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MEETING OF THE PARTIES TO THE CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES

Working Group on Monitoring and Assessment

Eighth meeting
Helsinki, Finland, 25–27 June 2007
Item 4 of the provisional agenda

ASSESSMENT OF THE STATUS OF TRANSBOUNDARY WATERS IN THE UNECE REGION[1]

PRELIMINARY ASSESSMENT OF TRANSBOUNDARY WATERS IN THE BLACK SEA BASIN (Transboundary waters in the Danube River Basin District and the rivers Kogilnik, Citai and Hadjider)

Submitted by the Chairperson of the Working Group on Monitoring and Assessment*

[1] At their fourth meeting (Bonn, Germany, 20–22 November 2006), the Parties to the Convention mandated its Working Group on Monitoring and Assessment with the assessment of transboundary rivers, lakes and groundwaters in the UNECE region. For details, please refer to documents ECE/MP.WAT/WG.2/2007/1 and ECE/MP.WAT/WG.2/2007/3.

* The present document was submitted late due to resources constraints in the secretariat and late submission by some countries.

GE.07-22779

I. ASSESSMENT OF THE STATUS OF TRANSBOUNDARY WATERS IN THE DANUBE RIVER BASIN DISTRICT

1. Following provisions of the Water Framework Directive[2], watercourses in the Danube River basin, watercourses in the Romanian Black Sea river basins as well as Romanian-Ukrainian Black Sea coastal waters have been combined in the Danube River Basin District (RBD)[3]. The transboundary rivers and lakes included in this chapter belong to the Danube RBD, although hydrologist regard some of them as separate first-order rivers discharging directly into a final recipient of water.

A. Danube River[4]

2. Nineteen countries (Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Germany, Hungary, Italy, Moldova, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Switzerland, The Former Yugoslav Republic of Macedonia and Ukraine) share the basin of the Danube River, with a total area of 801,463 km^2.

3. Due to its geologic and geographic conditions, the Danube River basin is divided into three main parts:

(a) The *Upper Danube* covers the area from the Black Forest Mountains to the Gate of Devín (east of Vienna), where the foothills of the Alps, the Small Carpathians and the Leitha Mountains meet;

(b) The *Middle Danube* that covers a large area reaching from the Gate of Devín to the impressive gorge of the Danube at the Iron Gate, which divides the Southern Carpathian Mountains to the north and the Balkan Mountains to the south;

(c) The *Lower Danube* that covers the Romanian-Bulgarian Danube sub-basin downstream of the Cazane Gorge and the sub-basins of the rivers Siret and Prut.

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[2] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000, establishing a framework for European Community action in the field of water policy.

[3] Following the Water Framework Directive, a River Basin District means the area of land and sea, made up of one or more neighboring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3 (1) as the main unit for management of river basins.

[4] If not otherwise specified, information on the Danube River and its major tributaries, as well as the Danube delta, is based on information submitted by the International Commission for the Protection of the Danube River.

Basin of the Danube River			
Area	Country	Country's share	
801,463 km^2	Albania	126 km^2	<0.1 %
	Austria	80,423 km^2	10.0 %
	Bosnia and Herzegovina	36,636 km^2	4.6 %
	Bulgaria	47,413 km^2	5.9 %
	Croatia	34,965 km^2	4.4 %
	Czech Republic	21,688 km^2	2.9 %
	Germany	56,184 km^2	7.0 %
	Hungary	93,030 km^2	11.6 %
	Italy	565 km^2	<0.1 %
	Moldova	12,834 km^2	1.6 %
	Poland	430 km^2	<0.1 %
	Romania	232,193 km^2	29.0 %
	Serbia and Montenegro*	88,635 km^2	11.1 %
	Slovakia	47,084 km^2	5.9 %
	Slovenia	16,422 km^2	2.0 %
	Switzerland	1,809 km^2	0.2 %
	The Former Yugoslav Republic of Macedonia	109 km^2	<0.1 %
	Ukraine	30,520 km^2	3.8 %

Source: The Danube River Basin District - River basin characteristics, impact of human activities and economic analysis required under Article 5, Annex II and Annex III, and inventory of protected areas required under Article 6, Annex IV of the Water Framework Directive (2000/60/EC), Part A – Basin-wide overview. International Commission for the Protection of the Danube River, Vienna, 18 March 2005. This publication is hereinafter referred to with its short title: "Danube Basin Analysis (WFD Roof Report 2004)".

* At the date of publication of the Danube Basin Analysis (WFD Roof Report 2004), Serbia and Montenegro still belonged to the same State.

Hydrology

4. The confluence of two small rivers – the Brigach and the Breg – at Donaueschingen (Germany) is considered to be the beginning of the Danube. The river flows south-eastward for a distance of some 2,780 km before it empties into the Black Sea via the Danube delta in Romania.

5. The long-term average discharge of the Danube River is about 6,550 m^3/s (207 km^3/a).[5] The annual discharge in dry years is 4,600 m^3/s (95 % probability, one-in-20 dry years) and in wet years 8,820 m^3/s (5 % probability, one-in-20 wet years).[6]

[5] Danube Basin Analysis (WFD Roof Report 2004).
[6] Danube Pollution Reduction Programme – Transboundary Analysis Report. International Commission for the Protection of the Danube River, June 1999.

Approximate distribution of Danube River basin runoff by country/group of countries

Country/group of countries	Annual volume of runoff (km^3/a)	Mean annual runoff (m^3/s)	Share of Danube water resources (%)	Ratio of outflow minus inflow ÷ outflow (%)
Austria	48.44	1,536	22.34	63.77
Bulgaria	7.32	232	3.99	7.35
Czech Republic	3.43	110	1.93	n.a.
Germany	25.26	801	11.65	90.71
Hungary	5.58	176	2.57	4.97
Romania	37.16	1,177	17.00	17.35
Slovakia	12.91	407	7.21	23.0
Bosnia and Herzegovina, Croatia and Slovenia	40.16	1,274	16.84	n.a.
Moldova and Ukraine	10.41	330	4.78	9.52
Montenegro and Serbia	23.5	746	10.70	13.19
Switzerland	1.40	44	0.64	86.67
Italy	0.54	17	0.25	100.00
Poland	0.10	3	0.04	100.00
Albania	0.13	4	0.06	100.00
Total	**216.34**	**6,857**	**100.00**	

Source*:* Danube Pollution Reduction Programme - Transboundary Analysis Report. International Commission for the Protection of the Danube River, June 1999.

6. Extremely high floods have hit certain areas of the Danube River basin in recent years. Floods in the Morava and Tisza sub-basins and in the Danube River itself have had severe impact on property and human health and safety. Changes in morphological characteristics and in river dynamics can also take place during large floods. After severe floods, dikes need to be reconstructed, which is often costly. The damage inflicted by large floods may influence the way flood-endangered areas are used.

Pressure factors

7. The activities of over 81 million people living in the Danube River basin greatly affect the natural environment of the basin, causing pressures on water quality, water quantity and biodiversity.

8. The most significant pressures fall into the following categories: organic pollution, nutrient pollution, pollution by hazardous substances, and hydromorphological alterations.[7]

[7] Given earlier decisions by the Parties to the Water Convention, the present assessment of the status of transboundary waters focuses on the chemical quality of the main transboundary rivers and their tributaries rather than on other pressures, such as hydromorphological alterations. Analysis has shown that hydromorphological alterations can also significantly impact rivers in the entire region. An assessment of hydromorphological alterations will therefore become part of the foreseen second UNECE assessment report.

Significant point sources of pollution in the Danube River Basin District[8]

Item	Countries along the main watercourse and tributaries*												
	DE	AT	CZ	SK	HU	SI	HR	BA	CS	BG	RO	MD	UA
Municipal point sources: Wastewater treatment plants	2	5	1	9	11	3	10	3	4	6	45	0	1
Municipal point sources: Untreated wastewater	0	0	0	2	1	3	16	15	14	31	14	0	0
Industrial point sources	5	10	10	6	24	2	10	5	14	4	49	0	5
Agricultural point sources	0	0	0	0	0	1	0	0	0	0	17	0	0
Total	**7**	**15**	**11**	**17**	**36**	**9**	**36**	**23**	**32**	**41**	**125**	**0**	**6**

Source: Danube Basin Analysis (WFD Roof Report 2004).

* The following abbreviations for country names are used: DE (Germany), AT (Austria), CZ (the Czech Republic), SK (Slovakia), HU (Hungary), SI (Slovenia), HR (Croatia), BA (Bosnia and Herzegovina), CS (the former Serbia and Montenegro), BG (Bulgaria), RO (Romania), MD (Moldova) and UA (Ukraine).

9. Insufficient treatment of wastewater from major municipalities is a significant cause of organic pollution. In parts of the Middle and Lower Danube, wastewater treatment plants are missing or the treatment is insufficient. Therefore, the building of wastewater treatment plants is a prime focus of the programme of measures which needs to be developed under the Water Framework Directive's river basin management plan by the end of 2009. Organic pollution (expressed as BOD_5 and COD_{Cr}) reaches its maximum between Danube-Dunafoldvar (river kilometre 1,560 below Budapest) and Danube-Pristol/Novo Selo (river kilometre 834, just below the border of Serbia and Bulgaria). The most polluted tributaries from the point of view of degradable organic matter are the rivers Russenski Lom, Sio and Siret.[9] COD_{Cr}, ammonium-nitrogen and ortho-phosphate phosphorus reach the highest values in the Lower Danube.

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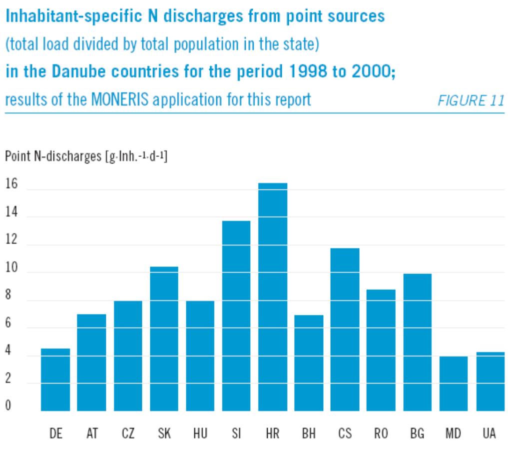
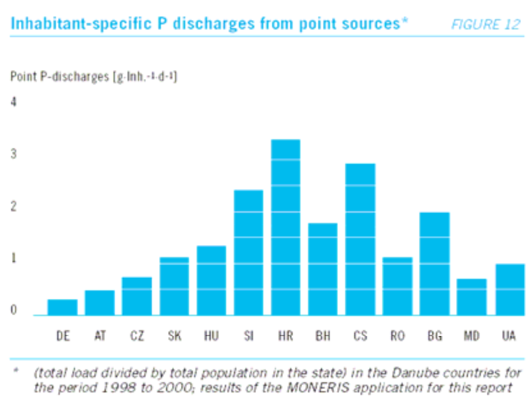
[8] The Danube River Basin District with an area of 807,827 km^2 includes the basin of the Danube River (801,463 km^2), Romanian Black Sea river basins (5,122 km^2) and Romanian-Ukrainian Black Sea coastal waters (1,242 km^2).
[9] Following more recent information by Romania, the Siret River (RO 10 – confluence Danube Sendreni, year 2005) was in class II for dissolved oxygen and BOD_5 and only for $COD_{Cr,}$ in class IV.





Inhabitant-specific discharges of nitrogen and phosphorus from point source[10]

10. The chemical, food, and pulp and paper industries are prominent industrial polluters, and wastewaters from these plants raise the levels of nutrients, heavy metals and organic micro-pollutants in the river network. Pollution loads of hazardous substances can be significant, although the International Commission for the Protection of the Danube River has not yet evaluated the full extent. Currently, there is little data available for such hazardous substances as heavy metals and pesticides.

11. Cadmium and lead can be considered as the most serious inorganic microcontaminants in the Danube River basin. Especially critical is cadmium, for which the target value under the TNMN [11, 12] is substantially exceeded in many locations downstream of river kilometre 1,071 (values are in many cases 2-10 times higher than the target value). The pollution of the Lower Danube by cadmium and lead can be regarded as a significant problem.

12. Agriculture has long been a major source of income for many people, and it has also been a source of pollution by fertilizers and pesticides. Many tributaries, such as the rivers Prut, Arges, Russenski Lom, Iskar, Jantra, Sio and Dyje, are considered as rather polluted by nitrogen compounds. Most of these are in the lower part of the Danube.

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[10] *Source:* Danube Basin Analysis (WFD Roof Report 2004), figures 11 and 12.

[11] The Transnational Monitoring Network (TNMN) constitutes the main data source on water quality of the Danube and its major tributaries. The main objective of the TNMN is to provide an overall view of pollution and long-term trends in water quality and pollution loads in the major rivers of the Danube River basin. Currently, the network consists of 78 water-quality monitoring sites with a minimum sampling frequency of 12 times per year for chemical determinands in water. The TNMN includes biological determinands with a minimum sampling frequency of twice a year. There are 23 sampling stations in the TNMN load assessment programme with a minimum sampling frequency of 24 times per year.

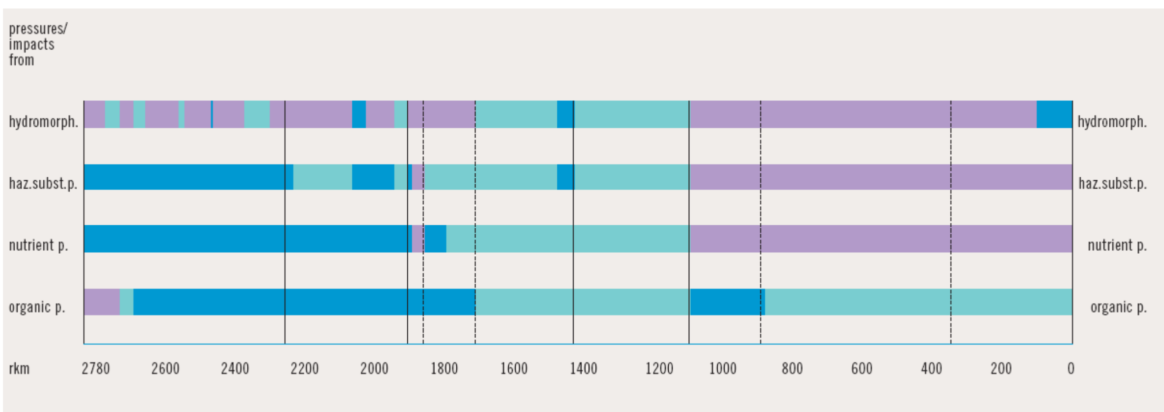
[12] The "target values" have been purposely developed for the presentation of results of the TNMN; in some way, the choices were made with arbitrariness and they do not represent any threshold-, limit- or standard values, which may be required by national law or EU legislation for the characterization of water bodies.

13. There are indications that the Middle Danube (from river kilometre 1,600 to 1,200) may be sensitive to eutrophication. Other sections of the Danube and its tributaries are apparently flowing too fast, and are too deep or too turbid to develop eutrophication problems. Like many large rivers, the impact of the high transboundary river nutrient loads in the Danube river basin is the most critical in the receiving coastal waters of the Black Sea; however, pressures from the coastal river basins directly affecting the coastal waters of the Danube RBD also need to be considered.

14. A substance of special concern in the lower Danube is p,p'-DDT. Here, the very low target values of the TNMN are often exceeded in the order of two magnitudes. This means that, despite a high analytical uncertainty, the level of p,p'-DDT is significant and gives a strong indication of potential risk of failure to reach the good status. For lindane, the results of the TNMN classification are not so alarming.[13] Some tributaries (the Sió, the Sajó and the Sava) show random occurrence of high concentrations of atrazine.

Transboundary impact

15. In the Danube basin, there are areas in "high and good status", but there are also stretches of river which fall under "heavily modified water bodies" and have been assessed as "polluted". As analysed in the above section, cadmium, lead, mercury, DDT, lindane and atrazine are among the most serious pollutants.



Risk classification of the Danube River, disaggregated into the risk categories of hydromorphological alterations, pollution by hazardous substances, nutrient pollution and organic pollution[14]

16. The Upper Danube, where chains of hydropower plants exist, is mainly impacted by hydromorphological alterations, and many water bodies have also been provisionally identified as "heavily modified water bodies".

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[13] At the time of writing, the International Commission for the Protection of the Danube River had not yet assessed the consequences of the newly set environmental-quality standards.
[14] *Source:* Danube Basin Analysis (WFD Roof Report 2004), figure 67.

17. The Middle Danube is classified as “possibly at risk” due to hazardous substances. The section of the Danube shared by Slovakia and Hungary is classified as “at risk” due to hydromorphological alterations. The section shared by Croatia and Serbia is “possibly at risk” in all categories, since not enough data is available for a sure assessment.

18. The Lower Danube is “at risk” due to nutrient pollution and hazardous substances, and in large parts due to hydromorphological alterations. It is “possibly at risk” due to organic pollution.

Trends

19. The water quality in the Danube basin has improved significantly during the last decade, hand-in-hand with improvements of the general environmental conditions in the Danube basin.

20. Improvements in water quality can be seen at several TNMN locations. A decrease of biodegradable organic pollution is visible in the Austrian-Slovakian section of the Danube and in a lower section downstream at Chiciu/Silistra. The tributaries Inn, Salzach, Dyje, Vah, Drava, Tisza (at Tiszasziget) and Arges show the same tendency.

21. As for nutrients, ammonium-nitrogen decreases are evident in locations of the upper part of Danube down to Hercegszanto (TNMN site H05), in tributaries of the upper section (Inn, Salzach, Morava, Dyje, Vah) as well as in the Drava, Tisza (at Tiszasziget), Sava and Arges. A significant decrease of ammonium-nitrogen is also apparent in the Danube at Silistra/Chiciu (TNMN site BG05), but is not supported by Romanian data at the same monitoring location. Nitrate-nitrogen decreases in several locations of German-Austrian part of the Danube River, at Danube-Dunafoldvar and in some locations of the Lower Danube, such as Danubeus, Iskar-Bajkal and Danube-us.Arges. Nitrate-nitrogen decreases have also been seen in the tributaries Morava, Dyje, Vah and Drava, and at Sava-us.Jasenovac.

22. A decrease of ortho-phosphate phosphorus has been observed at Slovak monitoring locations, at Danube Szob, and at most downstream locations on the Danube River starting from the Reni Chilia/Kilia arm. An improvement can also be seen in the tributaries to the upper part of the river, and further in the rivers Drava, Siret and at Sava-us.Una Jasenovac.

23. Despite the achievements of the last 10 years, water and water-related ecosystems in the Danube River basin continue to be at risk from pollution and other negative factors. A period of more intensive farming, especially in the fertile areas of the new European Union (EU) member States in the basin, may increase agricultural pollution. This calls for the development of a long-term strategy to address the problems of pollution, and especially diffuse pollution from agriculture.

24. As is the case in other basins, the frequency of serious flood events due to climatic changes could increase, which, in combination with unsustainable human practices, may cause substantial economic, social and environmental damage.

B. Lech River[15]

25. The Lech (254 km) is a left-hand tributary of the Danube. Its sub-basin (4,125 km^2) covers parts of Austria and Germany. Its discharge at mouth is 115 m^3/s (1982-2000).

C. Inn River[16]

26. The Inn (515 km) is the third largest by discharge and the seventh longest Danube tributary. At its mouth in Passau (Germany), it brings more water into the Danube (735 m^3/s, 1921–1998) than the Danube itself although its sub-basin of 26,130 km^2 (shared by Austria, Germany, Italy and Switzerland) is only half as big as the Danube's basin at this point. The main tributary of the Inn is the Salzach River, shared by Austria and Germany.

D. Morava River[17]

27. The Morava (329 km) is a left-hand tributary of the Danube. Its sub-basin of 26,578 km^2 covers parts of the Czech Republic, Slovakia and Austria. Its discharge at mouth is 111 m^3/s (1961–2000).

E. Raab/Raba River[18]

28. The 311-km-long Raab/Raba is shared by Austria and Hungary (total area of the sub-basin 10,113 km2). Various rivers flowing from the Fischbacher Alps in Austria feed it. Its discharge at mouth is 88 m^3/s (1901–2000).

F. Vah River[19]

29. The Vah (398 km) is a right-hand tributary of the Danube. Its sub-basin of 19,661 km^2 covers parts of Poland and Slovakia. Its discharge at mouth is 194 m^3/s (1961–2000).

G. Ipel/Ipoly River[20]

30. Slovakia (upstream country) and Hungary (downstream country) share the sub-basin of the Ipel/Ipoly River, with a total area of 5,151 km^2.

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[15] Danube Basin Analysis (WFD Roof Report 2004).
[16] Danube Basin Analysis (WFD Roof Report 2004).
[17] Information provided by the Ministry of Environment, Slovakia. The figures are based on country information and deviate from the Danube Basin Analysis (WFD Roof Report 2004).
[18] Danube Basin Analysis (WFD Roof Report 2004).
[19] Information provided by the Ministry of Environment, Slovakia. The figures are based on country information and deviate from the Danube Basin Analysis (WFD Roof Report 2004).
[20] Based on information provided by the Ministry of Environment and Water, Hungary, and the Ministry of Environment, Slovakia.

Sub-basin of the Ipel/Ipoly River			
Area	Country	Country's share	
5,151 km^2	Slovakia	3,649 km^2	70.8%
	Hungary	1,502 km^2	29.2%
Source*:* Ministry of Environment and Water, Hungary, and Ministry of Environment, Slovakia. These figures deviate from the Danube Basin Analysis (WFD Roof Report 2004).			

Hydrology

31. The 232-km-long Ipel/Ipoly[21] has its source in the Slovak Ore Mountains in central Slovakia. It flows south to the Hungarian border, and then southwest, west and again south along the border between Slovakia and Hungary until it flows into the Danube near Szob. Major cities along its course are Šahy (Slovakia) and Balassagyarmat (Hungary). Its discharge at mouth is 22 m^3/s (1931–1980).

32. There are 14 reservoirs on the river.

33. The most serious water-quantity problems are flooding and temporary water scarcity.

Pressure factors

34. Diffuse pollution mainly stems from agriculture, but also from settlements that are not connected to sewer systems. The estimated total amount of nitrogen and phosphorus reaching surface waters in the Ipel/Ipoly sub-basin is 1,650 tons nitrogen/year and 62 tons phosphorus/year.

35. The most important and problematic pressure factor is inappropriate wastewater treatment. Point sources of pollution, which are mostly municipal wastewater treatment plants, discharge organic pollutants, nutrients and heavy metals into the river and its tributaries.

[21] The Danube Basin Analysis (WFD Roof Report 2004) quotes a length of 197 km.

Pollution in the sub-basin of the Ipel/Ipoly River in 2000		
Determinands	**Discharges in the Slovak part [tons/year]**	**Discharges in the Hungarian part [tons/year]**
BOD-5	514.9	27.1
COD-Cr	1,283.5	98.4
Dissolved solids	6,507.1	2,017
Suspended solids	515.5	117
NH_4-N	159.9	7.5
NES-UV	6.84	Oil and grease 2.5
Nitrate-N	…	145
Total discharged wastewater	**12,882,000 m^3/year**	**1,959,000 m^3 /year**
Source: Ministry of Environment and Water, Hungary, and Ministry of Environment, Slovakia.		

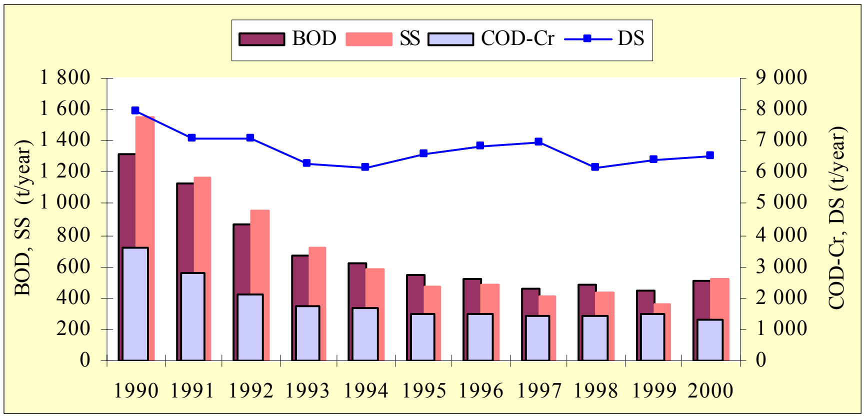
Transboundary impact

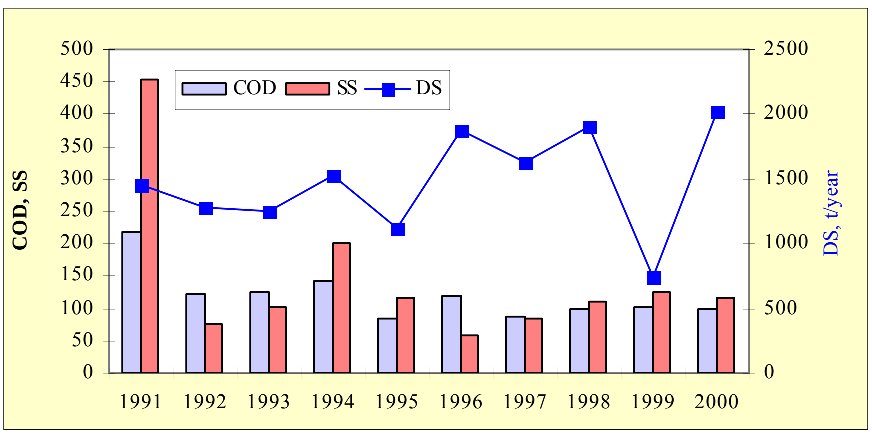
36. The most serious water-quality problems are eutrophication, organic pollution, bacterial pollution, and pollution by hazardous substances.

37. Owing to inappropriate wastewater treatment and agricultural practices, the content of nutrients in the waters of the transboundary section of the river is rather high and gives rise to the excessive growth of algae.

38. Organic pollution can have a negative impact on the ecosystem, irrigation, fishing and drinking-water quality. The BOD_5 values in the Ipel/Ipoly River sometimes exceed the limits of the water-quality criteria for drinking water and aquatic life. The primary sources of the biodegradable organic pollutants are wastewater discharges. Coliform bacteria, faecal coliforms and faecal streptococcus counts in the river also exceed the water-quality criteria for drinking water and bathing; the bacterial pollution therefore threatens these uses. Recreational use is directly affected, as compliance with bacteriological limit values is a prerequisite for bathing. Abstraction for drinking water is indirectly affected because flexible treatment technologies can eliminate a wide range of bacteria. The main sources of bacterial pollution are municipal wastewater discharges.

39. The occurrence of hazardous substances in waters presents a risk to biota and can affect almost all uses as well as the ecological functions of the river. Some specific pollutants – cadmium, petroleum hydrocarbons and phenols – were identified at concentrations exceeding those for drinking-water abstraction and irrigation.





Loads of selected determinants (BOD – biological oxygen demand; COD – chemical oxygen demand; SS – suspended solids; DS – dissolved solids) discharged into the Ipe/Ipoly River from the Slovak part (upper figure) and the Hungarian part (lower figure).

Trends

40. The Hungarian national sewerage collection and wastewater treatment plan for settlements envisages the construction or upgrading of sewerage systems and treatment plants in order to implement the requirements of the Council Directive of 21 May 1991 concerning urban wastewater treatment (91/271/EEC) by the year 2010. In Slovakia, implementation of the Council Directive is required by 2010 for wastewater treatment plants with more than 10,000 population equivalents (p.e.) and by 2015 for those with 2,000 to 10,000 p.e.

41. Thus, organic pollution and pollution by dangerous substances will substantially decrease. The trend of nutrient pollution from agriculture is still uncertain.

H. Drava and Mura Rivers [22]

42. The transboundary river Drava (893 km) is the fourth largest and fourth longest Danube tributary. It rises in the Southern Alps in Italy, but is the dominant river of southern Austria, eastern Slovenia, southern Hungary and Croatia. The sub-basin covers an area of 41,238 km². One of the main transboundary tributaries is the Mura, with its mouth at the Croatian-Hungarian border. The discharge of the Drava at its mouth is 577 m^3/s (1946–1991).

I. Tisza River[23]

43. Hungary, Romania, Slovakia, Serbia and Ukraine share the sub-basin of the Tisza, also known as the Tysa and the Tisa. The sub-basin of the Tisza is the largest sub-basin in the Danube River basin.

Sub-basin of the Tisza River

Area	Countries	Countries' share	
157,186 km^2	Ukraine	12,732 km^2	8.1
	Romania	72,620 km^2	46.2
	Slovakia	15,247 km^2	9.7
	Hungary	46,213 km^2	29.4
	Serbia	10,374 km^2	6.6

Source: Ministry of Environment and Water, Hungary.

Hydrology

44. The Tisza sub-basin has both a pronounced mountain and lowland character as it stretches over the Carpathians and the Hungarian lowlands. The average elevation is about 377 m above sea level (in Hungary, 129 m). The Tisza is the longest tributary (966 km) of the Danube. By flow volume it is the second largest.

45. The sub-basin can be divided into three main parts. The first is the mountainous Upper Tisza in Ukraine (upstream of the Ukrainian-Hungarian border). The second part comprises the Middle Tisza in Hungary. It receives the rivers Bodrog and Slaná/Sajó, collecting water from the Carpathian Mountains in Slovakia and Ukraine, and receives the Somes/Szamos, the Crisul/Körös and the Mures/Maros draining Transylvania in Romania. The third part is the Lower Tisza, downstream of the Hungarian-Serbian border.

[22] Danube Basin Analysis (WFD Roof Report 2004).
[23] Based on information by the Ministry of Environment and Water, Hungary.

Discharge characteristics of the Tisza River at the gauging station Szeged (Hungary)		
Q_{av}	863 m^3/s	Average for: 1960-2000
Q_{max}	~ 4,000 m^3/s	1931
Q_{min}	57.8 m^3/s	1990
Mean monthly values:		
October: 504 m^3/s	November: 641 m^3/s	December: 762 m^3/s
January: 775 m^3/s	February: 908 m^3/s	March: 1,218 m^3/s
April: 1,574 m^3/s	May: 1,259 m^3/s	June: 956 m^3/s
July: 756 m^3/s	August: 531 m^3/s	September: 473 m^3/s
Source: Ministry of Environment and Water, Hungary.		

46. Lakes in the sub-basin cover an area of 31,350 ha, and reservoirs 39,355 ha. Forests make up 4,312,344 ha. Protected sites cover 419,216 ha.

Pressure factors

47. In Hungary, agriculture uses 60% of the available water, urban users 27%, industry 7.5%, and energy 4.5%. Main pressures arise from sewerage, as the Urban Wastewater Treatment Directive[24] has not yet been fully implemented in Hungary. Large storage tanks of chemicals and fuels are potential accidental risk spots.

Transboundary impact

48. Pathogens in wastewater discharges are both locally and transboundary significant. Heavy metals also cause transboundary impact.

49. The water quality[25] of the Tisza at Tiszabecs ("entrance section", downstream the border with Ukraine, river kilometre 757 km) is in class I for dissolved oxygen, electric conductivity and nitrate; in class II for biochemical oxygen demand and total phosphorus; and in class IV for coliform bacteria count. The water quality of the River Tisza at Tiszasziget ("exit section", upstream of the border with Serbia, river kilometre 162.5 km) is in class I for biochemical oxygen demand; in class II for dissolved oxygen, nitrate and electric conductivity; and in class III for total phosphorus and coliform bacteria count.

[24] Council Directive of 21 May 1991 concerning urban waste water treatment (91/271/EEC).
[25] The Hungarian classification system has five water-quality classes.

Trends

50. There were no significant changes in recent years (2000–2005). The implementation of Urban Wastewater Treatment Directive and the implementation of Nitrate Directive[26] are decisive steps to significantly improve the status of the Tisza in Hungary and its tributaries in Slovakia and Romania.

1. Somes/Szamos[27]

51. The sub-basin basin of the river Somes/Szamos is shared by Romania and Hungary.

Sub-basin of the Somes/Szamos River			
Area	Country	Country's share	
16,046 km^2	Romania	15,740 km^2	98%
	Hungary	306 km^2	2%
Source: Ministry of Environment and Water, Hungary.			

Hydrology

52. The Somes/Szamos has its source in the Rodnei Mountains in Romania and ends up in the Tisza. The sub-basin has an average elevation of about 534 m above sea level.

Discharge characteristics of the Somes River at the gauging station Satu Mare (Romania)		
Q_{av}	126 m^3/s	Average for: 1950-2005
Q_{max}	3342 m^3/s	15 May 1970
Q_{min}	4.90 m^3/s	18 December 1961
Mean monthly values:		
October: 59.5 m^3/s	November: 84.2 m^3/s	December: 110 m^3/s
January: 99.4 m^3/s	February: 152 m^3/s	March: 224 m^3/s
April: 240 m^3/s	May: 169 m^3/s	June: 139 m^3/s
July: 107 m^3/s	August: 68.7 m^3/s	September: 56.3 m^3/s
Source*:* National Administration "Apele Romane", Romania.		

[26] Council Directive of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC).
[27] Information based on submissions by the National Administration "Apele Romane", Romania.

53. Reservoirs in the Romanian part include the Fantanele, Tarnita, Somes Cald, Gilau, Colibita and Stramtori-Firiza reservoirs. Fish ponds are numerous. There are two natural water bodies: the lakes Stiucilor and Bodi-Mogosa.

Pressure factors

54. In the Romania part of the sub-basin, the population density is 86 persons/km^2. Water use by sector is as follows: agriculture – 0.5%, urban uses – 0.5%, industrial uses – 0.2%, and energy production – 98.8%

55. As concerns animal production, domestic animals have a density below the Danube basin average. In the rural areas, the most important diffuse pollution sources are situated in localities delineated as vulnerable areas.

56. In Romania, the most significant point pollution sources are the mining units located in the middle part of the sub-basin, which cause a degradation of downstream water quality due to heavy metals. Tailing dams for mining are an additional pollution source and generate diffuse pollution in the areas with developed mining activity. There is a potential risk of industrial accidents, especially in mining areas.

57. Discharges from manufacturing are insignificant, mainly due to a decrease in industrial production in the last decade.

58. There is still an environmental problem related to untreated or insufficiently treated urban wastewater, which increases the nitrogen concentration in the river. Uncontrolled waste dumpsites, especially located in rural areas, are an additional significant source of diffuse nutrient inputs into the watercourses.

59. As in other parts of the UNECE region, there is also a “natural pressure” due to hydrochemical processes in areas with mining activities.

Transboundary impact and trends

60. Nutrient species and heavy metals (Cu, Zn, Pb) cause transboundary impact.

61. Improving the status of the river requires investments in wastewater treatment technology and sewer systems. In urban areas, investments to expand capacity and/or rehabilitate sewerage treatment facilities are necessary. In rural areas, the connection rate to these facilities, which is very low, and should be increased.

62. Improving the status of the river also requires measures against pollution in mining areas. At the national level, there is already a step-by-step programme for closure of the mines and for the ecological rehabilitation of the affected areas.

2. Mures/Maros River[28]

63. The sub-basin of the Mures/Maros River is shared by Romania (upstream country) and Hungary (downstream country). The river ends up in the Tizsa.

Sub-basin of the Mures/Maros River			
Area	Country	Country's share	
30,195 km^2	Hungary	1,885 km^2	6.2%
	Romania	28,310 km^2	93.8%

Source: National Administration "Apele Romane", Romania.

64. The basin has a pronounced hilly and mountainous character with an average elevation of about 600 m above sea level. A major transboundary tributary to the Mures/Maros is the river Ier with its source in Romania.

Discharge characteristics of the Mures/Maros River at Arad (Romania)		
Discharge characteristics	Discharge, m^3/s	Period of time or date
Q_{av}	182	1950-2006
Q_{max}	2,320	1950-2006
Q_{min}	15.5	1950-2006

Source: National Administration "Apele Romane", Romania. The station has been in operation since 1861.

65. There are many man-made water bodies, but also natural water bodies, in the Romanian part of the sub-basin.

66. In Romania, the dominant water user is the energy sector (75.1%). The share of other users is as follows: agriculture – 4%, urban uses – 10.9%, and industrial water use – 10.0%. Pressure factors of local significance include mining, manufacturing and sewerage as well as waste management and storage. Electricity supply generates thermal pollution, but this is only of local significance. It is possible that accidental water pollution by heavy metals can have a transboundary impact. With local exceptions, the Mures/Maros is being characterized as a river with a "medium to good status". Its trend is "stable".

[28] Information based on submissions by the National Administration "Apele Romane", Romania, and the Ministry of Environment and Water, Hungary.

67. In the Hungarian part of the sub-basin, the dominant water user is the agricultural sector, mainly for irrigational water use. The river is characterized as “at risk” due to hydromorphological alterations.

J. Sava River[29]

68. The sub-basin of the Sava River covers considerable parts of Slovenia, Croatia, Bosnia and Herzegovina, northern Serbia, northern Montenegro and a small part of Albania.

Sub-basin of the Sava River

Area	Country	Country’s share	
97,713.2 km^2	Slovenia	11,734.8 km^2	12.0 %
	Croatia	25,373.5 km^2	26.0 %
	Bosnia and Herzegovina	38,349.10 km^2	39.2 %
	Serbia	15,147.0 km^2	15.5 %
	Montenegro	6,929.8 km^2	7.1 %
	Albania	179.0 km^2	0.2 %

Source: International Sava River Basin Commission; Regional Sava CARDS Project.

69. The Sava is the third longest tributary and the largest by discharge tributary of Danube. The length of the river from its main source in the mountains of western Slovenia to the river mouth at Belgrade is about 944 km. The average discharge at the mouth is 1,564 m^3/s (for the period 1946–1991).

70. The Sava is nowadays navigable for large vessel up to Slavonski Brod (river kilometre 377) and for small vessels up to Sisak (river kilometre 583). The Sava’s main tributaries include the rivers Ljubljanica, Savinja, Krka[30]**,** Sotla, Krapina, Kupa, Lonja, Ilova, Una, Vrbas, Orljava, Ukrina, Bosna, Tinja, Drina, Bosut and Kolubara.

71. The Sava sub-basin is known for its outstanding biological and landscape diversity. It hosts the largest complex of alluvial wetlands in the Danube basin (Posavina - Central Sava basin) and large lowland forest complexes. The Sava is a unique example of a river, where some of the floodplains are still intact, supporting both mitigation of floods and biodiversity. Four Ramsar sites, namely Cerkniško Jezero in Slovenia, Lonjsko Polje in Croatia, Bardača in Bosnia and Herzegovina, and Obedska Bara in Serbia have been designated and numerous other areas to protect birds and plants have been established at the national level and as NATURA 2000 sites.

72. Key water management issues in the Sava sub-basin include organic pollution, nutrient pollution, pollution by hazardous substances, and hydromorphological alterations. Additional issues for transboundary water cooperation are floods, water-demand management and drinking-

[29] Based on the contribution by the International Sava River Basin Commission. The figures on the size of the basin are those given by the Commission and slightly deviate from the Danube Basin Analysis (WFD Roof Report 2004).
[30] There is also a Krka River in the Mediterranean basin; for details see the assessment in document ECE/MP.WAT/WG.2/2007/13.

water supply as well as sediment management (quality and quantity). Prevention of accidental pollution and emergency preparedness are further tasks for international cooperation. Morphological alterations due to dams and hydropower plants, and hydrological alterations due to water abstractions for agricultural and industrial purposes and hydropower operation, must also be dealt with. Invasive species are also of concern.

73. Unregulated disposal of municipal and mining waste remains as a major pressure factor. The development of hydro-engineering structures, including those for navigation, is expected to become an additional pressure factor.

K. Velika Morava River[31]

74. The Velika Morava (430 km), with a sub-basin of 37,444 km^2, is the last significant right-bank tributary before the Iron Gate (average discharge 232 m^3/s for 1946–1991). It is formed by the confluence of two tributaries, the Juzna Morava, draining the south-eastern part of the sub-basin, and the Zapadna Morava, draining the south-western part.

Sub-basin of the Velika Morava

Area	Country	Country's share	
37,444 km^2	Bulgaria	1,237 km^2	3,3%
	Serbia and Montenegro*	36,163 km^2	96,6%
	The Former Yugoslav Republic of Macedonia	44 km^2	0,1%

Source: The Danube River Basin District. Part B: report 2004, Serbia and Montenegro. International Commission for the Protection of the Danube River, Vienna.

* At the date of publication of the above report, Serbia and Montenegro still belonged to the same State. At the time of writing of the UNECE assessment report, Montenegro and Serbia did not specify the separate countries' figures.

75. The mouth of the Velika Morava is critically polluted.

76. The most significant municipal pollution sources are the cities of Belgrade, Novi Sad and Nis. These sources discharge untreated wastewater and exert significant pressures with regard to both organic and nutrient load. The largest industrial polluters in Serbia are the food industries. Large pig farms are the largest point sources of nutrient discharge. Chemical fertilizers are widely used in farming. As for pesticides, significant impact arises due to inadequate distribution control and application, and use of prohibited pesticides and outdated products as well as poor storage methods.

[31] Based on information form the publication: The Danube River Basin District. Part B: report 2004, Serbia and Montenegro. International Commission for the Protection of the Danube River, Vienna.

77. Parts of the Juzna Morava's sub-basin have been almost completely deforested, causing one of the most severe cases of excessive erosion in the Balkans. As a result, the Juzna Morava brings large amounts of materials into the Velika Morava, filling and elevating its riverbed.

78. The Velika Morava and its tributaries the Juzna Morava and Nishava (see below) are significantly affected by hydromorphological alterations: hydropower generation, navigation, flood protection and urban development are the most affected. Also, dredging in the rivers Velika and Juzna Morava leads to morphological changes.

79. The most significant tributary of the Juzna Morava is the 218-km-long Nishava River (4,068 km^2 in total area, of which 1,058 km^2 is in Bulgaria). The Nishava rises on the southern side of the Stara planina Mountain in Bulgaria and joins the Juzna Morava near the city of Nis. A tributary of Nishava River, the 74-km-long Erma/Jerma, is in south-eastern Serbia and western Bulgaria. It twice passes the Serbian-Bulgarian border.

Sub-basin of the Nishava River

Area	Country	Country's share	
4,068 km^2	Serbia and Montenegro*	3,010 km^2	74%
	Bulgaria	1,058 km^2	26%

Source: The Danube River Basin District. Part B: report 2004, Serbia and Montenegro. International Commission for the Protection of the Danube River, Vienna.

* At the date of publication of the above report, Serbia and Montenegro still belonged to the same State. At the time of writing of the UNECE assessment report, Montenegro and Serbia did not specify the separate countries' figures.

L. Timok River[32]

80. The Timok River (180 km) is a right-bank tributary of Danube. Its area of 4,630 km^2 is shared by Serbia (98%) and Bulgaria (2%). On its most downstream part, the river forms for 17.5 km the border between Serbia and Bulgaria. At its mouth, the river discharge amounts to 31 m^3/s (1946-1991). Pollution by arsenic, cadmium, copper, nickel, zinc and lead is significant.

M. Siret River[33]

81. Ukraine (upstream country) and Romania (downstream country) share the sub-basin of the Siret River.

[32] Based on information form the publication: The Danube River Basin District. Part B: report 2004, Serbia and Montenegro. International Commission for the Protection of the Danube River, Vienna.
[33] Based on information by the National Administration "Apele Romane", Romania

Sub-basin of the Siret River			
Area	Country	Country's share	
47, 610 km^2	Romania	42,890 km^2	90.1%
	Ukraine	4,720 km^2	9.9%
Source: National Administration "Apele Romane", Romania			

Hydrology

82. Among the Danube tributaries, the 559-km-long Siret has the third largest sub-basin area, which is situated to the east of the Carpathians. The Siret's source lies in Ukraine and it flows through the territory of Ukraine and Romania. The sub-basin has a pronounced lowland character.

83. Its main tributaries are the rivers Suceava, Moldova, Bistrita, Trotus, Barlad and Buzau.

Discharge characteristics of the Siret River at the gauging station Lungoci (Romania)		
Q_{av}	210 m^3/s	Average for 1950-2005
Q_{max}	4,650 m^3/s	14 July 2005
Q_{min}	14.2 m^3/s	27 December 1996
Mean monthly values:		
October – 136 m^3/s	November – 128 m^3/s	December – 124 m^3/s
January – 110 m^3/s	February – 135 m^3/s	March – 217 m^3/s
April – 375 m^3/s	May – 337 m^3/s	June – 332 m^3/s
July – 256 m^3/s	August – 215 m^3/s	September – 178 m^3/s
Source: National Administration "Apele Romane", Romania		

84. There are over 30 man-made lakes in the catchment area. Natural lakes in Romania include the Rosu, Lala, Balatau, Cuejdel, Vintileasca and Carpanoaia Lakes.

85. Hydropower is generated at over 25 sites along the river.

Pressure factors

86. In Romania, the main water users are agriculture (13%), urban uses (47%), industry (32%), and thermal power production (8%).

87. The mining industry is one of the most significant pressure factors, with copper, zinc and lead mining, coal mining and uranium mining in Romania. There are a number of storage facilities (including tailing dams for mining and industrial wastes) in the Siret sub-basin.

88. Manufacturing includes light industry, and the paper, wood, chemical and food industries.

89. Thermal power stations are located at Suceava, Bacau and Borzesti; but only the thermal power station at Borzesti contributes to thermal pollution.

Transboundary impact and trends

90. According to an earlier assessment[34], the Siret was among the most polluted Danube tributaries in terms of degradable organic matter. Following water classifications for 2005, the Siret (RO 10 - confluence Danube Sendreni) was in class II for dissolved oxygen and BOD_5 and only for COD_{Cr} in class IV. The river Râmnicu Sărat, a right-hand tributary of the Siret, has a high natural background pollution by salts (class V) along its entire length of 136 km. The table below includes these new data and shows an increase in river kilometres that fall into class II.

Classification of the Siret River in Romania

Class/year	2003	2004	2005
Class I	1245 km (45%)	1332 km (48.2%)	920 km (31.8%)
Class II	628 km (22.7%)	921 km (33.3%)	1168 km (40.3%)
Class III	641 km (23.2%)	297 km (10.7%)	555 km (19.2%)
Class IV	111 km (4%)	15 km (0.5%)	109 km (3.8%)
Class V	139 km (5%)	199 km (7.2%)	145 km (5.0%)
Total length classified	2,764 km	2,764 km	2,897 km

Source: National Administration "Apele Romane", Romania.

[34] *Source:* Danube Basin Analysis (WFD Roof Report 2004).

N. Prut River[35]

91. Moldova, Romania and Ukraine share the Prut sub-basin.

Sub-basin of the Prut River			
Area	Country	Country's share	
27,820 km^2	Ukraine	8,840 km^2	31.8%
	Romania	10,990 km^2	39.5%
	Moldova	7,990 km^2	28.7%

Source: Ministry of Environment and Natural Resources, Moldova, and National Administration "Apele Romane", Romania. Figures for Ukraine are estimates. The Danube Basin Analysis (WFD Roof Report 2004) quotes an area of 27,540 km^2.

Hydrology

92. The Prut is the second longest (967 km) tributary of the Danube, with its mouth just upstream of the Danube delta. Its source is in the Ukrainian Carpathians. Later, the Prut forms the border between Romania and Moldova.

Discharge characteristics of the Prut River at the monitoring site Sirauti (Moldova)	
Q_{av}	1,060 m^3/s
Q_{max}	3,130 m^3/s
Q_{min}	3,73 m^3/s

Source: Ministry of Environment and Natural Resources, Moldova.

93. The rivers Lapatnic, Drageste and Racovet are transboundary tributaries in the Prut sub-basin; they cross the Ukrainian-Moldavian border. The Prut River's main national tributaries are the rivers Ceremosh, Derelui, Volovat, Baseu, Corogea (Ukraine), Jijia, Elanu, Liscov (Romania), Caugur, Camenca, Sovetul Mic, Sarata and Lapusna (Moldova). Most are regulated by reservoirs.

94. The biggest reservoir on the Prut is the hydropower station of Stanca-Costesti (total length – 70 km, maximal depth – 34 m, surface – 59 km^2, usable volume – 450 million m^3, total volume 735 million m^3), which is jointly operated by Romania and Moldova.

[35] Information submitted by the Ministry of Environment and Natural Resources, Moldova.

Pressure factors

95. Agriculture, supported by large irrigation systems, is one of the most important economic activities in the sub-basin. The rate of soil erosion is high and nearly 50% of the land used in agriculture suffer from erosion, thus polluting the surface water by nutrients.

96. Environmental problems include insufficient treated municipal wastewater, discharged mostly from medium-sized and smaller treatment facilities, which require substantial rehabilitation, as well as wastewater discharges from industries, many of them with outdated modes of production.

97. In Moldova, in particular the standards for organic pollution, heavy metals, oil products, phenols and copper are exceeded. One should note, however, that these standards are more stringent than the standards usually applied in EU countries. During the warm season, a deficit of dissolved oxygen and increased BOD_5 levels also occur. Microbiological pollution is also of concern.

98. In general, there is “moderate pollution” in the upper and middle sections of the Prut; the lower part is “substantially polluted”. All tributaries are also “substantially polluted”.

Hydrochemical characteristics of the Prut River at the monitoring site Cahul (Moldova), located 78 km upstream of the river mouth

Determinands	MAC[36]	End of 1980s	End of 1990s	September 2001	April 2002	September 2002	March 2003
N-NH_4, mg/l	0.39	1.78	0.69	0.09	0.63	0.33	0.77
N-NO_2, mg/l	0.02	0.08	0.04	0.01	0.03	0.01	0.04
N-NO_3, mg/l	9.00	1.54	1.79	1.03	0.91	0.79	2.46
N mineral, mg/l	…	3.40	2.43	2.13	1.88	1.32	3.70
P-PO_4, mg/l	…	0.05	0.06	0.04	0.05	0.04	0.09
Cu, µg/l	1.0	3.78	5.00	<3.00	<3.00	4.60	3.51
Zn, µg/l	10.0	15.95	29.90	5.00	<3.00	<3.00	<3.00
DDT, µg/l	Absence	0.37	0.28	<0.05	<0.05	<0.05	<0.05
HCH, µg/l	Absence	0.07	…	<0.01	0.01	0.00	0.00

Source: Moldova Water Quality Monitoring Program 2001-2004.[37]

Transboundary impact

99. Apart from water pollution, flooding remains a problem, despite water regulation by the many reservoirs.

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[36] The maximum allowed concentration of chemical determinands, except oxygen where it stands for the minimum oxygen content needed to support aquatic life. This term is only used in EECCA countries. Other countries use the term “water-quality criteria”. For a more detailed explanation, see earlier documents.

[37] C. Mihailescu, M. A. Latif, A Overcenco: USAID/CNFA-Moldova Environmental Programs - Water Quality Monitoring 2001-2004. Chisinau, Moldova, 2006.

100. The large wetland floodplain in downstream Moldova has been drained in favour of agriculture, but nowadays the pumping stations and dykes are poorly maintained, thus productive agricultural land is subject to becoming waterlogged. Due to flow regulation and water abstractions, the water level in downstream river sections in southern Moldova, particularly in dry years, is low and the water flow to the natural floodplain lakes, including lakes designated as a Ramsar site, is often interrupted.

101. In case of significant increase of the Danube water level, flooding of downstream flood plains in Moldova can become a problem. Oil abstraction fields and oil installations located near Lake Beleu may thus be flooded and oil products may contaminate the Ramsar site.

Trends [38]

102. Following measurements by Moldova, there is a decreasing pollution level for almost all determinands, except for nitrogen compounds, copper containing substances, and zinc. The decrease of pollution is particularly obvious in the lower part of the river.

103. Despite the improvement of water quality in the last decade, mostly due to decreasing industrial production, significant water-quality problems remain. However, water-quality improvements in terms of nitrogen, microbiological pollution and the general chemical status are likely.

O. Cahul River[39]

104. The Cahul River originates in Moldova and flows into the Lake Cahul, a Danube lake shared by both countries. Usually, the river is considered as a separate first-order river. It has become, however, part of the Danube River Basin District.

105. The table below shows the river's hydrochemical regime and developments since the end of the 1980s. Compared to the 1980s, the concentration of water pollutants has fallen considerably.

[38] Information submitted by the Ministry of Environment and Natural Resources, Moldova.
[39] Information submitted by the Ministry of Environment and Natural Resources, Moldova.

Hydrochemical characteristics of the Cahul River at the monitoring site Vulcanesti (Moldova), located 15 km upstream of the lake

Determinands	MAC	End of 1980s	End of 1990s	September 2001	April 2002	September 2002	March 2003
$N\text{-}NH_4$, mg/l	0.39	8.90	…	0.70	1.64	0.77	0.47
$N\text{-}NO_2$, mg/l	0.02	0.82	…	0.19	0.04	0.07	0.09
$N\text{-}NO_3$, mg/l	9.00	6.49	…	4.33	0.30	4.07	5.08
N mineral, mg/l	…	16.21	…	5.70	2.24	5.47	6.39
$P\text{-}PO_4$, mg/l	…	0.33	…	0.13	0.03	0.03	0.04
Cu, µg/l	1.0	8.50	…	3.60	3.20	7.00	<3.00
Zn, µg/l	10.0	12.40	…	6.40	3.00	9.20	<3.00
DDT, µg/l	Absence	0.16	…	<0.05	<0.05	<0.05	<0.05
HCH, µg/l	Absence	0.08	…	0.01	0.02	0.02	<0.01

Source*:* Moldova Water Quality Monitoring Program 2001–2004.

P. Ialpug River[40]

106. The Ialpug River originates in Moldova and flows into Ukraine's Lake Ialpug, one of the Danube lakes. Usually, the river is considered as a separate first-order river. It has become, however, part of the Danube River Basin District.

107. The table below shows the river's hydrochemical regime and its developments since the end of the 1980s. Compared to the 1980s, the concentration of water pollutants has fallen considerably.

Hydrochemical characteristics of the Ialpug River at the monitoring site Aluat (Moldova), located 12 km upstream of the lake

Determinands	MAC	End of 1980s	End of 1990s	September 2001	April 2002	September 2002	March 2003
$N\text{-}NH_4$, mg/l	0.39	1.17	…	0.12	1.50	0.60	0.20
$N\text{-}NO_2$, mg/l	0.02	0.25	…	0.00	0.05	0.00	0.01
$N\text{-}NO_3$, mg/l	9.00	4.31	…	0.59	3.23	0.94	1.75
N mineral, mg/l	…	5.74	…	1.32	5.26	4.15	2.35
$P\text{-}PO_4$, mg/l	…	0.15	…	0.07	0.02	0.04	0.02
Cu, µg/l	1.0	7.10	…	3.00	<3.00	3.00	<3.00
Zn, µg/l	10.0	23.20	…	<3.00	<3.00	<3.00	<3.00
DDT, µg/l	Absence	0.02	…	<0.05	<0.05	<0.05	<.0.5
HCH, µg/l	Absence	0.06	…	<0.01	0.02	<0.01	<0.01

Source: Moldova Water Quality Monitoring Program 2001-2004.

[40] Information submitted by the Ministry of Environment and Natural Resources, Moldova.

Q. Danube delta[41]

108. The Danube delta is largely situated in Romania, with part in Ukraine. It is a protected area, which covers 679,000 ha including floodplains and marine areas. The core of the reserve (312,400 ha) was established as a "World Nature Heritage" in 1991. There are 668 natural lakes larger than one hectare, covering 9.28 % of the delta's surface. The Delta is an environmental buffer between the Danube River and the Black Sea, filtering out pollutants and enabling both water quality conditions and natural habitats for fish in the delta and in the environmentally vulnerable shallow waters of the north-western Black Sea. Moreover, it is Europe's largest remaining natural wetland – a unique ecosystem.

R. Transboundary lakes in the Danube River Basin District[42]

109. In the Danube River Basin District, there are a multitude of natural lakes. Most of them are small, but some are also very large, with areas of several square kilometers.

110. Transboundary lakes include Lake Neusiedl (shared by Austria and Hungary, the lakes Iron Gate I and Iron Gate II on the Danube itself, the reservoir Stanca-Costesti (shared by Moldova and Romania, located on the river Prut), Lake Cahul (shared by Moldova and Ukraine, the lake is the final recipient of the river Cahul[43]) and Lake Ialpug[44] (a liman-like lake in Ukraine that has been blocked off by levees of the Danube River).

111. An assessment of these lakes is contained in the following documents: ECE/MP.WAT/2006/16/Add.1 and ECE/MP.WAT/WG.2/2007/16 and 17.

II. ASSESSMENT OF THE STATUS OF THE KOGILNIK RIVER[45]

112. Moldova (upstream county) and Ukraine (downstream country) share the basin of the Kogilnik River.

Basin of the Kogilnik River

Area	Countries	Countries' share	
6,100 km²	Moldova	3,600 km²	57.8%
	Ukraine	2,600 km²	42.2%

Source: The United Nations World Water Development Report – a joint report by the 23 United Nations agencies concerned with freshwater. Published in 2003 jointly by UNESCO and Berghahn Books.

[41] Danube Basin Analysis (WFD Roof Report 2004).
[42] Danube Basin Analysis (WFD Roof Report 2004).
[43] The Cahul, shared by Moldova and Ukraine, is usually considered as a separate first-order river. It became part of the International Danube River Basin District.
[44] Lake Ialpug is the final recipient of the Ialpug River, which drains part of Moldova and part of Ukraine. The river is usually considered as a separate first-order river. It has become part of the International Danube River Basin District.
[45] Information submitted by the Ministry of Environment and Natural Resources, Moldova.

113. The Kogilnik has several small transboundary tributaries, including the Schinosa and the Ceaga.

Discharge characteristics of the Kogilnik River in Moldova upstream of the border with Ukraine	
Q_{av}	8.32 m^3/s
Q_{max}	18.0 m^3/s
Q_{min}	1.53 m^3/s

Source: Ministry of Environment and Natural Resources, Moldova.

114. Over the observation period, the level of ammonium is permanently over the MAC and tends to grow. Concentrations of nitrogen have increased over the last years. Compared to the end of the 1980s and 1990s, concentrations of phosphorus increased considerably.

Hydrochemical characteristics of the Kogilnik River at the monitoring site Cimislia (Moldova)

Determinands	MAC	End of 1980s	End of 1990s	September 2001	April 2002	September 2002	March 2003
$N\text{-}NH_4$, mg/l	0.39	3.22	…	0.50	2.06	10.00	6.90
$N\text{-}NO_2$, mg/l	0.02	0.64	…	0.24	0.10	0.24	0.38
$N\text{-}NO_3$, mg/l	9.00	3.54	…	3.46	0.60	3.38	6.42
N mineral, mg/l	…	7.40	…	5.88	3.12	14.78	15.24
$P\text{-}PO_4$, mg/l	…	0.38	…	0.15	0.67	1.39	1.89
Cu, µg/l	1.0	7.40	…	11.80	4.10	<3.00	3.43
Zn, µg/l	10.0	12.00	…	49.10	31.50	215.50	<3.00
DDT, µg/l	Absence	…	…	<0.05	<0.05	0.01	<0,05
HCH, µg/l	Absence	0.01	…	0.01	0.03	<0.01	<0.01

Source: Moldova Water Quality Monitoring Program 2001-2004.

III. ASSESSMENT OF THE STATUS OF THE CITAI RIVER[46]

115. Of the basin's total area, shared by Moldova and Ukraine, there are 150 km^2 in Moldova. An assessment will be made at a later stage.

IV. ASSESSMENT OF THE STATUS OF THE HADJIDER RIVER[47]

116. Of the basin's total area, shared Moldova and Ukraine, there are 180 km^2 in Moldova. An assessment will be made at a later stage.

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[46] Information submitted by the Ministry of Environment and Natural Resources, Moldova.
[47] Information submitted by the Ministry of Environment and Natural Resources, Moldova.