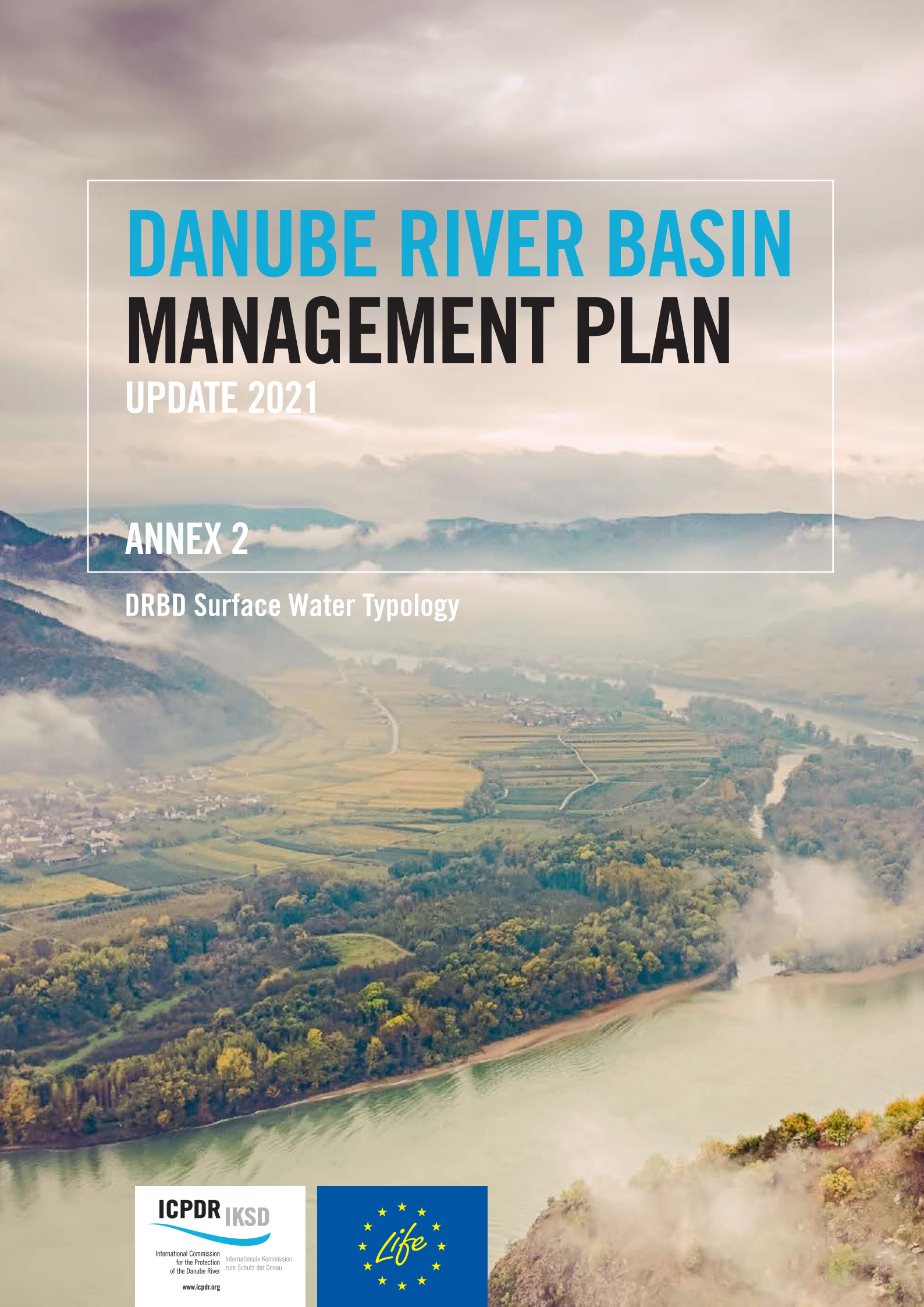
DANUBE RIVER BASIN MANAGEMENT PLAN

UPDATE 2021

ANNEX 2

DRBD Surface Water Typology



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International Commission for the Protection of the Danube River
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Typology of the Danube River

The typology of the Danube River has been developed in a joint activity by the countries sharing the Danube River for the first DBA in 2004. The Danube typology therefore constitutes a harmonised system used by all these countries. The Danube typology was based on a combination of abiotic factors of System A and System B. The most important factors are ecoregion, mean water slope, substratum composition, geomorphology and water temperature.

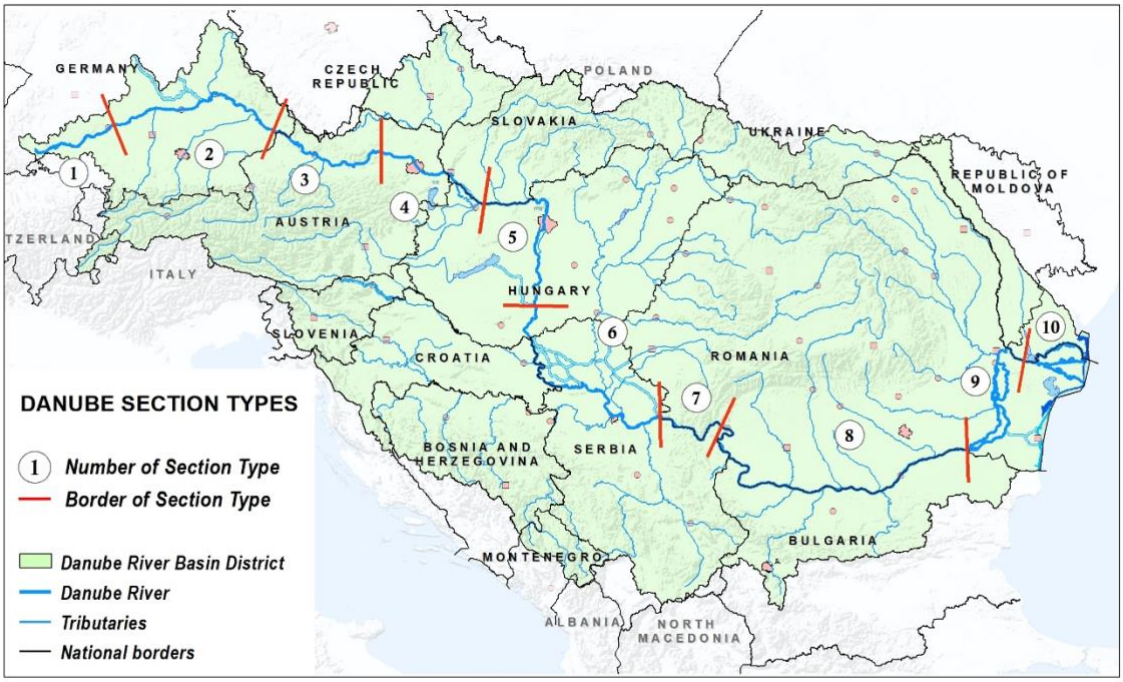

Figure 1: Danube section types; the dividing lines refer only to the Danube River itself.

Table 1: Danube section types

Section Type	Name of the Section Type	from - to
1	Upper course of the Danube	rkm 2786: confluence of Brigach and Breg – rkm 2581: Neu Ulm
2	Western Alpine Foothills Danube	rkm 2581: Neu Ulm – rkm 2225: Passau
3	Eastern Alpine Foothills Danube	rkm 2225: Passau – rkm 2001: Krems
4	Lower Alpine Foothills Danube	rkm 2001: Krems – rkm 1790: Gönyű/Ližská Nemá
5	Hungarian Danube Bend	rkm 1790: Gönyű/ Ližská Nemá – rkm 1497: Baja
6	Pannonian Plain Danube	rkm 1497: Baja – rkm 1075 : Bazias
7	Iron Gate (Cazane) Danube	rkm 1075: Bazias – rkm 943: Turnu Severin
8	Western Pontic (Cazane-Calarasi) Danube	rkm 943: Turnu Severin – rkm 375.5: Chiciu/Silistra
9	Eastern Wallachian (Calarasi-Isaccea) Danube	rkm 375.5: Chiciu/Silistra – rkm 100: Isaccea
10	Danube Delta*	rkm 100: Isaccea – rkm 0 on Chilia arm, rkm 0 on Sulina arm and rkm 0 on Sf. Gheorghe arm

Ten Danube section types were identified (see Figure 1 and Table 1). The morphological and habitat characteristics are outlined for each section type. In order to ensure that the Danube section types are biologically meaningful, these were validated with biological data collected during the first Joint Danube Survey in 2001.

Typology of the tributaries in the Danube River Basin District

The typologies of the Danube tributaries were developed by the countries individually. Stream types relevant on transboundary water courses were bilaterally harmonised with the neighbours.

Most countries in the DRB (Germany, Austria, Czech Republic, Hungary, Slovenia, Bosnia and Herzegovina, Serbia, Croatia, Romania, Bulgaria) have applied System B (Annex II, 1.2.1 WFD) for establishing their river typology. Only Slovakia and Ukraine have used System A. Countries using System B have used a number of optional factors to further describe the river types. River discharge, mean substratum composition and mean water slope are most frequently used.

Table 2 gives an overview of the class boundaries used by the DRB countries for the common descriptors: altitude, catchment area and geology.

Table 2: Obligatory factors used in river typologies (Systems A and B)

Descriptor	Country	Class boundaries				
Altitude	Germany	0-200 m	200-800m	> 800 m		
	Austria	0-200 m	200-500 m	500-800 m	800-1600 m	> 1600 m
	Czech Republic	0-200 m	200-500 m	500-800 m	> 800 m	
	Slovakia	0-200 m	200-500 m	500-800 m	> 800 m	
	Hungary[1]	slope categories were used in river typology				
	Croatia	0-200 m	200 - 500 m	> 500 m		
	Slovenia	no altitude classes were used in river typology				
	Serbia	0-200 m	200-500 m	> 500 m		
	Romania	0-200 m	200-500 m	> 500 m		
	Bulgaria	0-200 m	200-800 m	> 800 m		
	Bosnia and Herzegovina	< 200 m	200-500 m	500-800 m	> 800 m	
	Republic of Moldova	0-200 m	200-800m	> 800 m		
	Montenegro					
	Ukraine	< 200 m	200-500 m	500-800 m		
Catchment area	Germany	10-100 km²	100-1000 km²	1000-10,000 km²	> 10,000 km²	
	Austria	10-100 km²	100-500 km²	500-1000 km²	1000-2500 km²	2500-10,000 km²
	Czech Republic	Not applied anymore				
	Slovakia[2]	10-100 km²	100 – 1 000 km²	1000 – 10000 km²		
	Hungary	10-100 km²	100-1000 km²	1000-10,000 km²	10,000-100,000 km²	> 100,000 km²
	Croatia	10-100 km²	100-1000 km²	1000-10,000 km²	> 10,000 km²	
	Slovenia	<10 km²	10-100 km²	100-1000 km²	1000-10,000 km²	> 10,000 km²
	Serbia	10-100 km²	100-1000 km²	1000-4000 km²	4000-10,000 km²	> 10,000 km²
	Romania	10-100 km²	100-1000 km²	1000-10,000 km²	> 10,000 km²	
	Bulgaria	10-100 km²	100-1300 km²	1300-10,000 km²	> 10,000 km²	
	Bosnia and Herzegovina	<100 km²	100-1000 km²	1000-4000 km²	4000-10,000 km²	> 10,000 km²
	Republic of Moldova	10-100 km²	100-1000 km²	1000-10,000 km²	> 10,000 km²	
	Montenegro					
	Ukraine	10-100 km²	100-1000 km²	1000-10,000 km²	> 10,000 km²	
Geology	Germany	siliceous	calcareous	organic		
	Austria	crystalline	tertiary and quaternary sediments	flysch and helveticum	limestone and dolomite	
	Czech Republic	crystalline and vulcanites	sandstones, mudstones and quaternary			
	Slovakia	mixed				
	Hungary	siliceous	calcareous			
	Croatia	siliceous	calcareous	organic	mixed	
	Slovenia	siliceous	calcareous	flysch[3]		
	Serbia	siliceous	calcareous	organic		
	Romania	siliceous	calcareous	organic		
	Bulgaria	siliceous	calcareous	mixed		
	Bosnia and Herzegovina	siliceous	calcareous	organic		

[1] River type-classification of waterbodies based on the slope category more powerful then altitude based on biological validation results (slope categories: <0,15 ‰, 0,15 ‰ - 2,5‰, >2,5‰; real altitude categories are rather 0-150m, 150-350m, >350 m and used as background-information).

[2] The river typology is not based on strict boundaries of catchment area. Rivers > 1,000 km² make up individual types; definition of types for smaller rivers is based on ecoregion, altitude and geology.

[3] not for the tributaries in the Danube river basin district

	Republic of Moldova	siliceous	calcareous	organic
	Montenegro			
	Ukraine	siliceous	calcareous	organic

Lakes

Types for four lakes were reported at the DRB overview level: Neusiedler/Fertö-to (Austria/Hungary), Balaton (Hungary), Ialpug (Ukraine) and Razim/Razelm (Romania). Information is provided in Table 3.

Table 3: Lakes selected for the basin-wide overview and their types

Lakes > 100 km²	Country(s)	Type of lake	Ecoregion	Altitude class	Depth class	Size class	Geology
Neusiedler See / Fertő-tó	AT, HU	lowland, large shallow, saline lake	2	lowland: < 200 m	< 3 m	> 100 km²	saline
Lake Balaton	HU	lowland, very large, mid deep, calcareous lake	1	lowland: < 200 m	3-15 m	> 100 km²	calcareous
Ozero Ialpug	UA	n.a.	12	n.a.	n.a.	> 100 km²	n.a.
Lacul Razim / Razelm	RO	lowland, very shallow, calcareous, very large lake type	12	lowland: < 200 m	< 3 m	> 100 km²	calcareous

Transitional and coastal waters

The transitional and coastal waters of the DRB are located in Romania and Ukraine. For the development of the typology of transitional and coastal waters System B was applied. The transitional waters are differentiated into lacustrine and marine transitional waters (Table 4).

Table 4: Types of transitional waters in the DRBD

Transitional water	Type
Lake Sinoe	Transitional lacustrine type
Black Sea coastal waters (northern sector) – Chilia mouth to Periboina	Transitional marine type

Two coastal water types have been defined for the coastal waters in the DRBD (Table 5).

Table 5: Types of coastal waters in the Danube River Basin District

Coastal water	Type
Periboina – Singol Cape	Sandy shallow coastal water
Singol Cape – Vama veche	Mixed shallow coastal water