

# ICPDR organisation and work in the field of accidental water pollution

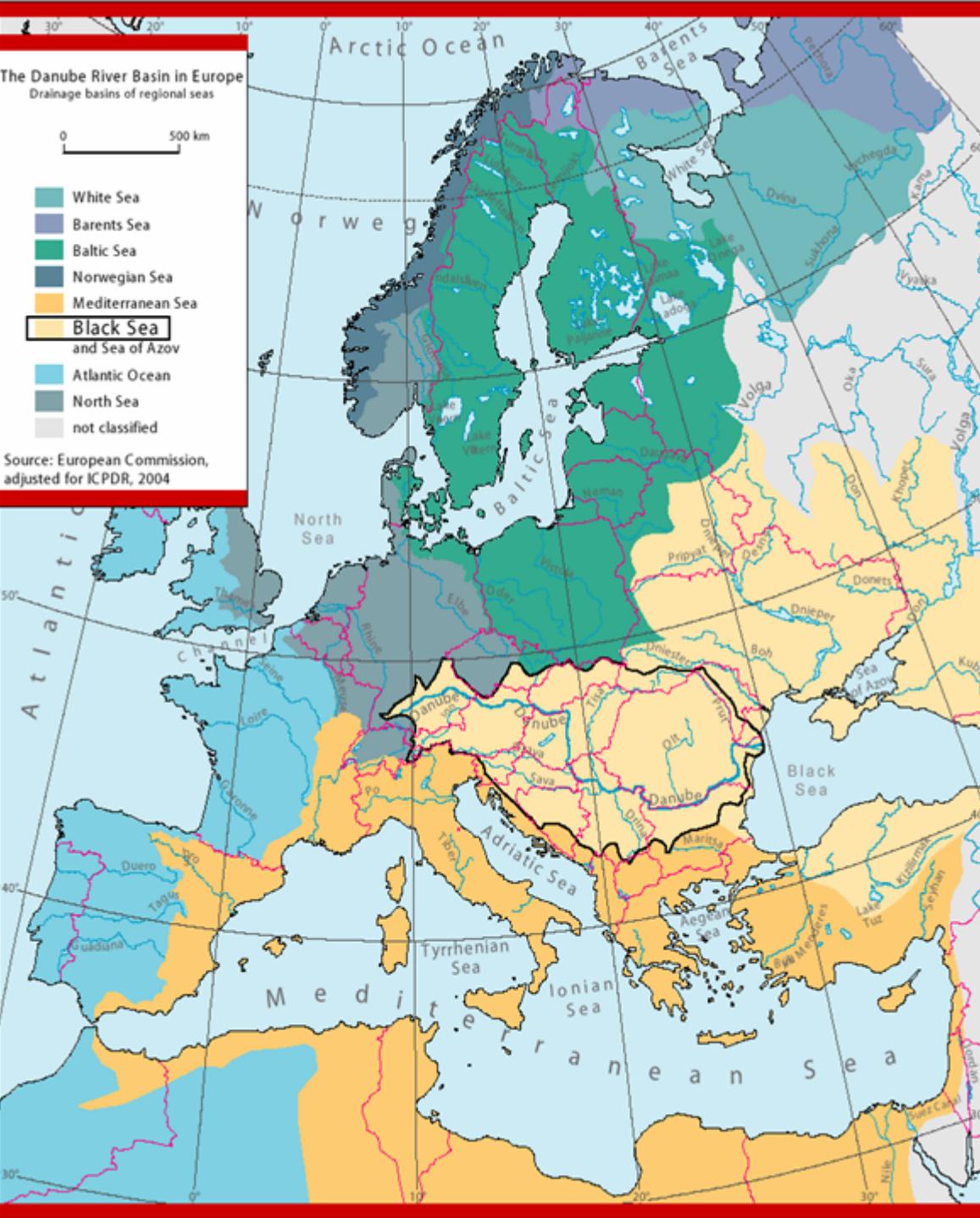
## Examples of transboundary cooperation

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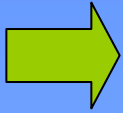
CEDRE Day  
Paris, **22** March 2007.



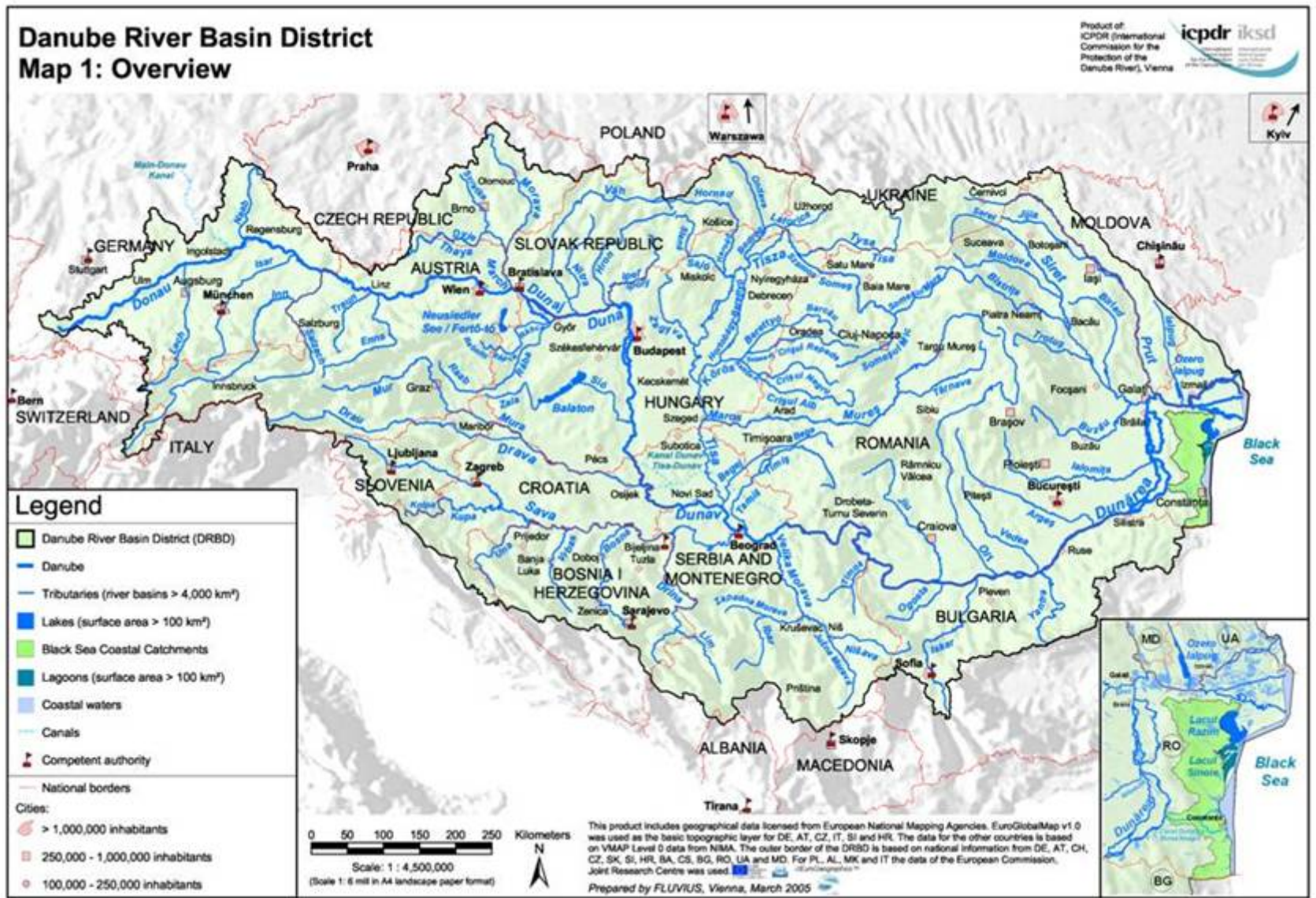
- 10% of Europe
- 83 mil inhabitants
- 18 countries

**Most international river basin in the world**





# Danube River Basin District



# The Danube River Protection Convention

- Signed 29. June 1994
- Entry into force 22. October 1998
- Permanent Secretariat since 1 October 1999














A legal frame for co-operation to assure the protection of water and ecological resources and their sustainable use in the Danube River Basin






# **The International Commission for the Protection of the Danube River (ICPDR )**

**has been established to  
implement the objectives and  
provisions and to achieve the  
goals of the Danube River  
Protection Convention**



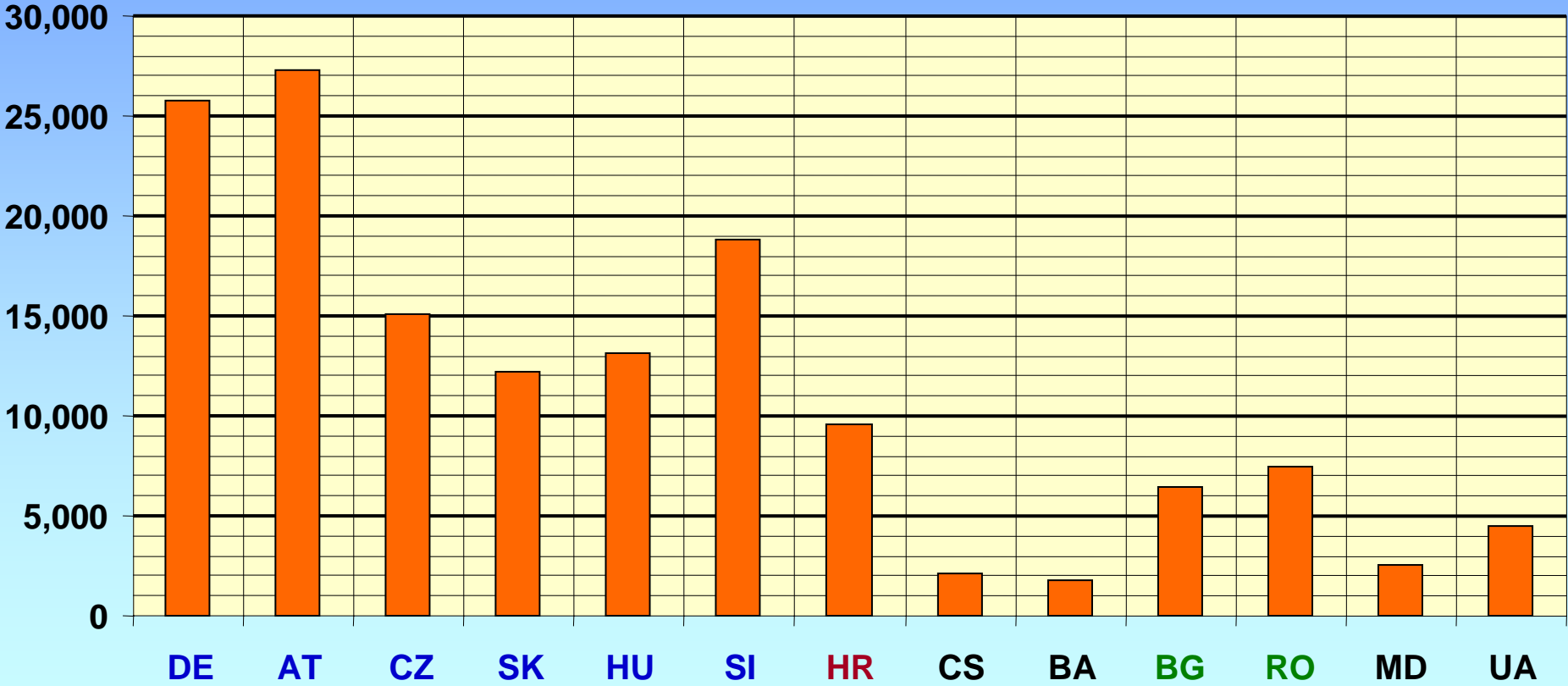
**ICPDR – common platform for the implementation of  
EU Water Framework Directive (WFD) in the  
Danube River Basin**

COUNTRY				POPULATION*			TOTAL AREA			DRB
				of the state		in DRB		of the state		in DRB
flag	name	status		capita	million	%	km <sup>2</sup>	km <sup>2</sup>	%	%
	GERMANY	EU	CP	82,398,326	9.300	11.49	357,021	56,184	7.01	15.74
	AUSTRIA	EU	CP	8,188,207	7.700	9.51	83,858	80,423	10.03	95.90
	CZECH REPUBLIC	EU	CP	10,249,216	2.800	3.46	78,866	22,870	2.85	29.00
	SLOVAKIA	EU	CP	5,430,033	5.200	6.42	48,845	47,084	5.87	96.39
	HUNGARY	EU	CP	10,045,407	10.045	12.60	93,030	93,030	11.61	100.00
	SLOVENIA	EU	CP	1,935,677	1.700	2.10	20,273	16,422	2.05	81.00
	CROATIA	Apl	CP	4,422,248	3.000	3.71	56,542	34,965	4.36	61.84
	SERBIA AND MONTENEGRO	-	CP	10,655,774	9.800	12.11	102,350	88,635	11.06	86.60
	BOSNIA AND HERZEGOVINA	-	CP	3,989,018	2.900	3.58	51,129	36,636	4.57	71.65
	BULGARIA	Acs	CP	7,537,929	3.500	4.32	110,910	47,413	5.92	42.75
	ROMANIA	Acs	CP	22,271,839	21.000	25.94	237,500	232,193	28.97	97.77
	MOLDOVA	-	CP	4,439,502	1.100	1.36	33,843	12,834	1.60	37.92
	UKRAINE	-	CP	48,055,439	2.650	3.27	603,700	30,520	3.81	5.06
ICPDR TOTAL				219,618,615	80.850	99.88	1,877,867	799,209	99.72	

	ALBANIA	-	-	3,582,206	0.010	0.01	28,748	126	0.01	0.44
	ITALY	EU	-	57,998,353	0.020	0.02	301,230	565	0.07	0.19
	MACEDONIA	-	-	2,063,122	0.010	0.01	25,333	109	0.01	0.43
	POLAND	EU	-	38,622,660	0.040	0.05	312,685	430	0.05	0.14
	SWITZERLAND	-	-	7,318,638	0.020	0.03	41,290	1,809	0.23	4.38
BASIN TOTAL				329,203,593	80.950	100.00	2,587,153	802,248	100.00	

# Economic indicators (estd. in 2002)

## GDP on PPP [ Euro / capita ]

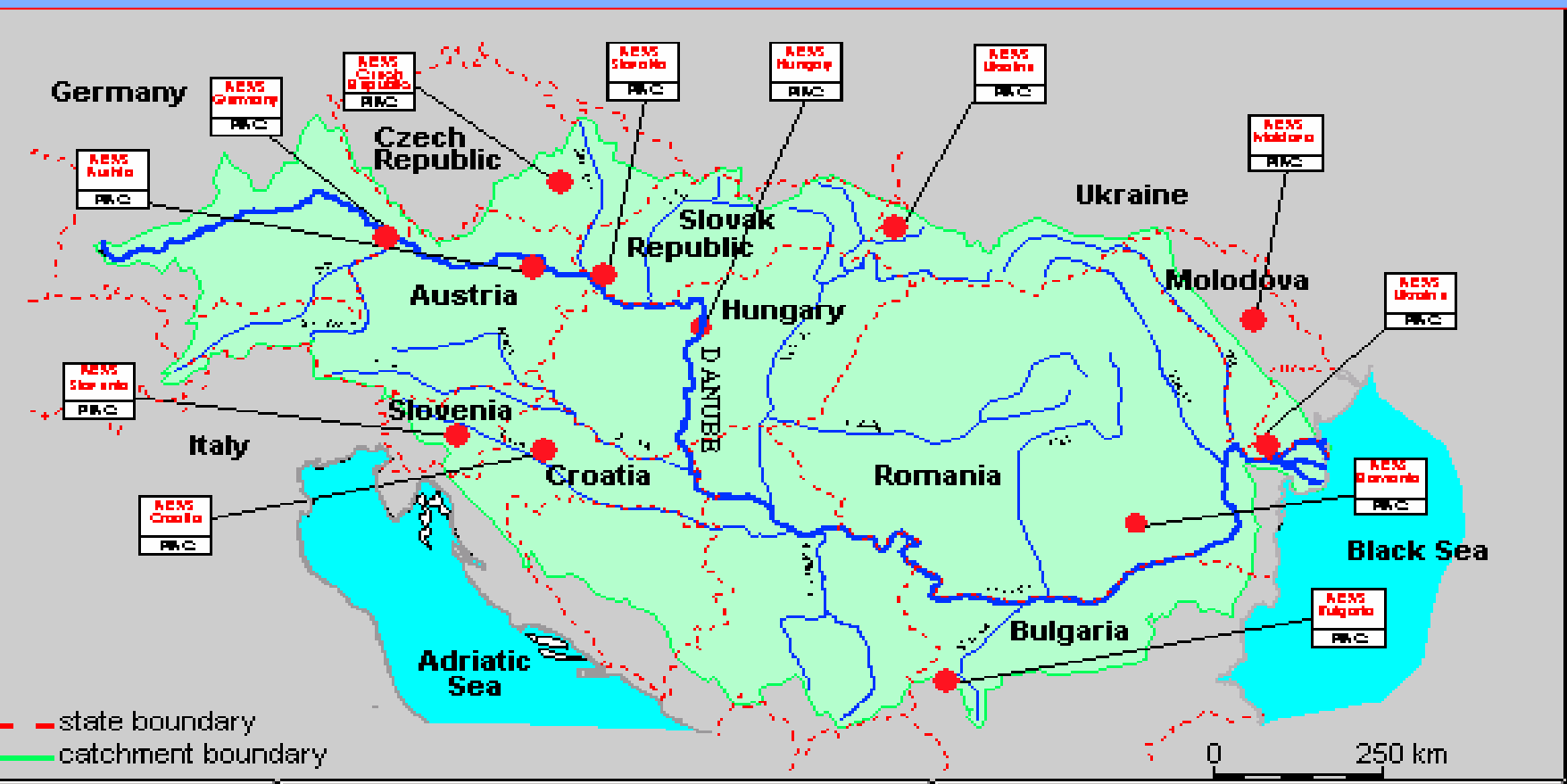








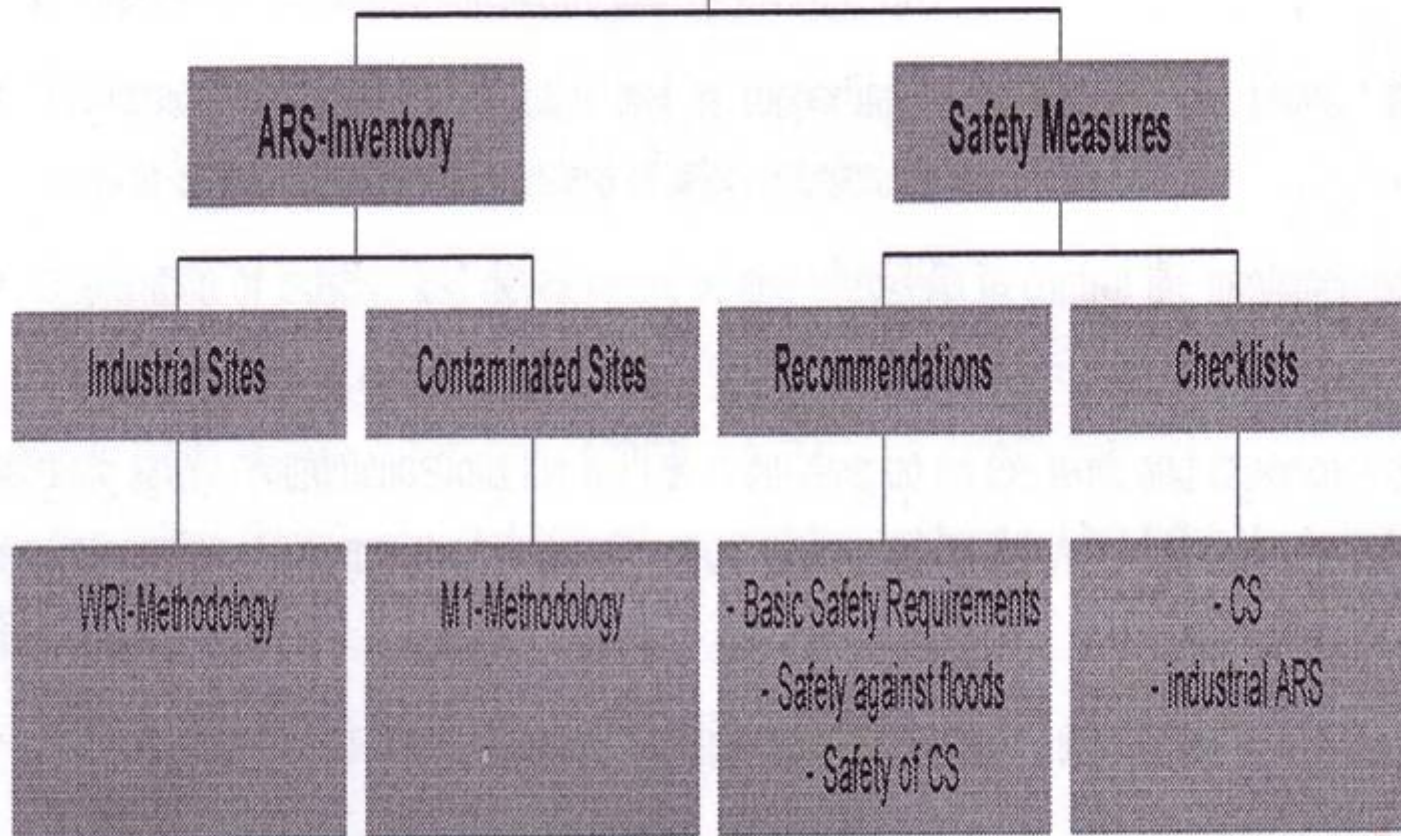
# Principle International Alarm Centres (PIAC) of the Accident Emergency and Warning System (AEWS) of Danube



# ICPDR organisation and work in the field of accidental water pollution

- The first stage of the Danube AEWS came into operation in April 1997 in Austria, Bulgaria, Czech Republic, Croatia, Germany, Hungary, Romania, Slovak Republic and Slovenia. Ukraine and Moldova entered the system in 1999; Bosnia and Herzegovina, and Serbia and Montenegro are joining at present.
- In the participating countries so-called Principal International Alert Centres (PIACs) have been established. The main function of these centres is to propagate the warning message at international level.

# ICPDR Accident Prevention



# Basic units of PIACs

- the Communication Unit, which sends and receives warning messages,
- the Expert Unit, which evaluates the possible trans-boundary impact of an accident,
- the Decision Unit, which decides about international warnings.

PIACs have 24-hour attendance at the communication unit.

- ✓ The Expert Unit uses the database of dangerous substances to evaluate the possible impact to the environment and the Danube Basin Alarm Model to assess and forecast the transfer of pollutants in the river network.



# Danube AEWS

- The Danube AEWS is activated in the event of trans-boundary water pollution danger or if warning threshold levels are exceeded.
- The AEWS operation has been tested many times during various Danube alerts. Since the official start of its operation in May 1997, more than 50 accidents have been registered by AEWS.
- The most frequent pollutant was oil in 50÷60 % of cases.
- The cause of an accident was identified only in 20 cases.

# Danube AEWS (cont)

- The procedures for the AEWS operation are described in the International Operation Manual, which is translated into the national languages of the Danube countries.
- Satellite communication with Information Processing System and faxes were established with the support of the Phare programme and were used for the fast transmission of the messages.

# Danube AEWS upgrade

- A substantial upgrade of AEWS is being carried out to make the whole system more effective and cost-efficient. The old satellite-based communication has been replaced by a web-based communication using Internet and SMS messages to be an integral part of the ICPDR information system (Danubis).
- Simultaneously, the AEWS supporting tools (Danube Basin Alarm Model and database of dangerous substances) are continuously being improved. Importance is given to regular training and experience exchange of the PIAC's staff to support the proper operation of the AEWS.

# Testing of PIACs

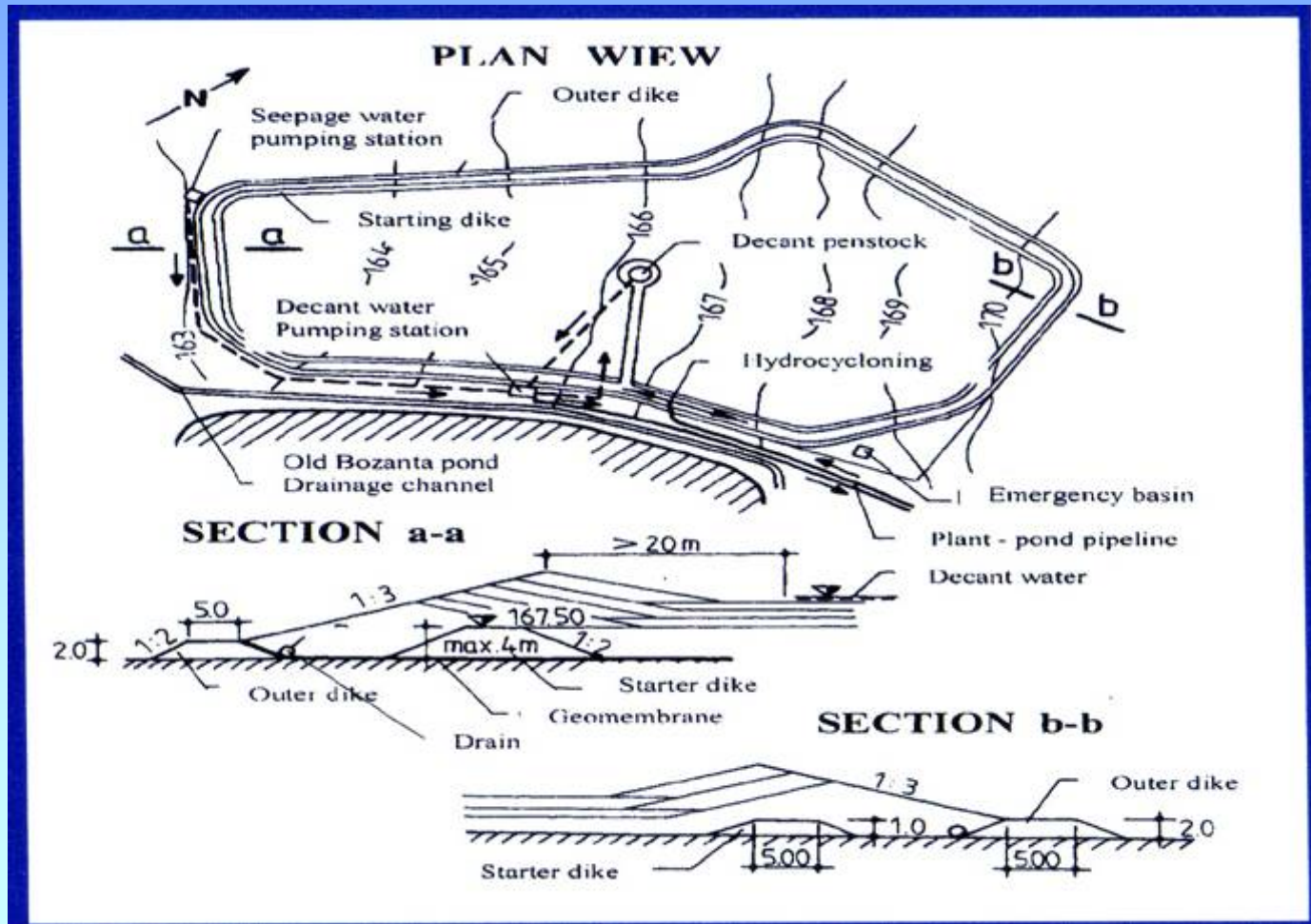
- The efficiency of the Romanian PIAC was firstly proved during the Kosovo war, in spring of 1999, when communicating the state of the Danube at the entrance to Romania, due to contradictory news about the NATO bombardments on economic targets and refineries on the Danube banks (Novi Sad, Pancevo, etc.) which posed a serious threat to the water intakes for the population along the Danube River and Danube Delta.
- Significant proof of the efficiency of AEWS was obtained during the Baia Mare and Baia Borsa spills on the Tisza River in January and March 2000. Sound operation of the system enabled timely activation of measures preventing greater damage to the Tisza River ecosystem



# Causes and effects of accidental pollution

- On 30 January 2000 at around 10 p.m. a dam broke at the Aurul Mine Tailings Recovery Plant near Baia Mare in north-western Romania, (due to liquid precipitation fallen on a thick snow layer and sudden increase of the temperature from below zero to 8°C).
- The accidental pollution with cyanide was due to a breach of approx. 20 m, with a depth expansion until the top of the starter dike on the southern side of the pond S.C.AURUL S.A. Baia Mare. The pond has an area of 93 ha and is located at a distance of 1.2 km from Lapus river.
- 100,000 m<sup>3</sup> of waste waters with a high cyanide and heavy metal content were discharged into the receiving creeks, and from there, onwards into the river network of the Danube Basin (Somes/Szamos; Tisza and the Danube).

# Initial layout of AURUL S.A. tailings pond



Aerial view of the pond before the technical accident



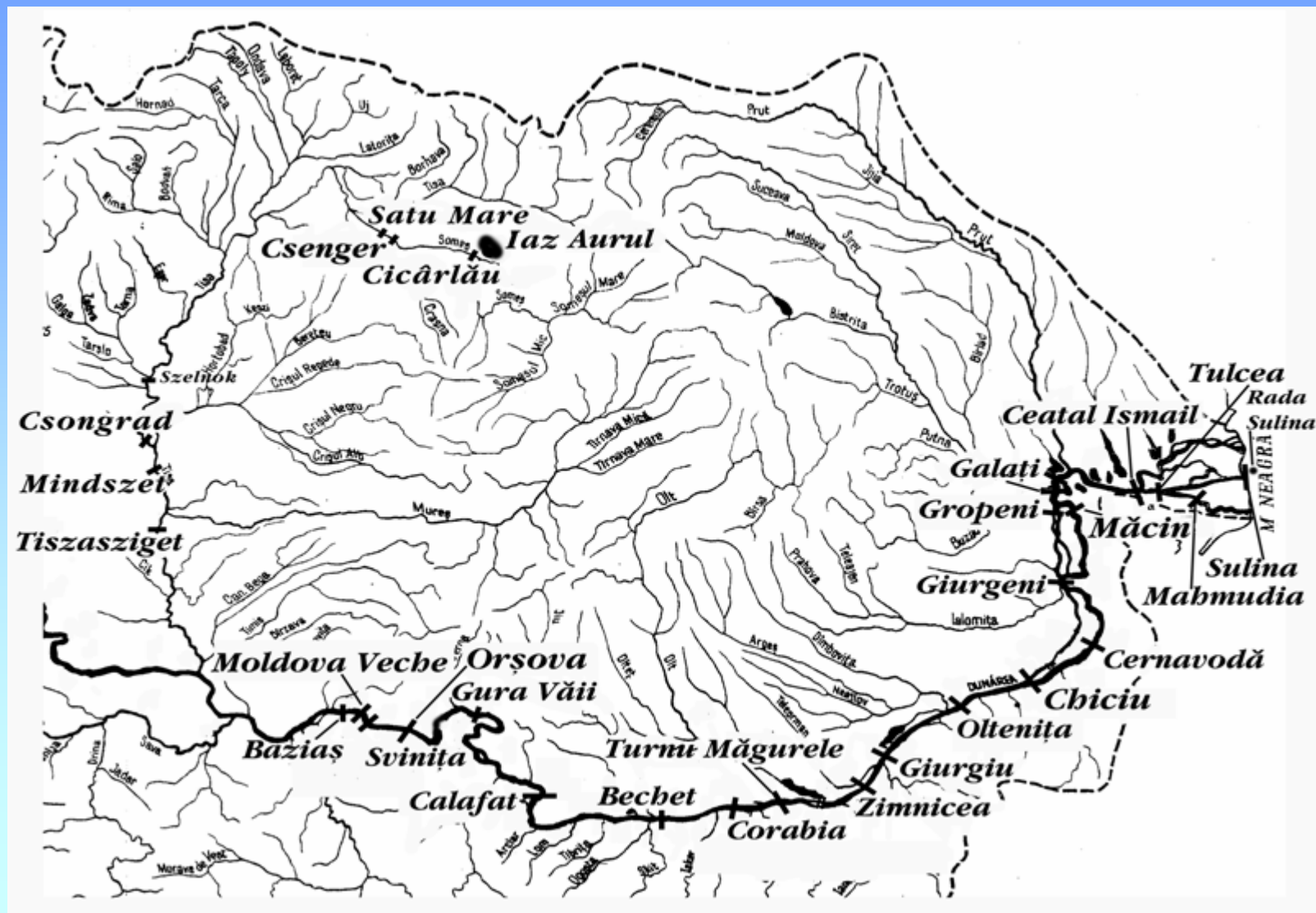


# Dike breach after the technical accident

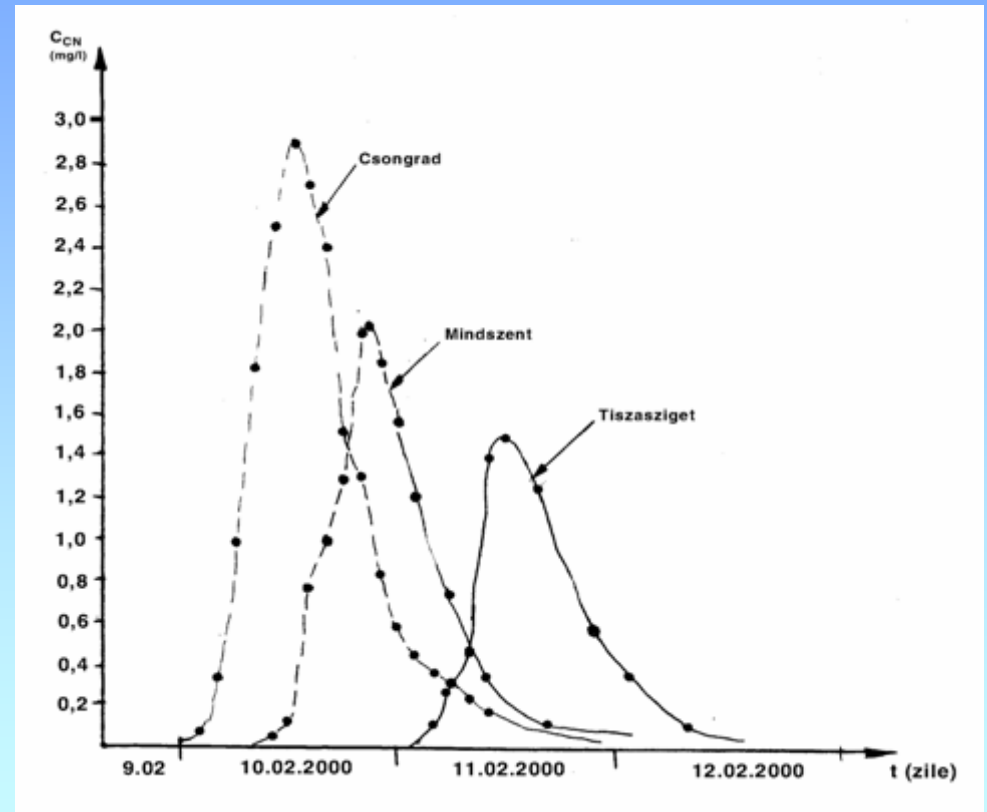
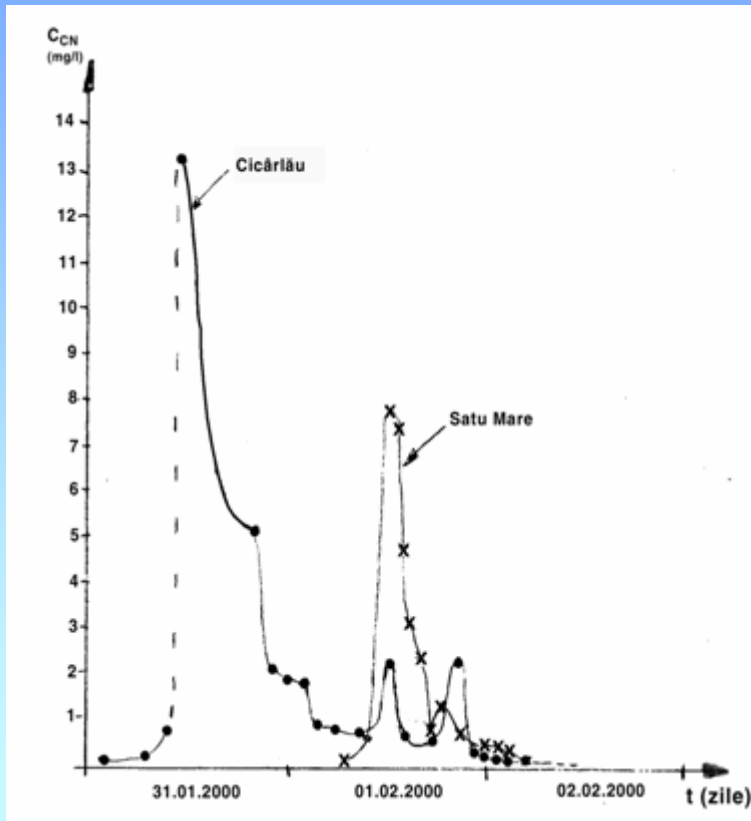




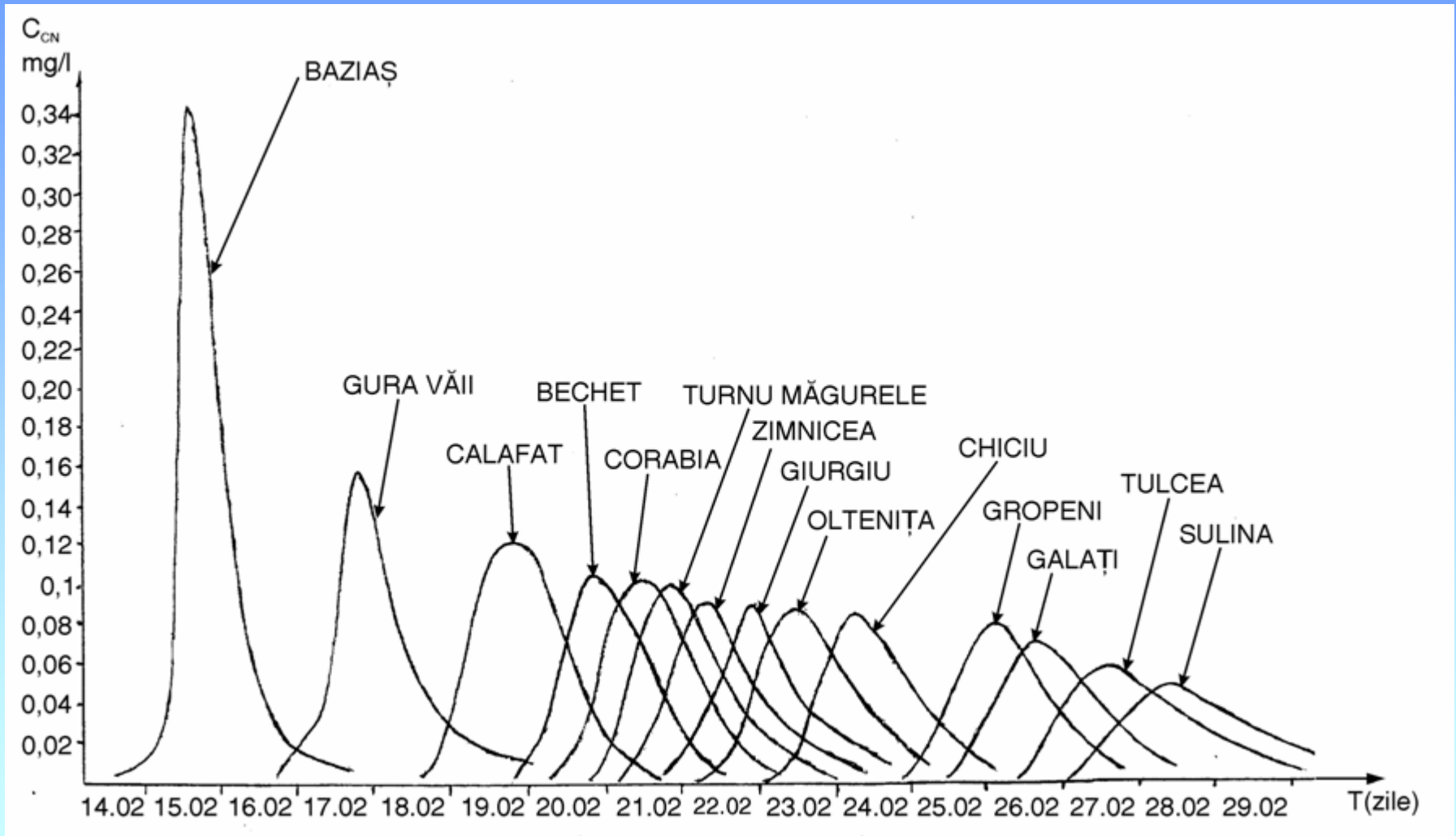
# Main monitoring stations on rivers Somes, Tisa and Danube during the spill



# Propagation of the cyanide concentrations at the main monitoring stations on Somes and Tisa rivers



# The propagation of the cyanide concentrations at the main monitoring stations on the Danube river during the period 14.02 – 28.02.2000.



By February 26, 2000, cyanide concentration fell below limits, but concentrations of Cd, Cu, Mn and Fe were higher than admissible values

## Chemical hotspot locations in areas affected by the spill

Chemical	EU Standard 98/83/EG	Date of testing	Location	Concentr. (mg/l)
Copper	2 µg/l	During spill	Cicarlau	10.5
		During spill	RO–HU border	18
Cyanide	0.05 mg/l	During spill	Aurul Pond	66-81
		During spill	Near spill	19.2
		During spill	Satu Mare / Somes	7.8
		During spill	HU–YU border	1.5
		During spill	Bazias/Danub e	0.34
		During spill	Danube Delta	0.058

# Pollution impact on environment

- Regarding cyanide, acute effects occurred along stretches of the rivers Tisa and Danube:
  - Water plankton (plant and animal) was killed when the cyanide wave passed;
  - Fish were killed in the wave or immediately after;
  - Soon after the wave passed, however, plankton and aquatic micro-organisms recovered relatively quickly due to unaffected water coming from upstream;



# Response organisation

- In the same region, another tailing dam broke in Baia Borsa on 10 March 2000, due to a severe rainfall, spilling 40,000 tones of sediments containing heavy metals.
- These two serious accidents with a transboundary impact initiated a rapid response within both the ICPDR and the EU.
- The Romanian PIAC warned in due time the population and the transboundary countries in order to take the necessary measures to prevent any contamination, having noticed that no any affected persons were recorded.

- Also the data transmitted in due time by Romanian PIAC, was forwarded by the ICPDR Secretariat from Vienna, directly to Mrs. Margot Wallstrom, the European Commissioner on Environment Protection.
- This allowed the media to be informed on the evolution of the pollution and the measures taken in due time by the Romanian authorities in order to:
  - diminish and to avoid any adverse effects of the accident on the water users and the environment.

# Follow-up event

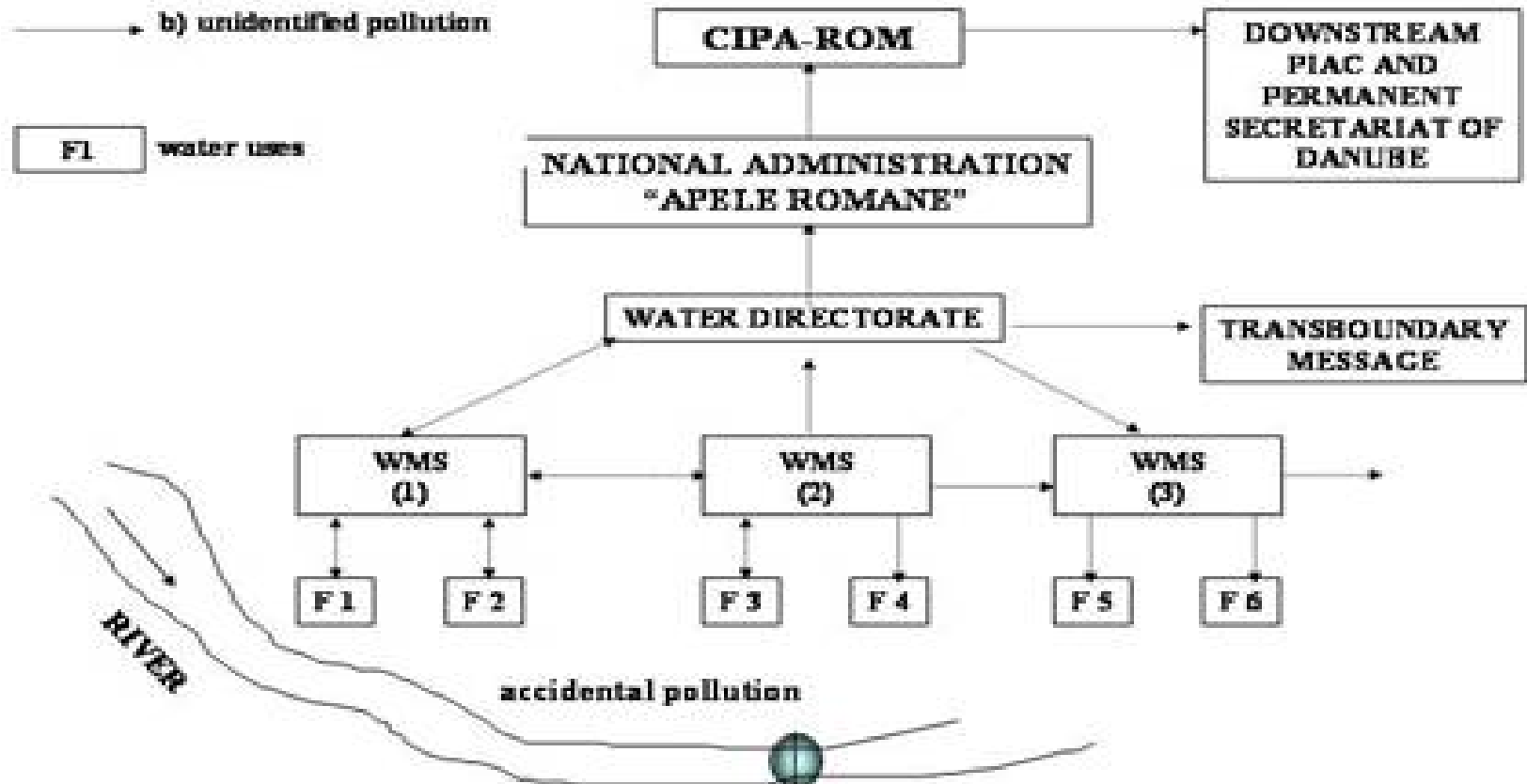
- The Baia Mare case was also provided as an example with spill clean-up costing Romania some 2 million Euros with a further 10 million Euros spent by the remaining company to make safe the dam and providing an extra 300,000 m<sup>3</sup> overflow capacity

# Testing of PIAC Romania (CIPA- ROM)

- The Accidental Emergency Warning System (called SAPA-ROM in Romania) stipulates the form and conditions of notification which is the framework for action in order to prevent accidental water pollution and raise the alarm in Romania, no matter what the nature and the source of the pollution ;
- As a Danube country, Romania, like Hungary, implements the AEW System in the frame of the International Commission for the Protection of the Danube River (ICPDR). Furthermore, cooperation between Hungary and Romania is regulated by a trans-boundary river convention also known as the Hydrotechnical Convention.

# Informational flow in the case of accidental pollution with a transboundary effect

PRIMARY INFORMATIONAL FLOW IN CASE OF LOCAL ACCIDENTAL POLLUTION WITH TRANSBOUNDARY EFFECT (UNIDENTIFIED POLLUTION)





# Ordinary activities of CIPA-ROM

- Receiving a first rapport on accidental pollution;
- Recording the event;
- Decision-making concerning the actions which must be taken and the authorities who must be informed or warned;
- Warning the national and regional authorities in order to mitigate the reported situation;
- Informing the public and mass-media;
- Initiating a national and regional alarm plan;
- Transmitting the message to other PIAC centres for additional information;
- Recording all the measures during the alarm situation;
- Decision-making on when the alarm is over;
- Transmitting a message “alarm over” to the other PIAC centres

# Transboundary (Hungary ↔ Romania) co-operation

- The cooperation of Romanian authorities with Hungarian authorities exists both for the Water Authority and the Environmental Authority and they develop according to the agreement between the Governments of Romania and Hungary regarding the Co-operation on Protection and Sustainable Usage of Transboundary Waters;
- The Danube Regional Emergency Alarm System, which has its centre in Vienna and the Hungarian centre in Budapest-VITUKI, can be involved in structuring the water quality contingency plan.
- The Romanian Water Directorates take part in the water quality contingency tasks: the concerned Directorate situated in the watershed of Barcau and Crisuri has its centre in Oradea.

# Transboundary (Hungary ↔ Romania) co-operation (cont.)



## Transboundary River Basin Management of the Körös/Crisuri River, a Tisza/Tisa sub-Basin

### Activity B.1

“Harmonised accidental water pollution response plan  
for the Körös/Crisuri watershed”

**THANK YOU FOR YOUR ATTENTION!**