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# DBA update on DRBD surface water typology

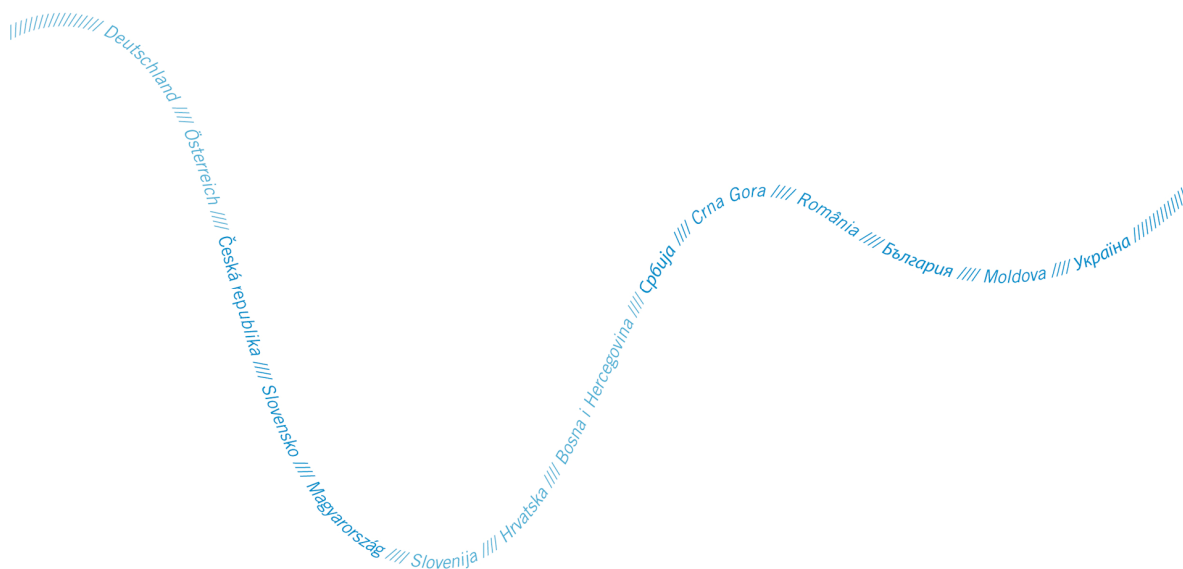
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## Annex 2 of the DRBM Plan

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## Typology of the Danube River

For the Danube River, ten section types were delineated in a joint activity by the countries sharing the Danube (Moog et al., 2008). This typology was based on a combination of abiotic factors, among which, ecoregion, mean water slope, substratum composition, geomorphology and water temperature are the most important. Figure 1 displays the ten section types along the entire course of the Danube. Further details including the characterisation of individual section types are given in the DBA 2004.

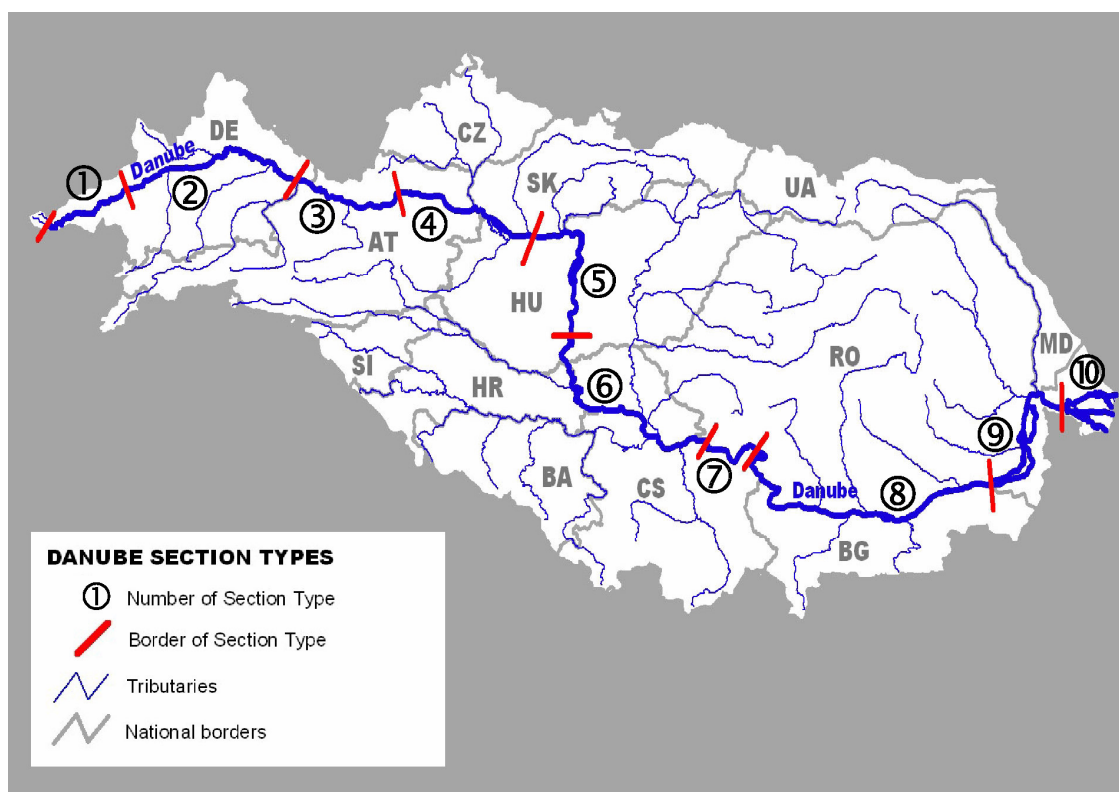


Figure 1: Danube section types; the dividing lines refer only to the Danube River itself.

## National surface water typologies

### *Rivers and lakes*

An overview of national surface water typologies was given in the DBA 2004. However since this analysis, several countries have amended their national typologies. Consequently, this annex contains an update of national typologies based on the information collated in the Danube GIS and Pottgiesser & Birk (2007).

Table 1. provides an update on the number of national river types defined at the DRBD overview level. A total of 160 national types were reported. Most countries in the DRB (Germany, Austria, Slovak Republic, Hungary, Slovenia, Bosnia and Herzegovina, Serbia, Croatia, Romania, Bulgaria and Ukraine) have applied System B (Annex II, 1.2.1 WFD) for establishing their river typology. Only the Czech Republic has used System A. The Danube River has been subdivided into 17 national section types.

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

**Table 1: Number of national river types defined at the DRBD overview level**

Country	Number of national types	
	River (total)	Danube
Germany	6	1
Austria	21	2
Czech Republic	12	-
Slovak Republic	11	1
Hungary	25	3
Slovenia	7	-
Bosnia and Herzegovina	13	-
Serbia	15	3
Croatia	13	1
Bulgaria	12	1
Romania	11	4
Moldova	2	-
Ukraine	12	1
<b>Total number</b>	<b>160</b>	<b>17</b>

In total, four lakes were reported at the DRB overview level: Neusiedler/Fertő-to (Austria/Hungary), Balaton (Hungary), Ialpug (Ukraine) and Razim (Romania). Lake Sinoe (Romania) is identified as a transitional water body and any details on typology can therefore be found in Table 3. All lakes form distinct types defined following System A. Details are given in the DBA 2004.

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

Descriptor	Country	Class boundaries				
Altitude [m]	Germany	0-200		200-800	>800	
	Austria	0-200	200-500	500-800	800-1600	>1600
	Czech R.	0-200		200-800	>800	
	Slovak R.	0-200	200-500	500-800	>800	
	Hungary	0-200	200-500	>500		
	Slovenia	0-200		200-800	>800	
	Bosnia and H.	0-200	200-500	500-800	>800	
	Serbia	0-200	200-500	500-800	>800	
	Croatia	0-200		200-800	>800	
	Bulgaria	0-200		200-1000	>1000	
	Romania	0-200	200-500	500-800	>500	
	Ukraine	0-200		200-800	>800	
	Catchment area [km <sup>2</sup> ]	Germany	10-100	100-1000	1000-10,000	>10,000
Austria		10-100	100-1000	1000-10000	>10,000	
Czech R.		10-100	100-1000	1000-10,000	>10,000	
Slovak R.		10-100	100-1000	1000-10,000	>10,000	
Hungary		10-200	100-2000	1000-12,000	>10,000	
Slovenia		10-100	100-1000	1000-2500		
Bosnia and H.		10-100	100-1000	1000-4000	4000-10,000	>10,000
Serbia		10-100	100-1000	1000-4000	4000-10,000	>10,000
Croatia		100-1000		1000-10,000	>10,000	
Romania		10-100	100-1000	1000-10,000	>10,000	
Bulgaria		10-100	100-1000	1000-10,000	>10,000	
Ukraine		10-100	100-1000	1000-10,000	>10,000	
Geology		Germany	siliceous		calcareous	organic
	Austria	crystalline	tertiary and quaternary sediments	flysch and helveticum	limestone and dolomite	
	Czech R.	siliceous		calcareous		
	Slovak R.	siliceous		mixed		
	Hungary	siliceous		calcareous	organic	
	Slovenia	siliceous		calcareous	organic	
	Bosnia and H.	siliceous		calcareous		
	Serbia	siliceous		calcareous	organic	
	Croatia	siliceous		calcareous		
	Romania	siliceous		calcareous	organic	
	Bulgaria	siliceous		calcareous	mixed	
	Ukraine	calcareous		organic		

### Coastal and transitional waters

The coastal and transitional waters of the DRB are located in the coastal area of the Black Sea in Romania. The coastal typology of Romania was not modified. The two existing types are described in the DBA 2004.

For the DRBM Plan, two types of transitional waters were reported by Romania. Both types are listed in Table 3.

**Table 3: Types of transitional waters in the DRBD**

Name	Salinity	Tidal range	Type
TT02 - Lacul Sinoe	oligohaline	<2 m	Transitional lacustrine type
TT03 - Chilia-Periboina	mesohaline	<2 m	Transitional marine type

References:

1. Moog, O., M. Sommerhäuser, S. Robert, T. Battisti, S. Birk, D. Hering, T. Ofenböck, U. Schmedtje, A. Schmidt-Kloiber & B. Vogel, 2008. Typology of Danube River Sections Based on Environmental Characteristics and Benthic Invertebrate Assemblages. Arch. Hydrobiol. Suppl. "Large Rivers" 166: 127-144.
2. Pottgiesser, T. & S. Birk, 2007. River Basin Management Tools: River Typologies. Harmonisation of DRB Typologies. Umweltbüro Essen, Essen.