Open University of Netherlands

Final Research Report

Stage 4 - Group Activity 4

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Studentgroup 4 -WAT: Kristof Blockx, Sheila Francl, Su-Ma Kaba, Veronika Rigó, Christian Ters, Theano Theodoridou

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List of Acronyms

AEWS	Accident Emergency Warning System
ANDR	National Agencies for Regional Development
AQC	Analytical Quality Control
AT	Austria
BG	Bulgaria
CAP	Common Agricultural Policy
CAR	Centre for Rural Assistance Romania
CESO	Canadian Executive Services Overseas
CF	Cohesion Fund
CIS	European Commission's Common Implementation Strategy
CITES	Convention on International Trade in Endangered Species
CNCAN	Comisia Nationala pentru Controlul Activitatilor Nucleare The National Commission for the Nuclear Activities Control
CZ	Czech Republic
DBA	Danube Basin Analysis 2004 (WFD Roof Report) [Version 18 Mar 2005]
DDBRA	Danube Delta Biosphere Reserve Authority
DDT	Dichlordiphenyltrichlorethan
DABLAS	Task Force Informal Task Force for co-operation on water related issues in the Danube and Black Sea Region
DEF	Danube Environmental Forum
DIFGA	Computer aided hydrograph differences method
DRB	Danube River Basin
DRBD	Danube River Basin District
DRBMP	also DRBM Plan, Danube River Basin District Management Plan [Final Vers 14.Dec.2009]
DRBD	Danube River Basin District
DRPC	Danube River Protection Convention
EC	European Commission
EIB	European Investment Bank
EPER	European Pollutant Emission Register
E-PRTR	European Pollutant Release and Transfer Register
ERDF	European Regional Development Fund
EU	European Union
EU MS	European Union Member State
EU WFD	European Union Water Framework Directive
GIS	Geographical Information System
GNI	Gross National Income
HMWB	Heavily Modified Water Bodies
HR	Croatia

HU	Hungary
IAD	International Association for Danube Research
ICPDR	International Commission for the Protection of the Danube River
ISPA	Instrument for Structural Policies for Pre-Accession
IUCN	International Union for Conservation of Nature
JDS	Joint Danube Survey
MD	Republic of Moldova
ME	Montenegro
MESD	Ministery of Environment and Sustainable Development
Mio	Million
MONERIS	Modelling Nutrient Emissions in River Systems
MTCT	Ministry of Transport, Construction and Tourism
NARW	National Administration of Romanian Waters
NAPA	National Agency for Protected Natural Areas
NEPA	National Environmental Protection Agency
NGO	Non-Governmental Organization
Non-EU MS	Non European Union Member State
NSDS	National Sustainable Development Strategy
NSRF	National Strategic Reference Framework
PO	Poland
POM	Programme of Measure
RBM	River Basin Management
RBMP	River Basin Management Plan
REC	Regional Environmental Centre for Central and Eastern Europe
RO	Romania
ROP	Regional Operational Program
RS	Republic of Serbia
SECI	Southeast European Cooperative Initiative
SI	Slovenia
SK	Slovak Republic
SOP	Sectoral Operational Programs
SOP ENV	Sectoral Operational Prorgams Environment
SWAT	Soil and Water Assessment Tool
SWMI	Significant Water Management Issue
TNMN	Transnational Monitoring Network
UA	Ukraine
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UWWTD	Urban Waste Water Treatment Directive
VTMIS	Vessel traffic management information system

WED	World Ecosystems Database
WFD	Water Framework Directive
WWF	World Wide Fund for Nature
WWTP	Waste Water Treatment Plan

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General introduction

The objective of the European Union Water Framework Directive (WFD)[1] for all European Union Member States (EU MS) aims at achieving good environmental qualitative and quantitative status of all water bodies by 2015. This is an important challenge as the majority of water bodies in the EU have been identified as being at risk to meet the objectives of the Directive.

As part of the WFD sustainable development is characterized to achieve a certain quality and quantity of water bodies as it is absolute necessary to enable a healthy environment for human beings, flora and fauna in and around the river basin. As a consequence, this also means to ensure the usability of the water bodies for economical and social activities for future generations.

The main objective of this research report was the evaluation of the international river basin management plan for the Danube basin focusing on Romania.
Therefore, it had to be analysed what chances as well as risks Romania currently is facing to meet the requirements for the implementation of the WFD with a special focus on the sustainable development approach of the student group. This means to find out the:

- preconditions and details about the main characteristics of Danube basin in terms of economic, social and political issues
- relevant authorities and organizations
- relevant ecosystem services and their respective conflicts
- the recent status of the implementation of monitoring programmes as well as the elaboration of programmes of measures and the establishment of river basin management by the Romanian government
- practical difficulties e.g. the lack of experts, capacity building via education related to the implementation of the WFD

During the research period the student group was facing serious problems to fulfil this objective.
It was difficult and sometimes even not possible to find authentic information in English about the recent status of the WFD implementation.

An essential column of the work is based on the *Danube River Basin District Management Plan*[2] and the *Danube Basin Analysis - WFD Roof Report 2004*[3] to which the DRBM Plan is often referring.
Both documents are elaborated from the *International Commission for the Protection of the Danube River* (ICPDR) which is in charge of acting as a platform and organ for the WFD implementation (more

1 Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. [Reference in this report: WFD or EU WFD (2000).]
2 ICPDR (2009 a), also called DRBMP or DRBM Plan
3 ICPDR (2005 Mar), also called DBA

information about ICPDR in chapter 12.3). Therefore the DRBM Plan was developed until December 2009 as the required First River Basin Plan.

ICPDR advice to interpret the DRBM Plan in combination with the national RBM Plan as it could give more faithful and detailed information[4], but national documents are kept in the national language. So the group couldn't follow this important requirement and couldn't focus always on Romania as it was proposed in the group research proposal.

The research report begins with a short presentation of the Danube River Basin. It describes the important areas for nature and biodiversity among the Danube Basin and the provided ecosystem services in that. A definition of water management requirements from a sustainable development perspective will be given by the student group.
The main part of this document tries to evaluate the international river basin management plan for the Danube basin and the implementation of the WFD in protected areas (focusing on Romania as far as possible). Under this aspect also the assessment efforts and the significant water management issues were observed. As an important column for the success to protect the environment the Romanian sustainable development strategy was viewed and in correlation to this the role for Non-Governmental organizations (NGO's) and authorities.

4 Cf. ICPDR (2009 a), DRBM Plan, 'Disclaimer'

1 Main DRB Characteristics and Protected Areas

1.1 Geographical

The origin of the Danube is the union of three sources: Breg, Brigach and the Donaueschingen in Germany. The Danube is with its 2,857[5] km the second largest river of Europe and its hydrological basin exceeds 8% of Europe's area[6]. The Danube River Basin District (DRBD) associates 19 countries. The Danube Basin contains the Tisza, Drava and Sava Basin and the Danube Delta with entrance to the Black Sea.[7]

Romania has a special role under the Danube counties as a third of the river's length and around 30% of the Basins surface area is situated in the Romanian section. Before the river flows into the Black Sea it passes through the Danube mouth: the remarkable Danube Delta. 82% of the Delta (3446 km²) is Romanian the rest is part of the Ukraine. Here the Danube splits in 3 branches: Chilia 58%, Sulina 19% and Sf.Gheorghe 23%[8]. In total 97.4% of Romania is situated within the Basin[9] and it is part of 4 ecoregions in the DRBD[10] :

- The Carpathians (also AT, CZ, SK, PO, RS, ME)
- Hungarian Lowlands (also AT, CZ, HR, HU,SI, SK, RS, ME)
- Pontic Province (also BG, MD, UA)
- Eastern Plains (also MD, UA)

Map 1 shows the entire DRB District where the Danube passes through quite different geographic and environmental conditions.

Map 1: DRBD: Overview[11]

[5] Cf. ICPDR (2010 Feb.4 a), 'River Basin'

[6] Cf. Danube Delta Biosphere Reserve Authority (DDBRA) (2010 Feb.4a), 'Die Verwaltungsbehörde des Biosphärenreservates Donaudelta'

[7] Cf. ICPDR (2010 Feb.1 a), 'Homepage'

[8] Cf. DDBRA (2010 Feb.4 b), 'Le Danube'

[9] Cf. ICPDR (2010 Feb.1 b), 'Romania'

[10] ILLIES, J. (1978), *Limnofauna Europaea*

[11] ICPDR (2009 a), DRBM Plan, Map1


GERMANY
CZECH REPUBLIC
POLAND
SLOVAKIA
UKRAINE
REPUBLIC OF MOLDOVA
AUSTRIA
SWITZERLAND
ITALY
HUNGARY
SLOVENIA
CROATIA
ROMANIA
BOSNIA AND HERZEGOVINA
SERBIA
MONTENEGRO
BULGARIA
ALBANIA
FYR OF MACEDONIA
Adriatic Sea
Black Sea
Praha
Bratislava
Wien
Budapest
Ljubljana
Zagreb
Beograd
Sarajevo
Podgorica
Sofia
București
Chișinău
LEGEND
Danube River Basin District (DRBD)
Danube River
Tributaries (with catchment area > 4,000 km²)
Lake water bodies (with surface area > 100 km²)
Transitional water bodies
Coastal water bodies
Canals
Competent authority
National borders
Cities:
100,000 - 250,000 inhabitants
250,000 - 1,000,000 inhabitants
> 1,000,000 inhabitants
0 50 100 200 Kilometers
Scale: 1 : 4,600,000

Table 1: Basic characteristics of the Danube River Basin District[12]

DRBD area:	807,827 km²	DRB area:	801,463 km²
Danube countries with catchment areas > = 2,000 km²:			
EU Member States (8):	Austria, Bulgaria, Czech Republic, Germany, Hungary, Slovak Republic, Slovenia, Romania.		
EU Accession Country (1):	Croatia		
Non EU Member States (5):	Bosnia & Herzegovina, Moldova, Montenegro, Serbia and Ukraine		
Danube countries with catchment areas < 2,000 km²:			
EU Member States (2):	Italy, Poland		
EU Accession Country (1):	FYR Macedonia		
Non EU Member States (2):	Albania, Switzerland		
Inhabitants:	≈ 80,5 million	Length of Danube River:	2,857 km
Average discharge:	≈ 6,500 m3 /s (at the Danube mouth)		
Key tributaries with catchment areas > 4,000 km²:			
Lech, Naab, Isar, Inn, Traun, Enns, March/Morava, Svratka, Thaya/Dyje, Raab/Rába, Vah, Hron, Ipel/Ipoly, Siò, Drau/Drava, Tysa/Tisza/Tisa, Sava, Timis/Tamiš, Velika, Morava, Timok, Jiu, Iskar, Olt, Yantra, Arges, Ialomita, Siret, Prut.			
Important lakes > 100 km²:			
Neusiedler See/Fertö-tó, Lake Balaton, Ozero Ialpug, Razim-Sinoe Lake System (Lacul Razim and Lacul Sinoe, which is also a transitional water body)			
Important groundwater bodies:			
11 transboundary groundwater bodies of basin-wide importance are identified in the DRBD.			
Important water uses and services:			
Water abstraction (industry, irrigation, household supply), drinking water supply, waste water discharge (municipalities, industry), hydropower generation, navigation, dredging and gravel exploitation, recreation, various ecosystem services.			

Romania counts 11 national river types. The Romanian Danube can be classified in 4 of them[13]. Romania has 2 important lakes >100 km² the Razim and the Sinoe. The latter is also defined as a transitional water body (salinity: oligohaline, Tidal range < 2m, Lacustrine type)[14].

Both lakes are identified as lakes under significant chemical pressure[15]. Romania's surface water resources depend to 80% on transboundary rivers[16].

This huge area of the DRB District has a very complex diversity of history, social context, different sectors (as industry, agriculture, transport, power plants…) and economical background, which are necessary to regard for a good water management.

[12] ICPDR (2009 a), DRBM Plan, Table 1, p.2
[13] ICPDR (2009a), DRBM Plan (Annex 2 Table 1), 'Number of national river types defined at the DRBD overview level'
[14] ICPDR (2009a), DRBM Plan (Annex 2 Table 3), 'Types of transitional waters in the DRBD'
[15] ICPDR (2009a), DRBM Plan (Table 8), 'Presence of significant hydromorphological alterations and chemical pressures affecting DRBD lakes'
[16] Cf. LoGo Water (2007 Feb), 'Local governance in Integrated Water Resources Management in the Danube Basin', p.23

In total 20 million people depend on drinking water form the Danube[17] and in some Danube countries up to 95% of the supplied public drinking water is gained by groundwater[18]. Already this shows how important it is to protect the DRB. (more about drinking water in chapter 10.2.1.1).

1.2
Flora, Fauna and Aquatic Life

Along the Danube there are several areas which are worth to be protected caused on its richness of nature life such as floodplains, wetlands and the Danube Delta. The DRB is home for more than 5000 animal species, about 2000 vascular plants[19] and over 1,000 aquatic species and higher-level organisms[20]. The DRB is a mayor migration route for around 300 species of birds[21].

1.2.1 Floodplains

The lower Danube flows for more than 1000 km through Romania, Bulgaria, Moldova and Ukraine. Downstream of the border between Serbia and Romania, the lower Danube exhibits narrow floodplains with very marked slopes on the Bulgarian side, and a large-scale floodplain up to 15 km wide on the Romanian side. Large remaining floodplain areas exist only in the confluence areas of the Romanian tributaries with the Danube[22].

1.2.2 Floodplain Forests

Floodplain forests are ecosystems with high levels of biodiversity and in many aspects create an extraordinary habitat hosting different species of fauna and flora. These forests are located on islands in former inland delta of the Danube River and are compared to jungle or tropical rain forests. They are also equally threatened. Despite the long-term nature conservation efforts, floodplain forests, as well as many other wetland habitats, are still under big pressure and are threatened by various human activities[23].

1.2.3 Wetlands

Wetlands are defined as areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of

[17] Cf. Danube Campaign (2010 Feb.4)

[18] Cf. ICPDR (2007e) 'JDS2: Water pollution in the Danube River Basin', p.2

[19] Cf. ICPDR (2010 Feb.3 a), 'Danube Day: River of Life'

[20] Cf. ICPDR (2010 Feb.3 b), 'JDS 1 Joint Danube Survey 2001'

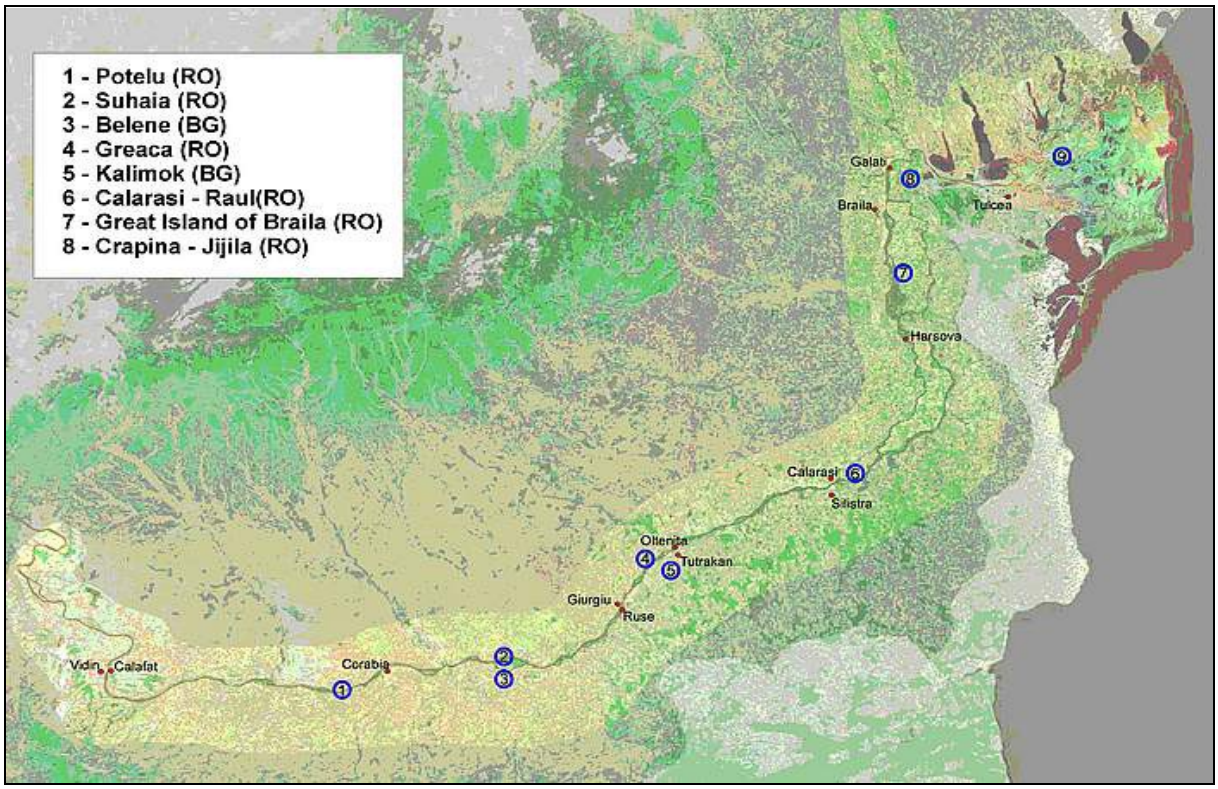
[21] Cf. ICPDR (2010 Feb.3 a), 'Danube Day: River of Life'

[22] WWF, 'Lower Danube Green Corridor Europe's most ambitious wetland project' (2010), viewed on February 26, 2010, <http://www.panda.org/what_we_do/where_we_work/black_sea_basin/danube_carpathian/our_solutions/freshwater/floodplains/lower_danube_and_danube_delta/>

[23] P. Socháň, 'Danube floodplains – jungle in the Central Europe', <http://www.nerium.net/plantaeuropa/Download/Procedings/Sochan.pdf>

marine water the depth of which at low tide does not exceed six meters. The Lower Danube wetlands stretch out over Serbia, Romania, Bulgaria, Moldova, and Ukraine, with a size of approximately 600,000 ha. They are a mosaic of protected areas including 80 Ramsar Sites (sites on the Ramsar List of Wetlands of International Importance), Biosphere Reserves, National/Nature Parks and a World Heritage Site. With the signing of the Lower Danube Green Corridor agreement[24] in June 2000, Bulgaria, Romania, Ukraine and Moldova committed to establish a network of 900,000 hectares of restored, protected and sustainable-used wetlands and floodplain habitats along the Lower Danube (see map 2). The most ecologically-important area in the Lower Danube Green Corridor is the Danube Delta in Romania.

Map 2: Proposed key areas for ecological restoration on the Lower Danube (WWF, n.d [25])



1.2.4 Danube Delta

At the end of its long journey through Europe, the Danube River reaches its final destination on the Black Sea Coast in eastern Romania. Here it transforms into a labyrinth of water channels, floating islands, reed beds, lakes, ancient forests and shifting sandbanks. The Danube Delta is one of the biggest wetlands of international importance in the world and the second largest delta in Europe. It is a habitat for waterfowl and the biggest area of compact reed beds on the planet and an unrivalled paradise for wildlife. Millions of birds breed on the lakes and floating islands or in the reeds and

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[24] C. Ramsar, *Declaration on the Cooperation for the Creation of a Lower Danube Green Corridor* (2000)

[25] WWF, 'Lower Danube and Danube Delta' (viewed on February 26, 2010, <http://www.panda.org/what_we_do/where_we_work/black_sea_basin/danube_carpathian/blue_river_green_mtn/danube_river_basin/lower_danube/>

forests. The Delta is one of the most important nesting and resting places in the world for rare species as the White Pelican, White Taled Eageles[26] and Red-breasted Goose[27].

The Danube Delta is also very important for fish. Over 70 species have been recorded here so far, and include several which are endemic to the region[28]. With 30 types of ecosystems and 5,300 flora and fauna species, the Danube Delta is a natural genetic bank with inestimable value for natural heritage. The fish population is declining and partial nearly exterminated as in case of the beluga sturgeon, Danube Salmon[29] and Kingfisher[30]. Around 135 different fish species can still be found in the Delta[31].

The universal value of the Danube Delta Biosphere Reserve is recognized by many institutions (see table 2)

Table 2: Importance of the Danube Delta

United Nations Educational, Scientific and Cultural Organization (UNESCO)	International network of biosphere reserves	Man and Biosphere Programme
	Strictly protected areas	World Heritage List under the World Cultural and Natural Heritage Convention
Ramsar Convention (International conservation treaty of 1975 that aims sustainable use of wetlands for mankind without disturbing the natural properties of the ecosystem)	Wetland of international importance (especially as waterfowl habitat)	Ramsar Site
World Wide Fund for Nature (WWF)	Most biologically distinct terrestrial, freshwater, and marine ecoregions of the planet	Global 200 Sites
Natura 2000 (Ecological network of protected areas under the Birds and Habitats Directives)	Site of Community Importance	"Habitats Directive" (92/43/EEC) Protected areas for threatened species and habitats and list of animal & plant species in need of strict protection
	Special Protection Area	"Birds Directive" (79/409/EEC) All wild birds protected and protected areas for threatened and migrating birds

[26] Cf. ICPDR (2010 Feb.4 a), 'Family cards', pp.4

[27] Cf. ICDPR (2010 Feb.4 b), 'The Danube Basin Ecosystem', p.82

[28] K. Sundseth & S. Barova, *Natura 2000 in the Black Sea Region* (European Communities, 2009), p. 5

[29] Cf. ICPDR (2010 Feb.3 a), 'Danube Day: River of Life'

[30] Cf. ICDPR (2010 Feb.4 c), 'The Danube Basin', p.238

[31] Cf. DDBRA (2010 Feb.4 d), 'Biodiversity'

2 Requirements for Water Management

The sustainable development process in the DRB and in particular water management should be characterized by the public involvement in the environmental decision making process on the political level and reinforcement of the entire community. In this regard, EU MS as well as Non-EU MS have to deal with different political backgrounds. In recent years the countries had to deal with the collapse of the Eastern bloc and the respective erection of new political and institutional structures with all its difficulties.

The sustainable development for the DRB according to the WFD asks for the following environmental objectives:

- Achievement of good condition for all water bodies until 2015; at least until 2027
- Prevention of a deterioration of the water condition
- Drought and flood risk management and prevention
- Protect and enhance all artificial and heavily modified bodies of water with the aim to archive good ecological potential

To ensure this the member states have to fulfil the following tasks in international coordination and respecting deadlines:

- Strategies and engineer standards against water pollution from industries and municipals
- Managing sustainable land use and land use change (e.g. sector: agriculture)
- Compatibility of shipping traffic and ecological continuity of water demand
- Usage of a demanding monitoring system for good analysis and reports to be able to act quickly by accidental pollutions and to do a planning which regards the whole system (ecological, economical, social aspects).
- International integrated water management plans for the DRB
- Periodic updates of these management plans

Of course there is much more to do to avoid direct and indirect harmful effects of human actions. It is very important to educate and train companies, private and public sectors and each individual what sustainable developments means, what effects humans' behaviour has and why we should take care of our environment. With this, governments encourage and insist against unsustainable trends in relation to climate change, protection of our atmosphere nature, water, air and soil such as in the production (e.g. industry, agriculture) and consumption.
Just so we could reach together the conservation of biodiversity and marine ecosystems, a management of natural resources in a responsible way for protecting the impressing balance of life in our earth system.

3 Implementation of the EU Water Framework Directive in European States

3.1 Basic Information about the WFD

For years the European Community has tried to regulate the European water policy by over 20 directives concerning waters (for example Drink Water Directive (80/778/EEC), Fish Directive (78/659/EEC), Urban Waste Water Treatment Directive (91/271/EEC) (UWWTD),…).
This multitude of regulations made the particular implementation of their contents difficult because those directives often overlapped or contradicted each other in parts. The EU WFD was passed by the European Parliament on 7th September 2000 in order to harmonize European water protection and to settle the legal situation at the same time. It came into force on 22nd December and since then it has formed the legal regulation framework for water policy within the EU and its member states.

> *"Water is not a commercial product like any other but rather a heritage which must be protected, defended and treated as such[32]."*

A new chapter of water legislation in Europe was written by enacting the WFD. For the first time European water management is based on standardised ecological, economic and socially agreeable fundamental principles. Already the above quoted excerpt justifying the WFD[33] indicates that the new directive is more ecologically oriented and stands up for an integrated and lasting water protection.

3.1.1 Main Issues of the WFD

The general objectives for a sustainable and environmentally aware usage of water as a resource are given in paragraph 1 of the WFD. These objectives are specified in paragraph 4 and formulated as criterion for European water management.
The main demand of the WFD deriving from these objectives is the achievement of a good condition of all European waters[34].
This condition is described by chemical, physical, biological and structural criteria and has to be achieved for all surface waters and ground waters, as well as for waters created and heavily modified by humans. This good condition is to be oriented towards the natural condition of waters with slight deviations only. All member states are obliged to achieve this good condition of all waters within their national territory until 2015.
Recently the WFD has decided on a catchment area related approach to waters for achieving this high objective. According to this approach rivers are to be considered as a whole regardless of their

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32 Official Journal of the European Communities (WFD, Article 1 Preamble, 2000)

33 Cf. Preamble to WFD

34 Rumm, von Keitz, Schmalholz (Handbuch der Wasserrahmenrichtlinie, p. 105, 2006)

administrative affiliation. This means that rivers are examined from the spring to the mouth without consideration of national borders.

Waters are divided into units of river basins (surface waters, ground waters), categories of waters (river, lake, transitional waters and coastal waters) and separate water bodies. In this system water bodies are the smallest units. A water body is a self-contained subunit of categories of rivers, such as a river reach homogeneous in itself or a stream. River Basin Management Plans (RBMP) and concepts of measures which are to guarantee the achievement of the good condition is developed on the basis of water bodies.

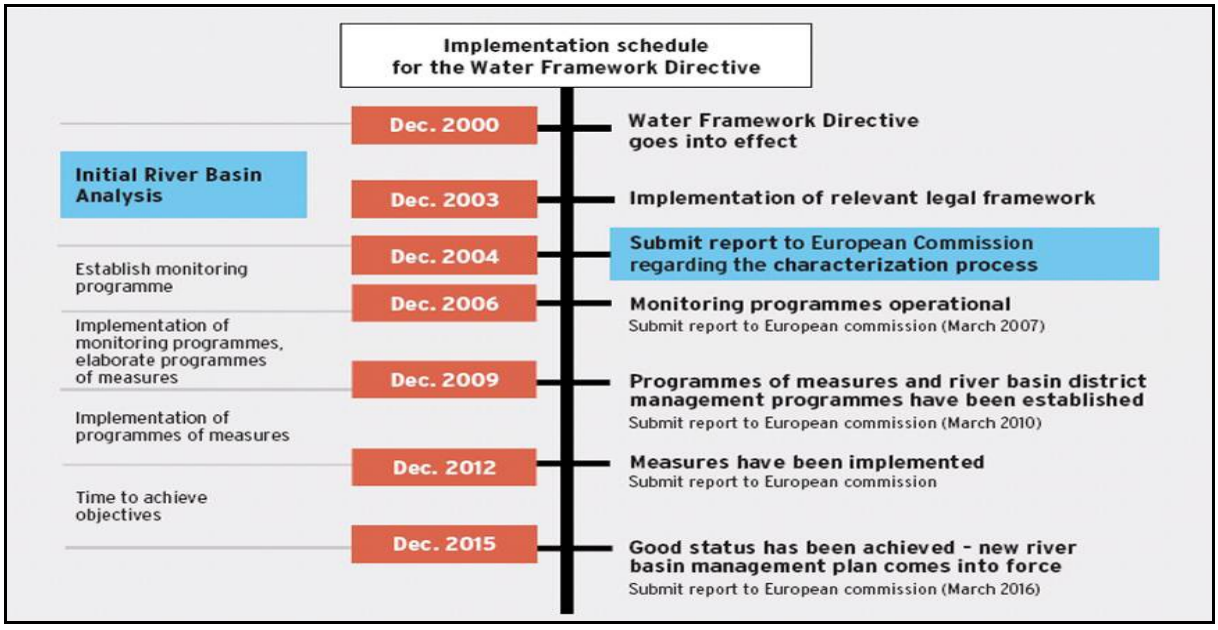
As past experience has shown a durable and fast implementation of projects can only be carried out on a broad base. Therefore the WFD demands[35] intensive public participation as further main contents. This participation is to be made possible by regular information on the status of implementation, measures and the possibility of active participation in planning and implementing processes.

3.1.2 Working Steps of the Implementation of the WFD

The WFD can only give the regulation framework for European water policy because of the various differences between the countries.

Therefore the requirements and contents of the directive have to be incorporated into the national laws of the member states. Here WFD is determined by binding respites.

Figure 1: Implementation schedule of WFD[36]



The short time frame of 15 years for the implementation consequently demands a quick rethinking by the countries[37].

[35] see WFD, Art. 15

[36] Borchardt, D et.al. (2005)

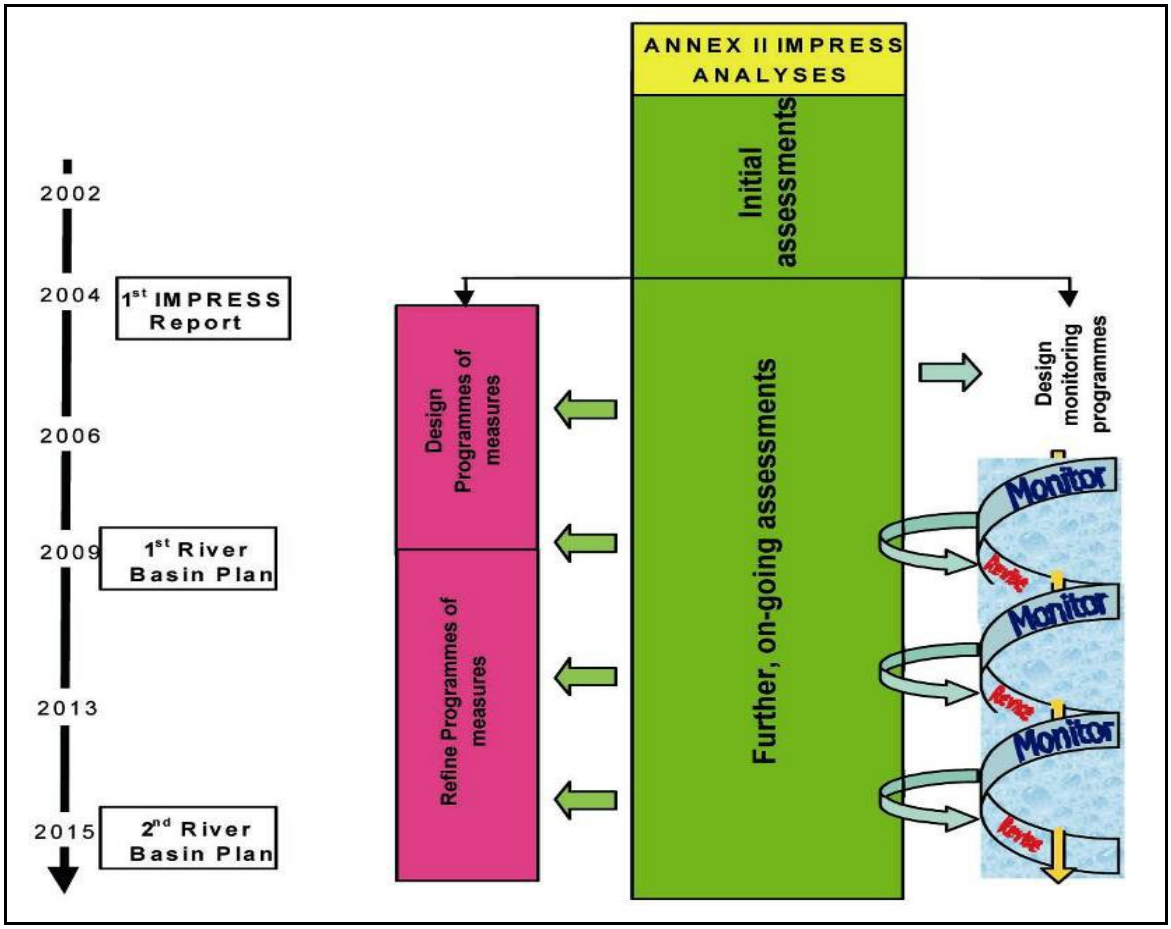
[37] Rumm, von Keitz, Schmalholz (Handbuch der EU-Wasserrahmenrichtlinie, p. 12, 2006)

A strategy concerning all river basins and applicable Europe-wide for the implementation of the WFD had to be developed to organise the consistent and comparable implementation of the demanding objectives and the complex contents of regulation of the WFD.

For this purpose the European Commission (EC) published "Guidance documents" in cooperation with the administrations of waters. These documents describe basic scientific, technical and practical information on all main parts of the implementation. As informal and legally not binding documents they are to facilitate the implementation for the individual member states.

Nevertheless the implementation of the WFD and the achievement of a good condition constitutes a complicated and complex process. Its implementation can be divided into different main phases: ImPress Analyses, Initial Assessments, Establishment of Monitoring, Establishment of RBMPs and Programme of Measures.

Figure 2: Implementation values of European Commission's Common Implementation Strategy (CIS)[38]



The different phases of implementation are described in the following paragraph.

ImPress Analysis /Initial assessments

At first the water bodies of a member state are described in detail and divided into units of river basins, categories of waters, and individual water bodies in the context of ImPress Analysis (Impact and

[38] European Commission (2003)

pressure Analysis). This classification occurs by means of geological, geographical and hydrological characteristics[39]. Each type of water body is assigned to a reference condition for assessing the degree of naturalness. The water condition is to correspond with the very good condition (natural condition) or is to come close to it. Finally significant impacts by human activity are assessed and their consequences for the rivers for the different types of water bodies are described.

After that all rivers are compared by means of chemico-physical, biological and hydromorphological quality elements[40] with the reference condition by initial assessments. Thus it can be discovered which rivers miss the environmental objectives and which quality elements are responsible for this.

Monitoring programmes

The development of a monitoring network is required in the WFD. There are three different types of monitoring programmes:

- ***surveillance monitoring*** for observing durable changes by natural and anthropogenic influences,
- ***operational monitoring*** for observing water bodies missing the good condition after ImPress,
- ***investigative monitoring***, which is only carried out if the reason for not achieving the environmental objectives is unknown.

The different monitoring programmes are to enable a coherent and comprising view of the condition of waters as well as of their development. With their help information is to be assessed if the WFD's requirements can be achieved in order to trace potential problems in a reliable way. (Further information in chapter 8: Assessment Measures for DRB Water Bodies).

Management plans and measure programmes

The WFD determines that management plans have to be set up for all European rivers. These plans are to be coordinated with each other and are to guarantee a durable environmentally aware management of the particular rivers in future. The management plans are to be set up in a way that the good ecological condition is either preserved (prohibition of deterioration) or achieved (improvement of the condition).

Measure programmes are to be set up for water bodies which do not reach the good condition according to the statement of the ImPress analyses and the monitoring programmes.

These measure programmes are to remove deficiencies within a unit of river basin by precise measures and they are to improve the condition of rivers. Here one must distinguish between basic and supplementary measures[41]. Basic measures summarize those which are relevant for fulfilling existing directives. Supplementary measures are additional to them and relevant for achieving the demanded “good condition”.

Each of these phases has to be implemented within the member states by a deadline. A report to the EC constitutes the end of a phase.

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39 Official Journal of the European Communities (WFD, Annex II and XI, 2000)

40 Official Journal of the European Communities (WFD, Annex V, 2000)

41 Official Journal of the European Communities (WFD, paragraph 11, 2000)

4 Implementation of the WFD in Romania

Romania has the same obligations regarding the implementation of the WFD as all other European countries. There are deadlines for all the requirements which the WFD sets out clearly[42].
Although Romania is one of the recent members of the EU they have to fulfil the obligations in time such as:

- Development of assessing methods
- Development of a water management authority being able to manage the obligations concerning the WFD
- Development of a River Basin Management Plan (RBM Plan)

4.1 Development of Measures for Improving the Water Quality in Romania Analysing Data Basis

As mentioned above the data basis is unfortunately not as recent and detailed as hoped. The following two examples from 2005 and before, however, can be seen as precise facts how Romania deals with the implementation of the WFD.

4.1.1 Food and Agriculture Organization of the United Nations – Sub-regional Office for Central and Eastern Europe (SEUR)

In 2003 the Seminar on Integrated Water Management in the Tisza River Basin was held in Budapest. One member of the Romanian water authority “Apele Romane” gave a lecture about the stage of the WFD implementation in Romania.
First of all it was mentioned that there are different aspects regarding the implementation of the WFD. Regarding the technical and scientific aspect special hardware and software, such as Geographical Information System (GIS) and adequate monitoring systems have to be adjusted.
Romania has also to cope with the organisational aspect: For example they have to establish competent authorities for the implementation of the WFD. These are the Romanian water authority “Apele Romane” and the River Basin Authorities.
There are 11 river sub-basins in Romania on which the WFD has to be implemented, including the Romanian coastal waters within the DRBD and the river basin tributaries to the Black Sea. In this context the deep and shallow aquifers at the Danube District boundary and the trans-boundary aquifers in Romania have to be delineated.
Methodological guidelines have to be developed and elaborated for the following category groups:

[42] see Figure 2

- Definition of surface waters typologies
- Identification of heavily modified water bodies (HMWB) and delineation of surface water bodies
- Development of criteria for establishing type specific reference conditions
- Development of an integrated monitoring national system
- Analysing pressure and impacts
- GIS elements implementation
- Economic analysis
- Public participation in IRBM planning[43]

At the time of the seminar the first three methodologies have already been put into practise in the 11 river sub-basins in Romania mentioned above.

4.1.2 Pilot Projects for the Implementation of the WFD

Above that Romania realised various pilot projects for the implementation of the WFD:

- EU-CIS: Romania Hungaria (RO-HU) project on testing the CIS Guidance Documents in the Somes/Szamos Pilot River Basin (2002-2003)
- Matra: Implementation of the WFD in Romania - Mures Pilot River Basin (2002-2003)
- Matra: Implementation of the WFD and the integrated Coastal Zone Management in transitional and coastal waters in Romania (2003-2004)
- Phare: Implementation of the WFD on two pilot river basins - Somes and Arges (2002-2003)

The Phare project for example was funded by the Phare Programme of the EU. The objectives of such a project are mainly to support Romania in implementing the WFD. The results and methodologies worked out by means of the two pilot basins the Arges and the Somes were disseminated in order to use them in other basins in Romania,
The duration of the project was 22 months and the budget of over 1 million € offered various project activities such as software procurement, training, technical assistance and dissemination of the results.

[43] see 12. The stage of the WFD implementation in Romania by Ms. Elena Tuchiu http://www.fao.org/regional/seur/Tisza/tisza4_en.htm

5 Problems with the Implementation of the WFD in Romania

5.1 Knowledge and Basic Data

There are various problems regarding the implementation of the WFD. One of the main problems are the lack of existing expert knowledge and the assessment of data (chapter 8). In the final report of the Phare pilot project these problems are also mentioned.

"Romania is as well advanced in implementing the WFD as most of the EU MS and Accession countries but, like them, it does not have biological monitoring data of the extent and quality required to fulfil the requirements of the WFD." [44]

This problem is existent in all member states and may lead to a delay of the implementation of the WFD. There are experts in each country but most of them *"lack experience and specialised knowledge and need training and reference materials"*[45]. This lack of experience and the insufficient biological data handicapped the completion of various tasks as the Phare example shows. Biotic typologies could not be defined as well as type specific reference conditions. The execution of validating type-specific reference sites was also handicapped. Other methods can be considered such as the use of modelling techniques, expert judgement or historical data as it is pointed out in the WFD. But that was not available in Romania at that moment which means that the assessment of data was or possibly still is a problem. Other handicapped tasks were for example: The definition of environmental objectives and a resulting programme of measures (POM) and the intercalibration of ecological status boundaries.

Another evidence about the problems regarding the assessment of data in all European states is from Croatia. As it was already mentioned states have the possibility to choose the methods for assessing data. The difficulty in Croatia is that the method they have chosen to assess hydromorphological data is not fulfilling the WFD[46].

These examples show that it can be assumed that there are similar problems in Romania as in all other countries implementing the WFD.

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44 Phare *WAFDIP* (2005 Oct.), p.13

45 Phare *WAFDIP* (2005 Oct.), p.13

46 see diploma thesis "Comparison of different hydromorphological assessment methods on the example of Croatian surface water bodies" of Johannes Reh and Roland Kraus

5.2

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

The following facts are based on an expert interview with Mrs. Vogel of the ICPDR from the 20.01.2010:

There are two main problems regarding the implementation of the WFD in Romania in the opinion of the ICPDR:

1. Hydropower plants
2. Development of navigation

The construction of hydropower plants was and still is a big issue in Romania. Of course opinions about that are very controversial but nevertheless regarding the WFD the building of new hydropower plants is a disaster. It means that rivers and streams worth protecting are obstructed, impaired and destroyed regarding their ecological naturalness. Hydropower plants have massive impacts for the continuity of rivers. This means that the transposition of river sediments and the exchange of aquatic organisms is interrupted.

The second main problem is the development of navigation in Romania. It is a difficult task to connect the interests of the WFD with the interests of the navigation in Romania. On the one hand the WFD wants to protect and recreate Romanian rivers on the other hand the Danube river is to be extended for the navigation.

It is necessary to find a way that both interests can exist side by side without interacting negatively.

6 Danube River Basin Management Plan

6.1

Facts

The information in the Danube River Basin Management Plan (DRMP) are based on data delivered by the Danube countries which means that the DRBM Plan is focused on the Danube river basin as a whole and its riparian states.

In the following there are only the most relevant facts and resulting consequences described for Romania.

Table 3: Share of DRBD per country; percentage of state within the DRBD; DRBD population; water body delineation for all DRBD rivers with catchment areas > 4000 km2 and the Danube River[47]

Country	Share of DRBD (%)	Percentage of state within the DRBD (%)	Population in DRBD (in millions)	Length of national DRB river network	Number of water bodies (WB)		Share of all DRBD WBs (%)	Average national WB length (rkm)	
					All	Danube		All	Danube
DE	7.0	16.0	9.7	1,503	53[8]	15	7.1	28.4	37.7
AT	10.0	96.1	7.9	2,392	190	13	25.6	12.6	27.0
CZ	2.7	27.3	2.8	598	32	0	4.3	18.7	-
SK	5.8	96.0	5.2	1,811	45	4	6.1	40.2	43.4
HU	11.5	100.0	10.2	3,189	57	4	7.7	55.9	128.1
SI	2.0	81.1	1.8	834	25	0	3.4	33.4	-
HR	4.3	61,9	3.1	1,470	33	2	4.4	44.6	70.3
BA	4.7	74.9	2.9	1,602	35	0	4.7	45.8	-
ME	0.9	55.0	0.2	no information					
RS	10.1	92.8	7.5[9]	3,277	63[10]	10	8.5	52.0	77.0
RO	29.6	100.0	21.6	9,474	182[11]	7	24.5	52.1	370.8
BG	5.8	42.6	3.4	1,291	15	1	2.0	86.1	471.6
MD	1.5	36.2	1.1	837	no information				
UA	4.5	6.0	2.6	1,056	13	1	1.7	81.3	245.2
Total	**100[12]**		**80.5[13]**	**25,117[14]**	**681[15]**	**45[14]**	**100**	**38.4**	**85.8**

Danube River	WB number	Total length
	45	2,857[15]

[47] ICPDR (2009 a), DRBM Plan, p.18

Figure 3: Current situation regarding the area (ha) and number of DRBD wetlands/floodplains (>500 ha or which have been identified by the Danube countries of basin wide importance) identified as having a potential for reconnection and/or improvement of water regime by 2015 and beyond[48]

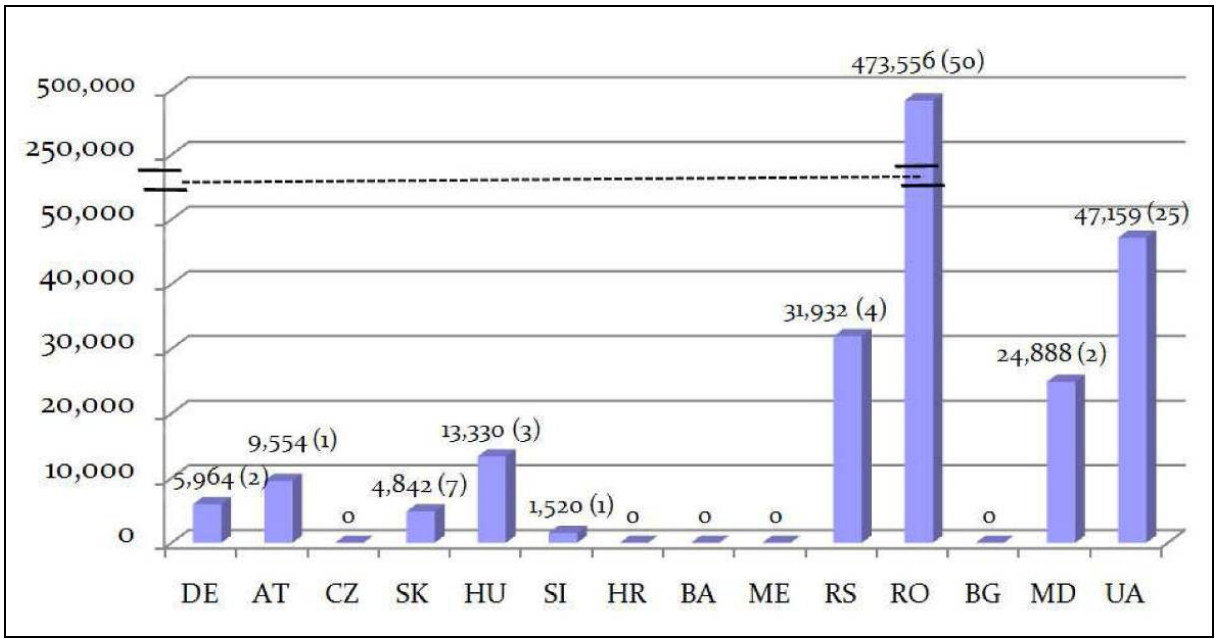


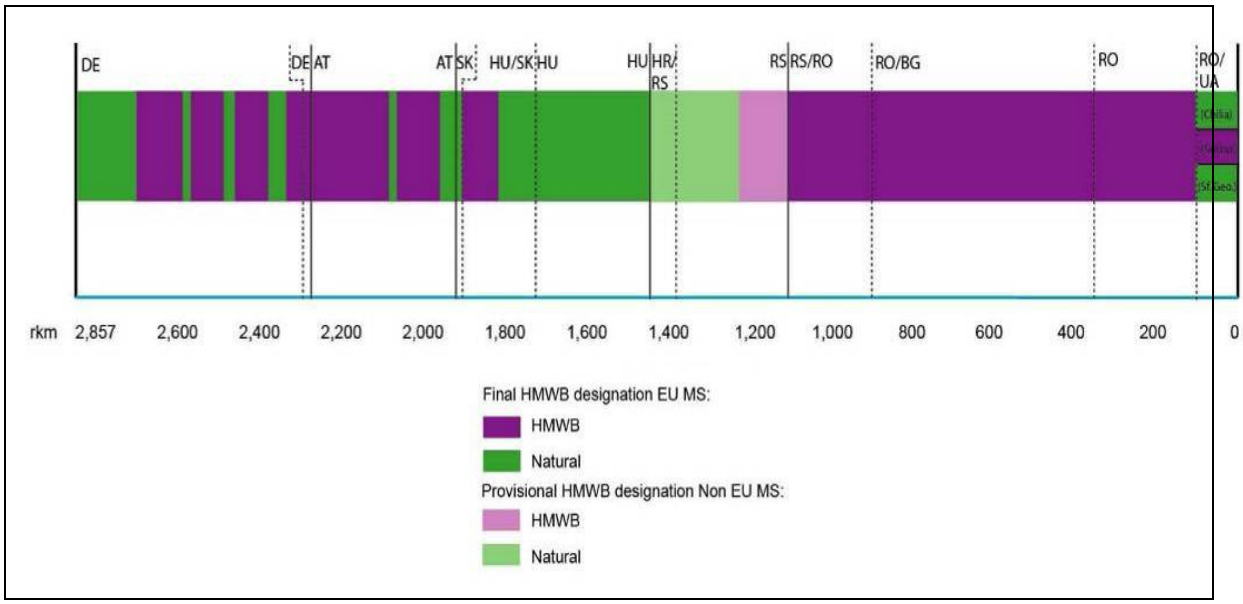
Figure 3 shows that nearly 474.000ha of Romania´s land coverage are categorised as water sensible area for protecting the Danube. This exceeds the number of water sensible areas of other member countries many times over.

The Danube in Romania is categorised in the range of hydromorphology, hazardous substances pollution, nutrient pollution and organic pollution. (Please find more information in chapter 7 and 9).

There has to be a new assessment for all surface waters being categorised as “possibly at risk” or “at risk”. This assessment distinguishes in Heavily Modified Water Bodies (HMWB - water bodies which can not be recreated into a natural condition) and see figure 4. In the case of the definition HMWB the water body has to achieve the natural potential and not the natural condition anymore. The natural potential is defined by the ecological potential and the chemical potential.

[48] ICPDR (2009 a), DRBM Plan, p.36

Figure 4: Heavily modified water bodies of the Danube River – results of the joint approach[49]



The whole Danube in Romania is categorised as HMWB as it is shown clearly in figure 5. A recreation of the natural condition is not possible in this range anymore.

Figure 5: Status classification for the Danube River represented as continuous bands[50]

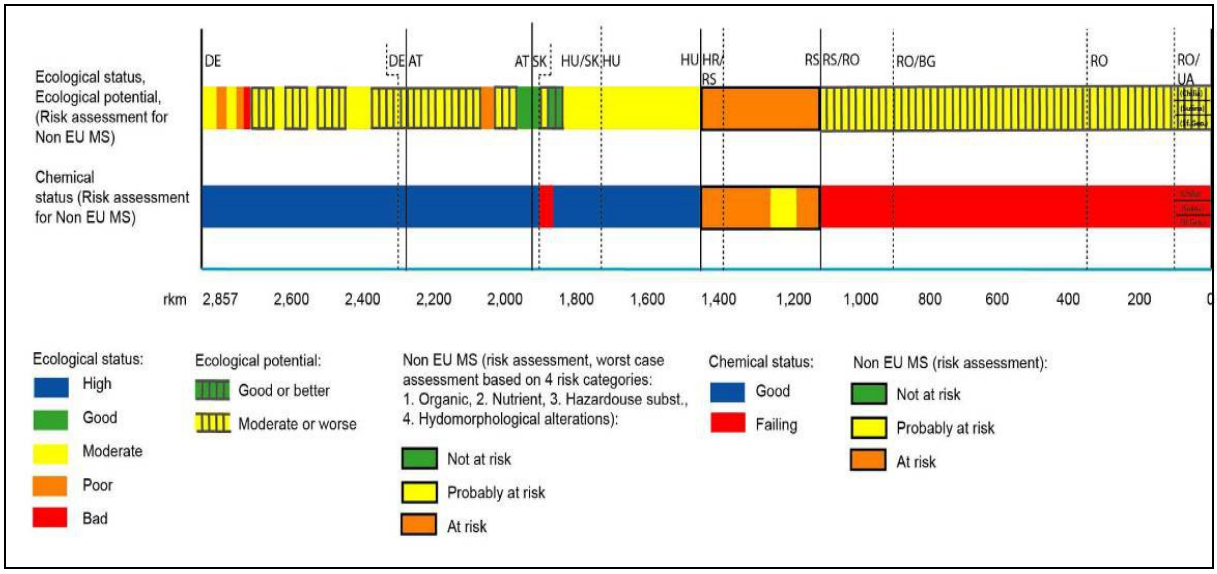


Figure 5 shows the status classification of the HMWB from figure 4 regarding their ecological potential and chemical status. The ecological potential is for the whole Danube in Romania categorised as "moderate" or "worse" and the chemical status is categorised as "at failing".

49 ICPDR (2009 a), DRBM Plan, p.55

50 ICPDR (2009 a), DRBM Plan, p.58

6.2

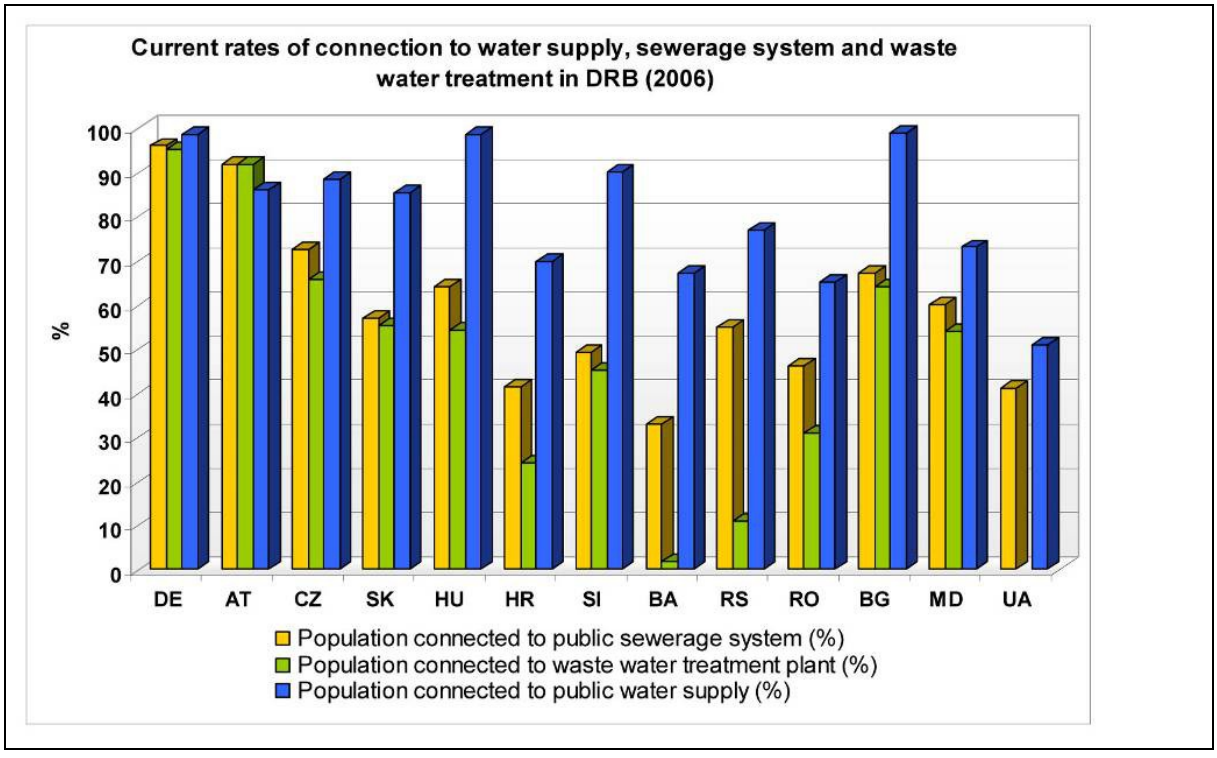
Interpretation for Romania

Romania´s responsibility protecting the Danube is very high as it has the biggest share of the DRBD has shown in table 3. Figure 2 (p.19) emphasises this significance of responsibility, through the delineation of a very high percentage of water sensible areas too.

It is shown clearly in figure 4 and 5 that the natural condition of water bodies can not be achieved and that nearly the whole Danube is categorised as HMWB. HMWB do not correspond with the aimed condition of the European WFD. This means that Romania has to face a lot of challenges regarding the implementation of the WFD such as high costs and efforts for achieving the demanded condition.

One problem in achieving the demanded condition can be seen in the fact that big parts of Romania are not connected with the public sewage system respectively the waste water treatment plant is implemented on a small scale (see Figure 6, green and yellow columns)

Figure 6: Drinking water supply, waste water services and connection rates[51]



Another problem for achieving the demanded condition is the non existing continuity of water bodies. There are 145 locations in Romania where the flowing continuum of waters is discontinuous (hydropower plants, barrages, transverse structures). There is no definition of measures for 69 artificial barriers. This means again that Romania has to face high costs and efforts.

[51] ICPDR (2009 a), DRBM Plan, p.67

Table 4: Overview for each Danube country on the number of river continuity interruptions 2009 & 2015, restoration measures (e.g. fish migration aids) and exemptions according to WFD Articles 4(4) and 4(5)[52]

	River continuity interruptions 2009	Fish migration aids to be constructed by 2015	River continuity interruptions 2015	Exemptions WFD Art 4(4)	Exemptions WFD Art 4(5)	No measures yet indicated	
						EU MS	Non EU MS
DE	244	8[83]	236	236	0	0	-
AT	270	71	199	199	0	0	-
CZ	68	2[84]	66	66	0	0	-
SK	98	16	82	82	0	0	-
HU	18	9	9	9	0	0	-
SI	12	0	12	12	0	0	-
HR	2	0	2	0	0	-	2
BA	5	0	5	0	0	-	5
ME	-	-	-	-	-	-	-
RS	30	1	29	0	0	-	29
RO	145	1	144	48	27	69[85]	-
BG	39	0	39	34	5	0	-
MD	1	0	1	0	0	-	1
UA	0	0	0	0	0	-	0
Total	**932**	**108**	**824**	**686**	**32**	**69**	**37**
Danube	**56**	**5**	**51**	**49**	**0**	**0**	**2**

[52] ICPDR (2009 a), DRBM Plan, p.93

7 Implementation of WFD in Protected Areas

This chapter studies similarities or overlaps between the WFD and the laws that are in place to protect these area's (Natura 2000). It names the ecosystem services provided by the river basin and the pressures on these services. The chapter ends with proposed solutions to the pressures on the services and analyses if these solutions are sufficient or if there is room for improvement.

7.1 The Relationship between the WFD and Natura 2000

In 1994 the countries of the Danube River Basin and the EC agreed to cooperate in conservation, pollution reduction and control and signed the Danube River Protection Convention (DRPC)[53] in order to achieve sustainable and equitable water management in the Danube river basin.

Article 1(a) of the WFD identifies the protection, restoration and enhancement of wetlands as part of its purpose. It states that the Directive will: *'establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater, which:…… prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems*.'[54]

7.1.1 Natura 2000 Sites are Protected Areas in WFD

Natura 2000 is the principal instrument of EU for nature conservation of the most valuable and endangered species (plants and animals) and natural habitats of European interest. The emphasis in these areas lies on ensuring that future management is sustainable, both ecologically and economically[55].

Measures for implementing WFD can influence species and habitats in different ways. Interventions that have overall positive effects on the Natura 2000 species and habitats are those interventions that tackle external sources of disturbance or pollution, such as prohibition in marine antifouling paints, reducing nitrogen deposition and interventions that prevent disturbances or measures against the influx of contaminants. Interventions that can have negative effects on fish, birds and amphibians are interventions in the water body itself, such as environmental dredging, removal of weirs or interventions with implications for the area around the water body, such as diversion of river quays for more space and building secondary channels[56].

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[53] ICPDR (1994), 'Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Sofia, 1994)'

[54] Official Journal of the European Communities, *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy* (Official Journal, 2000), p. 5

[55] 'What is Natura 2000?', (2009), viewed on February 26, 2010, <http://botanica.uaic.ro/docs/Natura2000-en.pdf>

[56] M. Paulissen, F. Ottburg & H. Wolfert,'Gelijktijdige implementatie van de kaderrichtlijn Water en Natura 2000; deel 1: analyse van de potenties van KRW-maatregelen van Natura 2000-doelen' (Alterra, Wageningen 2006),

Water-dependent Natura 2000 sites are 'protected areas' under Article 6 of the EU WFD. Protected areas are the areas designated as requiring special protection under specific Community legislation for the protection of their surface water and groundwater or for the conservation for habitats and species directly depending on water. Measures to achieve their 'favourable conservation status' must be included in RBM Plans[57].

In designating and setting objectives for HMWB and Artificial Water Bodies, Member States must ensure consistency with the implementation of other Community legislation [cf. Art. 4(8)], such as the Fauna Flora Habitat Directive (92/43/EEC) and the Birds Directive (79/409/EEC). At the same time, the requirements of the Water Frame Directive need to be respected in the implementation of these directives[58] (see table 5). See §chapter 6.2

Table 5: Interconnected articles in the Habitats Directive, Birds Directive and WFD (Bennett & Sheate, 2007)[59]

Natura 2000		**WFD**
Habitats Directive	Birds Directive	
Article 3(1) Conservation of natural habitats and habitats of species: inclusion of special protection areas in Natura 2000 Network	Art 3 The preservation, maintenance and re-establishment of a sufficient diversity and are of habitats for all species of bird	Art 4 (c) Environmental Objectives
		Art 6 Register of protected areas
article 7 Amendments to Birds Directive: in relation to special conversation areas		Art 8 (1) Monitoring
		Art 11(3)(a) POM
		Annex IV Content of register of protected areas

Article 4.2 states that where more than one objective applies - for example where a Natura 2000 Protected Area is also a ‘water body’ - “the most stringent shall apply”. The objective for Natura 2000 Protected Areas will normally be to achieve ‘favourable conservation status’ as defined in the Habitats Directive 1992, though other objectives, for example ‘good chemical status’ may also require to be met. For Natura 2000 Protected Areas that are not ‘water bodies’, the only objective is ‘favourable conservation status’. Alternative objectives, such as ‘moderate status’ or ‘good ecological potential’ may not be set if they undermine the objectives for ‘favourable conservation status’. The relevant nature conservation authority should be able to advise on the requirements for ‘favourable

p. 15

[57] Eurosite, *Integration of the Water Framework Directive and Natura 2000 | Eurosite* (2008)

[58] WFD,'Common Implementation Strategy for the Water Framework Directive (2000/60/EC) Identification and Designation of Heavily Modified and Artificial Water Bodies' (WFD CIS, 2003), p. 57

[59] S. Bennett & W. Sheate,'The Water Framework Directive, Assessment, Participation and Protected Areas: What are the Relationships? (WAPPA)' (Environmental Protection Agency Ireland, 2007), p. 67

conservation status'[60]. Table 6 summarizes pressures on wetlands and the relationship with objectives of the WFD[61].

[60] Eurosite, *Water Framework Directive - Checklist for Natura 2000 Protected Areas | Eurosite* (2008), p. 1

[61] European Communities, *Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Horizontal Guidance on the Role of Wetlands in the Water Framework Directive.* (Luxembourg, Office for Official Publications of the European Communities, 2003), p. 32

Table 6: Pressures on wetlands and the relevance for the WFD (European Communities, 2003[62]).

Objectives for surface water bodies	**Preventing deterioration and achieving good status for groundwater bodies.**	**Objectives for Protected Areas.**
Drainage of floodplain	Groundwater abstraction	Abstraction from surface water bodies
Flood embankments resulting in reduction of floodplain and of retention capacity	Groundwater pollution	Pollution of surface water bodies
Drainage or destruction of peatlands and other wetland systems in the wider river basin		

7.1.2 Exemptions

In line with articles 4.1(c), 4.2, 4.8 and 4.9, article 4.7 exemption can be applied to protected areas to the extent that these are also water bodies if and only if it guarantees at least the same level of protection as the existing Community legislation(s) under which the area has been designated (article 4.9), and it is consistent with the implementation of other Community environmental legislation (article 4.8). In other words, article 4.7 cannot be used as an exemption from fulfilling the legal requirements of other Directives. In an event that a new development is proposed that would cause deterioration of status and a failure to achieve the objectives for a Natura 2000 site then (in order to fulfil both the WFD and the Habitats Directive) the relevant conditions set out in Article 4.7 of the WFD for allowing deterioration of status would have to be met to the extent that it is a water body **and** the conditions set out in Article 6 of the Habitats Directive (92/43/EEC) for allowing a failure to achieve a Natura 2000 site's objective would have to be met.[63]

7.1.3 Which Area's

Article 2 defines a 'body of surface water' as a discrete and significant element of surface water, such as a lake a reservoir, a stream, river or canal a transitional water or a stretch of coastal water. Natura 2000 Protected Areas may be identified as 'water bodies', but there are other water-dependent habitats of European importance - such as fens and peat bogs - which cannot be identified as 'water bodies' but still qualify as Protected Areas. Although the Directive refers to wetlands (Recitals 8 and 23, Article 1(a) and Annex VI(vii)), it does not provide any specific definition of a wetland, nor does it set obligations or recommendations for wetlands or clearly state the extent to which wetlands should be used for the achievement of the environmental objectives of the WFD. These objectives are to be

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62 Ibid., p. 35

63 European Communities, *Common Implementation Strategy for the Water Framework Directive. Exemptions to the Environmental Objectives under the Water Framework Directive allowed for new modifications or new sustainable human development activities (WFD Article 4.7)*, p. 9

applied to 'water bodies' as the 'operational units' of WFD[64]. Table 7 summarizes different ecosystems specifically mentioned by the Directive, with comparable wetland types, which can be regarded as (part of) water bodies and once comprised in a River Basin District they may require specific measures to achieve objectives of the Directive. (See §chapter 3.1.1 for water bodies in the River Basin Management Plans)

Table 7: Wetlands water bodies compared to the ecosystems mentioned in the WDF (Source: Janak. 2006[65])

Type of ecosystems according to WFD	Applicable wetland types
terrestrial ecosystems directly dependent on ground water bodies	springs, fens and bogs, salt meadows, wet meadows and pastures, bare bottom growths, wood and shrub marshes, floodplain forests, caves with underground streams or standing water
riparian, shore or interdital zone hydromorphological quality elements of surface water bodies	aquatic plants, floodplain forests, tall-herb floodplain vegetation, alluvial meadows, reed beds and tall sedges, bare bottom growths, seasonal pools, inland deltas, tidal areas
small elements of surface water not identified as water bodies but connected to surface water bodies	springs, fens and bogs, seasonal pools, wet meadows and pastures, wood and shrub marshes, reed swamps and tall sedge marshes, bare bottom growths, aquatic plants
river, lake, transitional water or coastal water bodies	streams and rivers, tarns, lakes, oxbow lakes, ponds, polders, deltas and coastal zones
ecosystems significantly influencing the quality or quantity of water reaching surface water bodies or surface water connected to surface water bodies	all wetland types

A non-legally binding reference document for European wetland policy, the "Horizontal Guidance on the Role of Wetlands in the WFD (Guidance Document No. 12)" has been prepared, to assist Member States with the implementation of the WFD with regard to wetlands and the link with EU nature conservation policy, in particular the Habitats and Birds directives. It also outlines the best practices beyond the legal requirements of the WFD, as in many cases, additional effort leads to enhanced results[66].

7.1.4 Other European Legislation Related to Wetlands

Other European legislation also has relevance to wetland conservation, in particular when it comes to the prevention of pollution. Examples include the Nitrates Directive (91/676/EEC), the Groundwater Directive (2006/118/EC), and the UWWTD. There is also the recently adopted **Flood Risk**

[64] European Communities, *Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Horizontal Guidance on the Role of Wetlands in the Water Framework Directive.*, p. 4

[65] M. Janak, 'Wetlands in river basin management', 2006, viewed on February 27, 2010, <http://www.daphne.sk/docs/ponuky_07/DEF_WFD_web.pdf>

[66] European Communities, *Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Horizontal Guidance on the Role of Wetlands in the Water Framework Directive.*, p. 1

Management Directive, which is directly relevant to wetlands. The directive will be implemented in conjunction with the WFD, notably through the coordination of flood risk management plans and river basin management plans (RBMP's), and through the coordination of public participation procedures in the preparation of these plans. In their favourable conservation status, wetlands play a vital role in water retention and act as an important buffer zone in the prevention of flooding.[67]

7.2

Ecosystem Services Provided by the River Basin

The list of provisioning, regulatory, cultural and supporting services apply to entire river basin. The wetlands and the Danube Delta also have more specific functions and values, which will be listed after the general services.

Provisioning services

- Food (Fish: decline of crayfish stocks)
- Raw Materials (Natural reed harvesting)
- Wood
- Drinking water
- Energy (Hydropower)
- Genetic resources

Regulatory services

- Flood protection
- Nutrient retention
- Groundwater recharge
- Climate regulation (Loss of carbon retention and sequestration capacity)
- Water regulation (Declined capacity to regulate peak flows during floods due to loss of natural habitats)
- Erosion control (Increased erosion of river basin caused by more rapid ground saturation and increased overland flow)
- Water purification and waste management (Decline in purification of catchment's runoff and water in the water body (e.g. nitrate retention capacity, pollution control))

Cultural services

- Recreation and ecotourism
- Transport
- Cultural heritage, spiritual
- Education

[67] European Parliament and Council, *Environment: European Parliament and Council reach agreement on the new Floods Directive* (European Parliament, 2007)

Supporting ecosystem services

- Nutrient cycling and primary production
    - Loss of normal predator-prey dynamics, changes in ecosystem's food chains.
    - Loss of wetland/river basin nutrient cycling capacity due to loss of wetland habitats[68]
- Biodiversity (habitats and species)

Specific functions of wetlands

Wetlands are wildlands of particular importance both economically and environmentally. The most important roles which wetlands perform are: preservation of biological diversity, production of goods and production of services. Wetlands have a wide range of significant functions and values, which relate to hydrology, water quality, food chain support or habitats. Hydrological functions of wetlands are important for water resource management. These functions include flood flow control, bank erosion prevention, water purification, nutrient retention & export, temperature maintenance, groundwater supply and a habitat for wildlife & fish[69].

Environmental values of the Danube Delta

A primary ecosystem service provided by the Lower Danube floodplain and Danube Delta is its capacity to support a rich biodiversity. It is a globally important area for migrating species (fish and birds) and has a high proportion of rare, endangered and protected species, as well as natural habitats of European and global interest. The Danube Delta has vast capacities to absorb and filter nutrients and pollutants, thus preventing them to reach the Black Sea. The Danube Delta also has important socio-economic aspects: it is part of the a river-sea-river shipping network, as well as one of Europe's important transport routes (Black Sea-Danube-Rhine-North Sea), it has good spatial distributions of urban/industrial activities, as most of these activities are located on the outskirts of the Delta and it has opportunities for the local population to earn income from natural resources and sustainable activities[70].

7.3 Pressures on Ecosystem Services

Pollution, structural interventions and climate change do not only affect the river basin in general, but also wetlands.

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[68] M. Kettunen & P. ten Brink,'Value of biodiversity - Documenting EU examples where biodiversity loss has led to the loss of ecosystem services' (Institute for European Environmental Policy (IEEP), Brussels, Belgium 2006), p. 9

[69] Janak, 'Wetlands in river basin management',

[70] WWF International, *Danube Delta: a natural gateway to Europe Ecology and Economy in Harmony* (WWF International, 2007), p. 7

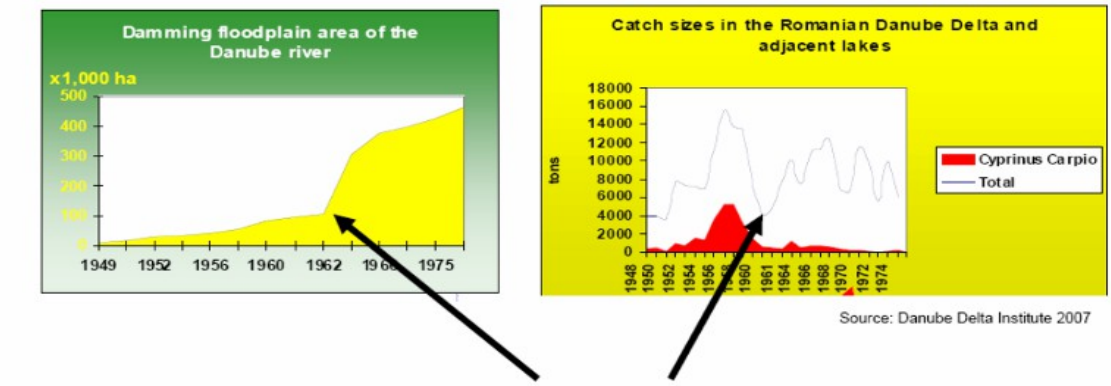
7.3.1 Water Quality

Excessive nutrients are disturbing the ecological balance in the Danube and the Black Sea Cadmium, Lead, Mercury, DDT, Lindane and Atrazine are among the most serious pollutants contaminating the Danube River Basin. Pressures caused by pollutions are oxygen depletion, changes in species, composition, biodiversity decline and fish mortality[71]. For more information on pollution see chapter 6.1 and 9.

7.3.2 Structural Interventions

Common river regulation techniques and practices aimed at improving navigability tend to negatively impact the hydro morphology, and consequently the ecology of the river system. Pressures due to structural interventions are: habitat loss, habitat fragmentation, biodiversity decline, loss of filtering capacity, hindrance of fish, migration (e;g. sturgeons), alteration of natural, flow dynamics and alteration of sediment balance (see figure 7)..

Figure 7: The loss of wetlands contributes to a loss of fish catch (WWF, 2003 in: Hulea, 2008[72])



Cutting off side-channels, riverbank enforcement, and constructions of dikes and drainage of wetlands for agricultural purposes have altered the dynamics of the floodplain and wetlands. Consequently, their ecological value decreased dramatically. These areas, which are now disconnected, have been lost as spawning grounds for fish, which has partially contributed to the decline of fisheries along the lower Danube[73]. Find more information on transport in chapter 10.2.2.

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71 O. Hulea, *Lower Danube Green Corridor Lower Danube Green Corridor. "Working with nature and not against it Working with nature and not against it".*(EEB Conference, Brussels, 2008), p. 13

72 Ibid., p. 5

73 WWF, 'Factsheet on Lower Danube Green Corridor, Cooperation and Management across borders and boundaries' (World Wildlife Fund for Nature, 2003) <http://assets.panda.org/downloads/ldgc_factsheet_041006_se.doc>

7.3.3 Climate Change

Climate change causes floods & droughts, species displacement, biodiversity decline, disappearance of sp. & habitats, changes in community composition and invasive species. The effect of flooding is worsened by canalization and the loss of natural floodplains[74].

7.4 Restoration and managing Wetlands

Both the Ramsar Convention and the DRPC acknowledge the role of wetlands in water management, including flood control, nutrient retention and groundwater replenishment, as well as the need to minimize the impacts of land use and development projects on wetland's functions and their biodiversity. A POM **protecting** and **restoring** wetlands and their biodiversity in the context of RBM can include measures to **manage** specific pressures arising from: forestry, agriculture, urban development; control regimes or environmental permitting systems; water demand management measures; economic instruments such as incentives, taxes on fertilizers and river restoration strategies.[7576]

7.4.1 Restoration

The ICPDR's vision is to reconnect and restore approximately 330,000 hectares of wetlands in 17 sites along the Danube and its tributaries by 2015. The DRMP will include a list of national projects related to reconnecting former floodplains, breaching dikes or mitigating their effects, significantly changing the maintenance of dams or dikes and restoring respective habitats[77].

Dry and unproductive land in the Danube Delta has been transformed through restoration projects. It has turned into a mosaic of habitats that offer shelter and food for many species, including rare birds and valuable fish species, like pike and carp. The economic benefits of the restoration works in Babina and Cernovca (3,680 ha), in terms of increased natural resources productivity (fish, reed, grasslands) and tourism, is about € 140,000 per year. Floodplains in the south of Romania will be reconnected to the Danube and land use changes will be promoted to offer a potential for sustainable tourism, natural reed harvesting, fishing and other sustainable economic activities. A pilot project to demonstrate integrated management of the floodplain forest combining nature conservation and sustainable use of natural resources will be launched on the Danube islands[78].

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74 ICPDR,'Active for the Danube River Basin. 1994 – 2004: Ten years of cooperation in the Danube River Basin' (International Commission for the Protection of the Danube River, 2004), p. 2

75 Official Journal of the European Communities, *Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy*, p. 13

76 Ramsar, *Declaration on the Cooperation for the Creation of a Lower Danube Green Corridor*

77 ICPDR, 'A functioning river system: incorporating wetlands into river basin management' (2007), viewed on February 27, 2010, <http://www.icpdr.org/icpdr-pages/dw0702_p_03.htm>

78 WWF, 'Lower Danube Green Corridor Europe's most ambitious wetland project' (

7.4.2 Danube Delta Biosphere Reserve Management Plan

In 2005, the Romanian government approved the Master Plan to support the sustainable development of the Danube Delta Biosphere Reserve. The plan will assist the Danube Delta Biosphere Authority, the Tulcea county and the local authorities in:

- Improving the monitoring system for the Danube Delta eco-systems using satellite information.
- Improving the infrastructure for public services, transport and communications aimed at reducing pollution, community isolation and to increase the living standard of the local people and the protection of the surrounded villages against flooding from the Danube.
- Restoring the natural eco-system functions and natural habitats of endangered species from the Danube Delta.
- Support the development of alternative traditional activities in order to reduce the pressure concerning the fish resources.
- Support the traditional use of natural resources and the rural landscape, promote the non-conventional sources of energy (windmills, solar energy, boats with electric engines)[79].

For more on management of protected areas see chapter 10.2.1.2 and Table 9

7.4.3 Floods Directive

The EC-Flood Management directive which entered into force 26 November 2007 aims at reducing and managing negative impact of floods on human health, the environment, cultural heritage and economic activities[80]. The big floods during 2003-2005 in Romania were most disastrous in areas that have undergone extensive deforestations following legal changes from state to private ownerships, particularly on the slopes of the Carpathians Mountains. New rules have being adopted in 2005, stipulating that, irrespective of ownership type, reforestation is compulsory within two years after deforestation. In case of reforestation failure with private owner, reforestation will automatically be realized by the National Forest Administration, at the cost of the owner. As reforestation is not very cheap, owners are expected to tend to avoid clear-cutting in the first place[81]. Sustainable flood risk management includes maintaining/restoring connectivity (lateral and longitudinal), use natural river morphology and processes and avoid irreversible structural impacts (non-structural prior structural measures). It is necessary to ensure ecological coherence between protected areas (cross-border management, functional ecological corridors)[82].

The WFD 2000/60 and Directive for assessment and management the flood risk of EU stipulate the elaboration of The RBM Plan at the river basin scale. The RBM Plan has to include the new concept for the planning of rivers “more room for rivers” which has the main objectives to reduce the flood risk and to preserve the environmental aquatic biodiversity. The new concept “more room for the rivers”

[79] WWF International, *Danube Delta: a natural gateway to Europe Ecology and Economy in Harmony*

[80] ICPR, 'Floods directive' (International Commission for the Protection of the Rhine, 2009), viewed on February 27, 2010, <http://www.iksr.org/index.php?id=110&L=3>

[81] B. R. Gurjar and others, 'Overexploitation of ecosystem resources vs. the costs of storms and flooding risk management' in P Höppe and R Pielke (eds), *Climate Change and Disaster Losses: Understanding and Attributing Trends and Projections* (Hohenkammer, Munich 2006)

[82] O. Hulea, *Lower Danube Green Corridor Lower Danube Green Corridor. “Working with nature and not against it Working with nature and not against it”.*(EEB Conference, Brussels, 2008), p. 22

implies new spaces for flood attenuation by creating wetlands, re-allocation of dikes, retention area with controlled flooding, using old river branches etc., and new spaces for nature meaning flood plains - places for development of new ecosystems and for optimum conditions for specific flora and fauna and for recreational activities and tourism[83]. More on strategies to achieve sustainable development in chapter 10.

[83] C. Boscornea, 'Romanian transboundary water management under conditions of climate change' (viewed on February 27, 2010, <http://www.inweb.gr/twm4/abs/BOSCORNEA%20Corina%20Cosmina.pdf>

8 Assessment Measures for DRB Water Bodies

For the evaluation of the health of a water body and to analyse what are the pressures upon it an assay of chemical water quality and the assessment of its biological status must be done. It is important to observe with an accurate assessment the changes of the water state in a consistent and periodic manner.

With the implementation of the above-mentioned WFD on pilot basins (Phare WAFDIP RO 0107. 15.02.01) in 2004/2005 it was clear that Romania was facing an enormous challenge to fulfil the WFD in time. One main result of the project was that Romania (as many other countries too) couldn't provide the required WFD water quality assessment method, mainly caused by a lack of the necessary high quality biological monitoring data. For this reason the alternative solution of physicochemical assessment was temporarily used.[84]
Various further troubles were to manage e.g. the implementation of a standard database framework and software to report in EU formats to the point of possible leaving of well trained staff for more attractive jobs into the private sector.[85]

8.1 Short Overview of Danube Water Assessment

For reaching useful results it is essential in equal parts to monitor regularly under same circumstances and to do occasional surveys with complex investigations.
With this goal there were many expeditions in the Danube River Basin over the last 25 years. Just few of them, the most important assessment projects and systems where Romania was participating, are mentioned here:

1985 Danube countries joint water management activities by ***Bucharest Declaration***, the outcome was a program of water quality studies and series of monitoring stations[86]

1990-1992 ***Equipe Cousteau***, private association, which distributed the result of the 2 years expedition to ~ 1,600 scientists, decision-makers and journalists[87]

1996 ***Trans-National Monitoring Network*** (TNMN) is coordinated by the ICPDR. Many a time enhanced and adapted regarding the requirement of the WFD

Since 1997 ***Accident Emergency Warning System*** (AEWS) is connected to Principal International Alert Centres (PIACs).The AEWS was essentially improved by an upgrade in 2003/2004.

Since 1998 ***Modelling Nutrient Emissions in River Systems*** (MONERIS)

2001 ICPDRs ***Joint Danube Survey 1*** **(JDS1),** first expedition to study the entire length of the DR and to develop the existing TNMN.

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84 Cf. Phare WAFDIP (2005 Oct.), p.57

85 Cf. Phare WAFDIP (2005 Oct.), p.101

86 ICPDR (1985), 'Bucharest Declaration'

87 Cf. Cousteau Society (2010)

2005-2009 ***Aquaterra Danube Survey*** (ADS), Integrated Modelling of river-sediment-soil-groundwater system.

2006 3 days *ICPDR* sediment assessment of the Iron Gate at the border of Romania and Serbia (two hydropower dams including navigation locks). This was also studied by *ADS*.

2007 ***JDS2*** supplied highly comparable and reliable information on water quality and pollution. The sampling was made in 50 days along 2,375 km in 10 countries at 95 stations.

Different expert teams are working together to fulfil the objectives from ICPDR like the implementation of European directives especially the WFD.
The involved ICPDR group for the TNMN, Analytical Quality Control (basin-wide AQC programme is regularly organized), AEWS, JDS 1&2 and all matter concerning water quality assessment is the ICPDR *Monitoring and Assessment Expert Group*[88]. This team also communicates alarm and warning messages in case of an incident.

8.2 Trans-National Monitoring Network – TNMN

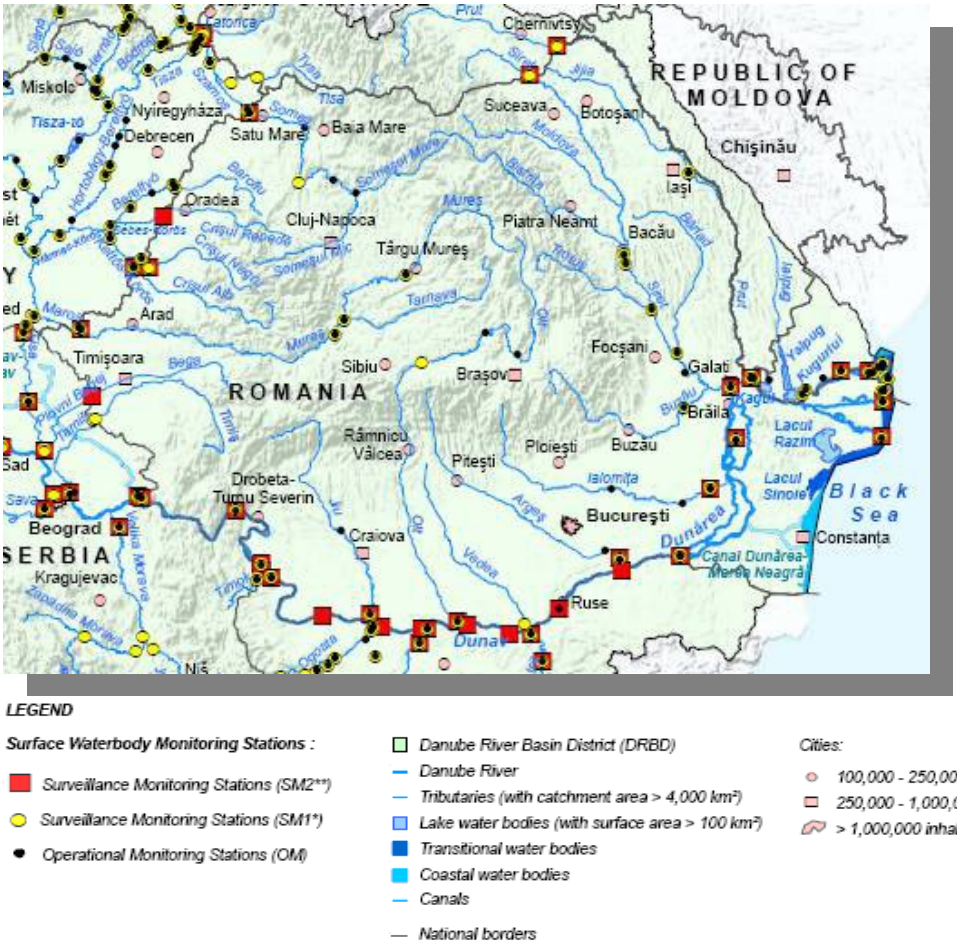
In consequence of the DRPC the Trans-National Monitoring Network was developed to get an overview about serious pollution loads and long-term trends in water quality. Its first assessment period was from 1996 to 2001. This data source was used for the ICPDR Danube Basin Analysis (DBA)[89]. Even though lots of valuable data was thereby delivered e.g. for hazardous substances, the analysis showed clearly a lack of important information[90] especially for biological data. For this reason was the TNMN largely enhanced and adapted in 2006 to ensure it can answer the demanding requirement of the WFD[91]. The DRBM Plan uses the TNMN collecting database of ground[92] and surface water status via operational and surveillance monitoring.

In addition the ICPDR parties are working together for a surveillance monitoring of specific pressures.
Today the frequency of monitoring is 12 times[93] per year for chemical and physical parameters in water and twice a year for biological parameters at 77 monitoring locations with 107 sampling sites[94].
The TNMN should provide today comparable data gained with standard methods that its reports help the responsible institutions to make the right decisions writing policies and affording investment. TNMN yearbook and its database updates are published on the ICPDR site around 2 years after measuring year[95] at the moment because it takes quite a while until the monitoring data are processed, verified and approved by all Danube countries[96].

88 Cf. ICPDR (2010 Jan.3), 'Expert Groups'
89 ICPDR (2005 Mar), 'Danube Basin Analyse DBA'
90 Cf. Jos van Gils (2006 Oct), 'Assessment of TNMN and identification of data gaps – DBAM Upgrade'
91 Cf. Popescu (2009 Sep.), 'The results of TNMN-Transnational Monitoring Network 1996 to 2007'
92 TNMN hasn't monitored groundwaters until 2007; cf. Popescu (2009 Sep.)
93 Cf. ICPDR (2009), 'TNMN Yearbook 2006', p.8
94 Cf. ICPDR (2009), 'TNMN Yearbook 2006', p.4
95 Assumption as on 11 of February 2010 the yearbook and database last updates were 2006
96 ICPDR (2010 email)

It is remarkable that Romania, regarding its huge part of the DRB, seams to have just few monitoring sites at tributaries (please see map 3).

Map 3: DRBD Romania: Transnational Monitoring Network – surface waters[97]



8.3 Joint Danube Survey - JDS 1&2

The JDS as occasional survey does investigative monitoring on the basin-wide level. It is the complement to the TNMN, inter alia, taking care on possible data lack of the TNMN, harmonising the methods of practising monitoring and has the investigative function to test new methods and to detect emerging chemical substances estimating their impact.

The ICPDR launched 2001 the 6 weeks expedition JDS1. It was an assessment project along the Danube in 7 countries 98 stations to make extended, more comparable and faithful data analysis about the DRBD water quality and ecological status regarding the TNMN. Therefore more than 140 diverse indicators were analysed from various groups as biological, chemical, bacteriological and aquatic flora and fauna[98]. They provided over 40,000 results[99].

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97 ICPDR (2009 a), DRBM Plan, Map 10

98 Cf. ICPDR (2007a), p.1

99 Cf. ICPDR (2010 Feb. 3 b), 'JDS 1 Joint Danube Survey 2001'.

The results approved the particular wealthiness of biodiversity and rare species in the DRBD which still has to be protected. They also admonished the Danube countries to act against organic and nutrients pollution and hazardous substances contamination (heavy metals, oil and other chemicals).

Also these JSD1 data were used for the DBA Roof Report 2004. Despite of the enormous amelioration of the data pool the high quality of the WFD demand couldn't be completely served, especially the biological monitoring was failing and a lack of data on hazardous substances was noted. [100]

For this reason and as the environment is a highly dynamical system reacting on lots of influences a second expedition was done for the entire Danube and many of its tributaries in 2007, the JDS2. The sampling was made at 95 stations covering all 10 countries.[101] A part of the sampling sites were different to the TNMN to enrich the overall view about the water area status.[102]
The analysis showed that water management actions helped to get a better water quality but that there are still significant issues (Chapter 9) which have to be get under control demanding strict and fast measures[103]. The JDS are performed every 6 years.[104]

The DBA and JDS2 provided the analysis result for the DRBM Plan. Still the data on hazardous substances are an issue, although they improved a great deal, but in some downstream countries the faultiness of adequate analytical instrumentation goes on. Obligatory measurements are not done caused on insufficient legal instruments.[105] Further assessment is also needed to investigate the increased number of non-native fish and other organisms[106].

8.4 AquaTerra Danube Survey - ADS

The focus of this survey was the history of chemical and isotopic substances from the moment they arrived into the water. Therefore they studied mainly the river sediment and the soil as especially the land use and erosion influence was from interest. The samplings were taken from 30 sites[107] along 1147 km[108] of the Danube (near Vienna to the Serbian-Bulgarian border).

Determining the sampling sites AquaTerra was focusing on:[109]

- Sites identical with the JDS and/or the TNMN

[100] Cf. ICPDR (2005 Mar), 'DBA', p 23 ; p107, 142, 143 ; p148
[101] Cf. ICPDR (2007 b), 'Watch your Danube! Joint Danube Survey 2' p.2
[102] Cf. ICPDR (2007c), 'JDS2: Route and stopping points', p.2 and
ICPDR Danubis (2010 a), 'Report: TNMN Monitoring Points' and ICPDR (2007d), 'Monitoring Danube Basin waters'
[103] Cf. ICPDR (2008 a), 'JDS2: Research Expedition and Conclusions', p.5
[104] Cf. ICPDR (2008 b), 'JDS2: Final Scientific Report' , p.12
[105] Cf. ICPDR (2009 a), 'DRBM Plan', pp.15
[106] Cf. ICPDR (2008 a), 'JDS2: Research Expedition and Conclusions', p.5
[107] Cf. Chapman, A.S. (2009), p.2
[108] Cf. Aquaterra (2009 Jul), p.16
[109] Cf. Chapman, A.S. (2009), p.10

- Samples from the Danube mainstream only
- Upstream and downstream of major cities and tributaries
- Areas with high levels of contaminants of concern
- The Iron Gate and the Gabcikovo reservoirs

8.5 Accident Emergency Warning System – AEWS

Since 1997 the AEWS is running daily 24h and gets activated in any case of possible transboundary water pollution, also if hazardous substances break determined levels. The system is connected to Principal International Alert Centres (PIACs) with its Communication, Expert and Decision Units. They alert immediately downstream countries that those can take necessary counteractive measures as soon as possible. The AEWS was essentially improved by an upgrade in 2003/2004

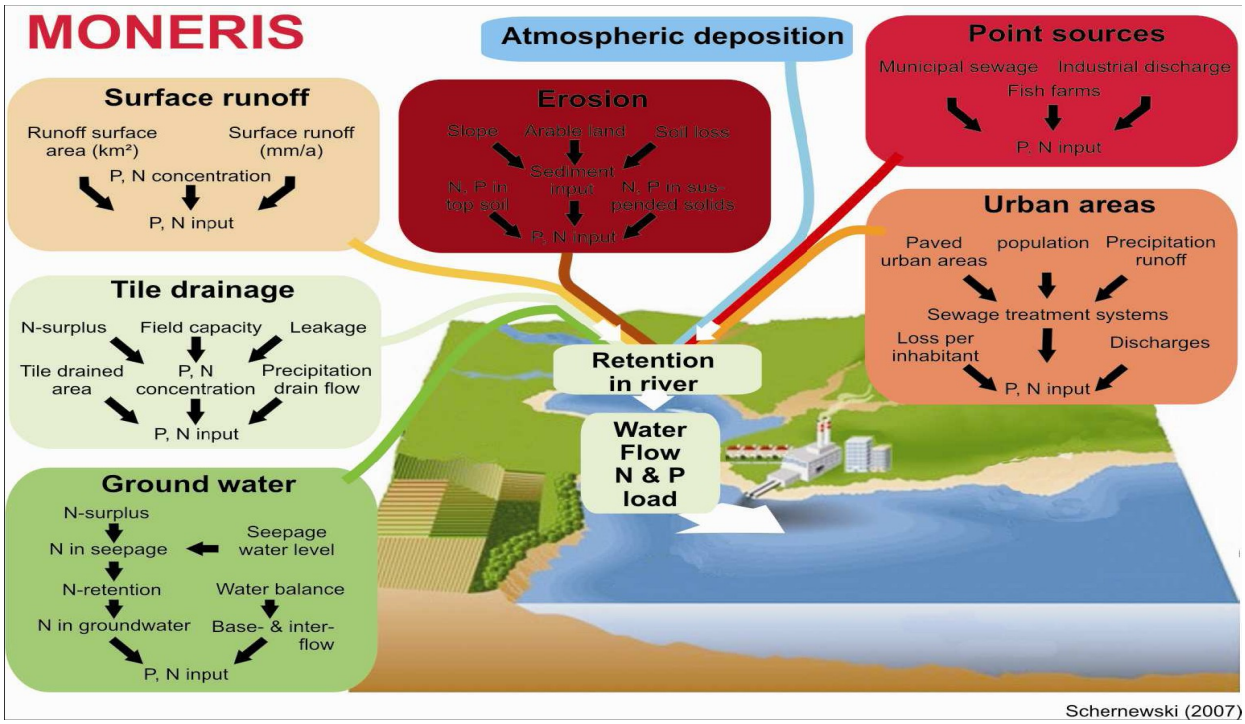
And as "Discretion is the better part of valour" the ICPDR does strong efforts to sensibly the concerning sectors for more preventive measures.
It is planned to enhance the AEWS also for ice and flood warning in the future.[110]

8.6 Modelling Nutrient Emissions in River Systems – MONERIS

MONERIS[111] is an empirical semi-statistics emission model based on GIS model calculating and estimating the emissions of phosphorus and nitrogen to the surface water, using different databases and sources as statistical TNMN yearbooks, the emission inventories and more. The aim of it is to model the hydrological balance via various pathways on the one hand point and on the other diffuse sources.[112]

Figure 8: Schematic picture of main processes in relation to sources and pathways of nutrient inputs, including retention, into surface waters (MONERIS model).[113]

[110] Cf. ICPDR (2010 Jan.5), '*AEWS Accident Emergency Warning System'*
[111] Behrendt et al. (2007), *'The Model System MONERIS'*
[112] Cf. ICPDR (2010 Feb.2), 'MONERIS-MOdelling Nutrient Emissions in RIver Systems'
[113] ICPDR (2009 a), DRBM Plan, Figure 8, p.14



As this modelling is very complex and different databases are used the results show a certain uncertainty.

8.7

Databases

Important decision should always be based on good analysis. For this authentic data are essential. The ICPDR information system Danubis[114] contains the monitoring databases from TNMN, Danube Survey, Bucharest Declaration and the Emission Inventory[115].

The EU MS have to report since 2007 to the European Pollutant Release and Transfer Register (E-PRTR). Romania sent in Romanian the first E-PRTR report, using data and information for 2007. The register contains annual data of 91 pollutants which are subsumed into 7 groups: Greenhouse and other gases, Heavy metals, Pesticides, Chlorinated organic and other organic substances, Inorganic substances for 9 industrial sectors (Map 4). The second report is expected for 30 June 2011.[116]

The precursor was until 2007 the European Pollutant Emission Register (EPER) with data sources from 2001 and 2004. Romania sent its National EPER Report 2005 of Romania Emission Data of Individual Facilities[117] which was used for the DRMP.

Map 4: Romania shown as geographical approach to E-PRTR data Jan2010[118]

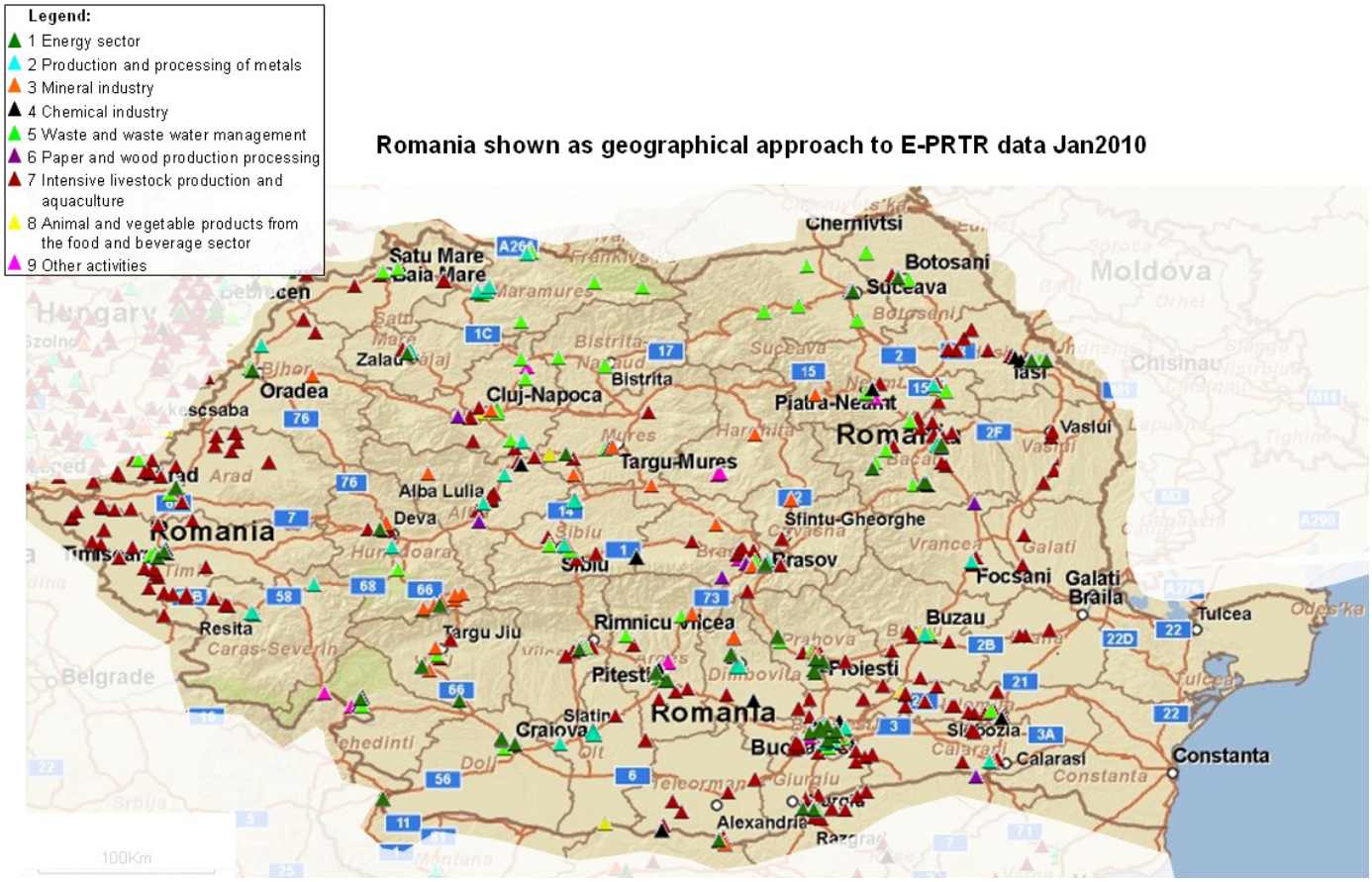
[114] Cf. ICPDR Danubis (2010 b) Databases

[115] Cf. ICPDR Mihaela Popovici (2001), 'Emission inventories - a response to the public's right to know'

[116] E-PRTR (2010 Jan.12), 'The European Pollutant Release and Transfer Register' ['Home' and 'About E-PRTR']

[117] EPER (2008 Mar.26), 'EPER The European Pollutant Emission Register of Romania - The Reported year 2005'

[118] ESRI, AND, TANA, ESRI Japan, UNEP/WCMC, Copyright© 2009



In parts the DRB there were and are further monitoring systems in use as Soil and Water Assessment Tool (SWAT) 2000 and Computer aided hydrograph differences method (DIFGA) 2000.

8.8

Danube Basin Analyse and Assessment

The DBA is an obligatory report following the WFD to provide the following information for a first characterisation and progress of the DRBD analysing significant anthropogenic pressures and impacts[119]:

- Characteristics of the river basin district
- Review of the environmental impact of human activity and economic analysis of water use
- Register of protected areas

Surface waters:

- Characterisation of surface water body types
- Ecoregions and surface water body types
- Establishment of type-specific reference conditions for surface water body types,
- Identification of Pressures

[119] Cf. ICPDR (2005 Mar), DBA, 'Table 1 Issues covered in Part A (Roof report) and Part B (National reports)', p.22

- Assessment of Impact

Ground waters:

- Initial and further characterisation
- Review of the impact of human activity on groundwaters
- Review of the impact of changes in groundwater levels
- Review of the impact of pollution on groundwater quality
- Analysis of economic characteristics
- Public information and consultation

The data source for this report was mainly collected by the JDS1, TNMN and AEWS, also MONERIS was used. As these assessments were done in 2001 those haven't taken into account all the 33 priority substances[120] regarding the emission limit values and environmental quality standards as this list was added later to the WDF in Nov 2001 (Decision No 2455/2001/EC)[121]

Following the DBA some points had to be developed. The most important were[122]:

- The emission inventory had to be improved regarding the E-PRTR
- The harmonisation of assessment rules and methods to get high quality inventory for analysis of HMWB, hydromorphological alterations; further as much on the quality status of protected or special valuable areas as on the status of transboundary groundwater bodies.
- Especially the monitoring system of chemical and ecological status had to be meliorated through transboundary monitoring programmes

The DBA had also to remark data inconsistency between the MONERIS and the national data like for significant point source pollution (overview) and the significant sources of nutrients (point and diffuse) including land use patterns.[123]

8.9

Danube River Basin Management Plan and Assessment

The DRBM Plan is the first RBM Plan following the WFD implementation schedule. The base for its assessment analysis is mainly the data from TNMN as network of surface water monitoring and JDS2. But the DRBM Plan also references often to the DBA Roof Report 2004 with data sources from 1997 to 2003 although e.g. the *ICPDR document IC 132: Significant Water Management Issues in the DRBD* uses also data from JDS2 in 2007 and is also used for the DRBM Plan.

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120 EU WFD (2000), Annex X p.73-75

121 EU WFD (2000), p.1, M1 Decision No 2455/2001/EC of the European Parliament and of the Council of 20 November 2001 L 331 1 15.12.2001

122 Cf. ICPDR (2005 Mar), DBA, p.186

123 Cf. ICPDR (2005 Mar), DBA, p.61

So the data analyses are based on different periods in a range of 10 years from different assessment systems and places. Sometimes the DRBM Plan points itself on this problem for example in the footnote 18 of the figure 2 it writes:

"This figure is based on findings of the DBA 2004 and may include differences to final findings at the national level and/or to the DRBM Plan."[124]

And so it is, sometimes the results are even contrary

The ICPDR has already made a great progress during the last years to harmonise the assessment methods regarding monitoring standards and collecting data of prioritised parameters to be able to write comparable reports. But the DRBM Plan shows also that much more must be done for the assessment quality as it faces partial deficient data for e.g. hazardous substances, agriculture organic and nutrient point sources, chemical status, ecological status/potential, biological quality elements and hydromorphological alteration[125]. Any significant discrepancies between the different research statements should be traced.

Regarding the enormous challenge the Danube countries have to manage with the implementation of several European directives probably the timeframe and the financing is a serious issue for certain tasks.

[124] ICPDR (2009 a), DRBM Plan, p.6

[125] Cf. ICPDR (2009 a), DRBM Plan , p.90-92

9 Significant Water Management Issues

According the WFD definitions of required quality and quantity water status by 2015 the outcome of those assessments was that 4 significant water management issues (SWMI) for all water bodies in the DRB could be defined: hydromorphological alterations and the pollution with nutrients, organic and hazardous substances.

The main causers for these issues are the agriculture, municipal waste water, industry, navigation, hydropower and flood defence. An intensive cooperation between the stakeholders must be proceeded to alleviate the effects of these SWMIs which probably will be higher costs for drinking water production, decrease of biodiversity and habitats, loss in agronomic potential of arable land and damage for fishing and leisure activities (tourism).[126]

9.1 Organic substances pollution

The JDS2 showed that 47% of the Danube has an organic pollution between "at risk" and "possible at risk"[127] mainly caused through waste water discharges from urban, industrial and agricultural sectors.

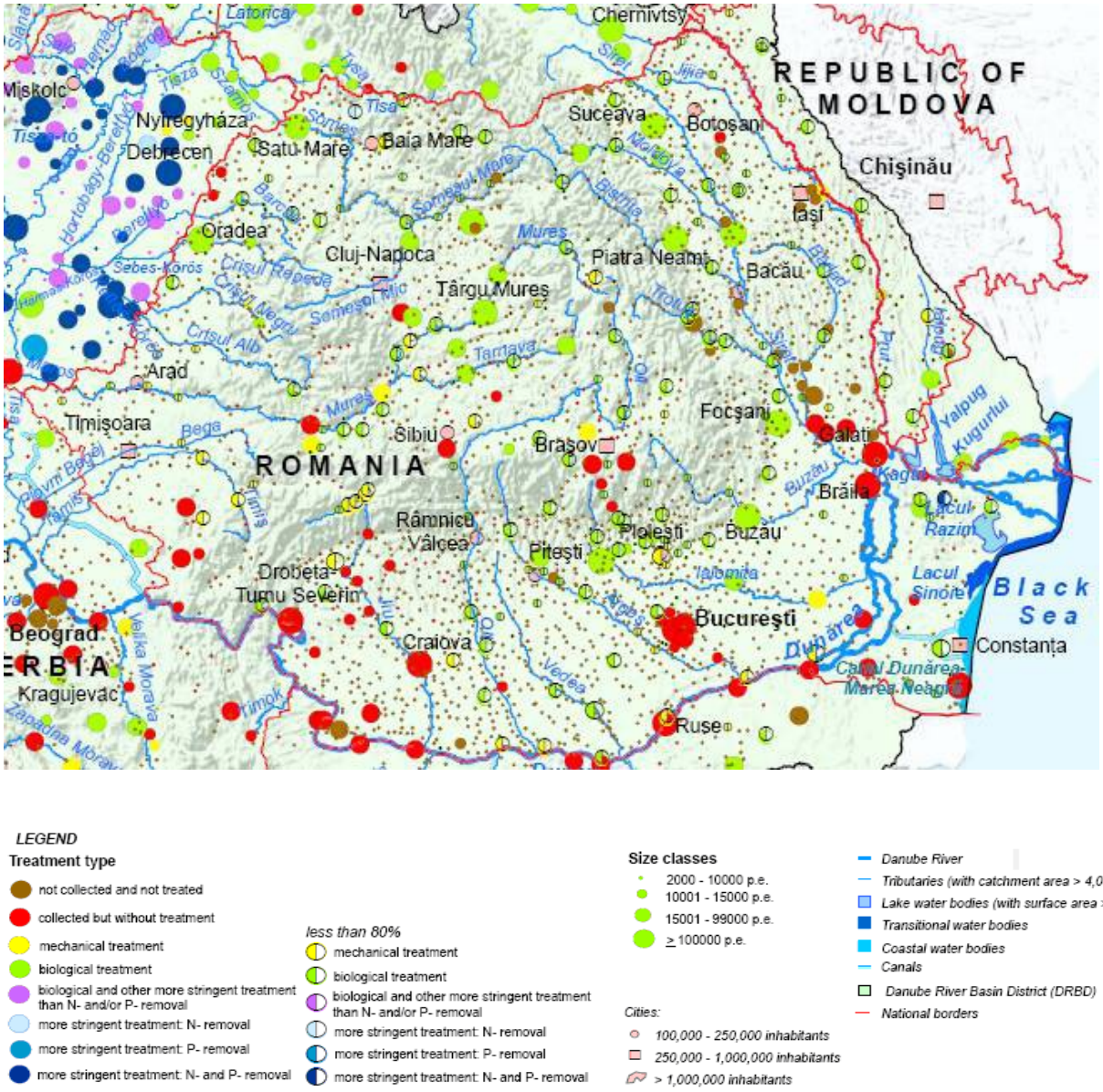
The influx of untreated waste waters within the DRB must be even more strongly reduced in the Danube itself and in many tributaries. For this amongst other things the EU MS have to implement until 2015 further directives as the UWWTD, the Sewage Sludge Directive (86/278/EEC) and Integrated Pollution Prevention Control Directive (96/61/EC). Regarding the UWWTD implementation has Romania time until 2018 for smaller urban areas with 2.000 - 10.000 inhabitants. Bucharest needs urgently to ameliorate its waste water treatment. Non-EU MS should also analyse their waste water system and elaborate and implement measures to reduce insufficient treated industrial and municipal waste waters.[128]

[126] Cf. ICPDR (2008 c), document IC 132

[127] Cf. ICPDR (2007 e), 'JDS2: Water pollution in the Danube River Basin', p.2

[128] Cf. ICPDR (2008 c), document IC 132, p.6-7

Map 5: DRBD: Urban waste water discharges - Reference Situation (RS-UWWT) 2005/2006.[129]



LEGEND

Treatment type

- not collected and not treated
- collected but without treatment
- mechanical treatment
- biological treatment
- biological and other more stringent treatment than N- and/or P- removal
- more stringent treatment: N- removal
- more stringent treatment: P- removal
- more stringent treatment: N- and P- removal

less than 80%

- mechanical treatment
- biological treatment
- biological and other more stringent treatment than N- and/or P- removal
- more stringent treatment: N- removal
- more stringent treatment: P- removal
- more stringent treatment: N- and P- removal

Size classes

- 2000 - 10000 p.e.
- 10001 - 15000 p.e.
- 15001 - 99000 p.e.
- ≥ 100000 p.e.

Cities:

- *100,000 - 250,000 inhabitants*
- *250,000 - 1,000,000 inhabitants*
- *> 1,000,000 inhabitants*

- *Danube River*
- *Tributaries (with catchment area > 4,000 km²)*
- *Lake water bodies (with surface area > 100 km²)*
- *Transitional water bodies*
- *Coastal water bodies*
- *Canals*
- *Danube River Basin District (DRBD)*
- *National borders*

[129] ICPDR (2009 a), DRBM Plan, Map 18

9.2

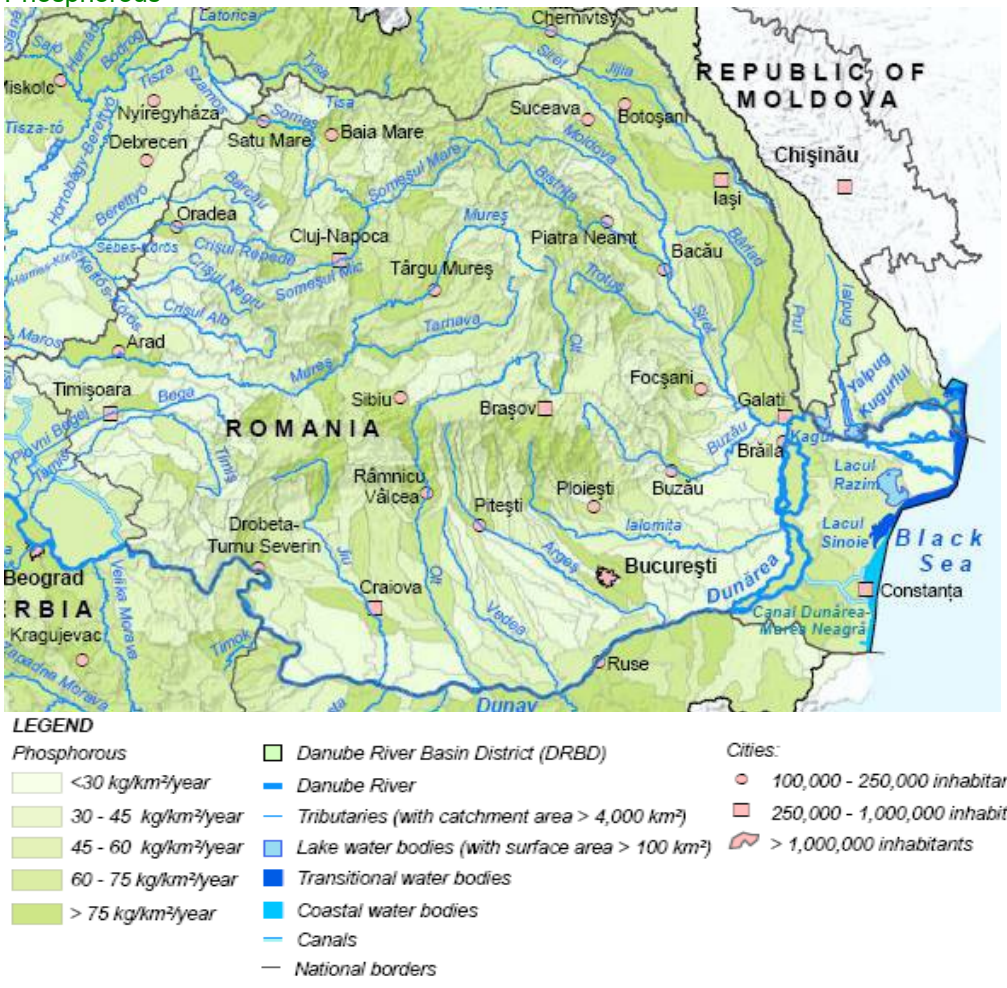
Nutrients pollution

A further result of the JDS2 was that around 55 % of the Danube is “at risk” or “possible at risk”[130] from nutrient pollution which is primarily caused by agricultural nitrogen mineral fertilizers and raising livestock and by phosphorus pollution mostly induced by waste water treatment plants, urban systems and agricultural land use.

Especially the Romanian its border Danube sections with Delta and Black Sea are at risk of eutrophication.

To defend a good ecological water status it is very important that the agriculture follows best practise knowledge (Best Agricultural Practice , Best Available Techniques, Best Environmental Practice) and to implement the EU Groundwater Directive (2006/118/EC), EU Nitrates Directive (91/676/EEC) and the EU Common Agricultural Policy (CAP). Furthermore nutrient sources must be observed and reduced. Phosphate-free detergents should be produced and used.[131]

Map 6: DRBD Romania: Nutrient pollution from point and diffuse sources–Reference Situation for Phosphorous[132]

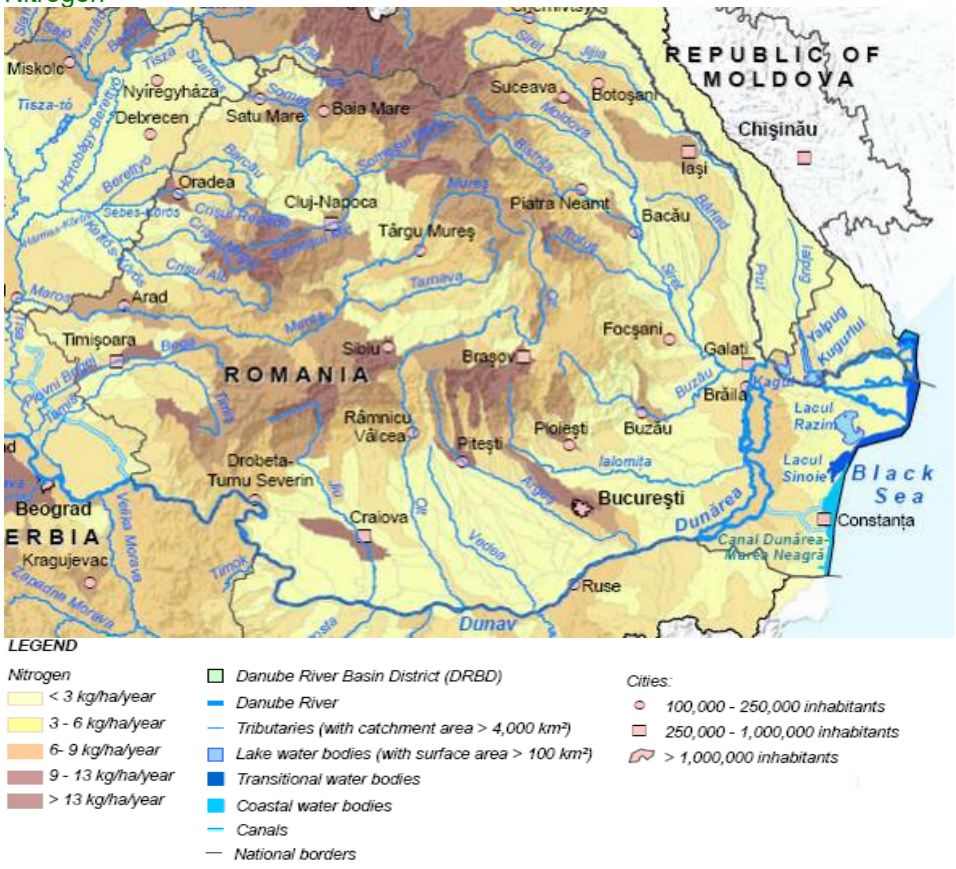


130 Cf. ICPDR (2007 e), ‘JDS2: Water pollution in the Danube River Basin’, p.2

131 Cf. ICPDR (2008 c), document IC 132 with Annex I, p.7 and p.15 et seqq.

132 ICPDR (2009 a), DRBM Plan, Map 23

Map 7: DRBD Romania: Nutrient pollution from point and diffuse sources–Reference Situation for Nitrogen [133]



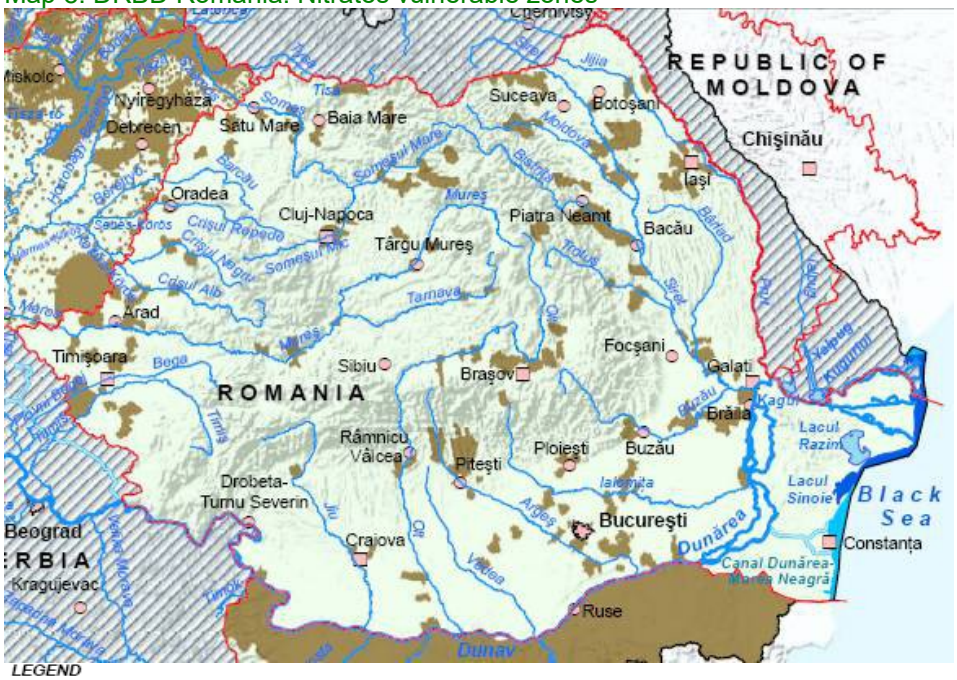
LEGEND

Nitrogen
- < 3 kg/ha/year
- 3 - 6 kg/ha/year
- 6- 9 kg/ha/year
- 9 - 13 kg/ha/year
- > 13 kg/ha/year

- Danube River Basin District (DRBD)
- Danube River
- Tributaries (with catchment area > 4,000 km²)
- Lake water bodies (with surface area > 100 km²)
- Transitional water bodies
- Coastal water bodies
- Canals
- National borders

Cities:
- 100,000 - 250,000 inhabitants
- 250,000 - 1,000,000 inhabitants
- > 1,000,000 inhabitants

Map 8: DRBD Romania: Nitrates vulnerable zones [134]



LEGEND

- Nitrates Vulnerable Zones
- Non EU MS : No reporting requirements
- Danube River Basin District (DRBD)
- Danube River
- Tributaries (with catchment area > 4,000 km²)
- Lake water bodies (with surface area > 100 km²)
- Transitional water bodies
- Coastal water bodies
- Canals
- National borders

Cities:
- 100,000 - 250,000 inhabitants
- 250,000 - 1,000,000 inhabitants
- > 1,000,000 inhabitants

[133] ICPDR (2009 a), DRBM Plan, Map 22

[134] ICPDR (2009 a), DRBM Plan, Map 26

It is remarkable that Romania shows just so few Nitrates vulnerable zones comparing to its Nitrogen pollution. The north of Bulgaria is completely marked as vulnerable and its pollution is less than in Romania. The region around Cluj-Napoca to Drobeta, Brasov to Bucharest and the north of Romania should be expected to be vulnerable too. For further investigation about this subject the maps 7 and 8 could be compared with the document "Soil Vulnerability to Nitrate Contamination from agriculture sources" in Romania (Catalin Simota (2009), p.24, p.33, p.34).

A result of the DRBM Plan is that it is already clear that planned measures to reduce nitrogen pollution won't satisfy the required status in the WFD 2015[135].

9.3

Hazardous substances pollution

The pollution with hazardous substances even shows a level up to 73 % "at risk" or "possible at risk"[136] for the Danube. Again the Romanian and its border Danube sections with the Delta are in high risk. Floodplain soils and sediments are contaminated with hazardous substances.
The heaviest threats are pesticides (11 from the WFD 33 priority substances) which are used in the Danube Basin. But also pollution from navigation (mainly oil) and from industry (heavy metal and chemical pollutants) must be tackled. Accidental pollution preventive measures must be tightened and the AEWS enhanced.

Following the DRBM Plan analysis a good chemical status as required in the WFD probably won't be reached by 2015. Please see map 9 showing the chemical status of surface water bodies in Romania.
EU MS should also implement of the Integrated Pollution Prevention Control Directive (96/61/EC) and Dangerous Substances Directive (76/464/EEC).[137]
Some downstream countries have still a deficiency of adequate analytical instrumentation.[138]

It is very important that stronger measures are taken in agricultural land use, waste water management, metallurgy and mining areas to reduced the harmful pollution sources as the health of human and the waters ecosystem are in danger in the DRB with Delta and Black Sea.

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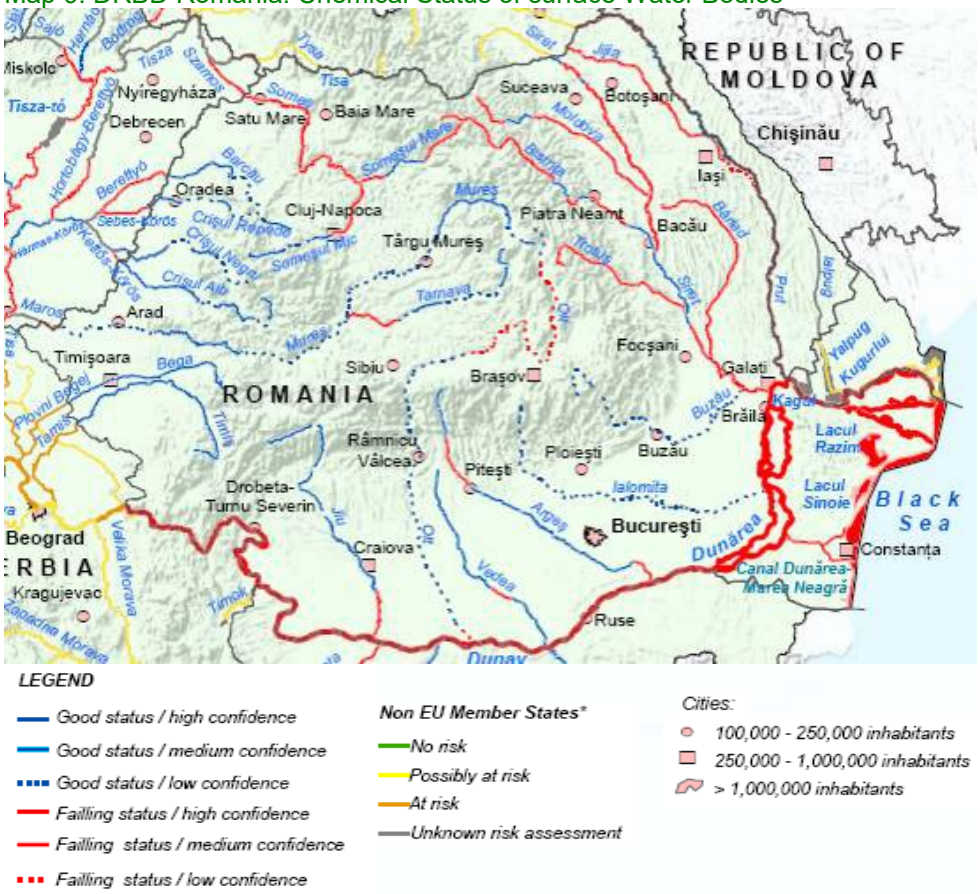
135 Cf. ICPDR (2009 a), DRBM Plan, p.90
136 Cf. ICPDR (2007 e), 'JDS2: Water pollution in the Danube River Basin' , p.2
137 Cf. ICPDR (2008 c), document IC 132 with Annex I, p.8 and pp.15
138 Cf. ICPDR (2009 a), DRBM Plan, p.16

Map 9: DRBD Romania: Chemical Status of surface Water Bodies[139]



9.4

Hydromorphological alterations

Hydromorphological alteration can mainly be divided into the interruption of lateral (e.g. hydropower) and longitudinal (e.g. canals for navigation) connectivity of rivers and hydrological alterations (e.g. drainage of wetlands/floodplains).

They have a fundamental impact on the natural balance. Spawning grounds, breeding areas and habitat get destroyed; the groundwater level can sink; the river flows to fast or has anthropogenic barriers which are not passable by fishes.[140] Those impacts are also mentioned in chapter 6.1 and 8.8.

Even though about 30% of the JDS2 investigated Danube showed strong artificial modifications, 40% could be declared as satisfying fortunately.[141] But more than 110 future infrastructure projects are listed in the DRBM Plan Annex 7 around 40 in Romania. This shows how important it is to keep high attention to those planned alterations.

[139] ICPDR (2009 a), DRBM Plan, Map 12

[140] Cf. ICPDR (2008 c), document IC 132 with Annex I, p.8-11 and pp.15

[141] Cf. ICPDR (2008 a), 'JDS2: Research Expedition and Conclusions', p.27

Although a good progress will be done until 2015 as e.g. regarding the WFD environmental requirements for habitat and river continuity, but numerous significant issues won't be solved and so no good ecological status or potential will be reached in time everywhere.[142]

[142] Cf. ICPDR (2009 a), DRBM Plan, p.91

10 Historical and recent developments towards a sustainable strategy in Romania

Following the signatory of the Rio declaration, a first strategy towards sustainable development was developed by the Romanian Government between 1997 and 1999. Various specialists from different authorities such as the National Council for Sustainable Development or the Romanian Bureau of the United Nations Development Programme (UNDP) participated in this project. The development of the strategy was also significantly supported by institutions including Government departments, NGOs, the research sector representing more than 20 specialised institutes divided into 6 work-groups.[143] The National Sustainable Development Strategy (NSDS) was adopted by the Romanian Government. Moreover, the Ministry for Water, Forests and Environmental Protection was established. Although the document had only a limited relevance for the political process due to the fact that the document did not foresee adequate mechanisms to monitor its implementation and periodic revision, it provided the conceptual and methodological framework for stakeholders.[144] In addition, it enabled 40 counties and municipalities to introduce the concept of Local Agenda 21 in their regions.[145]

Under the initiative of the Romanian Presidency a new sustainable development strategy for the year 2025 was drafted between 2002 and 2004, but again never became a practical document. As a new Member State of the EU Romania was obliged to develop a sustainable approach and consequently had to renew its own strategy. Based on the EU Sustainable Development Strategy of the European Council of 15./16. July 2006, Romania revised its NSDS on January 1st 2007.[146] The NSDS aims at keeping the balance between economic development and the natural environment as well as the needs of the society. The approval of the project was based on Government Decision HG No. 1216 of 4 October 2007 and published in the Official Gazette of Romania No. 737 of 31 October 2007. Various authorities such as the Ministry of Environment and Sustainable Development (MESD) (formerly Ministry for Water, Forests and Environmental Protection) and the UNDP represented by the National Centre for Sustainable Development in Bucharest were involved in order to update the NSDS.

Completed in 2008 in its session of 12 Nov. (HG no. 1460/12 Nov. 2008), the Romanian Government intends to enhance the NSDS to enable the monitoring of the implementation process over the period 2013-2030. For the completion of the NSDS various structures such as the Drafting Group, Working Groups and Scientific Council as well as institutional facilities to participate in the debates e.g. the National Public Debate Council, Regional consultative Councils were created. The Drafting Group was responsible for the framework concept, the topical summaries and new versions that occurred during the discussion processes. The Working Groups consisted of representatives from Ministries and other Government agencies. This group provided the relevant information in the draft period. The Scientific Council provided a critical review of the scientific accuracy of the draft strategy. The National Public

[143] The Regional Environmental Center for Central and Eastern Europe, Tisza-Szamos Public Benefit Company (2002), 'Country Report – Romania', http://www.rec.hu/frame2/RO_intro.html

[144] UNDP (2008), 'Revision of the National Sustainable Development Strategy', http://www.undp.ro/projects.php?project_id=54

[145] Frant, F.; Minica, M. (2008), 'Theoretical Aspects of Sustainable Development Strategy of Romania', p. 210

[146] UNDP (2008), 'Revision of the National Sustainable Development Strategy', http://www.undp.ro/projects.php?project_id=54

Debate Council mainly served as a forum to discuss the draft strategy paper in monthly sessions. In Regional Consultative Councils representatives of local public authorities, political parties, universities etc. in each of the eight Development Regions of Romania came together. During the drafting process 6 different versions and additional 41 revisions were necessary. Moreover, in the finalisation phase of this strategic document 5 national and 16 regional debates which includes the public took place.[147] The measures of the strategy will be presented in more detail in the next paragraph.

Along the development of a new sustainable strategy, the EU commission approved the National Strategic Reference Framework 2007 – 2013 (NSRF) of the Romanian Government on 25 June 2007.[148] This approach intends to link Romania more strategically to the appropriate EU policies such as the Economic and Social Cohesion policies including the European Regional Development Fund (ERDF) and Cohesion Fund (CF). Both funds provide significant financial support to the Romanian Government in order to achieve its sustainable goals. The NSRF compromises sustainable development targets that were defined during the consultations of the Lisbon Agenda and Gothenburg Strategy. The implementation of NSRF is managed via Sectoral Operational Programmes (SOPs) and Regional Operational Programmes (ROPs) of the eight regions. The strategies and measures with respect to sustainability will also be presented in more detail in the next paragraph.

At the same time the Romanian Government adopted the Second Report on the Millennium Development Goals on 18 September 2007. The UN Millenium Declaration is based on commitments of world leaders to achieve various targets by 2015. Amongst others, measures towards sustainable development are the central element of this agreement.[149] As a consequence of all these developments, the National Agency for Protected Natural Areas (NAPA) as public authority was established but it is still not operational. This agency shall conduct protected areas at national level. It should also ensure the implementation of the management plans for each of the areas designated for protection. Since December 2008 the MESD has been changed to the Ministry of Environment.

10.1

Strategies to achieve Sustainable Development in Romania

Despite the fact that Danube was designated a Biosphere Reserve, a Ramsar site (wetland of international importance) and World Heritage site, those severe international treaties will not ensure a versatile biodiversity. Therefore strategies and measures as well as sufficient administrative structures are necessary to develop integrated management plans and adequate resources to implement these plans to guarantee sustainable development. This paragraph aims to give an overview of the relevant strategies that has been implemented in order to protect areas such as Danube river basin, especially the NSDS 2007-2013 in Romania. Furthermore the Regional Strategy for the Conservation and Sustainable Management of Sturgeon Populations of the north-western Black Sea and Lower Danube River will be presented.

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147 UNDP (2008), 'Revision of the National Sustainable Development Strategy', http://www.undp.ro/projects.php?project_id=54

148 Government of Romania (2007), 'National Strategic Reference Framwork 2007 – 2013', p. 133-152

149 United Nations (2006), 'Millennium Project', http://www.unmillenniumproject.org/goals/index.htm

10.1.1 National Strategy for Sustainable Development (NSDS)

In the short term Romania has announced to incorporate the principles of sustainable development in all of the programmes and public policies by 2013 as a new Member State of the EU.[150] In the medium and long term quality of life and human relationships in harmony with the natural environment shall be improved. The Romanian Government has implemented various programmes and measures for different sectors to ensure sustainable development. On basis of the Government's strategic approach the National Development Plan 2007-2013 has been developed to ensure convergence with other EU Member States.[151] Amongst others, 3 main objectives are outlined that should also enable sustainable development with regards to water management and the protection of natural resources. The following priorities have been set:

- The sustainable development of the transportation sector
- The protection and improvement of the environment quality
- The development of the rural economy and the enhancement of productivity in the agricultural sector

The sustainable development of the transportation sector

The aim is to establish an extended, modern and sustainable infrastructure which amongst others also compromises naval transportation. This objective should be achieved by the reduction of negative environmental impacts that are related with transport works and activities upon the environment.

The protection and improvement of the environment quality

Based on this priority environment quality should be improved and protected. At the same time economic and social needs of the Romanian population need to be taken into account in order to improve the quality of life through sustainable development. This objective shall be achieved by various sub-priorities. Along other strategic suggestions, the focus should be on the enhancement of water management systems with regards to "preservation of the biological diversity, ecological reconstruction of the damaged systems, the prevention and intervention for the natural risks – mainly flooding" (Dobrescu 2008: 6).

The development of the rural economy and the enhancing of productivity in the agricultural sector

Along the development of a competitive agriculture, the objective of this priority is mainly focused on the protection of natural heritages. The plan foresees that the productivity in agriculture, forestry and fisheries should be increased. In terms of sustainable fisheries aquacultures in coastal areas will be encouraged which also includes the fishery products processing and marketing, modernization of the fishing vessels, and the durable development of the coastline fishing areas.

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[150] Government of Romania (2008), 'National Sustainable Development Strategy Romania 2013-2020-2030', p. 4

[151] Emilian M. Dobrescu (2008), 'Post-Accession Priorities: Romanian National Strategy for Development 2007-2013', p. 5-8

10.1.2 Regional Strategy for the Conservation and Sustainable Management of Sturgeon Populations

During the period between 1990 and 2000 the population of sturgeons decreased dramatically due to uncontrolled overfishing in the Danube river. In 2001, 2003 and 2006 three regional meetings of countries such as Bulgaria, Romania, Serbia and Montenegro and Ukraine took place in Bulgaria and Romania. As members of the Convention on International Trade in Endangered Species (CITES), all countries agreed and signed a "Regional Strategy for the Conservation and Sustainable Management of Sturgeon Populations of the north-western Black Sea and Lower Danube River" which includes a common monitoring system[152]. As a consequence of this agreement the Romanian Government introduced a commercial fishing ban of all wild sturgeons for the next ten years that will allow the populations in the Danube river basin to recover again. The ban came into force on 4 May 2006.

10.2

Programmes and measures towards sustainable development

In this paragraph the programmes related to sustainable development will be analysed. As mentioned above these Programmes are important components of the NSDS and NSRF of Romania's policy. The full list of Operational Programmes under the NSRF is as follows:

1. Increased Economic Competitiveness SOP
2. **Sectoral Operational Programme (SOP) Transport 2007-2013**
3. **Sectoral Operational Programme (SOP) Environment 2007-2013**
4. Human Resources Development SOP
5. Administrative Capacity Development OP
6. **Regional Operational Programme (ROP) 2007-2013**
7. Technical Assistance OP

SOP Environment (SOP ENV), SOP Transport as well as ROP including their respective objectives will be analysed as part of our research report due to the fact that these programmes are strongly linked to Danube river basin. In addition, the following agreement will be presented:

Implementation of the Millennium Declaration

10.2.1 Sectoral Operational Programme (SOP) Environment 2007 - 2013

As mentioned above SOP ENV is a substantial component of the NSRF. It aims at ensuring the preservation of the environmental potential. Following the Cohesion Policy of the EU, SOP Environment should adjust the discrepancies between environmental standards and services of Romania and the EU. The main objective of the programme is the protection and improvement of environment quality via precautionary and prevention principles in order to maintain and improve living standards as well. Physical elements that should be protected include water, soil and air. As part of the programme specific sub-objectives and priorities have been developed. The EU and State funds will be allocated towards the implementation of the priority axes. The relevant priority axes with

[152] Radu Suciu (2008), 'Sturgeons of the NW Black Sea and Lower Danube River', p. 1-2

regards to Danube and environmental protection are the following: water management (Priority Axis 1), nature protection (Priority Axis 4) as well as natural risk prevention (Priority Axis 5).

10.2.1.1 Priority Axis 1: Extension and modernization of water and waste water systems

In urban areas, some communities are confronted with poor quality of drinking water and a lack of sewerage collection and treatment facilities e.g. in small villages along the three main waterways, Chilia, Sulina and Sfintu Gheorghe the population relies upon clean water from Danube river basin as the main source of drinking water. Cases of cholera have been reported, the latest in August 1990 when 66 cases were diagnosed in the Tulcea region. In total the Danube is responsible for 44% of Romania's water resources.[153] Currently, merely 52% of the total population is connected to the water and waste water collecting systems and 27.3% to treatment plants.[154] In addition, the infrastructure is characterized by a large number of small operators with poor management, lack of long term development strategies and business plans. Therefore, this priority addresses the erection of water and waste water infrastructure in order to ensure adequate drinking water quality and waste water services at affordable tariffs in most urban agglomerations by 2015. Moreover, it should create an innovate and efficient water management that allows to improve the purity of watercourses.[155]

Table 8: Key indicators and targets for priority axis 1 of SOP ENV. (Ministry of Environment and Sustainable Development, 2007)

Indicator	Unit	Baseline	Baseline Year	Source	Target (2015)
Output					
Localities provided with new/ rehabilitated water facilities in a regional management system	Number	60	2006	MESD[156]	300
New/ rehabilitated waste water treatment plants	Number	30[157]	2006	MESD	200
Result					
Population connected to basic water services in a regional system	%	52	2006	MESD	70
Waste water treated (of the total waste water volume)	%	35	2006	MESD	60
Number of Regional Water Companies created	Number	10	2006	MESD	35

[153] International Commission for the Protection of the Danube River (ICPDR) (2006), 'Danube Facts and Figures – Romania', p. 3-4

[154] http://www.icpdr.org/icpdr-pages/romania.htm

[155] EU Commission (2007b), 'Romania - Memo/07/303, p. 2-3

[156] Ministry of Environment and Sustainable Development (MESD)

[157] The baseline number of 30 Waste Water Treatment Plan (WWTP) refers to completed or on-going major investments started in the pre-accession programmes.

10.2.1.2 Priority Axis 4: Implementation of adequate management systems for nature protection

While Danube river basin consists of unique flora and fauna, it is not only important for Romania. This natural habitat has a significant importance for the entire EU. However, this biodiversity is under pressure due to habitat fragmentation and excessive exploitation of the resources based on economic development. Compared to other Member States in the EU, most of the endangered species can be found in Romania.

Hence, the focus of this objective is on the conservation and improvement of biodiversity as well as natural habitats. The implementation phase of adequate management systems to control protected areas and stop degradation of biodiversity and natural resources should be finalized by 2015. Although the Romanian Government expressed its interest to set up a National Agency for Protected Natural Areas and Biodiversity Conservation, the present Government concluded not to establish this facility due to the financial crisis. Table 9 shows the respective indicators and targets.

Table 9: Key indicators and targets for priority axis 4 of SOP ENV. (Ministry of Environment and Sustainable Development, 2007)

Indicator	Unit	Baseline	Baseline Year	Source	Target (2015)
Output					
Protected areas and Natura 2000 sites, with management plans in force	Number	3	2006	MESD / NEPA[158]	240
Result					
Surface of protected areas and Natura 2000 sites benefiting from nature conservation measures	% of protected area surface	0	2006	MESD / NEPA	60

10.2.1.3 Priority Axis 5: Implementation of adequate infrastructure of natural risk prevention in most vulnerable areas

The flood damages over the past were significant in Romania. In 2005/2006 alone, floods affected more than 1.5 million people and destroyed important parts of the infrastructure. Approximately 43,000 houses, 4,682 bridges, 590 social purposes buildings and 10,334 km of roads were damaged. The damages exceeded an estimated 2 billion Euros of pecuniary losses. Almost every year, Romania experiences flood damages in its 11 river basins. Numerous reasons for the severe floodings exist. First of all heavy rainfalls can be observed. Moreover, increased use of urban land and tremendous reduction river bed capacity led to floodings. It is very likely that floods will occur in the future due to continuing deforestation processes.[159] In addition, the Romanian Black Sea shore is affected by severe losses due to beach erosion. The National Research Institute for Sea Development concluded in its study for the northern side of the Romanian coastal area that within the past 35 years more than 2,400 hectares of beaches got lost.

As a consequence, priority 5 aims at the implementation of sustainable flood management systems in order to minimize the impacts of disastrous casualties for the environment and mankind as well as to reconstruct vulnerable areas by 2015.[160] The strategy implies a pro-active initiative to reduce those havocs. This approach is also part of the WFD No 2000/60/EC that considers risk prevention, protection against flood and mitigation of risks and flood affects a crucial element of adequate infrastructures. Table10 shows the indicators and targets of priority axis 5.

[158] National Environmental Protection Agency (NEPA)_

[159] EU Commission (2007a), 'Financing Agreement - Floods related measures in the environmental sector', p.3-18

[160] Ministry of Environment and Sustainable Development (2007), 'Sectoral Operational Programme Environment 2007 – 2013', p. 80-82

Table 10: Key indicators and targets for priority axis 5 of SOP ENV (Ministry of Environment and Sustainable Development, 2007)

Indicator	Unit	Baseline	Baseline Year	Source	Target (2015)
Output					
Projects on floods protection	Number	0	2006	NARW[161]	10
Kilometres of seashore rehabilitated	km	0	2006	NARW	10
Result					
Population benefiting from floods protection projects in the SOP intervention areas	Number of inhabitants	0	2006	NARW	1,500,000
Reduction of incidence to floods risk in the SOP intervention areas	%	100%	2006	NARW	30%
Extension of coastal area	%	0	2006	NARW	30

10.2.2 Sectoral Operational Programme (SOP) Transport 2007 - 2013

The infrastructure of Danube and Black Sea includes river as well as seaports and inland waterways. The entire transport network ranges from Rotterdam at the North Sea to the Black seaport Constanta through Danube via Serbia, Hungary, Austria and furthermore the Rhine-Main-Danube Canal. The Romanian sector of the Danube includes Maritime Danube and Fluvial Danube with 29 ports, out of which 4 are fluvial. Romania has also 3 maritime ports: Constanta, Mangalia and Midia.

The transport of goods through navigation led to 455 accidents on the Danube river between 1983-2003.[162] In total 30 accidents resulted in significant water pollution. Therefore an important component of a transport strategy includes sustainable solutions for port operations and navigation. As part of the NSRF, SOP Transport 2007 – 2013 compromises priorities, objectives and procedures in order to develop the transport sector in a sustainable manner. Out of five priority axes and key areas of intervention outlined in the programme, priority axis 4 entitled “Sustainable development of the transport sector” is relevant in our context.

10.2.2.1 Priority Axis 4: Sustainable development of the transport sector

The main objective of priority axis 4 is the reduction of negative impacts on the environment and promotion of innovative modes of transport including intermodal as well as combined transport. In addition, the improvement of transport safety is an important strategic topic.[163] In order to ensure safety and security across various transport modes, SOP Transport intends to implement standards in line with European policies. These activities shall be controlled by the Ministry of Transport, Construction and Tourism (MTCT). With regards to safer water transport on Danube the existing Bulgarian vessel traffic management information system (VTMIS) shall be improved. As part of the

[161] National Administration of Romanian Waters (NARW)

[162] International Commission for the Protection of the Danube River (ICPDR) (2006), ‘Danube Facts and Figures – Romania’, p. 4

[163] Ministry of Transport, Construction and Tourism (2006), ‘Sectoral Operational Programme – Transport (SOPT) 2007 – 2013, p. 60

European wide network VTMIS provides vessel data, access to cargo data and marine pollution information.[164] In this regard the Ministry plans to deliver available and relevant VTMIS information/data to Bulgaria.

Another important issue within priority 4 is the reduction of negative impacts from transport on the environment. These activities include efficient non-polluting/environment-friendly transport infrastructure initiatives, the mitigation of past developments in the transport sector and establishment of a environmental management system.[165] Based upon SOP Transport all projects for construction, extension or rehabilitation of transport infrastructure will be subject to Environmental Impact Assessment procedures. Given these measures, specific numbers for the indicators are not available for this priority axis.

10.2.3 Regional Operational Programme (ROP) 2007-2013

Along the SOPs, ROP 2007 – 2013 was apoted as part of the NSRF and is managed by the Minstry of Environment. Among other issues ROP is designed to support sustainable development in 8 different regions of Romania such as South West, South Muntenia, North West, West, Center, South East, North East and Bucuresti Ilfov. For this purpose the Romanian Government established National Agencies for Regional Development (ANDR) in each of the regions.[166] The primary goal of ROP is to guarantee economic prosperity which should be based upon sustainable development. At the same time it shall ensure social development of the respective regions taking into account their specific needs. ROP is also divided into priority axes with different focal points such as the following:

1. Priority Axis 1: Support to sustainable development of urban growth poles
2. Priority Axis 2: Improvement of regional and local transport infrastructure
3. Priority Axis 3: Improvement of social infrastructure
4. Priority Axis 4: Strengthening the regional and local business environment
5. **Priority Axis 5: Sustainable development and promotion of tourism**
6. Priority Axis 6: Technical assistance

As tourism could be a driving force for the economic development of Romania, the unique Danube delta with its biodiversity and recreation value can play a major role. It is worth noting that unemployment rates along Danube in the south belong to the highest in Romania.[167] However, the development of tourism facilities can also jeopardise the uniqueness of Danube delta. In this context a sustainable approach is necessary.

10.2.3.1 Priority Axis 5: Sustainable development and promotion of tourism

Priority axis 5 of ROP stipulates to promote sustainable development in the tourism sector to attract visitors for the Danube river basin in order to create new jobs and growth opportunities. In this regard the tourist facilities such as hotels and infrastructure shall be improved. At the same time the

[164] EU Commission (2001), 'Intelligent Transport Systems - Results from the transport research programme'

[165] Ministry of Transport, Construction and Tourism (2006), 'Sectoral Operational Programme – Transport (SOPT) 2007 – 2013, p. 61

[166] Ministry of Regional Development and Tourism (2009), 'Regional Development » Regional Operational Programme 2007 – 2013, http://www.mdrl.ro/index.php?p=205&lang=en

[167] Ministry of Development, Public Works and Housing, 'Regional Operational Programme 2007 – 2013', p. 34

development should preserve the environmental assets through the usage of a controlled tourism regime leading to a balanced distribution of tourists for the entire year. In order to meet this target, an efficient booking-system shall be designed that enables a continuous monitoring of the numbers of tourists. In addition, negative impacts on the ecosystem should be avoided that are related to tourist activities. The key indicators and targets are presented in table 11.

Table 11: Key indicators and targets for priority axis 5 of ROP (Ministry of Development, Public Works and Housing, 2007)

Indicator	Unit	Baseline	Baseline Year	Source	Target (2015)
Output					
Tourism infrastructure / Accommodation projects implemented	No.	-	-	ROP Monitoring System -SMIS	400
Companies supported (direct and indirect) in tourism field	No.	-	-	ROP Monitoring System -SMIS	350
Promotional campaigns for advertising the tourism brand at national and international level	No.	-	-	ROP Monitoring System -SMIS	10
National Tourism Information and Promotion Centres supported	No.	-	-	ROP Monitoring System -SMIS	10
Result					
Increase of tourists number	%	-	-	Survey	15
Increase of overnights staying	%	-	-	Survey	5
Jobs created / saved at the end of project implementation	No.	-	-	Survey	1,000
Tourists visiting the Information and Promotion Centres	No.	-	-	SMIS / MSMSCTTLP	1 mil.
Web site visitors	No.	-	-	SMIS / MSMSCTTLP	15 mil.

10.2.4 Implementation of the Millenium Declaration

The Millenium Declaration has set environmental targets that should be achieved by 2015. An important target has been set under goal 7 of the Declaration.[168] It states that environmental protection can only be achieved through sustainable development. Amongst others one of the main targets is to increase the proportion of protected land area from 2.56% in 1990 to 10% by 2015. As part of this agreement Romania signed and ratified the Convention on Biological Diversity and established the Danube Delta Biosphere Reserve by law in 1992. The ratification led to a protection of land covering 580,000 ha.

Target 19 of the declaration states that the proportion of people with sustainable access to drinking water should be doubled.[169] The most important water resource, the Danube, can only be used to a small extent due to its peripheral position and to the required minimum navigation flow. The usable water resources are: river and inland lakes - 15.153 billion m^3/year, the Danube River – 20.00 billion m^3/year and ground water – 5.78 billion m^3/year. By complex planning and by reaching full potential,

[168] United Nations (2009), 'The Millennium Development Goals Report 2009', p. 40-47

[169] Government of Romania (2003), 'Millenium Development Goals Report', p. 41-42

these resources can achieve approximately 62 billion m^3/year (rivers and inland lakes – 25 billion m^3/year, ground resources 7.0 billion m^3/year and the Danube 30.0 billion m^3/year).

10.3

Financial aspects – National funding and support from EU

In terms of the EU cohesion policy for 2007-2013, the ERDF and CF are relevant financial support instruments for Romania. According to the Financial Perspectives 2007-2013 of the European Council, Member States are entitled to receive financial support from the CF in case their average Gross National Income (GNI) per capita in the time between 2001 and 2003 is less than 90% of the EU-25 average. Romania's per capita GNI is even less than 40% compared to the EU-25 average. In this regard Romania is entitled to receive transfers worth 3.7893% of its GDP.[170] For the ERDF regions are entitled to receive support if their per capita GDP is below 75% of the EU-25 average. Hence, Romania benefits from both the CF and ERDF through NSRF which sets the priorities for the application of the EU instruments.[171] The financial support is paid in advance to Member States at the beginning of the period 2007-2013. No specific request from the Member State is necessary to receive payments. The Romanian Government estimated a total of approximately 59 billion Euros out of which more than 4.8 billion Euros shall be invested in environmental projects.[172] The distribution of both the ERDF and CF towards the strategies and programmes mentioned in the previous chapters is shown in table 12.

Table 12: Distribution of EU Funds and share for sustainable development (2007-2013) (Ministry of Environment, own calculations)

Strategy/ Programme	Priority Axis	EU	National Funding			Total OP	EU rate
		in Mio €	Public in Mio. €	Private in Mio. €	Total in Mio. €	in Mio. €	in %
ROP	5	558.90 (ERDF)	57.86	99.01	156.87	715.77	78.08
SOP Transport	4	215.55 (ERDF)	71.85	33.60	105.45	321	67.15
SOP ENV	1	2,776.53 (CF)	489.98	-	489.98	3,266.51	85.00
	4	171.99 (ERDF	43	-	43	214.99	80.00
	5	270.02 (CF)	59.13	-	59.13	329.15	82.04

[170] Council of the European Union (2005), 'Financial Perspective 2007-2013', p. 9

[171] Frant, F.; Minica, M. (2008), 'Theoretical Aspects of Sustainable Development Strategy of Romania', p. 212

[172] Government of Romania (2008), 'National Sustainable Development Strategy Romania 2013-2020-2030', p. 91-92

Based on the relevant priority axes and the respective Sectoral Programmes outlined in our study approximately **4,847 Mio. Euros** are projected to foster sustainable projects. However, it is worth noting that not all of these investments are dedicated to Danube river basin projects.

By March 2009 the EU Commission has received proposals from the Romanian Government in order to realise 9 projects related to the upgrade and expansion of water supply and sewage systems in various regions. Each of the projects is worth more than 25 Mio. Euros (in total at least: 225 Mio. Euros).[173] In addition, the Romanian Government has already initiated projects as part of SOP Transport and priority axis 4. In table 13 recent developments are illustrated.

[173] Financiarul (2009), 'Romania makes progress with aid from EU cohesion policy', http://www.financiarul.ro/2009/03/20/romania-makes-progress-with-aid-from-eu-cohesion-policy

Table 13: Danube projects as part of SOP Transport (priority axis 4) between 2007 – 2013 Southeast European Cooperative Initiative (SECI 2009)

Projects	**Description**	**Time Frame**	**Total Costs**	**Funding sources/ Potential funding sources**
Călărasi - Brăila section (Danube)	Reduction of low water adverse effects on navigation through riverbed calibration and stabilisation as well as river bank protection on this Romanian stretch of the Danube	Phase I: 2009 - 2011 Phase II: 2011 - 2013	Phase I: 37.7 Mio. EUR Phase II: 20.45 Mio. EUR	external: ISPA[174] & CF and European Investment Bank (EIB) loan
Sulina Canal works (Maritime Danube)	Rehabilitation and improvement of the Danube's Sulina river branch (banks protection)	Phase I: 2008 - 2011 Phase II: 2011 - 2013	Phase I: 63.0 Mio. EUR Phase II: 80.0 Mio. EUR	external: EIB (50% for Phase I); CF (85% for Phase II, EU) national: state budget
Modernisation of the Danube-Black Sea Canal (Cernavodă - Agigea)	Since the opening of the canal in 1984 several factors lead to a continuous deterioration of the canal causing stability and erosion problems of the high embankments.	Feasibility study: 2008 - 05/2009 Execution of works: 2010 - 2013	110 Mio. EUR	external: ISPA, national: state budget
Modernisation of Poarta Albă–Midia-Năvodari Canal	Since the opening of the canal in 1986 several factors lead to a continuous deterioration of the canal causing stability and erosion problems of the high embankments.	Feasibility study: 2008 - 05/2009 Execution of works: 2010 - 2013	55 Mio. EUR	external: ISPA, national: state budget
Romanian River Information Services (RoRIS)	Full-scale implementation of RoRIS on the Danube and the Danube-Black Sea Canal.	2009 - 2011	15.0 Mio. EUR	ERDF (75%) national: state budget (25%).

[174] The Instrument for Structural Policies for Pre-Accession (ISPA) is a financial instrument started in 1999 to invest in the transition of countries of Central and Eastern Europe in the specific fields of transport and environment.

The projected investments regarding SOP Transport amount to approximately 381 Mio. Euros. This number is not in line with the total amount mentioned in table 12. However, additional fundings such as ISPA or loans from EIB are not listed. Hence, the total costs in table 13 may deviate in comparison with table 12.

11 Non-Governmental Organisations

11.1 NGO's and interest groups regarding to the Danube River Basin in Romania

In the Danube River Basin are several Non-Governmental Organisations (NGO's) active. There is one main umbrella organization for the hole Danube River Basin who has in total more than 88 member NGO's. The Danube Environmental Forum or DEF has in Romania alone a total of 8 members[175]:

1. South-West Romania Association
2. UNESCO Pro Natura Ecological Club
3. Silvanus Ecological Association
4. Mountain Tourism and Ecology Association "SPEO-ALPIN MH"
5. Romanian Ecological Action
6. ECO Counselling Centre Galati
7. Environmental Experts Association
8. Hobby Club Jules Verne

For example the last (no°8) Hobby Club Jules Verne is part of the DEF umbrella organisation and it has several tasks[176]:

- They identify the areas, make an evaluation of the pollution in concordance with the national and World Ecosystems Database (WED) norms and announce it to the population from the area.
- The WED norms are correct but heavy to apply in Romania; the Government doesn't recognize that those areas are polluted because all mining activities were abandoned from the Russian until now. They work together with many NGO like: DEF, Sud-Vest Dr.Turnu Severin (South – West Dr. Tr. Severin); CAR (Centre for Rural Assistance Romania), Timisoara; CESO Canada (Canadian Executive Services Overseas) and Governmental Institutes: CNCAN (The National Commission for the Nuclear Activities Control) and City Halls. They cooperate with Universities from Romania: Polytechnic University, West University and Agricultural Sciences from Timisoara, "Lucian Blaga" University in Sibiu and Universities from others Countries: Larenstein University the Netherlands, Fraunhofer Germany, Saskatchewan Canada, …
- They have to adopt and respect the Norms.
- They have many scientific researches publishing:
    a. Scientific research published in Scientific Bulletins

[175] Toth V., *pers. comm.* 2009

[176] Golosie M., *pers. comm.* 2009

b. Students, master and doctor degree which finished them license thesis and other which will finish them studies,
c. Scientific reports sent to the local and governmental authorities
d. TV and Radio Shows and articles in the written mass-media

- ECO Sud – Vest România is a NGO from Sud-Vest Dr.Turnu Severin a city on the left banks of the Danube near the Iron gate. Their work is more in the social sphere, it encourage participation[177].
- CAR is a NGO of Timisoara, the homepage of the Policy Documentation Centre (PDC) describes that CAR is focuses on the participation of voluntary civilians in the political implementation of several projects. For example they highlight important topics as: the Ukraine build a canal to connect the Black Sea with the Danube, without considering the alternatives.

In total there are 34 NGO's in one or the other way involved in the Danube basin in Romania. The communication between the different NGO's is in most cases not optimal. There is much communication over telephone, but less by email. If the communication by e-mail improves, it will have a positive effect on the collaboration.[178]

11.2
Cross boundary NGO's in the Danube River Basin

International NGO's participate on a broader scale going cross boundaries including the hole basin. In the past there have been several steps taken to improve the communication between several NGO's that are active in the Danube River Basin. By taken the principle of participation highly in their agenda.[179]

The main international NGO's involved in the Dunabe River Basin are:

- The WWF is an international and one of the bigger organizations involved in the Danube River Basin. The WWF has made several studies about the Danube basin in general and also more specific about the Danube River Delta. It's main goal is to preserve the flora and fauna in the basin and put a stop to the degradation of nature. Over the years the WWF has built a

[177] Open Society Institute Sofia 2006. Methodological and Information Material on Social Civil Society Organizations and NGO Networks in Bulgaria and Romania. 96p, viewed 1 February 2010, p. 25 <http://74.125.77.132/search?q=cache:1fuieODKNHoJ:nextmile.eu/download-file-secure.php%3Ffile%3DKniga_1_ENG_black.pdf+Sud-Vest+Dr.Turnu+Severin+NGO&cd=3&hl=nl&ct=clnk&gl=be>.

[178] Toth V., *pers. comm.* 2009

[179] Wolf AT. & Newton JT., 2007. Case study of transboundary dispute resolution: The environmental program for the Danube River. 11p, 28/02/2010, <http://www.transboundarywaters.orst.edu/research/case_studies/Documents/danube.pdf>. p.4

reputation as a respected critic of some of the European policies, especially its Cohesion Fund, which places an emphasis on improving environmental infrastructures.[180]

- Regional Environmental Centre for Central and Eastern Europe (REC) is an international organisation whose mission is to assist in solving environmental problems. It do so by promoting cooperation among governments, NGO's, businesses and other environmental stakeholders, and by supporting the free exchange of information and public participation in environmental decision making.
- Barbara Gauntlett Foundation is a private NGO accredited to the United Nations Commission on Sustainable Development per the Economic and Social Council document.
- International Union for Conservation of Nature (IUCN) focuses on finding pragmatic solutions to pressing environment and development challenges. The IUCN does this by supports of scientific research, manages field projects and brings governments, NGO's, United Nations agencies, companies and local communities together to develop and implement policy, laws and best practice.

- International Association for Danube Research (IAD) is a legal organisation containing 13 member countries and 12 experts groups covering all water-relevant scientific disciplines[181]. The IAD focusing on promoting and coordinating activities in the fields of limnology, water management, and water protection in the Danube River Basin[182].

The Environmental Program for the Danube River Basin is a strategic plan to protect the environmental status of the Danube Basin. Beside the protection of the Danube Basin on a cross-boundary scale, the program created a Task Force to use participation to assist cooperation. On February 1992 a first Task Force meeting was halt in Brussels where a Program Work Plan was developed and a Coordination Unit created. The Program Work Plan listed a series of actions and activities necessary to strengthen coordination between NGO's and governments involved. Participation was one of the keywords that provided the link between internal politics among different sectors and political constituents within a nation on the one hand and the strength and resilience of an agreement reached in the international realm on the other. This approach should have a positive effect on the environmental values and promote a mix of actions in the public and private sectors.[183]

The Joint statement on inland navigation and environmental sustainability, part of the DRBMP gifs a new integrated planning philosophy for a joint approach. Its aim is to reach a broader acceptance of the ongoing and future planning process. Therefore it tries a interdisciplinary approach from the

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[180] Weale A., Pridham G., Cini M. & Porter M., 2000. Environmental Governance in Europe: an ever closer ecological union. Oxford. P.235-294.p.267

[181] Bloesch J., 2009. The International Association for Danube Research (IAD) portrait of a transboundary scientific NGO. Environ Sci Pollut Res (2009) 16 (Suppl 1):S116–S122

[182] homepage IAD

[183] Wolf AT. & Newton JT., 2007. Case study of transboundary dispute resolution: The environmental program for the Danube River. 11p, 28/02/2010, <http://www.transboundarywaters.orst.edu/research/case_studies/Documents/danube.pdf>. p. 5

beginning with as much as possible stakeholders like the ministries responsible for environment, water management and transport, scientists and experts in river engineering, navigation, ecology, spatial planning, tourism and economics as well as representatives of other stakeholders, such as environmental NGO's and relevant private sector representatives.

There are more and more NGO's that are combining forces to have more influence in order to express their policy. An example of such a joint approach is the agreement of different international NGO's coordinated by the WWF about navigation on the Danube River on a sustainable way. Different international NGO's like: Birdlife International, Bund Naturschutz Bayern, Croatian Society for Bird and Nature Protection, DEF, European Anglers Alliance, European Environmental Bureau, Green Action, Grünes Herz Europas, IAD, Österreichisches Kuratorium für Fischerei & Gewässerschutz, Ribiska Zveza Slovenije, Transport & Environment, Verband Deutscher Sport-Fischer, VIRUS and WWF have agreed on a vision about sustainable use for navigation on the Danube River.[184]

Different NGO's have in overall eleven main topics ware win-win situations could be found. Of great concern is the wider environment, navigation on waterways including port facilities, recreation, drinking water supply, power generation, irrigation, water regulation (regarding to strategic water transfers and impoundment releases), flood protection, land drainage urbanisation and the last there is equally important sustainable human development activities[185].

~~The main Win-win situations are summed beneath,~~

~~1. Wider environment~~

~~2. Navigation including port facilities~~

~~3. Recreation~~

~~4. Drinking water supply~~

~~5. Power generation~~

~~6. Irrigation~~

~~7. Water regulation, subdivided into i) strategic water transfers and ii) impoundment releases~~

~~8. Flood protection~~

~~9. Land drainage~~

~~10. Urbanisation~~

~~11. Other equally important sustainable human development activities~~

[184] NGO, 2009. Save the Danube as a lifeline! - steps towards sustainable navigation, viewed on 8 January 2010, <http://www.wwf.de/fileadmin/fmwwf/pdf_neu/Save_the_Danube_as_a_lifeline_summary.pdf>. p. 2.

[185] Environment Agency River Basin Management Plan 2009, Anglian River Basin District Annex I: Designating artificial & heavily modified water bodies December 2009. p 7.

12 Policy and the Protection of the Danube River Basin

12.1 Political Processes and Perspectives

It was always a hard job for the politics to deal with environmental protection. One reason could be that politics do not plan for a long period of time ahead but for the time of a legislative period. Making the voters happy is the main goal for having the guaranty to be voted again. In this case politics try to deal with things like economy and social issues in which the public is most interested in.

Another reason for that is that the environment does not have such a big Lobby like economical associations do. They do not have the represents on the front to get political power.

But in the last few years something has changed. Topics like the climate change and the damage of biodiversity get more and more attention in the public media. This makes people think about it more deeply and the politics to deal with this. This fact connected with the good work of NGO's makes environmental protection an important point in the political work.

The EU is a significant agent for environmental policymaking and wants to be an example for environmental protection for the world. In order to become a member of the EU means for the member states to give some parts of their authority to her. The EU law is on the top of its hierarchical order. Can member states which are usually bad in environmental issues care for them with this "union concept"? This happens with regulations or directives. When the member states do not respect those they can be charged in front of the European Court of Justice. In this case they usually have to pay compensation and the directive, which usually does not have a direct effect, becomes a directly effective. This means that the directive has to be transformed into national law like it was in this case and does not leave space for interpretation.

This strict jurisdiction is a guaranty for the Union that the member states realize the legal orders.

12.2 Political Environmental Goals and Measures

The EU communicates environmental goals in different ways, for example through the above-mentioned Natura 2000 as backbone of EU nature & biodiversity policy and the shortly noted CAP. The EU uses also legislative acts like the before discussed WFD and the aforesaid directives amongst others.

The long-term goal of the commission is to minimize the pollution of water bodies with nutrient, organic and hazardous substances for achieving good water quality status of water bodies as in chapter 7 and 9 discussed. Some other important goals are the protection and improvement of ecosystems, the support of sustainable water using archiving a good water quantity status and sustainable navigation respecting the environment (chapter 5.2, 7.5, 9.4, 10.2.2 and 10.3).

A helpful EU measure for the protection of water-related ecosystems of the DRB including the Black Sea region is to give a platform for cooperation and management support for water investment project affairs. This platform is the DABLAS Task Force; started in November 2001 and intensified by the EU in April 2007 with the communication of the 'Black Sea Synergy'[186].

The members of DABLAS Task Force are[187]:

- Danube River Basin-Black Sea Countries
- Other EU MS and bilateral donors on facilitation of financing those projects
- The ICPDR
- The Black Sea Commission (BSC)
- International Financing Institutions (World Bank, EBRD, EIB, Council of Europe Development Bank)
- Other Finance Institutions (KfW and Iller Bank)
- Other Regional/international organisations (United Nations Environment Programme (UNEP), UNDP, REC)
- The EC

The aim of the cooperation is to optimise available financing and to find synergies between the different regional objectives and strategies to define common goals to be realised in cross-countries collaboration and to evaluate the priority of water and waste water investment projects. To be successful in such a complex challenge means also to be effective. The group wants to coordinate well all financial instruments and so the project management too. The Task Force developed and updates regularly the "Good Practice in Project Preparation" guidance in all DABLAS languages. An interactive database tool is provided to help making decisions which remaining investment needs and policy measures should be support next. This is also attractive for donors and investors. DABLAS takes care of identifying links between their processes and the WFD. As other DRB countries also Romania got direct investment support for projects.[188]

12.3 Competent Authorities for Water Management and International Agreements in Romania

The competent authorities in Romania regarding the DRBM Plan are the Ministry of Environment (chapter 10) and the national administration "Apele Romane" (chapter 4.1.1)[189]

[186] Cf. EU IP/07/486 (2010), 'Black Sea Synergy'
[187] Cf. DABLAS Task Force Secretariat (2008), p. 3
[188] Cf. DABLAS Task Force Secretariat (2008)
[189] ICPDR (2009a), DRBM Plan (Annex1), p.2

12.3.1 International Commission for the Protection of the Danube River

As all over this report mentioned the ICPDR has a most important role and responsibility for the protection of the Danube river basin. The fundament of ICPDR activities is the DRPC (chapter 7.1). Regarding transboundary water management and the cooperation between the DRB countries the DR Protection Convention is the mayor legal instrument of its kind. [190]

The ICPDR was founded 1998 and since then its ambition is to reach and to conserve healthy water bodies and river basin systems, reducing flood damage till cero and for this it expedites and prioritises policy agreements, common strategies and joint projects in the entire DRB District.

Table 14: Contracting parties of the DRPC[191]

Contracting Party	Signature	Entry into force
Austria	29.06.1994	22.10.1998
Bosnia and Herzegovina	-	11.07.2005
Bulgaria	29.06.1994	02.08.1999
Croatia	29.06.1994	22.10.1998
Czech Republic	10.03.1995	22.10.1998
Germany	29.06.1994	22.10.1998
Hungary	29.06.1994	22.10.1998
Republic of Moldova	29.06.1994	29.08.1999
Montenegro	-	28.10.2008
Romania	29.06.1994	22.10.1998
Republic of Serbia	-	19.08.2003
Slovakia	29.06.1994	22.10.1998
Slovenia	06.12.1994	22.10.1998
Ukraine	29.06.1994	13.03.2003
European Community	29.06.1994	22.10.1998

The ICPDR is built by 3 columns:

- Ordinary Meeting Group: which takes the political decisions
- Standing Working Group: which provides political guidance
- 7 Technical Expert Groups: are national experts provided by contracting parties and agents of the observer organisations. They have quite different task to do the most important is the implementation of the EU WFD, further tasks amongst others are to allocate technical background papers and to propose policy measures to reduce water pollution. [192]

A Secretariat located in Vienna, Austria supports the work of the ICPDR.

For the WFD implementation regarding transboundary matters the ICPDR has also been nominated as acting platform in 2006. Matters on national level are in national responsibility. Meanwhile the ICPDR is a wanted partner to collaborate with for scientific communities, technical experts, member of civil society, national delegates, NGO's and highest ministerial agents[193] also from Italy, Switzerland, Poland, Albania and the Former Yugoslav Republic of Macedonia[194].

Another very important act of the ICPDR is public relations. The public is a fundament for sustainable water use and water bodies' protection as it is required in the WFD and DRPC[195]. A substantial goal

[190] ICPDR (2010 Feb.28 a), 'About us'
[191] ICPDR (2010 Feb.28 b), 'Contracting Parties'
[192] ICPDR (2010 Feb.28 c), 'Expert Groups'
[193] ICPDR (2010 Feb.28 a), 'About us'
[194] ICPDR (2010 Feb.28 b), 'Contracting Parties'
[195] ICPDR (1994)

for the ICPDR is to realise their work with the public, informing, providing efficient structures and mechanisms for the public participation.

12.3.2 International DRBD Agreements in Romania

The most important international agreements, conventions and declarations regarding the DRBD Romania is participating in are mentioned in this report. They are:

- Lower Danube Green Corridor agreement (chapter 1.3.3)
- World Heritage List under the World Cultural and Natural Heritage Convention (Chapter 1.3.4)
- Ramsar Convention (Chapter 1.3.4)
- DRPC (chapter 7.1 and 12.3.1)
- Bucharest Declaration (chapter 8.1 and 8.7)
- Rio declaration (Chapter 10)
- CITES (Chapter 10.1.2)
- Convention on Biological Diversity (chapter 10.2.4)
- UN Millenium Declaration (chapter 10.2.4)

13 Key-Conclusions

The implementation of the European WFD is a respectable challenge especially for the new EU MS. And the WFD is not the only European directive which had and has to be implemented by the EU MS. Romania has just joined the EU in 2007. This means that there are only 8 years for implementing the demands of the WFD. Furthermore it is the last country before the Danube flows into the Black Sea. This means that Romania's results are highly dependent on the results of the other Danube countries. So Romania is facing high efforts and costs to satisfy the WFD requirements.
There are also conflicts of interests in Romania regarding the fact that Romania has more economical, financial and social problems than the Western European states.
The water authority Apele Romane is responsible for controlling the implementation of the WFD but, however, it takes a lot of time until a water authority can handle such a big implementation itself.

The directive clearly identifies the need for the protection and restoration of wetlands. When dealing with pressures on ecosystem services, the WFD has to take into account other legislations that are in place to protect area's of particular importance for biodiversity such as Natura 2000 or the Flood Risk Management Directive. The main focus has been on the restoration of damaged area's.

According to the EU commission in July 2009, the Romanian Government has reached a satisfactory level regarding the implementation of projects as part of its programmes and strategies (EU Commission, 2009). Various projects have been adopted by the EU Commission to foster sustainable development. At the same time the Commission has requested the Romanian Government to ensure sufficient capacities for financial management and control of its local management facilities. In this regard, the WWF has criticised the Ministry of Environment for its management of protected areas and the ineffective use of funds.[196] For institutions that tried to get access to these funds, the bureaucratic hurdles were simply too high. Due to high corruption going on in Romania, a lot of money that was meant to fund different types of environmental projects "disappeared" or got lost.
With regards to ERDF and CF the EU Commission has asked the Government of Romania to develop new public procurement rules e.g. guidelines on tender evaluations and standardised documentation in order to guarantee compliance with EU legislation. Moreover, the procedures need to be simplified to speed up the process of implementation. As a matter of fact, this issue has been addressed by the Romanian Government through various laws. Nevertheless, the Romanian Government is obliged to improve measures and strategies to achieve sustainable development.[197]

Without doubt, Romania and the other Danube countries have already accomplished a respectable part of the WFD assessment requirements, but the assessments systems must be still improved and harmonised. Special attention is needed for the following subjects:

- Quality assurance & control for monitoring systems must be enhanced

[196] http://www.panda.org/?175641/Money-woes-threaten-Romanian-protected-areas

[197] http://www.mdgmonitor.org/country_progress.cfm?c=ROM&cd=642

- Knowledge of impact from certain substances
- Monitoring by higher density of sites, frequency and completeness of samplings
- Analytical and legal instruments for obligatory measurements

Further urgent points are the significant water management issues. They must be better traced and as far as possible eliminated. In particular the sector of waste water management, the industry like metallurgy and mining, agricultural and the navigation sector have to improve there process in a sustainable manner respecting the environment.
The EU has to invest an extra effort to support capacity building and institutional strengthening, but the EU MS can't reach alone the WFD goal.

Participation is one of the keywords for the NGO's to get as much support as needed. The Environmental program for the Danube River is the first international body to use NGO and public participation throughout the planning process on a basin scale[198]. By doing so it hopes to preclude future conflict both within countries and, as a consequence internationally[199].
The most important problems national NGO's are facing:

- Coordination
- More and easier communication, both towards NGO's aligned and to institutions and governments
- Participation
- Supports by funding

Warburton [200] says in his book "Community and sustainable development: participation in the future" that participation and sustainable development helps to extend democracy, citizenship and accountability. Addition Warburton [201] also considers the role of science and expert knowledge in setting and achieving appropriate goals for development, and describes how participatory initiatives can inspire sustainable action on poverty and social inclusion. Therefore the book provide the basic message that sustainable development recognizes the need to conserve environmental resources, and also supports and builds the human resources through which the future will be realised, by ensuring that local people will be able to participate in the decisions and activities which affect their living environment [202].

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[198] Wolf AT. & Newton JT., 2007. Case study of transboundary dispute resolution: The environmental program for the Danube River. 11p, 28/02/2010, <http://www.transboundarywaters.orst.edu/research/case_studies/Documents/danube.pdf>. p.5.

[199] Wolf AT. & Newton JT., 2007. Case study of transboundary dispute resolution: The environmental program for the Danube River. 11p, 28/02/2010, <http://www.transboundarywaters.orst.edu/research/case_studies/Documents/danube.pdf>. p.6.

[200] Warburton D. 1998. Community and sustainable development: participation in the future. Earthscan Publications Ltd p.65.

[201] Warburton D. 1998. Community and sustainable development: participation in the future. Earthscan Publications Ltd p.67.

[202] Warburton D. 1998. Community and sustainable development: participation in the future. Earthscan Publications Ltd p.67.

The WFD braves all these problems, high costs and enormous efforts as it provides an absolute necessary new water framework for integrated RBM to protect the environment and to enable sustainable development.

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Borchardt, D et.al. (2005), Borchardt, D., U. Bosenius, R-D. Dörr, H-P. Ewens, C. Friedl, U. Irmer, H. Jekel, L. Keppner, V. Mohaupt, S. Naumann, B. Rechenberg, J. Rechenberg, S. Richter, W. Rohrmoser, T. Stratenwerth, J. Willeke, and R. Wolter, 'Water Framework Directive - Summary of River Basin District Analysis 2004 in Germany', Berlin (DE) Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Public Relations Division, 2005.

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Golosie Mircea, *pers. comm.* 14/12/2009. NGO Hobby Club Jules Verne (HCJV). President Buzias, Romania e-mail: Julesvernero@yahoo.com

Toth Viktoria, *pers. comm.* 30/11/2009. Danube Environmental Forum (DEF). Secretariat H-6500 Baja, Déry sétány 13. III./4. Fax: +36-79-525-163 e-mail: def@baja.hu or danubeforum@gmail.com

Acknowledgment

Specific contributions to the document have been provided by:

Birgit Vogel	ICPDR Member: Technical Expert on River Basin Management
Igor Liska	ICPDR Member: Technical Expert on Water Quality
Liviu N. Popescu	Department Head of Water Quality Monitoring and Data Management Department from ICIM Bucharest Chairman of MA/EG of ICPDR

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