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**COMMISSION STAFF WORKING DOCUMENT**

**Member State : Romania**

*Accompanying the document*

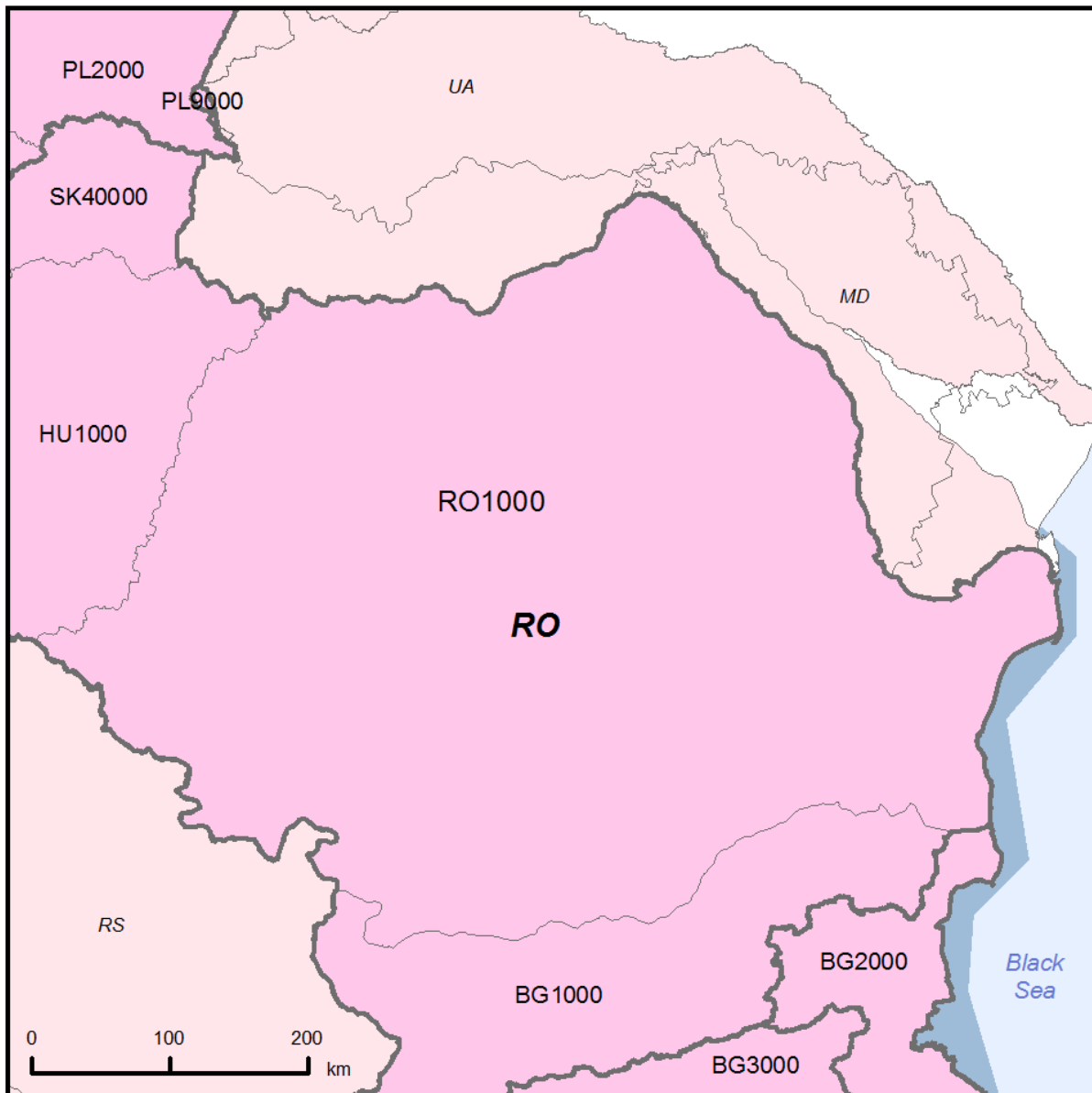
**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND  
THE COUNCIL**

**on the Implementation of the Water Framework Directive (2000/60/EC)**






**River Basin Management Plans**

**{COM(2012) 670 final}**

# 1. GENERAL INFORMATION



*Figure 1.1: Map of River Basin District*

-  International River Basin Districts (within EU)
-  International River Basin Districts (outside EU)
-  National River Basin Districts (within EU)
-  Countries (outside EU)
-  Coastal Waters

*Source: WISE, Eurostat (country borders)*

Romania has a population of 21,5 million and a total surface area of 238 391 km<sup>2</sup>. Romania, in southeast Europe, is mountainous in the north while the main feature in the south is the vast Danube valley. The river forms a delta as it approaches the Black Sea.

97.4% of Romania's surface is part of the international Danube River Basin District (DRBD), representing approximately 29% of its surface. The Romanian part of the DRBD encompasses 11 sub-basins.

RBD / Sub-basin	Name	Size (km <sup>2</sup> )	% of RO territory	Countries sharing borders
RO1000	Danube	238391		BG, HU, MD, RS, UA
<b>Sub-basin</b>				
SO	Someş - Tisa	22380	9.4	HU, UA
CR	Crişuri	14860	6.3	HU
MU	Mureş	28310	11.9	HU
BA	Banat	18393	7.7	RS
JL	Jiu	16676	47.1	-
OT	Olt	24050	10.1	-
AG	Argeş - Vedea	21479	9	-
IL	Buzău - Ialomiţa	24699	10.1	-
SI	Siret	28116	11.9	UA
PR	Prut - Bârlad	20267	8.5	MD, UA
DL	Dobrogea Litoral	19161	8	BG, MD, RS, UA

**Table 1.1:** Overview of Romania's River Basin District, including sub-basins

**Source:** River Basin Management Plans reported to WISE<sup>1</sup>: <http://cdr.eionet.europa.eu/ro/eu/wfdart13>

Name international river basin	National RBD	Countries sharing borders	Co-ordination category	
			1	
			km <sup>2</sup>	%
Danube	RO1000	BG, HU, MD, RS, UA	238,506	29.6

**Table 1.2:** Transboundary river basins by category (see CSWD section 8.1) and % share in Romania<sup>2</sup>

Category 1: Co-operation agreement, co-operation body, RBMP in place.

Category 2: Co-operation agreement, co-operation body in place.

Category 3: Co-operation agreement in place.

Category 4: No co-operation formalised.

**Source:** EC Comparative study of pressures and measures in the major river basin management plans in the EU

<sup>1</sup> This MS Annex reflects the information reported by the MS to WISE which may have been updated since the adoption of the RBMP. For this reason there may be some discrepancies between the information reported in the RBMP and WISE.

<sup>2</sup> Categorisation determined under the EC Comparative study of pressures and measures in the major river basin management plans in the EU (Task 1b: International co-ordination mechanisms).

## **2. STATUS OF RIVER BASIN MANAGEMENT PLAN REPORTING AND COMPLIANCE**

### **2.1 Adoption of the RBMP**

The Danube River Basin Management Plan (RBMP) was published on 22/12/2009 and was adopted by a Governmental Decision on 26/01/2011. The RBMP was reported to the Commission on 18/03/2011.

### **2.2 Key strengths and weaknesses**

A common strength for Romania's RBMP is that it identifies the major sources of pollution and the monitoring programme is continuously adjusted (e.g. the relevant BQEs are monitored). The RBMP was set up based on strong stakeholder involvement and good coordination at international level with EU Member States and third countries under the framework of the International Commission for the Protection of Danube River. The establishment of methodologies extensively uses the CIS guidance documents.

However, a range of weaknesses exist, some of them are the following:

- The use of biological quality elements for ecological status assessment is not complete.
- The link between identified pressures, objectives and measures is not always clear.
- The description of methodologies regarding e.g. cost-benefit analysis, exemptions etc. is very general.
- The evaluation of ecological potential has low confidence level.
- Harmonization between abiotic and biotic criteria is still under development for typology definition.

## **3. GOVERNANCE**

### **3.1 Timeline of implementation**

The RBMP was published on 22/12/2009 and submitted to the WISE system on 22/03/2010; further completions were added on 11/03/2011, 21/03/2011, 29/06/2011, 27/02/2012 and 12/03/2012 (in response to the additional request of the EEA).

The following table shows the dates of consultations on the work programme, the significant water management issues (SWMIs), and draft RBMP (from WISE section 1.3.2), as required by Article 14 of the WFD.

In addition, the final National Management Plan for the RO part of the international DRBD was published to schedule on 22/12/2009, with national approval provided on 26//2011.

<b>RBD</b>	<b>Timetable</b>	<b>Work programme</b>	<b>Statement on consultation</b>	<b>Significant water management issues</b>	<b>Draft RBMP</b>	<b>Final RBMP</b>
<b>Due dates</b>	<b>22/06/2006</b>	<b>22/06/2006</b>	<b>22/06/2006</b>	<b>22/12/2007</b>	<b>22/12/2008</b>	<b>22/12/2009</b>
RO1000		22/12/2006		20/12/2007	22/12/2008	22/12/2009

*Table 3.1.1: Timeline of the different steps of the implementation process*

*Source: WISE*

### **3.2 Administrative arrangements**

The National Administration Romanian Waters (NARW) was established in 2002 as the water management authority in Romania. Together with the Ministry of Environment and Forests, NARW was designated as the competent authority to implement the Water Framework Directive in Romania throughout the 11 Water Directorates encompassed by the national part of the DRBD

NARW elaborates the River Basin Development and Management Schemes under the coordination of the Ministry of Environment. Within the NARW, the Department for elaboration of the RBMP was created while in the Institute for Hydrology and Water Management belonging to NARW, a department concerning the elaboration of the RBDPs was created, its mission being to ensure the management of the quantitative aspects of water resources.

The Romanian National RBMP was elaborated in agreement with the international Danube RBMP coordinated by the ICPDR; the frame established together with other countries in the Danube River Basin was used as a basis of the national and sub-basin management plans. The National Plan represents a synthesis of the 11 Management Plans elaborated for the 11 sub-basins.

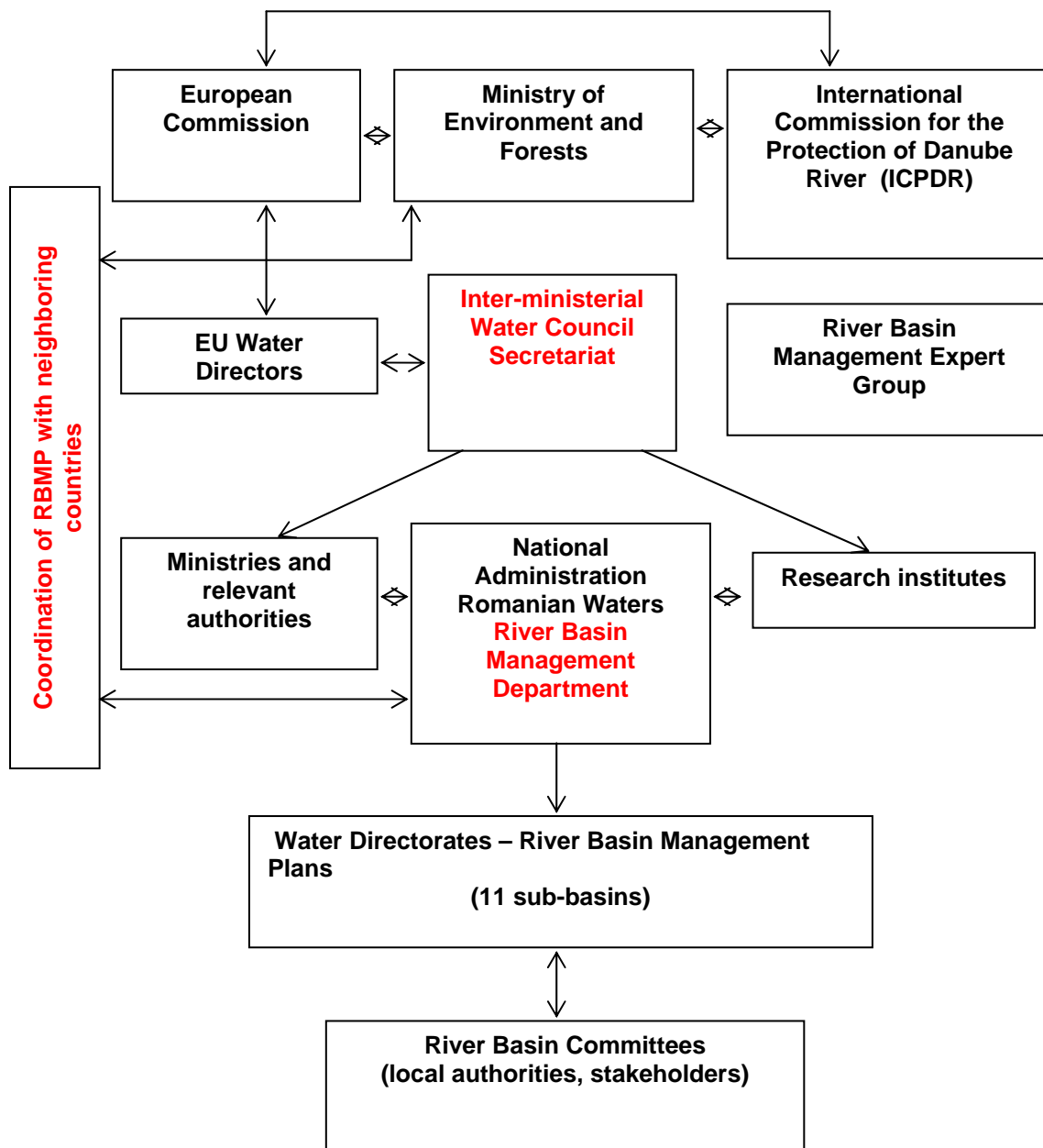


Figure 3.2.1: Organogram of water management authorities implementing the WFD in Romania

### 3.3 RBMPs - Structure, completeness, legal status

The Ministry of Environment coordinated the elaboration of the National Management Plan by NARW, which supervised further the elaboration of the sub-basin Management Plans by the 11 Water Directorates. The chapters concerning the groundwater were realized by the National Institute for Hydrology and Water Management. The 11 sub-basin Management Plans were further agreed by the Basin Committees; these structures aim to support the public consultations in every Water Directorate by involving the local stakeholders in the decision making process.

In 2010, the national plan (the synthesis of the 11 sub-basin plans), undertook the Strategic Environmental Assessment (SEA). An Environmental Report was drafted after SEA, and together with the national plan was submitted for public consultations. The finalized

Environmental Report was submitted to the National Authority in order to receive the Environmental Permit. The national RBMP was finally adopted by a Governmental Decision.

The Government adopts the RBMPs with a decision. According to the Romanian Constitution, the Government adopts decisions to organise the application of laws. Therefore, the Government's decision cannot contradict laws, and stands above any acts that may be issued by local administrations. The Water Law lays down that all programmes and administrative decisions related to water need to comply with the content of the RBMP as approved.

The binding effect of the environmental objectives set out in the RBMP is regulated according to the Water Law. However, since all programmes and administrative decisions need to be in accordance with the RBMP, the environmental objectives laid therein have a binding effect on authorities that can be in charge of developing programmes or issue administrative decisions, and also on water users which implement the provision of the RBMPs and POMs.

### **3.4 Consultation of the public, engagement of interested parties**

The Management Plans of the 11 sub-basins were agreed by the Basin Committees which represent the main unit for public consultation and information at basin and local level. The Basin Committee ensures the public consultation process in the field of water management, by involving local communities, water users, beneficiaries of water management services, local authorities, NGOs etc.

Between 22/12/2008 and 10/11/2009 the drafts of the 11 sub-basin Management Plans were available on NARW and Water Directorates web pages for public consultations, and public meetings were organized to obtain feedback from the relevant stakeholders. In 2010 the national RBMP, representing the synthesis of the 11 sub-basin plans, undertook the SEA. After the SEA, an environmental report was elaborated, discussed with stakeholders and submitted for acceptance to the Ministry of Environment.

Besides the four meetings organized in 2008 in each sub-basin, with stakeholders from different sectors (local communities, industry, agriculture, hydropower, other water users, NGOs, universities), two other meetings in each sub-basin were organized in 2009. The documents were available on-line between December 2008 and November 2009, allowing a continuous feedback during the consultation period. Feedback was required through the distributed questionnaires and on-line versions available. The public was informed by press releases, articles in the media, flyers, mailing to stakeholders and discussions at the Basin Committee level.

Some of the measures suggested during the public consultations were integrated in the RBMP. As part of the feedback to the public consultations, some deadlines were readjusted, new measures included, coordination with other policies was under development; new suggestions were considered for the next RBM cycles, such as: ways to improve information dissemination/feedback for the next cycles, mechanisms to strengthen the control, supplementary measures for the WBs at risk, enhanced cooperation between water managers and different users etc.

### **3.5 Cooperation and coordination with third countries**

In the Danube River Basin (DRB) the countries cooperate in the frame of the Convention for the Protection of the Danube River (1994). The International Commission for the Protection of Danube River (ICPDR) was established in 1998 and coordinates all the activities in the

frame of this Convention, being responsible for the implementation of the WFD in the DRB and the elaboration of the DRBMP (published at the end of 2009).

The Romanian National Management Plan was elaborated under the guidance of the ICPDR and its provisions were integrated in the international DRDMP. For transboundary catchments (e.g. Tisza River Basin, Danube Delta) the management plans are elaborated under ICPDR coordination based on the contribution of the countries sharing the catchment. For the Tisza River Basin the Management Plan was finalized in 2010, while for the Danube Delta the Article 5 report is under development.

At the Danube River Basin level, the ICPDR coordinates the integration of water management activities with other sectorial policies such as navigation and hydropower.

## **4. CHARACTERISATION OF RIVER BASIN DISTRICTS**

### **4.1 Water categories in the RBD**

The Romanian part of the Danube RBD includes all 4 categories of SWBs: rivers, lakes, transitional and coastal waters.

### **4.2 Typology of surface waters**

The typology was developed for all 4 categories of SWBs. The typology for surface waters has been partially validated with biological data, and the work is still in progress. Reference conditions have been established using a spatially based approach (including the use of historical data) and expert judgement.

For rivers, inter-calibration is still needed and the use of the European Fish Index (EFI) is under development. For non-permanent (temporary) streams, which represent 35% out of the total number of the WBs, due to their diversity and heterogeneity further hydrological differentiation followed by type-specific biological communities' investigations might be needed. At the moment of elaboration of the 1<sup>st</sup> RBMP, the process of validation of abiotic typology through the investigation of biological elements for natural lakes and for reservoirs was in progress, and it will be finalised in the future. For transitional waters, expert judgement based on historical and monitoring data was used. European guidance's were used for all 4 categories of SWBs. For coastal waters, expert judgement was based on historical and monitoring data; inter-calibration was performed between 2004 and 2007 for some biological communities and has continued after 2008.

The number of types for each water category: rivers – 20 types of water courses (4 temporary); lakes – 18 types of natural lakes, 14 types of reservoirs; transitional waters – 2 types; coastal waters – 2 types.



### 4.3 Delineation of surface water bodies

Overall, Romania has designated 3399 SWBs. Of these, 3262 are river WBs.

RBD	Surface Water								Groundwater	
	Rivers		Lakes		Transitional		Coastal		Number	Average Area (sq km)
	Number	Average Length (km)	Number	Average Area (sq km)	Number	Average Area (sq km)	Number	Average Area (sq km)		
RO1000	3262	23	131	8	2	391	4	143	142	1857

*Table 4.3.1: Surface water bodies, groundwater bodies and their dimensions*

*Source: WISE*

The delineation of WBs is based on surface water category, typology, physical characteristics; additional criteria: water status, hydromorphological alterations. Biological criteria were added after 2008.

Small WBs (rivers with a catchment area < 10 km<sup>2</sup>; lakes smaller than 50 ha) were grouped into one WB as long as they were subject to the same pressures, were at the same status and of the same type. In some cases (small basins), the entire river was considered as one WB if it is not impacted, or if it is mainly influenced by a certain type of pressure (e.g. hydropower, water abstraction, agriculture, industry etc.).

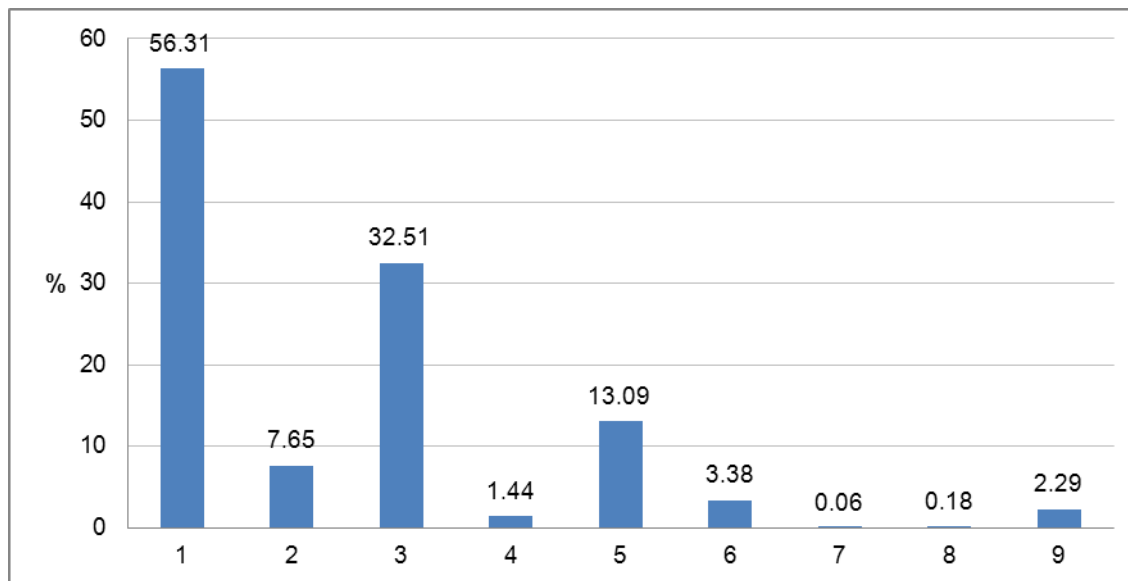
### 4.4 Identification of significant pressures and impacts

In Romania the following pressures have been identified as having a significant impact on the WBs: point and diffuse pollution including land use and hydromorphological alterations. Future infrastructure projects, sources with high potential risk of contamination, fishery/aquaculture, sand and gravel extraction from the river bed and forestry have been identified as other types of pressures which could have a possible impact on WBs.

RBD	No pressures		Point source		Diffuse source		Water abstraction		Water flow regulations and morphological alterations		River management		Transitional and coastal water management		Other morphological alterations		Other pressures	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
RO1000	1914	56.31	260	7.65	1105	32.51	49	1.44	445	13.09	115	3.38	2	0.06	6	0.18	78	2.29

**Table 4.4.1:** Number and percentage of surface water bodies affected by significant pressures

Source: WISE



**Figure 4.4.1:** Graph of percentage of surface water bodies affected by significant pressures

1 = No pressures

2 = Point source

3 = Diffuse source

4 = Water abstraction

5 = Water flow regulations and morphological alterations

6 = River management

7 = Transitional and coastal water management

8 = Other morphological alterations

9 = Other pressures

**Source:** WISE

The analysis of pressures and impacts was done using the Driver-Pressure-State-Impact-Response (DPSIR) concept. The assessment of significant pressures was made based on the requirements of the European Directives and national regulations.

The criteria for point pollution sources are based on specific thresholds/criteria defined in the water related European Directives transposed into the national legislation (UWWTD, IPPC Directive; Dangerous Substances Directive).

Major diffuse pollution sources are considered: agglomerations without sewerage systems or with systems to collect and process the sewage sludge, agricultural farms without proper storage/use of animal wastes, settlements identified as vulnerable to nitrates from agriculture, industrial deposits, unproper waste storage systems, abandoned sites etc. The National Report in 2004 highlighted that the most important diffuse pollution sources are located in the vicinity of vulnerable and potentially vulnerable areas identified according to the Nitrates Directive 91/676/EEC.

Both, point and diffuse pollution sources contribute to chemical pollution, major pressures being represented by human agglomerations, industry, agriculture and land use.

The types and size of hydromorphological pressures were defined based on recommendations of CIS Guidance No 3 - Pressures and Impacts (IMPRESS) and on the criteria of the Danube UNDP-GEF Regional Project that take into consideration the hydrotechnical works, pressure magnitude and the effect on ecosystems. Major hydromorphological pressures considered are dams, weirs, river regulations and embankments, river diversion, bank protection, waterways/channels, water abstraction/restitution, navigation, future infrastructure projects and other works which are executed at WBs level for different purposes.

#### 4.5 Protected areas

In Romania, more than 2500 protected areas have been designated, according to information provided to WISE.

1879 of these areas are for drinking water abstraction under Act. 7 of the WFD.

RBD	Number of PAs <sup>3</sup>										
	Article 7 Abstraction for drinking water	Bathing	Birds	European Other	Fish	Habitats	Local	National	Nitrates	Shellfish	UWWT
RO1000	1879	35	106	-	12	213	-	381	42	4	-

**Table 4.5.1:** Number of protected areas of all types in each RBD and for the whole country, for surface and groundwater<sup>4</sup>

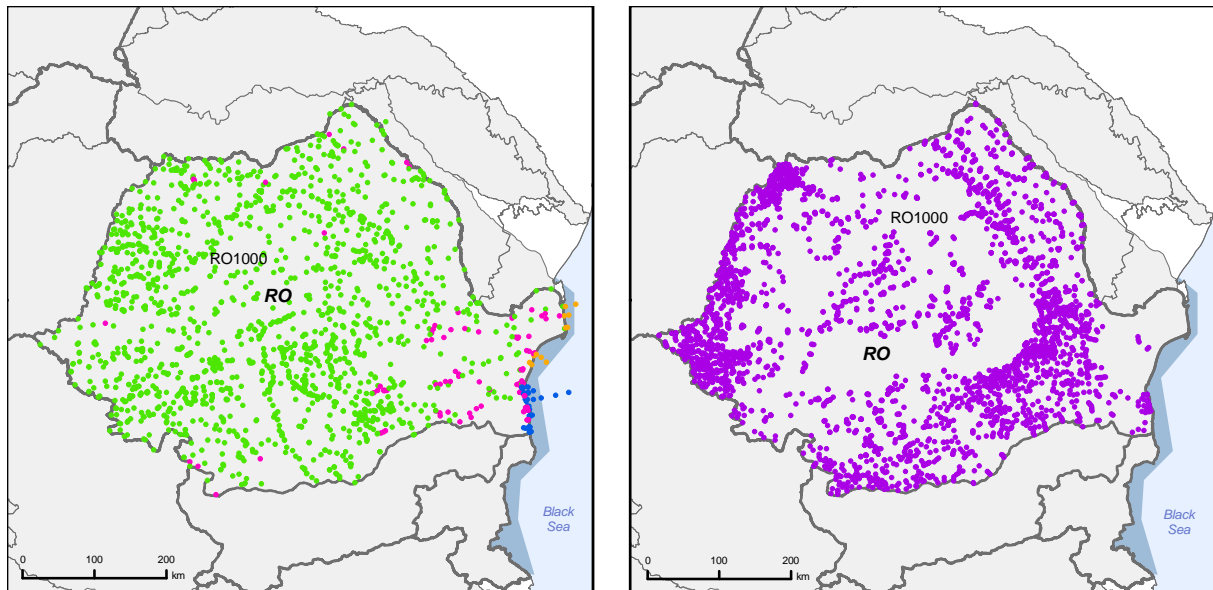
Source: WISE

<sup>3</sup> The entire Romanian surface is a nutrient sensitive area.

<sup>4</sup> This information corresponds to the reporting of protected areas under the WFD. More/other information may have been reported under the obligations of other Directives.

## 5. MONITORING

### 5.1 General description of the monitoring network



**Figure 5.1:** Maps of surface water (left) and groundwater (right) monitoring stations

- River monitoring stations
- Lake monitoring stations
- Transitional water monitoring stations
- Coastal water monitoring stations
- Unclassified surface water monitoring stations
- Groundwater monitoring stations
- River Basin Districts
- Countries outside EU

**Source:** WISE, Eurostat (country borders)

All four surface water categories and groundwater are monitored in separate surveillance and operational programmes developed according to WFD requirements.



Source: WISE

Table 5.1.1: Quality elements monitored

ROI000	RBD	Quality Elements																					
		Transitional							Coastal														
		QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.1 Microalgae	QE1.2.2 Angiosperms	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.1 Microalgae	QE1.2.2 Angiosperms	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants

ROI000	RBD	Quality Elements																					
		Rivers							Lakes														
		QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.3 Macrophytes	QE1.2.4 Phytobenthos	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 on priority specific pollutants	QE3.4 Other national pollutants	QE1.1 Phytoplankton	QE1.2 Other aquatic flora	QE1.2.3 Macrophytes	QE1.2.4 Phytobenthos	QE1.3 Benthic invertebrates	QE1.4 Fish	QE1.5 Other species	QE2 Hydromorphological QEs	QE3.1 General Parameters	QE3.3 Non priority specific pollutants	QE3.4 Other national pollutants

RBD	Rivers		Lakes		Transitional		Coastal		Groundwater		
	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Surv	Op	Quant
RO1000	1263	547	434	228	12	12	42	42	2365	1224	3338
<i>Total by type of site</i>	<i>1263</i>	<i>547</i>	<i>434</i>	<i>228</i>	<i>12</i>	<i>12</i>	<i>42</i>	<i>42</i>	<i>2365</i>	<i>1224</i>	<i>3338</i>
<i>Total number of monitoring sites<sup>5</sup></i>	<i>1263</i>		<i>434</i>		<i>12</i>		<i>42</i>		<i>3397</i>		

**Table 5.1.2:** Number of monitoring sites by water category

*Surv* = Surveillance

*Op* = Operational

*Quant* = Quantitative

**Source:** WISE

## 5.2 Monitoring of surface waters

The relevant quality elements are included in the monitoring programme including the optional elements, except for QE 2-7 in transitional waters which is not relevant for transitional lake WBs. However, not all the parameters are currently measured at every surveillance site, as the monitoring programme is subject to the relevance of monitoring elements to the WB categories, types and associated pressures.

The monitoring programme is carried out on an annual basis and all monitoring sites were defined as surveillance points. The networks for surveillance and operational monitoring have overlaps. One monitoring site can belong to more than one surface water programme and one monitoring site can include more than one monitoring sub-sites. One WB may have one or more monitoring stations, but the quality elements have been monitored at the representative station.

The following description gives information on the biological quality elements monitored in the operational monitoring. It is however unclear how these have been chosen to detect existing pressures.

- Rivers

Phytoplankton: are monitored in all water courses, excluding those from mountainous areas with rapid flow and ample slopes where it is not a relevant quality element; phytobenthos: are monitored only in areas where the substrate allows its development and sampling; macrophytes: are monitored only in areas where the substrate allows its development and sampling; macrozoobenthos: in all river types; fish fauna: in all river types.

- Lakes

Phytoplankton: are monitored in all lake types, in the middle of the lake; phytobenthos: in all lake types; macrophytes: are monitored in all lake types where the substrate allows its development and sampling, but excluding those situated at high altitude (>2000 m); macrozoobenthos: are monitored in all lake types in littoral and eu-littoral areas; fish fauna: in all lake types.

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<sup>5</sup> Number of sites calculated from data reported at site level. If no data reported at site level, then table supplemented with data reported at programme level.

- **Reservoirs**

Phytoplankton: are monitored at dam section and the middle of the lake; phytobenthos: are monitored only at dam section; macrophytes: are monitored in all reservoir types, but only in areas where the substrate allows its development and sampling; macrozoobenthos: are not monitored according to inter-calibration outcomes; fish fauna: are monitored at dam area and at the middle of the lake.

The above information is applied to the all water categories.

The list of monitored parameters and general information about the priority substances, specific and non-specific pollutants are provided; the substances included in WFD are monitored if the pollution sources include significant discharges of such substances.

Sediment and biota are monitored in all water categories. For both surveillance and operational monitoring, the sampling frequency is annually for sediment, while biota is sampled only in the operational programme (annually).

The WBs lacking monitoring sites were evaluated by considering the monitoring data obtained in a different WB with the same typology and anthropogenic pressure. Grouping was applied especially for rivers, where only 1263 sites are monitored out of the total 3262 WBs assessed. For lakes, transitional and coastal waters, the number of monitoring sites exceeds the number of the evaluated WBs.

The Romanian monitoring programme is established according to the CIS guidance No 7 on monitoring and is coordinated with the other countries in the Danube River Basin through ICPDR.

The total number of monitoring stations has changed since the 2007 report, the current monitoring program comprising 1263 sites for rivers, 434 for lakes, 12 for transitional waters and 42 for coastal waters.

### **5.3 Monitoring of groundwater**

For groundwater, the monitoring programmes include quantitative, chemical surveillance and chemical operational monitoring. The core parameters are monitored, while the monitoring of other pollutants is based on the pressure analysis. The monitoring programmes include groundwater level, oxygen content, pH value, conductivity, nitrate, ammonium and other pollutants.

The monitoring of chemical status is referenced against natural background levels. The monitoring is able to detect trends. Trends were assessed using the monitoring datasets recorded between 2004 and 2008.

The monitoring of the transboundary groundwater is performed by the countries using ICPDR approaches. The harmonization process with third countries on the river basin (Ukraine, Moldova, Serbia) is under development.

### **5.4 Monitoring of protected areas**

There is no specific monitoring programme of drinking water protected areas (DWPAs), but the operational and surveillance monitoring includes sites dedicated to Article 7 for rivers, lakes and transitional waters monitoring (the coastal waters are not subject to drinking water abstraction): 99 sites ensure the monitoring of surface DWPAs. The situation is similar regarding GWBs, where the monitoring of DWPAs is included in the quantitative, chemical



surveillance and chemical operational monitoring programs for GWBs. The total number of groundwater monitoring sites associated with drinking water abstraction is 105.

RBD	Surface waters									Ground-water drinking water
	Surface drinking water abstraction	Quality of drinking water	Bathing water	Birds sites	Fish	Habitats sites	Nitrates	Shellfish	UWWT	
RO1000	67	99*	0	168	192	231	610	18	0	105

**Table 5.3.1:** Number of monitoring sites in protected areas<sup>6</sup>

Note: \*Number of monitoring sites reported at programme level.

Source: WISE and RO

There are significant differences with the 2007 data presented in the 2009 Commission WFD Implementation Report, where 249 sites were mentioned under the Birds Directive, 113 under the Drinking Water Directive, 313 under Fish, 301 under Nitrates and 97 under Groundwater.

## 6. OVERVIEW OF STATUS (ECOLOGICAL, CHEMICAL, GROUNDWATER)

64% of all SWBs in Romania have been assessed as being at good or better ecological status. Only less than 2% of the SWBs are assessed as being of poor or bad ecological status.

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
RO1000	2791	145	5.2	1647	59.0	946	33.9	34	1.2	19	0.7	0	0

**Table 6.1:** Ecological status of natural surface water bodies

Source: WISE

RBD	Total	High		Good		Moderate		Poor		Bad		Unknown	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
RO1000	608	0	0	228	37.5	373	61.3	0	0	1	0.2	6	1.0

**Table 6.2:** Ecological potential of artificial and heavily modified water bodies

Source: WISE

For over 93% of Romania's SWBs are assessed as being of good chemical status and only less than 7% being of poor chemical status, according to the information reported to WISE.

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
RO1000	2791	2619	93.8	172	6.2	0	0

**Table 6.3:** Chemical status of natural surface water bodies

Source: WISE

<sup>6</sup> Number of sites calculated from data reported at site level. If no data reported at site level, then table supplemented with data reported at programme level.

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
RO1000	608	546	89.8	56	9.2	6	1.0

**Table 6.4:** Chemical status of artificial and heavily modified water bodies  
**Source:** WISE

Romania has reported that 87% of its GWBs have good chemical status while 13% of them are of poor status. All GWBs have been assessed.

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
RO1000	142	123	86.6	19	13.4	0	0

**Table 6.5:** Chemical status of groundwater bodies  
**Source:** WISE

All GWBs are assessed at good quantitative status according to Romania's reporting. All GWBs have been assessed.

RBD	Total	Good		Poor		Unknown	
		No.	%	No.	%	No.	%
RO1000	142	142	100	0	0	0	0

**Table 6.6:** Quantitative status of groundwater bodies  
**Source:** WISE

In total nearly 60% of Romania's SWBs were assessed as being of good status in 2009; according to the information reported to WISE the number of good status SWBs is expected to increase by 4.7% in 2015.

86% of the GWBs were assessed as being of good status in 2009. There is no improvement expected in Romania by 2015.

RBD	Total	Global status (ecological and chemical)					Good ecological status 2021	Good chemical status 2021	Good ecological status 2027	Good chemical status 2027	Global exemptions 2009 (% of all SWBs)					
		Good or better 2009		Good or better 2015		Increase 2009 - 2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7		
		No.	%	No.	%	%					%	%	%	%	%	
RO1000	3399	2008	59.1	2167	63.8	4.7							36	0	0	0

**Table 6.7:** Surface water bodies: overview of status in 2009 and expected status in 2015, 2021 and 2027<sup>7</sup>

Water bodies with good status in 2009 fall into the following category:

1. Ecological status is high or good and the chemical status is good, exemptions are not considered

Water bodies expected to achieve good status in 2015 fall into the following categories:

1. Ecological status is high or good and the chemical status is good, exemptions are not considered

2. Chemical status is good, and the ecological status is moderate or below but no ecological exemptions

3. Ecological status is high or good, and the chemical status is failing to achieve good but there are no chemical exemptions

4. Ecological status is moderate or below, and chemical status is failing to achieve good but there are no ecological nor chemical exemptions

Note: Water bodies with unknown/unclassified/not applicable in either ecological or chemical status are not considered

Source: WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)

RBD	Total	Ecological status					Good ecological status 2021	Good ecological status 2027	Ecological exemptions (% of all SWBs)					
		Good or better 2009		Good or better 2015		Increase 2009 -2015			Art 4.4	Art 4.5	Art 4.6	Art 4.7		
		No.	%	No.	%	%			%	%	%	%		
RO1000	2791	1792	64.2	1891	67.8	3.5					32.4	0	0	0

**Table 6.8:** Natural surface water bodies: ecological status in 2009 and expected status in 2015, 2021 and 2027<sup>8</sup>

Source: WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)

<sup>7</sup> Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

<sup>8</sup> Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total	Chemical status					Good chemical status 2021		Good chemical status 2027		Chemical exemptions (% of all SWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
RO1000	2791	2619	93.8	2634	94.4	0.5					5.7	0.04	0	0

**Table 6.9:** Natural surface water bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027<sup>9</sup>  
**Source:** WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)

RBD	Total	GW chemical status					Good chemical status 2021		Good chemical status 2027		GW chemical exemptions (% of all GWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
RO1000	142	123	86.6	123	86.6	0					13	0	0	0

**Table 6.10:** Groundwater bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027<sup>10</sup>  
**Source:** WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)

RBD	Total	Groundwater quantitative status					Good quantitative status 2021		Good quantitative status 2027		GW quantitative exemptions (% of all GWBs)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015					Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%	No.	%	No.	%	%	%	%	%
RO1000	142	142	100	142	100	0					0	0	0	0

**Table 6.11:** Groundwater bodies: quantitative status in 2009 and expected status in 2015, 2021 and 2027<sup>11</sup>  
**Source:** WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)

<sup>9</sup> Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.  
<sup>10</sup> Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.  
<sup>11</sup> Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

RBD	Total HMWB and AWB	Ecological potential					Good ecological potential 2021		Good ecological potential 2027		Ecological exemptions (% of all HMWB/AWB)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015	No.	%	No.	%	Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%					%	%	%	
RO1000	608	228	37.5	281	46.2	8.7					51.8	1.6	0	0

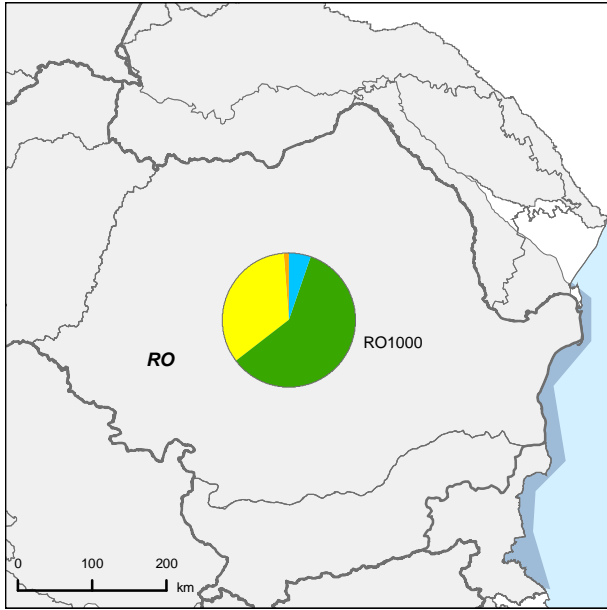
**Table 6.12:** Heavily modified and artificial water bodies: ecological potential in 2009 and expected ecological potential in 2015, 2021 and 2027<sup>12</sup>  
**Source:** WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)

RBD	Total HMWB and AWB	Chemical status					Good chemical status 2021		Good chemical status 2027		Chemical exemptions (% of all HMWB/AWB)			
		Good or better 2009		Good or better 2015		Increase 2009 -2015	No.	%	No.	%	Art 4.4	Art 4.5	Art 4.6	Art 4.7
		No.	%	No.	%	%					%	%	%	
RO1000	608	546	89.8	561	92.3	2.5					6.3	0.8	0	0

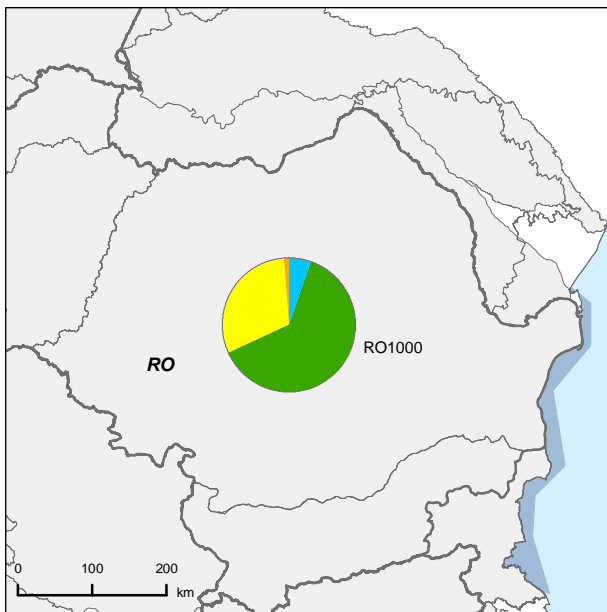
**Table 6.13:** Heavily modified and artificial water bodies: chemical status in 2009 and expected status in 2015, 2021 and 2027<sup>13</sup>  
**Source:** WISE (for data on status in 2009, 2015 and exemptions) and RBMPs (for data on status in 2021 and 2027)

<sup>12</sup> Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.

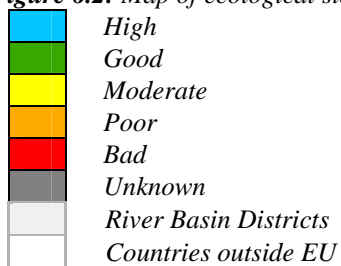
<sup>13</sup> Data for 2009 and 2015 extracted from WISE. Data for 2021 and 2027 established during the compliance assessment of the RBMPs.



**Figure 6.1:** Map of ecological status of natural surface water bodies 2009

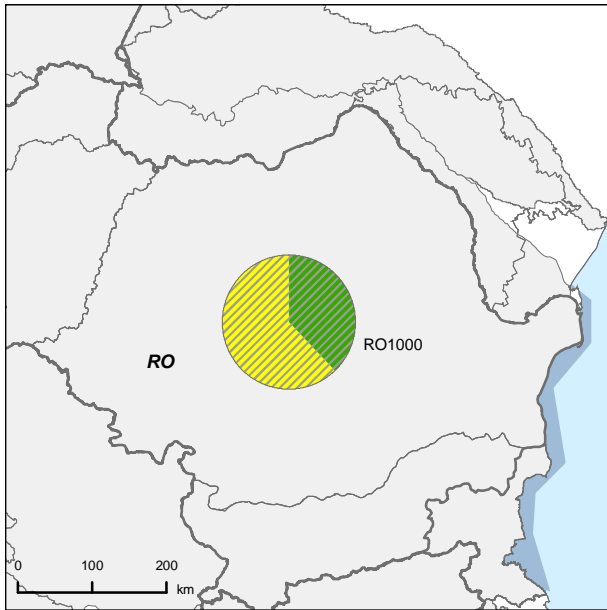


**Figure 6.2:** Map of ecological status of natural surface water bodies 2015

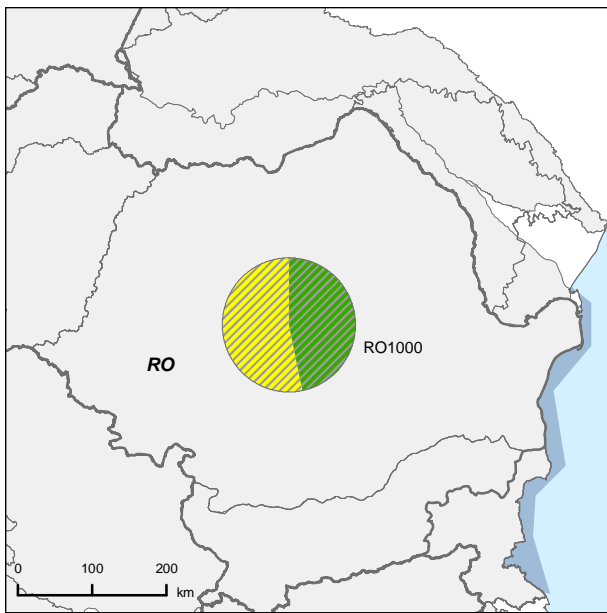


Note: Standard colours based on WFD Annex V, Article 1.4.2(i).

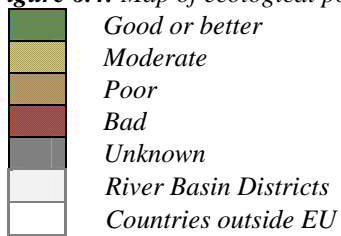
Source: WISE, Eurostat (country borders)



**Figure 6.3:** Map of ecological potential of artificial and heavily modified water bodies 2009



**Figure 6.4:** Map of ecological potential of artificial and heavily modified water bodies 2015



Note: Standard colours based on WFD Annex V, Article 1.4.2(ii).

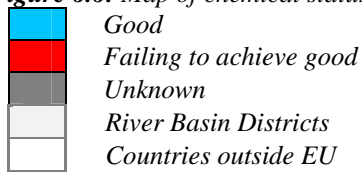
Source: WISE, Eurostat (country borders)



**Figure 6.5:** Map of chemical status of natural surface water bodies 2009

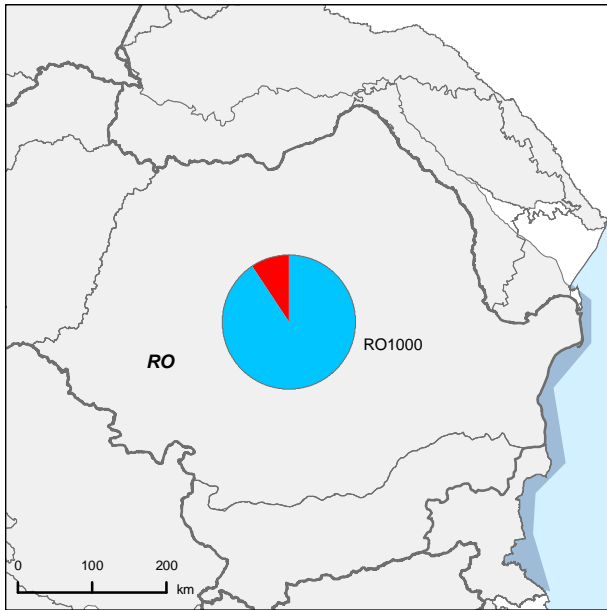


**Figure 6.6:** Map of chemical status of natural surface water bodies 2015



Note: Standard colours based on WFD Annex V, Article 1.4.3.  
 Source: WISE, Eurostat (country borders)

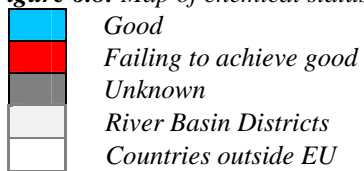




**Figure 6.7:** Map of chemical status of artificial and heavily modified water bodies 2009

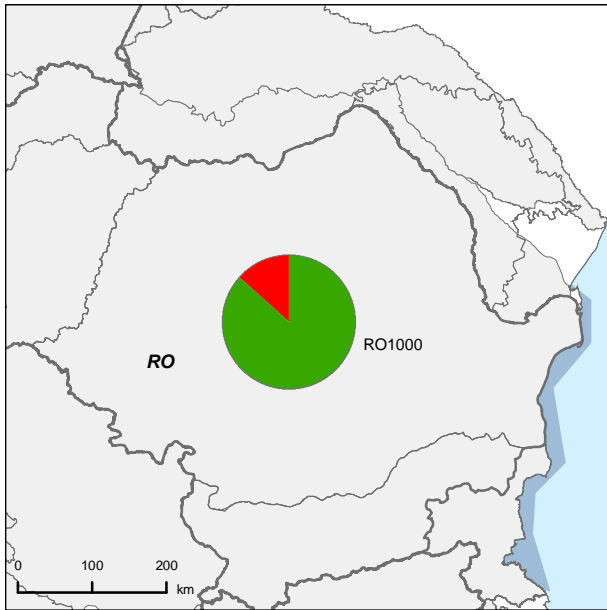


**Figure 6.8:** Map of chemical status of artificial and heavily modified water bodies 2015

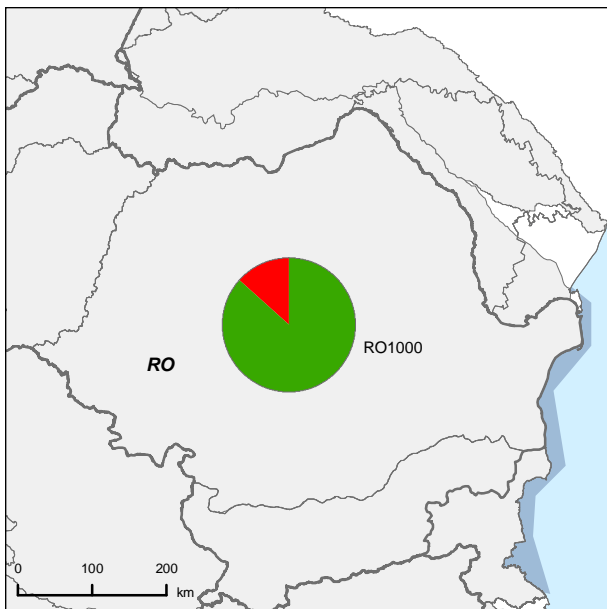


Note: Standard colours based on WFD Annex V, Article 1.4.3.

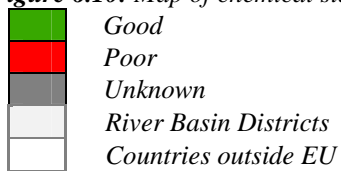
Source: WISE, Eurostat (country borders)



**Figure 6.9:** Map of chemical status of groundwater bodies 2009

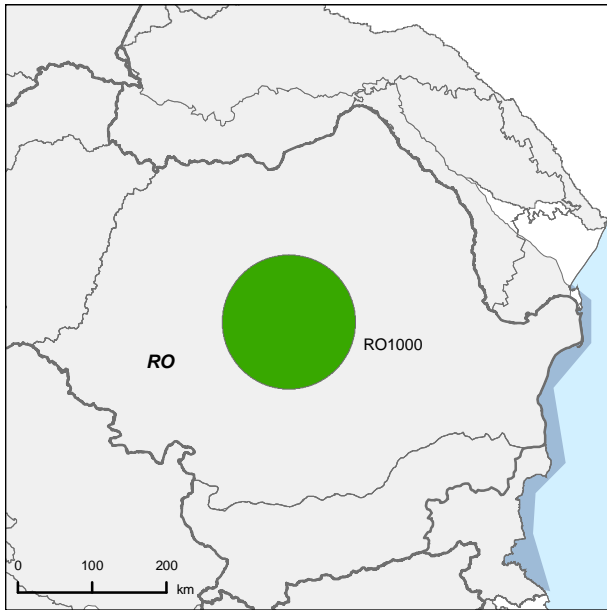


**Figure 6.10:** Map of chemical status of groundwater bodies 2015



Note: Standard colours based on WFD Annex V, Article 2.4.5.

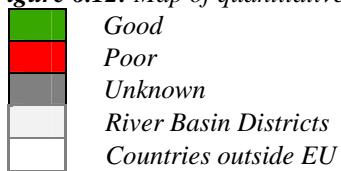
Source: WISE, Eurostat (country borders)



**Figure 6.11:** Map of quantitative status of groundwater bodies 2009



**Figure 6.12:** Map of quantitative status of groundwater bodies 2015



Note: Standard colours based on WFD Annex V, Article 2.2.4.

Source: WISE, Eurostat (country borders)

## **7. ASSESSMENT OF ECOLOGICAL STATUS OF SURFACE WATERS**

The Romanian RBMP was elaborated in accordance with the DRBMP coordinated by the ICPDR. Significant progress has been made since the former reporting in 2007, the majority of the methods are being developed.

### **7.1 Ecological status assessment methods**

Limited number of methods have been applied in the first RBMPs. Romanian authorities clarified in 2012 the results of the 2<sup>nd</sup> phase of inter-calibration and the methods under development.

The assessment methodology is not fully developed for all of the Biological Quality Elements (BQEs).

For rivers, WFD compliant assessment methods have been applied in the 1<sup>st</sup> RBMP for phytoplankton, macroinvertebrates and fish. As regards the macroinvertebrates and fish, the results of IC Exercise-Phase 2 have been included recently in the assessment methods.

Regarding the development of WFD compliant assessment methods for other biological quality elements, there was some progress since the finalization of the first RBMPs:

- The assessment system for phytobenthos has been developed (without being validated) after the finalization of the RBMP, and it was not applied in the 1<sup>st</sup> RBMP in progress at reporting time.
- The macrophytes method has not yet been developed, but data collection is on-going.

For lakes, a partial WFD compliant assessment method has been applied in the 1<sup>st</sup> RBMP.

In the last 2 years, the method for phytoplankton assessment in lakes was improved and a new method for phytobenthos has been developed, without being validated.

For macrophytes, the Hungarian assessment method for the evaluation of ecological status of natural lakes is going to be tested and used. For macrophytes and fish fauna data collection is on-going.

In the case of transitional waters, the data collection for angiosperms and macroalgae is on-going, but the assessment method is not yet developed. In the RBMP for fish assessment a partially WFD compliant method has been applied.

In the case of coastal waters, phytoplankton WFD compliant method has been used in the frame of 1<sup>st</sup> RBMP and thereafter improved and tested in the 2<sup>nd</sup> phase of the EU Inter-calibration exercise. For macroinvertebrates, the WFD compliant method has been used in the frame of 1<sup>st</sup> RBMP and within the Phase 2 of Inter-calibration the method was further developed and is pending finalization and validation.

In the frame of the 2nd Phase of Inter-calibration, the Bulgarian assessment method for macroalgae and angiosperms was undertaken and will be tested further. The data collection for angiosperms and macroalgae is on-going.

RBD	Rivers						Lakes						Transitional						Coastal									
	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macrophytes	Phytobenthos	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macroalgae	Angiosperms	Benthic invertebrates	Fish	Physico-Chemical	Hydromorphological	Phytoplankton	Macroalgae	Angiosperms	Benthic invertebrates	Physico-Chemical	Hydromorphological	
RO1000	Green	Yellow	Yellow	Green	Green	Yellow	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Yellow	Yellow	Green	Green	Yellow	Yellow	Yellow	Green	Yellow	Yellow	Green	Yellow	Yellow

**Table 7.1.1:** Availability of biological assessment methods

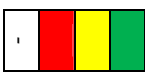
Assessment methods fully developed for all BQEs

Assessment methods partially developed or under development for all or some BQEs

Assessment methods not developed for BQEs, no information provided on the assessment methods, unclear information provided

Water category not relevant

Source: RBMPs and RO



It is not clear if the biological assessment methods are able to detect major pressures.

Standards have been set for some of the physio-chemical parameters used for the assessment of ecological status. In rivers, they comprise temperature, dissolved oxygen, pH, nutrients (NH<sub>4</sub>, NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub>, Total P), salinity and total N missing; in lakes, only dissolved oxygen and total P are considered, while the rest are missing; in transitional and coastal waters transparency, dissolved oxygen, oxygen saturation, BOD<sub>5</sub>, salinity, pH, nutrients (NH<sub>4</sub>, NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub>, SiO<sub>4</sub>) are considered, while temperature, total N and total P are missing.

The hydromorphological elements are developed almost fully in rivers: water flow, river depth and width variation, structure and substrate of the river bed, structure of riparian zone; connection to GWB and river continuity yet to be measured. For lakes, they are developed for water flow, connectivity with GWB, dredging coefficient, structure of lake shore, coefficient of embankment, however, connectivity to GWB and structure of the lake shore are yet to be measured. For transitional and coastal waters, hydromorphological QEs are sediment parameters (sand, silt, clay), wave regime, the influence of Danube hydrological regime (or the marine/coastal currents and the return currents in case of CW). However, not all QEs are measured yet (quantity, structure and substrate of bed, wave exposure).

It is not clear how hydromorphological QEs are linked to the ecological status assessment.

The analysis of point and diffuse pollution sources reveals the existence of river basin specific pollutants at national level. In rivers and lakes, the assessment of the ecological status took into consideration the concentrations of Zn, Cu, As, Cr, toluene, acenaphthene, xylen, phenols, PCB, while in transitional and coastal waters, the heavy metals, total hydrocarbons, PAHs, organo-chlorinated pesticides were considered. It is however unclear if EQS values have been developed according to the methodology of WFD Annex V 1.2.6.

The one-out-all-out principle has been applied to derive the overall ecological status.

The methodology developed according to the WFD was implemented after the first inter-calibration exercise; a reduced number of BQEs were used to assess the ecological status (and ecological potential) – hence, the confidence of the assessment was medium and low. The status assessment was presented in details consisting of ecological status/potential and chemical status on WB level. Indication on the spatial variability is provided in the Romanian National Management Plan; the evaluation of the global status (consisting of ecological status/ecological potential and chemical status) was done based on the monitoring data from the surveillance and operational programmes, based on WBs aggregation and based on risk analysis regarding the failure to achieve the environmental objectives; the WBs that are not at risk were considered in good status, while those at risk were considered in moderate status.

## **7.2 Application of methods and ecological status results**

Although most of the relevant QEs are monitored, their integration in the ecological status assessment, as explained in the previous section, is still under development and has not been applied in the ecological status assessment.

The selection of river basin specific pollutants was based on the pollution sources that could generate these types of substances and on a sufficient monitoring database – available at the time – correlated with the ecotoxicological profile of each individual pollutant.

Based on this methodology, the following pollutants have been identified as national river basin specific pollutants: PCB, Zn, Cu, Toluene, Acenaphthene, As, Cr, Phenols and Xylene.

In the meantime a methodology has been developed for two more other specific pollutants: cyanide (total form) and anionic detergents, which will apply in the next RBMP.

In general, the most sensitive BQEs have been selected for the operational monitoring. However, since the methodology developed according to the WFD was implemented after the first intercalibration exercise, a reduced number of BQEs was used to assess the ecological status/potential. The integration of the missing elements after the inter-calibration exercise is expected to increase the confidence level of the assessment.

### 7.3 River basin specific pollutants

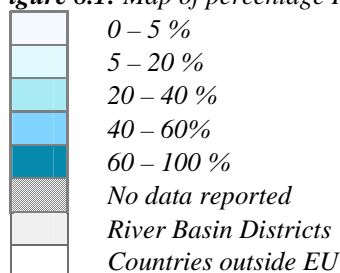
RBD	CAS Number	Substance
RO1000	83-32-9	Acenaphthene
RO1000	7440-38-2	Arsenic and its compounds
RO1000		BOD5
RO1000	7440-47-3	Chromium and its compounds
RO1000		COD-Cr
RO1000	7440-50-8	Copper and its compounds
RO1000	72-54-8	DDD
RO1000	72-55-9	DDE
RO1000	64743-03-9	Phenols
RO1000		Total N
RO1000		Total P
RO1000	7440-66-6	Zinc and its compounds

**Table 7.3.1:** River basin specific pollutants causing failure of status  
**Source:** RBMPs

## 8. DESIGNATION OF HEAVILY MODIFIED WATER BODIES (HMWB) AND ASSESSMENT OF GOOD ECOLOGICAL POTENTIAL



**Figure 8.1:** Map of percentage Heavily Modified and Artificial water bodies by River Basin District



**Source:** WISE, Eurostat (country borders)

### 8.1 Designation of HMWBs

15 % of the total number of WBs being designated as HMWBs, while for the AWBs 3%.

Water body	Rivers		Lakes		Transitional waters		Coastal waters		Total	
	Nb.	%	Nb	%	Nb.	%	Nb.	%	Nb.	%
HMWB	500	15.3	11	8.4	-	-	2	50	513	15
AWB	94	2.9	1	0.8	-	-	-	-	95	3
Natural	2668	81.8	119	90.8	2	100	2	50	2791	82
<i>Total</i>	<i>3262</i>	<i>100</i>	<i>131</i>	<i>100</i>	<i>2</i>	<i>100</i>	<i>4</i>	<i>100</i>	<i>3399</i>	<i>100</i>

**Table 8.1.1:** Number of heavily modified, artificial and natural surface water bodies that have been designated in Romania

**Source:** WISE

The water uses that led to the designation of HMWBs are: drinking water storage, power generation, irrigation, water regulation, fishery, flood protection and navigation. Water regulation and embankments along rivers mainly provide the role of flood protection and support navigation. These uses induced physical modifications such as: weirs/dams,



reservoirs, channelization, riverbed stabilisation, bank reinforcement, embankment, dredging, channel maintenance coastal modifications, ports, etc.

The designation followed the complete stepwise approach as described in CIS Guidance N° 4. A WB was designated as HMWB or AWB if it is not in good ecological status as a consequence of hydromorphological alterations. There are clear criteria used to define significant adverse effects on the use: shift from river to lake; length of the affected river section ( $> 1$  km for rivers with catchment  $< 1000$  km<sup>2</sup>,  $> 2$  km for rivers with catchment  $> 1000$  km<sup>2</sup>); ratio of the lentic length/total length ( $> 50\%$ ); regulation/bank consolidation ( $> 70\%$  of the WB); hydropeaking ( $> 50\%$  of the WB); high frequency of sills ( $> 2$ km); presence of dams/reservoirs with different uses (energy, irrigation, drinking water, flood protection, fish ponds).

The designation of HMWB or AWB was based on the evaluation of the ecological status and its alteration due to hydromorphological changes, according to WFD Art. 4.3. The ecological status of the Danube WBs was evaluated with medium confidence, except for the dams at Iron Gates I and II where there is a clear-cut situation (change from river to lake). The assessment of the ecological potential has in general low confidence level, only macroinvertebrates were considered in the evaluation for rivers, and also phytoplankton for reservoirs. The designation system still requires adaptation to the European Inter-calibration exercise for East-Continental Region and the inter-calibration initiated in 2009 for large rivers.

A screening process of alternative options took place in the process of designation of HMWB, in most cases no alternative, technically feasible being identified due to the multiple uses of the facilities.

## **8.2 Methodology for setting good ecological potential (GEP)**

GEP was defined based on the evaluation of the BQEs. Where there were no WFD compliant assessment methods, expert judgement was used. The reference-based approach (CIS Guidance) was used and all the steps have been followed. The class limits are given for maximum, good, moderate ecological potential, mitigation measure families and their efficiency are mentioned in the RBMPs. Only few BQEs were used (mostly macroinvertebrates) to derive the Maximum Ecological Potential (MEP), due to the lack of data.

The methodology for setting GEP is WB specific. Different limits were set for rivers, natural lakes, reservoirs and coastal waters; where monitoring data was missing, the WBs were aggregated by altitude (mountain, hill, plain).

Some alternative measures were suggested in order to release the pressure of the current water uses, such as: replace navigation with other transportation, move recreation facilities or limit the use during a certain time interval, replace surface with groundwater abstraction, replace hydropower generation with other types of renewable energy, creation of ecological farms or reduction of activities near the WB and establishment of a buffer area.

## **8.3 Results of ecological potential assessment in HMWB and AWB**

In Romania, 18.2% of the river WBs, 9.2 % of the lakes and 50% of the coastal waters are classified as HMWBs and AWBs. Their ecological potential ranges from 38.2% good to 60.8% moderate for river sections (1 % could not be classified), to 8.3% good and 91.7% moderate for lakes, and from 25% moderate to 25% bad for coastal waters.

Although the confidence level is currently low, after the finalisation of the inter-calibration exercise, it is expected that the confidence level of further assessments will increase.

## 9. ASSESSMENT OF CHEMICAL STATUS OF SURFACE WATERS

### 9.1 Methodological approach to the assessment

The evaluation of chemical status was based on the values included in Annex I of the Directive 2008/105/EC. The relevant QEs are included in the monitoring programme; the substances included in WFD Annex X WFD are monitored if the pollution sources include significant discharges of these kinds of substances.

The priority substances in water have been used in the assessment of the chemical status.

Background concentrations were considered in the assessment of compliance with the EQS.

There is no information provided that bioavailability factors have been used.

For the current reporting, mixing zones have not been used.

The RBMP provided information on specific substances causing failures to achieve good chemical status.

18-74-1	Hexachlorobenzene	6	0.18
<b>CAS Number</b>	<b>Substance</b>	<b>WBs failing good chemical status (no)</b>	<b>WBs failing good chemical status (%)</b>
87-86-5	Pentachlorophenol	7	0.21
50-32-8	Benzo(a)pyrene	7	0.21
<del>7440-43-9</del>	<del>Benzo(b)fluoranthene</del>	<del>154</del>	<del>0.56</del>
<del>7440-82-1</del>	<del>Benzo(k)fluoranthene</del>	<del>123</del>	<del>0.59</del>
<del>7439-97-6</del>	<del>Mercury(h,i)perylene</del>	<del>78</del>	<del>0.33</del>
<del>7440-02-0</del>	<del>Nickel</del>	<del>89</del>	<del>0.32</del>
15972-60-8	Alachlor	1	0.03
1912-24-9	Atrazine	8	0.23
608-73-1	Hexachlorocyclohexane	1	0.03
608-93-5	Pentachlorobenzene	1	0.03
1582-09-8	Trifluralin	1	0.03
120-12-7	Anthracene	11	0.32
91-20-3	Naphthalene	4	0.12
67-66-3	Trichloromethane	3	0.09
309-00-2	Aldrin	11	0.32
60-57-1	Dieldrin	8	0.24
72-20-8	Endrin	8	0.24
465-73-6	Isodrin	2	0.06
50-29-3	para-para-DDT	28	0.82
206-44-0	Fluoranthene	5	0.15

*Table 9.1.1: Substances responsible for WBs failing good chemical status*  
*Source: WISE*

## **10. ASSESSMENT OF GROUNDWATER STATUS**

In Romania 142 GWBs were delineated. About 73% of the GWBs are interlinked with SWBs.

### **10.1 Groundwater quantitative status**

The assessment of the quantitative status was done using the following criteria: hydrological balance, connectivity with surface waters, influence on terrestrial ecosystems dependent on the GWB, saline intrusion.

The long term (10 years) trend of the piezometric level was taken into consideration: if no significant decreases were noticed, the quantitative status of GWB was considered as good. The level of abstraction is exceeded by the natural recharge capacity everywhere, all GWBs were assessed in good quantitative status.

### **10.2 Groundwater chemical status**

19 out of the 142 GWBs monitored in this RBD are in poor chemical status; the pollutants causing failure to achieve good chemical status are Nitrates (17 WBs) and Ammonium (14 WBs).

The evaluation of the chemical status was done by comparing the monitoring values recorded between 2006-2007, to the threshold values and quality standards laid down in the Directive 2006/118/EC.

Surface waters associated to groundwater and groundwater dependent terrestrial ecosystems were considered in the chemical status assessment. The list of SWB and terrestrial ecosystems dependent on GWB is also presented.

The pollutants considered for threshold value (TVs) establishment were nitrates, nitrites, ammonium, phosphates, chlorides, sulphates, lead, cadmium, mercury and arsenic. The methodology for the establishment was presented in the RBMP, it is based on drinking water standards. Natural background levels (NBLs) were considered. Due to the lack of monitoring data, for some of the indicators mentioned above it was not possible to establish the NBL and TV. There is a methodology provided for threshold value exceedances.

The trends were assessed using the monitoring datasets recorded between 2004 and 2008. From the 19 GWBs, poor status pollutant trends is decreasing for 4 GWBs, while for 15 of them the trends are increasing.

Romania has 17 transboundary GWBs and agreements are in place for 8 GWBs (4 with Hungary, 2 with Bulgaria, 1 with Serbia, 1 with Moldova). For the remaining GWBs bilateral agreements are pending.

### **10.3 Protected areas**

The status of GWBs associated to drinking water protected areas was not assessed, all the 1423 DWPA being considered as unknown status. Several organizations are responsible with the collection/processing of these data in Romania (NARW, Ministry of Health, private

operators). Due to the different data formats used by the involved organizations, a homogenous data basis could not be established and analysed for the 2009 reporting.

## 11. ENVIRONMENTAL OBJECTIVES AND EXEMPTIONS

Water category	Total number of WBs	Ecological status			Chemical status			Exemptions		
		Good or high	Moderate or worse	Unknown	Good	Failing to achieve good	Unknown	Subject to any exempt. of any kind	Subject to a 4.4 exempt. of any kind	Subject to a 4.5 exempt. of any kind
River WBs	3262	1999	1257	6	3110	146	6	1129	1119	9
Lake WBs	131	21	110	0	55	76	0	107	107	0
Transitional WBs	2	0	2	0	0	2	0	2	2	0
Coastal WBs	4	0	4	0	0	4	0	4	2	3

*Table 11.1: Status of surface water bodies and exemptions in Romania*  
Source: WISE

### 11.1 Additional objectives in protected areas

It is not clear if additional objectives for protected areas have been defined. Additional measures to conserve the habitats and species directly linked to water and additional measures, and costs to diminish the impact of pollutants and improve water status are presented in the RBMP, however, the supplementary/additional measures presented in WISE are general, not linked with protected areas, although some of them will have a positive effect (e.g. floodplains restoration, new WWTPs, etc.).

Some additional measures are included in other programs: sturgeon (Acipenseridae) populations are protected by fishing prohibition (2006-2016), restocking and aquaculture. Several PHARE and LIFE projects complement the measures from the RBMP to implement the Birds and Habitats Directives: raising public awareness, monitoring species and habitats, drafting management plans for Natura 2000 protected areas, developing a national data basis regarding the protected species and habitats of community interest etc.

### 11.2 Exemptions according to Article 4(4) and 4(5)

The impacts that led to the use of exemptions refer mostly to hydromorphological alterations, the WBs designated as HMWB or AWB being exempted due to technical feasibility reasons or disproportionate costs; for other WBs, the diffuse pollution or point source pollution is targeted (improving of sewage system and connectivity to wastewater treatment plants is planned at a later stage as for Romania the full implementation of UWWT Directive is in 2018).

The exemptions according to Article 4.4 were applied due to technical feasibility, disproportionate costs and natural conditions, while Article 4.5 was applied for technical feasibility and disproportionate costs.

Regarding Article 4.4 technical feasibility was applied for basic measures (if they cannot be implemented by the end of 2012) and supplementary measures (for WBs that cannot reach the environmental objectives by 2015). Article 4.4 disproportionate cost was applied for supplementary measures (for WBs that cannot reach the environmental objectives by 2015). Article 4.5 (technical feasibility, disproportionate costs) was applied for WBs where measures to reach the environmental objectives cannot be applied. The transition period for the implementation of the UWWT Directive was taken into account (Article 4.4 - technical feasibility applied for basic measures).

Disproportionate costs in the frame of RBMP were relevant exclusively for supplementary measures, grouped in measures related to human agglomerations, industry, hydromorphology and agriculture. The evaluation the benefits of all supplementary measures have been done in a qualitative manner. Quantitative data was taken into account in cases where an evaluation of direct benefit (cost-income) was possible. Total estimated costs (direct & indirect), an estimated ratio of benefit and cost, and an estimated monetary benefit and global benefit in 2015 are also presented in the RBMP.

The results of Cost Benefit Analysis were used as a basis of discussion with stakeholders, in the way that if the benefit was accepted as exceeding the costs and these costs are financially accepted, then the environmental objective could be reached. Disproportionality Analysis was also developed.

During this stage the approach related to disproportionate costs was treated in a qualitative manner. It is expected to complete the analysis with studies which will lead to a clear quantified ratio between costs and benefits and implicitly to define if a cost is disproportionate or not.

Only 35% of the proposed works related to exemptions that was planned to be financed from the state/local budget has been approved due to national and local budget constraints.

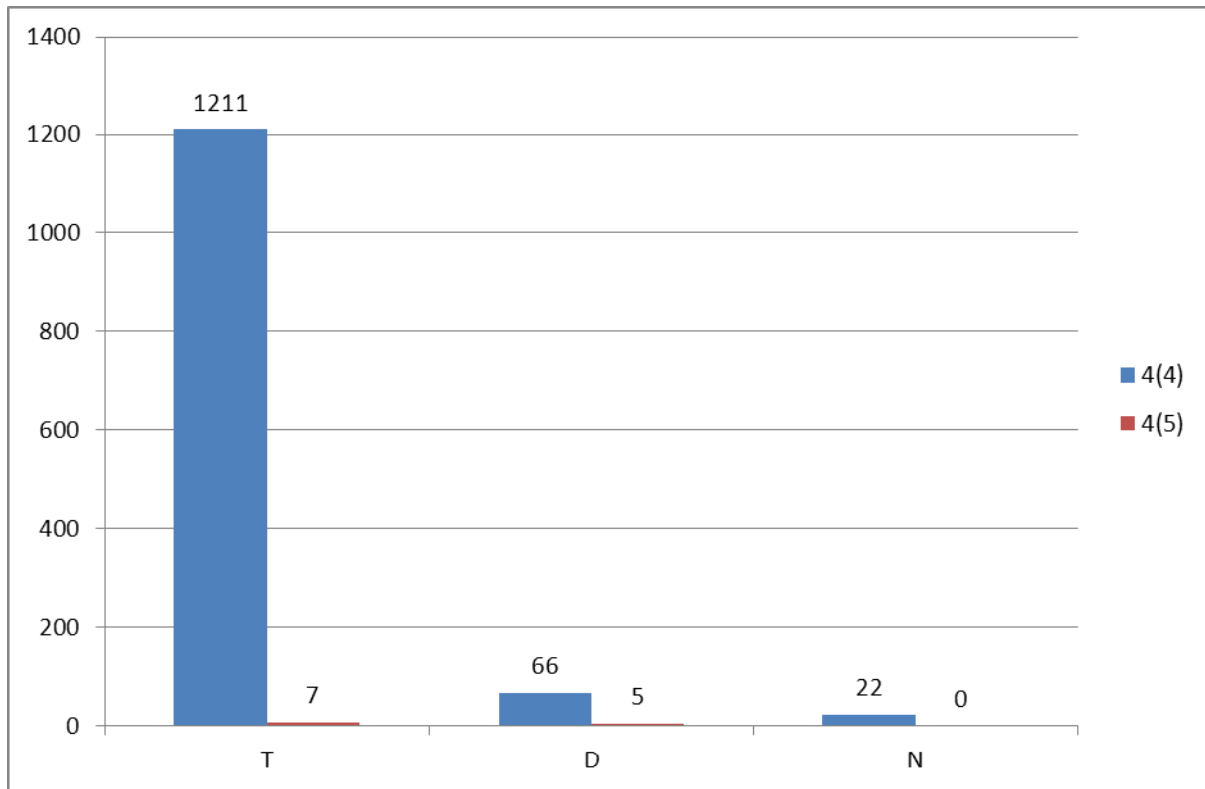
Alternative funding was foreseen (SAPARD, ISPA, PHARE, cohesion funds, structural funds, etc.); however, it is not clear if this funding will be used to overcome disproportionate costs of some measures or to fulfil supplementary measures.

The technical infeasibility was applied when no technical solutions were available or they were inefficient, when a longer time was needed than the one available, if the supplementary measures are not implemented by 22/12/2012 and the environmental objectives will be reached after 2015. Some supplementary measures require a longer time for implementation such as: the application of best agricultural practices (BAP) in farms or non-vulnerable areas, best available techniques (BAT) for non-IPPC units, establishing buffer zones along rivers to reduce the pesticides pollution, application of organic agriculture, reduce soil erosion, perform research studies, awareness raising campaigns. Although the measure is going to be implemented, the effect will be visible only in a few years.

RBD	Global <sup>14</sup>					
	Technical feasibility		Disproportionate costs		Natural conditions	
	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)	Article 4(4)	Article 4(5)
RO1000	1211	7	66	5	22	-

<sup>14</sup> Exemptions are combined for ecological and chemical status.

**Table 11.2.1:** Numbers of Article 4(4) and 4(5) exemptions  
**Source:** WISE



**Figure 11.1.1:** Numbers of Article 4(4) and 4(5) exemptions

*T = Technical feasibility*

*D = Disproportionate costs*

*N = Natural conditions*

*Blue = Article 4(4) exemptions*

*Red = Article 4(5) exemptions*

**Source:** WISE

### 11.3 Exemptions according to Article 4(6)

No exemption under Article 4.6 was used in Romania.

### 11.4 Exemptions according to Article 4(7)

Navigation projects in the Romanian sector have not been included as Article 4(7) projects in the National Management Plan – The Synthesis of River Basin Management Plan or Dobrogea-Litoral RBMP having in view that at the reporting time, the project implementation was uncertain.

Three infrastructure projects are mentioned as exempted under Article 4.7: two concerning navigation on inland waterways that aim to improve navigation along 700 km of the Danube River, that will impact the WBs by the construction of sills, channelization, and closure of side arms. Some other multiple purposes, future infrastructure projects in various stages of planning and implementation were also proposed in the RBMP without a reference to Article 4.7.

The navigation projects were not properly justified, as the potential impacts are not described, and the justification for the overriding public interest or the cost and benefit weighting have

not been included, as well as the assessment of possible better environmental option and the mitigation measures.

The Romanian authorities claim that for the 2<sup>nd</sup> RBMP the navigation projects in the Romanian section of the Danube will be reanalysed in relation to the provisions of WFD Article 4.7, taking also into account the results of the monitoring programme for the environmental impact of the works. The navigation projects will be finalized by the end of 2015 and the report on the impacted WBs will be done in later cycles.

### **11.5 Exemptions to Groundwater Directive**

Exemptions were made under Article 4.4 (technical feasibility) due to the fact that basic measures that will be implemented by the end of 2012 will not produce significant effects by 2015. Most of the pollution sources for groundwater are represented by non-sewered households and connected to the derogation of Romania concerning the implementation of UWWT Directive; some supplementary measures should be developed during the next cycles; in some cases reasons are not specified.

19 GWBs are in poor chemical status and are exempted under Art.4(4).

No exemptions were reported in drinking water protected areas.

## **12. PROGRAMMES OF MEASURES**

According to Annex VII of the WFD, the RBMPs should contain a summary of the programmes of measures (PoM), including the ways in which Member States expect to achieve the objectives of Article 4 WFD. The programmes should have been established by 2009, but are required to become operational only by December 2012. The assessment in this section is based on the PoM as summarised by the Member State in its RBMP, and the compliance of this with the requirements of Article 11 and Annex VII of the WFD.

It therefore does not include a comprehensive assessment of compliance with the requirements of Article 11(3)<sup>15</sup> on basic measures. It focuses in particular on key sets of measures. Member States will report to the Commission by December 2012 on the full implementation of their PoMs, including the progress on the implementation of basic measures as required by Article 11(3). The Commission will assess what Member States report and will publish its assessment in accordance with Article 18 WFD.

### **12.1 Programme of measures – general**

The PoM was defined based on status assessment and was in line with the ICPDR approach based on the pressure analysis undertaken in 2009, when nutrient, organic and hazardous substances pollution together with hydromorphological alterations were identified as Significant Water Management Issues at basin level.

The Joint Program of Measures (JPM) includes measures of basin-wide importance oriented towards the agreed visions and management objectives for 2015. The JPM represents more than a list of national measures, as the effect of national measures on the Danube basin-wide

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<sup>15</sup> These are the minimum requirements to be complied with and include the measures required under other Community legislation as well as measures to achieve the requirements of other WFD Articles and to ensure appropriate controls on different activities affecting water management.

scale is also estimated and presented. Specific measures to restore river continuity, to reduce the pollution loads with nutrients, organic and hazardous substances are included in the JPM.

In Romania the measures at sub-basin or WB levels are addressed in the 11 specific sub-basin management plans.

The National Administration Romanian Waters is responsible for the monitoring of the implementation of the PoM, as well as for reporting the implementation status, but other national authorities are contributing to the implementation as well: Local Public Administration, Local Water-Sewage companies (state owned or private business), drinking water producers and distributors, farmers, industrial and agro-industrial facilities etc. The regional authorities are responsible for the implementation of measures at county level. The Ministry of Health, Ministry of Environment, Ministry of Internal Affairs and Administration, Ministry of Agriculture, Forests and Rural Development ensure the coordination/control of the implementation process of the PoM.

The costs of measures have been identified and the financing sources are planned and detailed at sub-basin levels; in total, 25.33% are European funds (cohesion, ISPA, PHARE, SAPARD, SAMTID), 46.22% are funds from the local and state budgets, 28.56% are own resources and loans of water users. From the total cost of PoM (€22.992 billion), for around 29% (€6 billion) of the costs, financing sources should be identified on a later stage.

Different deadlines are foreseen for the implementation such as: 2012, 2014, 2015, 2018, 2021 or 2027 (e.g. the measures to implement the UWWT Directive will be operational by 2018).

## 12.2 Measures related to agriculture

Agriculture is considered as one of the main sources of point and diffuse pollution with nutrients, organic and hazardous substances due to the presence of animal farms without waste recycling/storage capacity, non-sewered households, use of fertilizers or pesticides, etc. Significant pressure due to water abstraction for irrigation is reported for some sub-basins.

During the public consultation period, the RBMP was discussed with the relevant stakeholders during the meetings organized by the Basin Committees and made available for comments. Some of the measures suggested during this process were integrated in the RBMP, such as: deadlines readjustment, new measures included, and coordination with other policy fields. It is assumed that the farmers were significantly involved in that consultation.

Concerning the scope of the measures, in general, the measures refer to specific areas.

No specific information is provided regarding the timing of implementation.

The costs of the measures have been identified. In general, the funding is ensured through farmers associations/agricultural units own sources, the Rural Development programme, the national project on nutrient pollution control and local authorities' funds.

Measures	RO1000
<b>Technical measures</b>	
Reduction/modification of fertiliser application	✓
Reduction/modification of pesticide application	✓
Change to low-input farming (e.g. organic farming practices)	✓
Hydromorphological measures leading to changes in farming practices	✓
Measures against soil erosion	✓



Measures	RO1000
Multi-objective measures (e.g. crop rotation, creation of enhanced buffer zones/wetlands or floodplain management)	✓
Technical measures for water saving	✓
<b>Economic instruments</b>	
Compensation for land cover	
Co-operative agreements	
Water pricing specifications for irrigators	
Nutrient trading	
Fertiliser taxation	
<b>Non-technical measures</b>	
Additions regarding the implementation and enforcement of existing EU legislation	✓
Institutional changes	
Codes of agricultural practice	✓
Farm advice and training	✓
Raising awareness of farmers	✓
Measures to increase knowledge for improved decision-making	
Certification schemes	
Zoning (e.g. designating land use based on GIS maps)	
Specific action plans/programmes	
Land use planning	
Technical standards	
Specific projects related to agriculture	
Environmental permitting and licensing	

**Table 12.2.1:** Types of WFD measures addressing agricultural pressures, as described in the PoM  
**Source:** RBMPs

### 12.3 Measures related to hydromorphology

The RBMP presents the measures that should be taken in WBs that risk to fail the environmental objectives; in general, they focus on restoring lateral and longitudinal connectivity and are presented below.

However, in view of the threats posed by climate change some other measures are needed in areas affected by droughts (e.g. the Southern part of Romania and Dobrogea), such as: reconnection of side arms for the Lower Danube, construction of retention basins, operational modifications for hydropeaking and reduction or modification of dredging.

General considerations regarding the expected positive effects on habitat and biota are presented, but there is no specific remark on how these measures will improve the ecological status/potential.

The supplementary measures include actions addressed to floodplain restoration, restoring lateral and longitudinal connectivity, improvement of hydrological conditions of channels and habitat restoration (leading to improved environmental conditions in Natura 2000 protected areas), diversification of bank structure, creation of buffer strips along some river sections to decrease diffuse pollution.

A series of hydromorphological measures are planned, but it is not clear if they will be applied also on HMWBs; only indirect information given: restoring the natural habitat along some river sections, constructing fish passages, hydrotechnical works to meliorate water circulation along some Danube Delta channels, improving hydrological regime downstream reservoirs, etc.

For the first RBMP cycle there are no guidelines for defining the ecologically based flow regime; the national Water Law requires that the hydrotechnical operators (dams, abstraction points, reservoirs) provide the necessary flow downstream according to the water uses and the ecological needs; however, at the moment there is no legal instrument in Romania to define the ecological flow. For the RBMP, based on different studies, the consideration of minimum flow was not ecologically based, but further studies are envisaged to link the ecological flow with biota's response and detect the optimum values according to specific situations. Some supplementary measures were considered in the PoM targeting the establishment of the ecological flow downstream of different reservoirs.

Measures	RO1000
Fish ladders	✓
Bypass channels	
Habitat restoration, building spawning and breeding areas	✓
Sediment/debris management	✓
Removal of structures: weirs, barriers, bank reinforcement	✓
Reconnection of meander bends or side arms	
Lowering of river banks	
Restoration of bank structure	✓
Setting minimum ecological flow requirements	✓
Operational modifications for hydropeaking	
Inundation of flood plains	✓
Construction of retention basins	
Reduction or modification of dredging	
Restoration of degraded bed structure	✓
Remeandering of formerly straightened water courses	

**Table 12.3.1:** Types of WFD measures addressing hydromorphological pressures, as described in the PoM  
**Source:** RBMPs

#### 12.4 Measures related to groundwater

The major pressures and risks considered in the RBMP are diffuse and point source pollution. Therefore, preventive measures were addressed, such as: prohibition of direct discharges of pollutants into GW, prior regulation of point sources discharges liable to cause pollution, measures to prevent significant losses of pollutants from technical installations and prevent/reduce the impact of accidental pollution incidents, modernization of the WWTPs by introducing a new step, extension of aeration procedure in the biological step, amelioration of effluent quality, installation of automatic monitoring system of waste water quality, neutralizing the mining waters before discharge, closing mining areas and apply the code for good practices in agriculture to limit the pesticides pollution etc.

The quantitative status of the evaluated GWBs was good, and therefore, no basic or supplementary measures were considered since the abstraction rate is lower than the natural recharge of aquifers.

General supplementary measures are considered, targeting the 19 GWBs with poor chemical status (sewerage systems for agglomerations < 2000 inhabitants, use of action plans and code of good practices in agriculture in non-vulnerable areas, use of organic agriculture etc). In some sub-basins specific measures are included in the PoM: supplementary monitoring of hazardous/priority substances lists in SW, GW and waste waters, studies regarding the ecological reconstruction of former mining areas, evaluation of the annual load of contaminants and their impact on water quality; rehabilitation of WWTPs, ecological reconstruction of polluted areas. Although not clearly linked, the supplementary measures target a reduction of pollution sources, aiming to improve the quality of the affected GWBs.

From the analysis of the transboundary GWBs no coordination was found with Ukraine; agreements are established only for part of the transboundary GWBs with Hungary, Serbia, Bulgaria and Moldova. Coordination at international level was ensured under ICPDR guidance for 8 GWBs considered of transboundary importance.

## **12.5 Measures related to chemical pollution**

The RBMP presents the major sources of point and diffuse pollution at basin level, these sources being under continuous monitoring. Other pressures are considered as well, such as: the sources presenting potential of accidental pollution, fishery/aquaculture activities, gravel exploitation directly from the river bed and forestry that may impact also water quality and could represent a source of chemical pollution. The substances envisaged are nutrients, organic and priority/hazardous substances, according to WFD requirements.

The basic measures of the PoM address: reduction of pollution with priority substances and other substances in SWs, prior regulation of point source discharges liable to cause pollution, measures to prevent pollution from diffuse sources (agriculture, industry, households), prohibition of direct discharge of pollutants into groundwater, prevention of significant losses of pollutants from technical installations and prevent/reduce the impact of accidental pollution incidents; besides the basic measures, supplementary and additional measures address point and diffuse pollution, such as: construction of wastewater treatment plants, raising public awareness, habitat restoration to enhance the purification function of natural ecosystems, etc. Coordinated measures for the reduction of organic, nutrient and hazardous substances pollution are presented in the Danube RBMP (ICPDR - Joint Program of Measures).

Substance specific measures are addressed in the sub-basin management plans, such as: prevent/reduce significant losses of contaminants from technical installations, improved sewage connection of human agglomerations, floodplain restoration, creation of buffer strips along rivers etc. For heavy metals, closure of waste deposits, construction of retention basins or modernization of waste water treatment facilities are envisaged; for organic contaminants (chloroform, carbon tetrachloride, pentachlorophenol, hexachlorobutadiene), modernization of waste water treatment, extension of sewage system to connect to the industrial sewage system or stabilization of waste deposits are foreseen.

## **12.6 Measures related to Article 9 (water pricing policies)**

As it is mentioned in the National Management Plan, the Governmental Decision no. 803/2008, specify water management activities, which are defined as public services such as:

water resource storage, impoundment, allocation, regulation and flood protection. There are also following water services reported in RBMP: water supply, waste water collection and treatment for household, industry and agriculture connected to the drinking water supply and sewerage /waste water treatment plant centralized network. The use of the water resources by hydropower, navigation, abstraction, irrigation, industry, agriculture etc. are part of specific water management activities, defined as public services which are based on the cost recovery principle.

Water uses are broadly defined in the National Management Plan in relation with the type of water resource:

- surface water: economical operators (household and others), public and cultural institutions, industrial and agro-technical units, hydropower and thermo energy operators, lock services, irrigations; aquaculture.
- groundwater: industrial operators; households, public and cultural institutions and other users of groundwater, aquaculture, agricultural operators.

There is little information on how water pricing policies in Romania provide incentives for users to use water resources efficiently. Regarding the quantitative protection of water resource the incentives used are the penalties according to the Water Law. Regarding the qualitative protection of water resource the internalised environmental cost is reflected into the final tariff for waste water treatment/sewerage services and concerns waste water release to WBs. The economic incentives applied for water quality protection are penalties and bonuses based on the types of indicators (general chemical, specific, toxic and very toxic, bacteriological and physical). No information concerning metering, volumetric charging or efficiency promoting tariffs within different water uses has been provided.

Cost recovery is calculated covering only financial costs:

- the cost related to water resource administration;
- the proper cost for drinking water supply and sewerage/waste water treatment services;
- cost related to receiving pollutants and costs related to prevention of quality damage.

The cost recovery for public services of water supply/sewage is based on consumers' contributions; the difference being due to the development and profit quota established according to the law. The investment costs were estimated based on the 27 County Master Programmes accepted (7 were still in progress at the end of 2009), of the programmes and projects, and on the cost recovery methodology elaborated by the National Administration Romanian Waters. To estimate the investment, maintenance and operational costs, a data basis of unitary prices was created in order to allocate the budget for different measures; the prices were estimated based on similar infrastructure projects from Romania or other countries; the basic prices correspond to 2008 year.

It is stated that financial cost of recovery is 100%. As it is reported that cross subsidies between water services (drinking water supply, wastewater sewerage and treatment) do not exist it means that the contribution of different water uses (households and industry) is also 100%.

Externalities regarding the environmental and resource costs were not calculated and taken into account within the cost recovery calculation. However some environmental costs concerning water quality (waste water release by industry, agriculture, households) are internalised through the penalties system.

Polluter pays principle is partially respected through the recovery of financial costs of water services and internalisation of some environmental costs (related to water quality). Polluter pays principle concerns households and industry connected to the drinking water supply and sewerage /waste water treatment plant centralized network, and also all users which discharge waste water into the water resource.

Romanian authorities reported that economic and social effects of cost recovery were taken into account at national level.

## **12.7 Additional measures in protected areas**

The supplementary/additional measures are general and not linked to protected areas although some of them will have a positive effect (e.g. floodplains restoration, new WWTPs, etc.).

Some additional measures to comply with Birds, Habitats and Freshwater Fish Directives are mentioned in the RBMP: the sturgeon (*Acipenseridae*) populations are protected by fishing prohibition (2006-2016), restocking and aquaculture; several PHARE and LIFE projects compliment the RBMP measures with raising public awareness, monitoring species and habitats, drafting management plans for Natura 2000 protected areas, developing a national data basis regarding the protected species and habitats of community interest, etc.

Although the measures are not specifically presented, it is mentioned that in the protected areas for water abstraction some additional measures are required to restrict activities and oblige land owners in order to avoid the risk of contamination. Indeed property rights allow only 60% of Romanian drinking water abstraction points to be protected by safeguard zones. In the rest of the cases protection measures are imposed on land owners by the competent authorities.

## **13. CLIMATE CHANGE ADAPTATION, WATER SCARCITY AND DROUGHTS AND FLOOD RISK MANAGEMENT**

### **13.1 Water Scarcity and Droughts**

Some areas located in the southern part of Romania, Dobrogea area (border of the Black Sea and Danube Delta) and part of the Central Moldavian Plateau are exposed to water scarcity and droughts.

Water scarcity and droughts were presented in general concerning the legislative status, developed strategies and further implementation. They were addressed more in the general context of climate change and less in terms of vulnerability of water resources.

Technical details have not been presented in the River Basin Management Plans since they are included in the River Basin Development Plans. The River Basin Development Plans together with the River Basin Management Plans form the River Basin Development and Management Schemes, according to the Water Law.

The River Basin Development Plans developed after approval of the River Basin Management Plans contains information regarding the influence of the drought on water resources and the pressures on water resources directly related to overexploitation of water that exceeds the resources available in certain areas.

The National Strategy regarding the Mitigation of Drought effects and Prevention of land degradation and Desertification includes measures that allow the management of emergency

situations generated by hydrological droughts. Each river basin includes a plan of restricted water use, updated and approved in 2009, that comprises an information warning system of the population and economic users, all the water uses (used discharge + minimum required discharge), control sections along water courses where different situations are envisaged (normal phase, warning phase, restriction phase).

Datasets and trend scenarios were not considered in the first RBMP cycle, the topic was treated at general level in the national RBMP and ICPDR Danube RBMP as it was not considered a Significant Water Management Issue at the analysis in 2004.

Details about water demand and trend scenarios for 2010-2020 period are presented. The balance between water availability and the expected trends for water demand shows no deficit at Member State level or in the 11 sub-basins; there are only few deficitary river sections in Prut - Bârlad basin that should be carefully considered in the future.

### **13.2 Flood Risk Management**

Floods were addressed in the context of climate change adaptation and coordination with ICPDR regarding flood protection measures is indicated. At sub-basin level the requirements of the Floods Directive are integrated and will be implemented through the National Strategy of Flood Risk Management on medium and long term, adopted in 2010.

The SEE Floodrisk project, currently developed along the Danube River, will contribute to mitigate the risk of floods in the Middle and Lower Danube and support the implementation of the Floods Directive.

The study 'Ecological and economic redimensioning of the Lower Danube Floodplain in Romania' analyses the possibility of restoring part of the Danube floodplains as a measure to mitigate the impact of the lost lateral connectivity and create retention basins for flood protection.

### **13.3 Adaptation to Climate Change**

The evidence of climate change in RO is presented based on research projects results (CLAVIER, CECILIA, ENSEMBLES, CIRCLE); however, the impact is only briefly described. The prognosis of climate models shows that by 2050 the precipitation level is expected to decrease by 20% in the southern part of Romania.

The RBMP was elaborated in coordination with the National Strategy for Climate Change (2005-2007) and the National Action Plan regarding the Climate Change; some measures to adapt the water management to climate change are considered, such as: improved research, water management strategies developed at catchment scale, flood protection measures, improved monitoring system of meteorological and hydrological data, development at regional scale of the water supply/sewage systems, intensify the international cooperation and knowledge exchange for concerted measures, increase public awareness and information etc.

The RBMP indicates also a general link to the National Rural Development Program with climate measures.

Basic measures related to climate change are foreseen to promote the efficient and sustainable water use, controls over the abstraction of surface water and groundwater and impoundment of surface waters, including a register or registers of water abstractions and a requirement for prior authorisation of abstraction and impoundment. Supplementary measures to increase resilience to climate change are addressed indirectly through other

measures (flood protection, floodplain and wetlands restoration, hydrological studies, melioration of water circulation, creation of buffer zones, restore banks vegetation, etc.).

Currently an adaptation strategy to cope with climate change is under development at the international river basin level under the coordination of ICPDR and the foreseen measures will be included in the future RBM cycles.

The following problems will be addressed in the next RBM cycles: adaptation of monitoring system to detect the impact of climate change on water ecological and chemical status, adaptive management (by considering the observed effects), investigate the impact of climate change on eco-regions, typologies and reference sections, investigate the effect of climate change on different sectors and evaluate the indirect impact on WBs status, evaluate ecosystem vulnerabilities in the catchment, implement EIA and SEA Directives for the Future Infrastructure Projects and consider their cumulative impact.

#### 14. RECOMMENDATIONS

Following the steps of river basin planning as set out in the WFD should ensure that water management is based on a better understanding of the main risks and pressures in a river basin and as a result, interventions are cost effective and ensure the long term sustainable supply of water for people, business and nature.

To deliver successful water management requires linking these different steps. Information on **pressures** and risks should feed into the development of **monitoring programmes**, information from the monitoring programmes and the **economic analysis** should lead to the identification of **cost effective programmes of measures** and justifications for exemptions. **Transparency** on this whole process within a clear governance structure will encourage **public participation** in both the development and delivery of necessary measures to deliver sustainable water management.

To complete the 1<sup>st</sup> river basin management cycle, and in preparing for the second cycle of the WFD, it is recommended that:

- The characterization is not complete, harmonization between abiotic and biotic criteria is still under development for typology definition. The characterization and the harmonization of abiotic and biotic criteria should be completed.
- There is a gap in the inter-calibration. The confidence level of the evaluation of ecological potential is low. These gaps should be filled in the 2<sup>nd</sup> RBMP cycle.
- There are still gaps in establishing biological quality element methods for ecological status assessment. The assessment of biological elements needs to be strengthened in order to comply with WFD requirements (monitoring and evaluation of BQEs, the impact of pollutants on biota, etc.).
- Mercury, hexachlorobenzene and hexachlorobutadiene should be monitored in biota for comparison with the biota standards in the EQSD, unless water EQS providing an equivalent level of protection are derived. The monitoring being carried out in sediment and biota should cover the requirement for trend monitoring specified for several substances in EQSD Article 3(3).
- Where there are currently high uncertainties in the characterisation of the RBDs, identification of pressures, and in the assessment of status, these need to be addressed

in the current cycle, to ensure that adequate measures can be put in place before the next cycle.

- More details on some methodologies (e.g. cost-benefit analysis) should be included in the RBMP.
- Only little improvement of the water status is expected by 2015 and the objectives for subsequent planning deadlines are not always clear. Objectives should be clearly indicated and transparent in order to be able to reach good status of waters in a reasonable timeframe.
- There have been a large number of exemptions applied in this first cycle of RBMPs. While the WFD does provide for exemptions, there are specific criteria that must be fulfilled for their use to be justified. The application of exemptions needs to be more transparent and the reasons for the exemptions should be clearly justified in the plans. The high number of exemptions applied in these first RBMPs is a cause of concern. Romania should take all necessary measures to bring down the number of exemptions for the next cycle, including the needed improvements in the characterisation process, monitoring networks and status assessment methods, as well as reducing significantly the degree of uncertainties.
- If there are new physical modifications planned, the use of exemptions under Article 4(7) should be based on a thorough assessment of all the steps as requested by the WFD, in particular an assessment of whether the project is of overriding public interest and whether the benefits to society outweigh the environmental degradation, and the absence of alternatives that would be a better environmental option. Furthermore, these projects may only be carried out when all possible measures are taken to mitigate the adverse impact on the status of the water. All conditions for the application of Article 4(7) in individual projects must be included and justified in the RBMPs as early in the project planning as possible.
- The monitoring activity should check also the efficiency of the implemented measures (e.g. fish passes, construction of buffer strips or wetland restoration effect on water quality etc.).
- Agriculture is indicated as exerting a significant pressure on the water resources in Romania. This should be translated into a clear strategy that defines the basic/mandatory measures that all farmers should adhere to and the additional supplementary measures that can be financed. This should be developed with the farmers' community to ensure technical feasibility and acceptance. There needs to be a very clear baseline so that any farmer knows the rules this can be adequately advised and enforced and so that the authorities in charge of the CAP funds can adequately set up Rural Development programmes and cross compliance water requirements.
- The RBMPs should indicate how hydromorphological measures will improve the ecological status/potential.
- The cost-recovery should address a broad range of water services, including impoundments, abstraction, storage, treatment and distribution of surface waters, and collection, treatment and discharge of waste water, also when they are "self-services", for instance self-abstraction for agriculture. The cost recovery should be transparently presented for all relevant user sectors, and environment and resource costs should be included in the costs recovered. Information should also be provided on the incentive



function of water pricing for all water services, with the aim of ensuring an efficient use of water. Information on how the polluter pays principle has been taken into account should be provided in the RBMPs.