

# Water Quality Management in the Danube and Black Sea Region – Policy and Implementation

Wasserqualitätsmanagement in der Region Donau – Schwarzes Meer:  
Strategien und Umsetzung

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## 1 Danube – Black Sea Basin – the most international basin

The Black Sea is the world's most isolated sea – connected to the Oceans via the Mediterranean Sea through the Bosphorus, Dardanelle and Gibraltar straits and with the Sea of Azov in the northeast through the Kerch Strait. The catchment area is 6 times greater than the surface area of the Black Sea.

The Black Sea is up to 2212 metres deep and receives the drainage from a 2 million square kilometre basin.

Every year, about 350 cubic kilometres of river water pour into the Black Sea from an area covering almost a third of continental Europe and including significant areas of seventeen countries: Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Germany, Hungary, Moldova, Serbia und Montenegro, Slovakia, Slovenia, Romania, Russia, Turkey, Ukraine. Europe's second, third and fourth rivers: the Danube, Dnipro (Dnipro) and Don via the Sea of Azov, together with Rioni, Kodori, Inguri Chorokh, Kizilirmak, Yeshilirmak, Sakarya, Southern Bug and Dnister, all flow into the Black Sea.

Its only connection to other marine water bodies is through the winding Istanbul (Bosphorus) Straits, a 35 km natural channel, as little as 40 metres deep in places. The Istanbul (Bosphorus) Straits has a two layer flow, carrying about 300 cubic kilometres of seawater to the Black Sea from the Mediterranean along the bottom layer and returning a mixture of seawater and freshwater with twice this volume.

The shelf occupies a large area in the north-western part of the Black Sea, where it is over 200 km wide and has a depth up to more than 150 meters. In other parts of the sea the shelf has a depth of less than 100 m and a width of 2.2 to 15 km. Near the Caucasian and Anatolian coasts the shelf is only a narrow intermittent strip in the upper layer. For this reason, the Black Sea is very vulnerable to pressure from land

based human activity and its health is equally dependent from the coastal and non-coastal states of its basin.

The Danube River is 2778 km long (from confluence of the Breg and Brigach) and drains 817,000 km<sup>2</sup> with a mean annual water volume of 6550 m<sup>3</sup>/s discharged into the Black Sea. Out of the 18 countries in the Danube River Basin, 13 countries have substantial territory within the basin. The basin area includes all of Hungary; nearly all parts of Austria, Romania, Slovenia, Slovakia and Serbia and Montenegro; significant parts of Bosnia – Herzegovina, Bulgaria, Croatia, the Czech Republic, Moldova and small parts of Germany and Ukraine. Switzerland, Italy, Poland, Macedonia and Albania have areas smaller than 2000 km<sup>2</sup>.

The Danube River was always the most important European River, providing the basic necessities for human life. From its source to mouth the Danube River and its tributaries serve as a resource for different water uses, like drinking water supply, industry and energy production, transport, irrigation in agricultural areas, waste water recipient, etc. In addition to that the Danube River and its basin together with the delta is an area of high biological diversity that is not only important for such activities like tourism, fishery and forestry, but it is also a home for large amount of animal and plant species.

The protection of the Danube became an issue over past years. The economic development in the Danube region brought not only improvement of quality of life but also threat to the environment and to the river. Increase of industrial activities, extensive agriculture, growing municipal communities, all are potential sources of pollution if not properly managed and can have a negative impact on functions of the river, water quality, water uses, e.g. water supplies for inhabitants, aquatic life, etc. In particular, pollution by nutrients and toxic substances becomes a serious problem, since it is affecting not only the Danube but also the Black Sea.

### **The social and economic context in the Danube – Black Sea Basin**

The Danube River Basin is characterised by significant regional social and economic disparities. Countries with economies in transition are in particular situation since they need to comply with EU directives and policies in short and mid term horizon. The analysis of economic disparities shows a clear trend of a west – east decline of the GDP from the upstream countries like Germany and Austria, with about 26,000 euro per capita and year (in 2002), to the downstream countries with about 2,000 euro per capita and year.

In the Black Sea Basin, the analysis of economic data shows a positive trend of stable growth of GDP in six the Black Sea riparian countries. In 2002 the annual growth of GDP in these countries in year 2002 was 4.3 % for Bulgaria, 5.4 % for Georgia, 4.3 % for Romania , 4.3 % for Russian Federation, 7.8 % for Turkey and 4.5 % for Ukraine (Source: The World Bank Group).

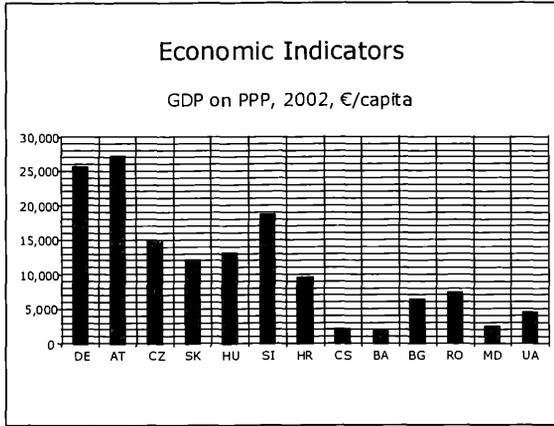


Fig. 1

From another perspective the middle and downstream Danube countries in transition as well as the countries of the Black Sea region are facing serious economic and financial problems in responding to the objectives of the Danube and Black Sea Protection Conventions and to implement measures for pollution reduction and for environmental protection as required for the accession to the European Union.

This shows the need to assist these countries and makes evident the responsibilities of the international community to respond to the regional and global concerns of environmental protection.

## 2 Cooperation for Pollution Control in the Danube – Black Sea Region

### 2.1 Strategic Partnership

In 2002 GEF launched its largest project in the area of International Waters – GEF Strategic Partnership for the Danube and Black Sea, with 95 Million USD grant for period 2001–2007.

16 nations of the Danube – Black Sea region requested GEF and its Implementing Agencies to initiate this Partnership consisting of capital investments, economic instruments, development of environmental policies and legal instruments, strengthening of public participation, and monitoring of trends and compliance, all measures for pollution control and nutrient reduction over the period of 2001 to 2007 for the countries of the Danube-Black Sea basin.

The Danube-Black Sea Basin Strategic Partnership was also established as part of a test, responding to Objective 8.5(e) of GEF's Operational Programme 8, to determine if GEF can serve as a catalyst in leveraging policy, legal, and institutional reforms and priority investments for reversing degradation of a damaged marine ecosystem and its contributing freshwater basins. The 16 countries in the Black Sea drainage basin share a variety of environmental problems that are largely transboundary in nature. Through GEF and donor involvement since 1992 in the region, the countries determined that excessive releases of nutrients (Nitrogen and Phosphorus) from agricultural, municipal, and industrial sources is the highest priority transboundary water issue.

The long-term objective is for all Black Sea basin countries to take measures to reduce nutrient levels and other hazardous substances to such levels necessary to permit Black Sea ecosystems to recover to similar conditions as those observed in the 1960s. The intermediate objective of the Partnership includes the implementation of urgent control measures by all countries in the Black Sea basin to avoid that discharges of nitrogen and phosphorus to the Black Sea exceed those levels observed in 1997. Through the formulation process, six objectives with indicators of success were adopted by the 16 nations for this Strategic initiative for the duration of the Partnership.

The Partnership represents the GEF's commitment to assist the 14 recipient countries (Bosnia and Herzegovina, Croatia, Czech Republic, Slovenia, Slovakia, Serbia and Montenegro, Hungary, Romania, Moldova, Ukraine, Bulgaria, Russian Federation, Georgia, Turkey) in the basin addressing, as the highest transboundary priority, nutrient reduction. The GEF assistance is designed as three complementary components:

- The GEF Black Sea Ecosystems Recovery Project implemented by UNDP, with the assistance of UNEP and in cooperation with the BSC;
- The GEF Danube Regional Project implemented by UNDP and in cooperation with the ICPDR; and
- The GEF/World Bank Partnership Investment Fund for Nutrient Reduction focused on country nutrient reduction investments.

Over the period of 2001–2007, the Partnership aims at catalysing capital investments, economic instruments, development and enforcement of environmental law and policy, strengthening of public participation, and monitoring of trends and compliance for the 16 countries of the Danube/Black Sea basin.

Recognizing that eutrophication is a pressing ecological threat to the fragile Black Sea ecosystem and that the Danube is a major nutrient source for the sea, the Black Sea Commission and the International Commission for the Protection of the Danube River decided to join efforts to reduce inputs from the Danube and protect the Black Sea from further degradation, by signing a Memorandum of Understanding in November 2001, to expand their commitment for collaborative action.

### **Objectives of the Strategic Partnership**

- Adopting and implementing of new policies, institutional and regulatory measures for nutrient reduction,
- Implementing investment projects for water pollution reduction,
- Capacity building for water pollution management including monitoring systems,
- Adopting of legal mechanisms at national and regional level (Conventions) to control nutrient releases to the Black Sea,
- Reinforcing international cooperation for nutrient reduction measures,
- Implementing pilot project for nutrient reduction with active involvement of stakeholders.

#### **2.1.1 Danube Regional Project**

UNDP, with support from the Global Environment Facility (GEF), has been working to address priority environmental problems in the Danube since 1992. Together with EU through its PHARE and TACIS Programmes, have provided since 1992 in the frame of the Danube Environmental Programme and Pollution Reduction Programme, international assistance to develop appropriate mechanisms and planning tools for the implementation of the Danube River Protection Convention and to prepare for funding pollution prevention and reduction activities required to both restore the Danube River Basin and to protect the Black Sea environment. In this frame, from 1992 to 2000, donor investments can be estimated at about 27 million USD for the EU PHARE and TACIS Programmes. Since 1992 to 2007 about 32 million USD is being provided by the UNDP/GEF. This facilitates the building up of capacities and structures of the ICPDR for joint operation under the Convention.

The Danube Regional Project, launched in December 2001 is the most recent intervention of the UNDP/GEF in the Danube Basin and it is part of the larger GEF Strategic Partnership. The overall objective is to reduce nutrient loadings into the Danube River and its tributaries, in order to improve water quality in the Danube, and in the Black Sea.

The Danube Regional Project is closely working with the International Commission for the Protection of the Danube River and complementing its activities required to strengthen a regional approach for solving transboundary problems. This includes the development of national policies and legislation, the definition of priority actions for pollution control, especially nutrient reduction, as well as the achieving of sustainable transboundary ecological conditions within the Danube River and the Black Sea Basin area.

The project supports the intermediate goal of the Commissions for the Danube and Black Sea to reduce nutrient and toxic loads to the Black Seas to mid-1990s levels, and their long-term goal to reduce nutrients and toxic substances to the levels necessary to allow Black Sea ecosystems to recover to conditions in the 1960s.

### **Activities of the Danube Regional Project**

- Strengthening Institution(s) – regional level (ICPDR), national level, other stakeholders;
- Improving Management Tools – river basin management, Danube GIS, economic instruments;
- Developing Policies – agriculture, industry, land-use and wetlands, phosphate detergents;
- Promoting Public Participation – NGO strengthening, Small Grants Programme, public participation and access to information;
- Implementing Pilot Projects – river basin management, agriculture, wetlands.

There are two main approaches of the project to implement its activities and achieve its goals. Those are:

- Support the ICPDR and its Contracting Parties, through strengthening the ICPDR Structures, activities and policy development;
- Strengthen public involvement in addressing key environmental problems through supporting the NGOs (Danube Environmental Forum network), public awareness activities, communication strategy, small grants programme and access to information.

## 2.1.2 Black Sea Ecosystems Recovery Project

Initial GEF efforts on Black Sea ecosystem protection date from 1993, when the Black Sea Environmental Programme (BSEP) was launched. The BSEP provided an important function of making the various interventions coherent and comprehensible to the public and to the governments. It is also attracted donor interest to the increasingly popular cause of 'Saving the Black Sea', to which the BSEP label became closely associated. Under BSEP a series of background studies have been completed, and a Transboundary Diagnostic Analysis was finalised in June 1996. On the basis of this comprehensive report, government officials negotiated the Black Sea Strategic Action Plan (BS-SAP), signed on 31<sup>st</sup> of October 1996, during the Ministerial Conference in Istanbul.

In the period 1997–1999, National Strategic Action Plans were developed and implemented with the help of funding from the regional GEF intervention. GEF support also enabled completion of reviews of the current legal, policy and institutional provisions for limiting nutrient discharges to the aquatic environment at the national level in the year 2000. This latest effort, commencing in 2002, is linked under the GEF Danube-Black Sea Strategic Partnership, together with the Danube Regional Project (UNDP), and the Investment Fund for Nutrient Reduction (World Bank).

The Black Sea Ecosystems Recovery Project, launched in 2002 is continuation of the GEF support provided to the Black Sea Region. The project assists and reinforces the structures and the activities of the Black Sea Commission as well as to reinforce at the national level the development of legal and institutional instruments and investment programmes for:

- pollution control,
- rehabilitation and sustainable management of coastal and marine ecosystems,
- dissemination and replication of successful measures for coastal zone management,
- protection of habitats and marine ecosystems and
- sustainable exploitation of resources.

### **Activities of the Black Sea Project**

- Supporting the consolidation and operation of institutional mechanism for cooperation under the Black Sea Convention;
- Development of policy guidelines, legal and institutional instruments for nutrient reduction from LBA, and protection of ecosystems of the Black Sea and its coastal zones;

- Development of economic instruments and promotion of investment opportunities in coastal zones for pollution control and protection of Black Sea ecosystems;
- Development of operational systems for monitoring, information management and research under the Black Sea Convention;

Strengthening of public participation in environmental protection through access to information, stakeholder training and awareness raising and Small Grants Programme.

### 2.1.3 World Bank Investment Fund for Nutrient Reduction

The GEF/World Bank Investment Fund for Nutrient Reduction (IFNR) is an integral part of the Partnership, focusing on key projects in the region and is actively engaging other stakeholders, including national and local governments, EU assistance programmes (PHARE, ISPA, CARDS, TACIS, CADSES), and International Funding Institutions in co-financing nutrient reduction centred interventions.

14 countries of the Black Sea and Danube Basin are eligible for GEF funding under the Investment Fund. These are, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Moldova, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia, Turkey and Ukraine.

The IFNR portfolio includes 14 projects in 10 of these countries. Six of these projects are under implementation and the rest at various stages of preparation.

The portfolio is well diversified among eligible areas of investment that were specified in the Partnership Framework Brief. Specifically, there are seven Agricultural Pollution Control (APC) Projects (in Croatia, Moldova, Romania, Russia, Serbia and Montenegro, Turkey and Ukraine); one wetland restoration project (in Bulgaria), one ICZM project (in Ukraine), and five municipal wastewater treatment projects (in Hungary, Bosnia, Moldova, Russia and Ukraine). It should also be noted that some of the projects include more than one eligible element. For example, the Moldova Agricultural Pollution Control Project and the Serbia Enterprise Pollution Reduction Project also support investments for reducing nutrient discharges from agro-industrial enterprises, such as slaughterhouses and meat-processing facilities, in addition to proper farm nutrient management. Furthermore, the Hungary Nutrient Reduction Project will support the restoration of wetlands in the Danube-Drava National Park Gemenc of the Beda-Karapancsa Region. This reflects the IFNR's flexible nature that allows for tailoring project interventions to each country's specific conditions with respect to nutrient pollution.

## Partnership Investment Fund Projects

Title	GEF Grant	Co-Funding Leveraged	Ratio GEF:Other
<i>Under Implementation</i>			
Romania Agricultural Pollution Control	7.50	5.65	1:1
Bulgaria Wetlands Restoration and Nutrient Reduction	7.50	5.78	1:1
Moldova Agricultural Pollution Control	4.95	5.79	1:1
Turkey Watershed Rehabilitation and APC	7.00	38.00	1:5
Serbia Danube River Enterprise Pollution Reduction	9.02	13.12	1:1
Bosnia Water Quality Protection	4.25	11.4	1:3
<i>Under Preparation</i>			
Hungary Nutrient Reduction	12.50	80.00	1:5
Russia Rostov Reduction of Nutrient Discharges and Methane Emissions	4.00	52.7	1:13
Russia Krasnodar Agricultural Pollution Control	5.00	7.00	1:1
Croatia Agricultural Pollution Control	5.00	30.00	1:6
Moldova Environmental Infrastructure	3.00	10.00	1:3
Ukraine Odessa Wastewater Treatment	6.90	150.00	1:22
Ukraine Integrated Coastal Zone Management	4.00	8.00	1:2
Ukraine Rural Development (APC)	5.00	75.00	1:15
<b>Total</b>	<b>83.27</b>	<b>492.7</b>	<b>1:6</b>

Fig. 2

**Other WB Investments in the Black Sea/Danube Basin.** The World Bank has carried out a variety of investment operations which are not formally in the framework of the Partnership IFNR, either because they became effective before the beginning of the Partnership or they were submitted to the GEF under an operational program other than International Waters. However they either were fully geared towards protection of wetlands and biodiversity in the Black Sea/Danube Basin or include components that target agricultural pollution control. Examples include the Romania Danube Delta Biodiversity Project, the Ukraine Danube Delta Biodiversity Project, the Ukraine Biodiversity Conservation in the Azov-Black Sea Corridor Project and the Georgia Agricultural Research, Extension and Training Project, the Georgia Integrated Coastal Zone Management Project and the Turkey Biodiversity and Natural Resource Management Project.

### 2.2 Danube River Protection Convention

The legal frame for cooperation of the Danube Countries to assure environmental protection of ground and surface waters and ecological resources in the Danube River

Basin is the Danube River Protection Convention (DRPC) which came into force in October 1998.

Contracting Parties to the DRPC are Germany, Austria, Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro, Bulgaria, Romania, Moldova, Ukraine and European Commission.

In order to implement the DRPC, the Danube countries have established the International Commission for the Protection of the Danube River (ICPDR). It is the institutional frame not only for pollution control and the protection of water bodies but it sets also a common platform for sustainable use of ecological resources and coherent and integrated river basin management.

Objectives of the Danube River Protection Convention:

- Ensure sustainable and equitable water management;
- Conservation, improvement and the rational use of surface waters and ground water;
- Control discharge of waste waters, inputs of nutrients and hazardous substances from point and non-point sources of emissions;
- Control floods and ice hazard;
- Control hazards originating from accidents (warning and preventive measures);
- Reduce pollution loads of the Black Sea from sources in the Danube catchment area.

Since its creation, the ICPDR has been effective in reaching agreed policy among countries on priorities and strategies for improving the Danube and implementing the DRPC. This includes improving tools to manage the basin such as the Accident Emergency Warning System, the Trans-National Monitoring Network for water quality and the information system for the Danube (DANUBIS). In effect, it has done much to promote trans-boundary cooperation among numerous countries in a highly complex European region.

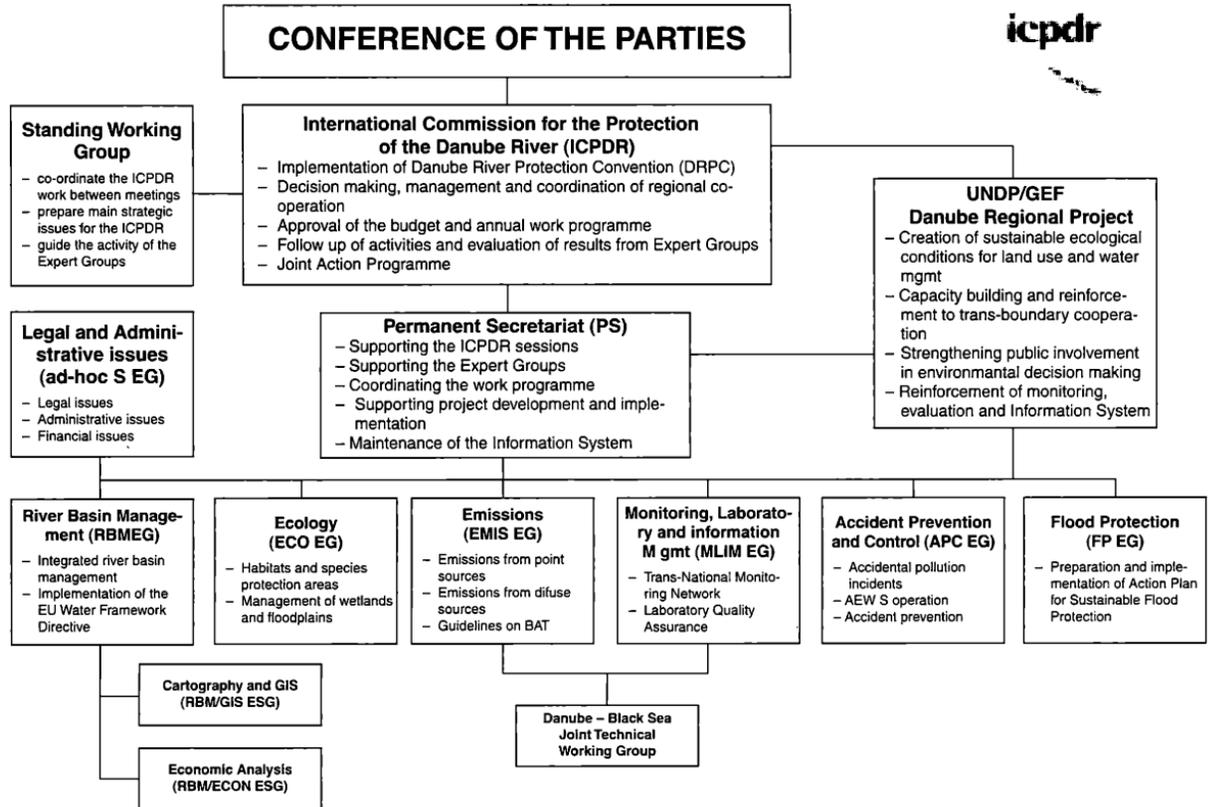
### 2.2.1 Joint Action Programme

#### **Background**

Since 1992 the European Community (PHARE and TACIS programmes) and the UNDP/GEF have supported the efforts of the Danube countries to develop the necessary mechanisms for transboundary cooperation and effective pollution control. This support has enabled the development of a Transboundary Analysis Report

Fig. 3

# Organisational Structure under the Danube River Protection Convention



(TDA) and the elaboration of a regional Strategic Action Plan (SAP). The TDA provided a scientific analysis of the root causes of environmental pollution in the DRB, identifying causes and effects of pollution with particular attention to transboundary issues and nutrient transport to the Black Sea. The Strategic Action Plan provided guidance concerning policies and strategies for pollution reduction and sustainable management of water resources enhancing the enforcement of the DRPC. In the frame of the UNDP/GEF Danube Pollution Reduction Programme (1997–1999) an investment portfolio has been developed with particular attention to nutrient reduction.

Responding to the DRPC requirements, and based on the DPRP results, the ICPDR developed a first Joint Action Programme (JAP) for the years 2001–2005, which was adopted at the ICPDR Plenary Session in November 2000. The ICPDR Joint Action Programme 2001–2005 reflects the general strategy for the implementation of the DRPC for the respective period. The general objectives of the ICPDR Joint Action Program 2001–2005 are harmonized with the three main objectives of the Contracting Parties, laid down in Article 2 of the DRPC:

- shall strive at achieving the goals of a sustainable and equitable water management,
- shall make all efforts to control the hazards originating from accidents ... and
- shall endeavour to contribute to reducing the pollution loads of the Black Sea from sources in the catchment area”

The JAP deals i.a. with pollution from point and non-point sources, wetland and floodplain restoration, reduction and control of priority substances, water quality standards, prevention of accidental pollution, floods prevention and control and river basin management. Particular attention is given to both structural/investment and non structural/policy reforms measures that address nutrient reduction and protection of transboundary waters and ecosystems:

- Coordinating and developing the River Basin Management Plan for the Danube River Basin in implementing the EU Water Framework Directive;
- Maintaining and updating emission inventories and implementing proposed measures for pollution reduction from point sources and non point sources;
- Restoring wetlands and floodplains to improve flood control, to increase nutrient absorption capacities and to rehabilitate habitats and biodiversity;
- Operating and further developing the Transnational Monitoring Network (TNMN) to assess the ecological and chemical quality status of rivers, including establishing respective water quality standards;

- Developing and introducing recommendations on BAT and BEP to assure prevention and/or reduction of hazardous and dangerous substances;
- Operating and upgrading the Accidental Emergency Warning System (AEWS), considering its use also for flood warnings, establishing classified inventories of accidental risk spots and developing preventive measures.

The Joint Action Program 2001–2005 is directed to

- the improvement of the water ecological and chemical status,
- the prevention of accidental pollution events and
- the minimization of the impacts of floods.

The implementation of the Joint Action Program will – in addition to the main objectives

- improve the standard of life,
- enhance economic development,
- contribute to the accession process to the European Union,
- restore the biodiversity, and
- strengthen the cooperation amongst the Contracting Parties.

## **Investments**

In the frame of the ICPDR Joint Action Programme, 243 committed investment projects and strategic measures have been identified out of which 156 are in the municipal sector and only 44 in the industrial sector. This reflects the situation in most transition countries where industries are not operational or using mostly outdated technologies. Most of these projects, listed generally as “hot spots” or point sources of pollution, are representing national priorities and taking equally into account the obligation to mitigate transboundary effects. Particular attention was also given to the identification of sites for wetland restoration, which play an important role not only as natural habitats but also for flood protection and as nutrient sinks.

The total investment foreseen in the JAP period 2001–2005 to respond to priority needs is estimated to be about 4.404 billion €, with 245 priority point source projects mainly being:

- Municipal waste water collection and treatment plants: 3.702 billion €
- Industrial waste water treatment: 0.267 billion €
- Agricultural projects and land use: 0.113 billion €
- Rehabilitation of wetlands: 0.323 billion €

From the total amount of investment of 4.4 billion € for point sources reduction, 3.54 billion € are earmarked as national contributions.

Table 1. Investments per sectors, 2001–2005

	Municipal	Industrial	Agricultural	Wetlands	Total
No of Projects	157	44	21	23	245
MEUR	3,702	267	113	323	4,404
(%)-Structure	84	6	3	7	100

Table 2. Projects and investments per country in the DRB

	DE	AT	CZ	SK	HU	SI	HR
No of Proj.	11	4	12	20	24	24	11
MEUR	231	264	147	118	687	384	433
(%)	5	6	3	3	16	9	10
	BA	CS	BG	RO	MD	UA	TOT
No of Proj.	12	40	21	25	31	10	245
MEUR	176	785	125	493	493	67	4,404
(%)	4	18	3	11	11	1	100

The ICPDR is asked to report on the implementation of the Joint Action Program for the period 2001 to 2003 in 2004, and for the period 2001 to 2005 in 2006.

### 2.2.2 Policies

Danube countries face substantial challenges in establishing and strengthening the policy and institutional framework required for functioning market-based and democratic societies. Today, progress can be reported with all Danube countries in redesigning policies, programs and regulations, in establishing appropriate incentive structures, re-defining partnerships with stakeholders, and strengthening financial sustainability of environmental services. Following a challenging and demanding period of transition, all DRB countries have in the last years developed a comprehensive hierarchic system of short, medium and long-term environmental policy objectives, strategies and principles which reflect the political context of each country, key country-specific environmental problems and the sector priorities on national and regional levels.

Still the key challenge Danube countries face in the policy field is to identify the most effective ways of transposing EU environmental directives. Country's choice on

how to achieve compliance with EU directives will have a significant influence on compliance costs.

In all DRB countries the legal framework for environmental management of water resources and ecosystems consists of a hierarchic system of decrees, laws, directives, ordinances, regulations and standards on different administrative levels. In addition to the WFD, there has been a high level of transposition of the EU Directives into the national legislations of the DB countries. The Urban Wastewater Treatment and IPPC Directives are considered as the most challenging areas for compliance. This is reflected in the negotiated derogation periods and agreed long transition periods.

All DRB countries currently have a more or less comprehensive system of environmental and water sector-related policies and strategies, which usually reflects:

- the capability of the country to contribute to the solution of transboundary problems;
- the significance and evidence of country-specific environmental problems;
- the significance and evidence of environment-related health hazards;
- the economic development and potential of the country.

Despite the diversity of problems, interests and priorities across the basin, the Danube countries share certain values and principles relating to the environment and the conservation of natural resources.

The key principles for water management and water pollution that have formed the basis for the revision of legal and institutional arrangements adopted by Danube countries include:

- Consider water as a finite and vulnerable resource, a social and economic good;  
Use of the integrated river basin management approach;  
Implement precautionary principle;
- Introduction and use of BAT, BAP and BEP;
- Control of pollution at the source and creation of cleaner production centres;
- Apply polluter pays principle and the beneficiary pays principle;
- Implement principle of shared responsibilities, respectively the principle of subsidiarity;
- Use market based instruments;  
Implement good international practices in managing environmental expenditures;
- Strengthen international partnership and transboundary cooperation.

Long-term objectives of water policies in the DRB countries mainly focus on:

- Preservation of a sound environment for the future generations;
- Protection of biological diversity;
- Protection of drinking water resources.

### 2.2.3 Status of Legislation Dealing with Water Management

Countries in the DRB have increasingly recognized that developing and implementing regulation (at the national, regional and local level) is a precondition for effectively responding to a range of key challenges. Further assistance and efforts are still needed to building institutional capacity at central and local government level to address the broad challenges of legal reforms.

The water legislation was amended, or is under revision, according to the EU Directives in most of the countries. The water sector-related policies and strategies reflect:

- country's commitment to respond to EU requirements and international agreements obligations,
- the need to incorporate general principles for sustainable development, environmental, economic and social concerns into the national development strategies,
- capability of the country to contribute to the solution of transboundary problems,
- the significance and evidence of country-specific environmental problems.

A fundamental objective of regulatory reforms in the Danube countries is to foster high quality regulation that will improve the efficiency of national economies and environmental actions, and will eliminate the substantial compliance costs generated by low quality regulations. By helping countries to revise their legal and institutional arrangement, the ICPDR has contributed to long-term economic prosperity and increased opportunities for investments to reduce pollution and protect natural resources. The following table gives an overview of implementation of water related legislation in the DRB countries. Legislation of Germany and Austria is in full compliance with the EU Directives.

Table 3. Status of water-related policy, programmes and National Environmental Action Plans in the DRB countries

Country	Explicitly formulated policy objectives for water management and pollution control	Programmes especially dealing with water management and pollution control	Programmes dealing with WFD implementation
DE	Appropriate system of policy objectives completely in line with the requirements of the relevant EU Directives	Action Programs Environmental Statute Book	Strategy for WFD implementation
AT	Appropriate system of policy objectives completely in line with the requirements of the relevant EU Directives Austrian Water Protection Policy Water Right Act	Action Programme to control diffuse pollution Austrian Programme of Environmental Friendly Agriculture	Strategy for WFD implementation
CZ	Appropriate system of policy objectives	Program for adequate implementation of municipal WWTPs	The State Environmental Policy 2004–2010 Resolution 339, 2004
SK	Satisfactory system of policy objectives in the Strategy for National Environmental Action Program, 1993; National Strategy for Sustainable Development, 2000 and Water Management policy	National Environmental Action Program Codex of Good Agricultural Practices State Water Protection Plan Action Plan for the protection of biological and landscape diversity	Strategy for WFD implementation Inter sectoral Strategic Group Coordinating office Working Groups
HU	Appropriate system of policy objectives	National Environmental Program National waste water collection and treatment programs National agro-environm. protection program Other programmes (lake, oxbow lake, low land, etc.)	Strategy for WFD implementation
SI	Satisfactory system of policy objectives	National Environmental Action Plan, 1999 New Environmental Action Plan in preparation Operative program for wastewater collection and treatment	Strategy for WFD implementation
HR	Satisfactory system of policy objectives in the current legislation:	State Water Protection Plan Strategy and Action Plan	Strategy for WFD implementation

Country	Explicitly formulated policy objectives for water management and pollution control	Programmes especially dealing with water management and pollution control	Programmes dealing with WFD implementation
	National Strategy for Environmental Protection, 2002 State Water Protection Plan, 1999 Environmental protection Plan Nature Protection Act, 1999 Water Act, 1995		
BA	Limited number of policy objectives	EU CARDS Program USAID, WB, GEF programmes National Environmental Action Plan, 2003	New Water Law in line with WFD, expected 2005
CS	Insufficient system of policy objectives and focussed programs	No explicit programmes	Harmonisation with EU legislation
BG	Satisfactory system of policy objectives	Environmental Strategy to implement ISPA objectives Program for UWWT Directive implementation National Strategy for Management and development of the water sector until 2015 Programme for construction of munic WWTPs	Strategy for WFD implementation
RO	Satisfactory system of policy objectives	National Environmental Action Plan Strategy for environmental protection Strategy for water resources management Series of nutrient-related programmes to be carried out during the forthcoming period Action program for reduction of pollution due to dangerous substances	Strategy for WFD implementation
MD	Reduced policy objectives. National Strategy for sustainable development, 2000 Concept of the Environmental Policy, 2001	National Water resources management Strategy, 2003 Water Supply and Sewage program, 2002 National Action Plan on Health Environment, 1995	Strategy for WFD implementation
UA	Under the revision system of policy objectives within the frame of the update version of the Sustainable Development Strategy	Program of the Development of Water Economy Governmental Action Plan	Water Code of Ukraine harmonized with EU Directives (expecting approval)



Country/ Directive	Water Framework	Dangerous Substances	Integrated Preven- tion and Pollution Control	Seveso	Environmental Impact Assessment	Environmental Management and Audit Schemes
Romania	Partially implemen- ted using as future framework for nation- al legislation	Partially implemen- ted using as future framework for nation- al legislation	Partially implemen- ted using as future framework for nation- al legislation	Partially implemen- ted using as future framework for nation- al legislation	Transposed and sub- stantially implemen- ted in National Legislation	Partially implemen- ted using as future framework for national legislation
Serbia – Monte- negro	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to trans- pose the EU directive	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive
Slovakia	Transposed and sub- stantially implemen- ted in National Legislation	Fully implemented in National Legis- lation	Fully implemented in National Legis- lation	Fully implemented in National Legis- lation	Fully implemented in National Legis- lation	Fully implemented in National Legislation
Slovenia	Transposed and sub- stantially implemen- ted in National Legislation	Fully implemented in National Legis- lation	Fully implemented in National Legis- lation	Fully implemented in National Legis- lation	Fully implemented in National Legis- lation	Fully implemented in National Legislation
Ukraine	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive	Not implemented and changes not planned to transpose the EU directive

## 2.3 Convention on the Protection of the Black Sea Against Pollution

The Black Sea Commission (BSC) is the body established under the Convention on the Protection of the Black Sea Against Pollution. The BSC contracting parties are: Bulgaria, Romania, Ukraine, Russian Federation, Georgia, and Turkey. Each of the Black Sea countries has a legal and institutional framework sufficient to enable its full participation, and has expressed its written commitment to make its own infrastructure and resources available for project implementation.

The countries have agreed to support the Secretariat of the Black Sea Commission with cash and in kind contributions. Georgia has yet to fulfil their financial contributions to the BSC. A strategy for securing contribution for the BSC is under development.

An Advisory Board composed of selected scientists both international and from the Black Sea riparian countries was established by the BSERP to prepare and execute the research program within activities of the International Study Group (ISG). Phase II of the BSERP includes further research activities, development of a comprehensive monitoring program based on relevant chemical and biological indicators, and establishment of an emissions/state database for point and non-point pollution sources within the coastal zone; these represent significant progress towards establishment of both stress reduction and environmental status indicators.

The Convention and its three Protocols were adopted by the Diplomatic Conference on the Protection of the Black Sea against Pollution held in Bucharest on 21 April 1992, and deposited with the Government of Romania.

Basic objectives of the Convention are:

- To prevent pollution by hazardous substances or matter;
- To prevent, reduce and control the pollution from land – based sources;
- To prevent, reduce and control the pollution of the marine environment resulting from emergency situations;
- To prevent, reduce and control the pollution by dumping;
- To prevent, reduce and control the pollution caused by or connected with activities on the continental shelf, including exploration and exploitation of natural resources;
- To prevent, reduce and control the pollution from or through the atmosphere;
- To protect the biodiversity and the marine living resources;
- To prevent the pollution from hazardous wastes in transboundary movement and the illegal traffic thereof;
- To provide framework for scientific and technical co-operation and monitoring activities.

The name “Bucharest Convention” actually refers not only to the framework convention itself, the Convention for the Protection of the Black Sea, but also to its five Resolutions, and three Protocols: the Land-Based Sources Protocol, the Emergency Response Protocol, and the Dumping Protocol.

The Convention, as well as the Land-Based Sources Protocol and the Emergency Response Protocol, entered into force on 15 January 1994, in accordance with Art. XXVIII of the Convention, i.e. sixty days after their fourth ratification.

In order to support the Black Sea Commission with the best possible advice and information on topics which are key to the implementation of the Convention and of the BS-SAP, Advisory Groups and Activity Centers have been designated to work under the coordination of the Permanent Secretariat. The GEF Intervention in the area was the engine for action in the Black Sea region.

### **LBA Protocol and ICZM**

A revised Land-Based Activities (LBA) Protocol to the Black Sea Convention, developed by the BSERP with support from UNEP/GPA, was approved by the BSC in November 2004 and submitted for national consultations. The Commission also approved the Work Program to Enhance the Implementation of the Black Sea LBA Protocol Taking into Consideration the GPA Objectives.

Integrated Coastal Zone Management (ICZM) policies for the Black Sea were developed in 1999 with GEF support. Based on this effort in 2003–2004 a Regional Strategy on ICZM for the Black Sea Region was developed with support from the EU TACIS program. A draft of the Black Sea ICZM Strategy has been approved by the BSC in November 2004. The ICZM policies are valid, and an operational plan is a part of the BSERP.

Additionally, a new Fisheries Convention (or a legally binding document/protocol to the existing Convention) is being negotiated between all six Black Sea countries.

## **2.4 Danube – Black Sea Memorandum of Understanding**

Memorandum of Understanding on Common Strategic Goals is the main mechanism for cooperation between the BSC and ICPDR and constitutes a cornerstone in propagating nutrient reduction protocol among the participating countries.

The MoU objectives are following:

- Long-term goal: to permit Black Sea ecosystems to recover to conditions observed in 1960s;

- Intermediate goal: to avoid nutrients load exceeding those in the mid of 1990s;
- Harmonization of standards to assure comparable assessment;
- Assessment and reporting on ecological status and input loads;
- Adoption of strategies for pollution reduction while assuring economic development in the region;
- Analysis of results achieved by 2007 and review of measures to achieve the long term goal.

## **2.5 Danube – Black Sea Joint Technical Working Group**

The Danube-Black Sea Joint Technical Working Group (JTWG), formed to facilitate implementation of the Memorandum of Understanding between the BSC and ICPDR, has agreed upon ecological status indicators and reporting formats, taking into account implementation of the EU WFD in coastal waters.

Work Programme:

- Assessment of existing monitoring systems (BSC area);
- Development of monitoring programme (BSC area);
- Development of ecological status indicators (BSC area);
- Assessment of pollution (causes) in the BSC area and of the ecological status of the Black Sea;
- Development of reporting formats;
- Recommendations to limit discharge of nutrients and hazardous substances;
- Assessment of impact of pollution from the Danube on the Black Sea North-Western Shelf;
- Evaluation of data needed from the Danube basin.

The shallow water ecosystem in the North Western Black Sea shows a positive development. The development of phytoplankton blooms observed from ocean colour registering satellite sensors has decreased during the last years compared to the extension of strong phytoplankton blooms in the 1980ies (Zaitzev et al., 1989).

There has been measurable, albeit gradual recovery of biodiversity among the benthic community of the Western Black Sea. The number of benthic species observed in the early 2000s was 1.5x–2x higher than levels found in the late 1980s, but still more than 1.5x lower than conditions in the 1960s.

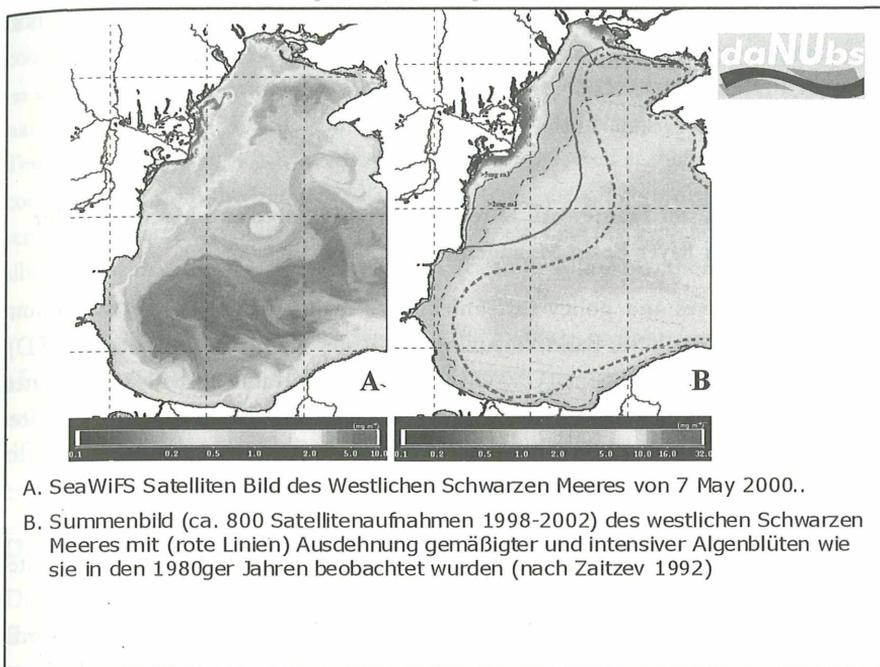


Fig. 4

## 2.6 EU DABLAS

Based on the Ministerial Declaration (26 November 2001, Brussels) on the “Protection of Water and Water Related Ecosystems in the Wider Black Sea Region” the DABLAS Task Force was formed with the main objective to provide a platform for cooperation and to facilitate financial arrangements for the implementation of projects for pollution reduction and rehabilitation of ecosystems in the wider Black Sea region.

The DABLAS Task Force is composed of a number of representatives from the countries in the region, the International Commission for the Protection of the River Danube (ICPDR), the Black Sea Commission, International Financing Institutions (IFIs), the EC, interested EU Member States, other bilateral donors, regional/international organisations and civil society representatives.

The Task Force formed a prioritization working group, which developed a framework for project financing, focusing on project screening and prioritization criteria. The resulting list of priority projects that was presented to donors and International

Financing Institutions (IFI's) includes 30 water infrastructure investment projects as the main priority from a regional point of view.

An ICPDR DABLAS database for prioritization of investment projects in the selected sectors is operational at the [www.icpdr.org](http://www.icpdr.org).

## **2.7 The EU Water Framework Directive: Driving Force and Mechanism for Integrated River Basin Management**

The EU Directives and policy instruments are major driving forces throughout the Danube and Black Sea Basin, including: the Water Framework Directive (WFD); Urban Wastewater Treatment (UWWT) Directive; Nitrates Directive; Integrated Pollution Prevention Control (IPPC) Directive; Common Agricultural Practices (CAP).

The Water Framework Directive 2000/60/EC (EU WFD) brings major changes in water management practices. Most importantly, it:

- sets uniform standards in water policy throughout the European Union and integrates different policy areas involving water issues,
- introduces the river basin approach for the development of integrated and coordinated river basin management for all European river systems,
- stipulates a defined time-frame for the achievement of the good status of surface water and groundwater,
- introduces the economic analysis of water use in order to estimate the most cost-effective combination of measures in respect to water uses,
- includes public participation in the development of river basin management plans encouraging active involvement of interested parties including stakeholders, non-governmental organisations and citizens.

What makes the implementation process in the Danube River Basin a particular challenge is the fact that only some countries are EU Members and therefore obliged to fulfill the EU WFD. Besides Austria and Germany, four additional Danube countries have become EU Members States on May 1, 2004. Three other Danube countries are in the process of accession and are preparing to conform with the complete body of EU legislation in order to become EU Members. Others have not initiated a formal process to join the EU.

In November 2000 all Contracting Parties of the Danube River Protection Convention stated their commitment to implement the EU WFD within their jurisdic-

tion and to cooperate in the framework of the ICPDR to achieve a single, basin wide coordinated Danube River Basin Management Plan.

For issues of basin wide importance the ICPDR serves as the platform for coordination in the implementation of the EU WFD in the Danube River Basin District. Transboundary issues not covered by the ICPDR are solved at the appropriate level of cooperation, e.g. in the frame of bilateral/multilateral river commissions. Local issues remain a national task. Generally, coordination will take place at the lowest level possible so that the coordination via the ICPDR can be limited to those issues necessary on the basin wide level.

All Danube countries jointly agreed on the necessary actions for the development of the Danube River Basin Management Plan, e.g. the development of a strategy for establishing the RBM Plan, development of the Basin-wide overview (Part A) or identifying needs for harmonisation of methods and mechanisms.

### **Development of the Danube River Basin Management Plan**

Due to the large number of states and the coordination requirements in the Danube River Basin District (DRBD) it is necessary to divide the Danube River Basin Management Plan into two parts. Part A (Basin-wide overview) gives relevant information of multilateral or basin wide importance, whereas Part B (detail analysis of the Danube river basin countries) gives all relevant further information on the national level as well as information coordinated on the bilateral level.

The Basin-wide overview (Part A) contains information on issues of multilateral or basin wide importance and includes, in particular, an overview of the main driving forces and the related pressures exerted on the environment.

The UNDP/GEF Danube Regional Project has provided a broad expert input in to development of this report. The contribution of the Danube Regional Project consisted of:

- conducted studies for the characterisation of surface waters and groundwater (development of a typology of the Danube River, study on hydromorphological alterations in the DRB); Agricultural policy study as a contribution to the pressure and impact analysis; Contributions to the economic analysis; and the development of a Public Participation Strategy;
- specialised workshops for capacity building and for coordination/harmonisation of WFD implementation amongst DRB countries;

- data collection via templates and questionnaires, drafting of specific chapters of this report, and preparation of Danube River Basin District maps for WFD topics through consultants input.

This first characterisation of the Danube, the Danube Basin Analysis – Roof Report 2004, has been completed and approved by 13 Ministers or their deputies at the Ministerial meeting that was held on 13/14 December 2005.

The results of this work have shown that in last two decades, considerable improvements in environmental conditions in the Danube basin have been made. Where investments, e.g. in wastewater treatment, have taken place, the improvement of the water quality is visible. However, a major part of pollution reduction can be attributed to the decline of industries and agricultural activities in the middle and lower parts of the basin since 1989. In these areas, investments for a sustainable reduction of pollution levels has just started and will have to continue for another 10 to 20 years.

In surface waters, the loads of organic pollution are still unacceptably high in most of the Danube tributaries and in some parts of the Danube River. The considerable discharge of untreated or insufficiently treated wastewater from municipal, industrial and agricultural point sources is wide-spread, in particular in the middle and lower part of the basin. The indicators for impact from organic pollution show that the water quality is significantly affected, the major cause being insufficient treatment of waste-water from municipalities.

Essential is, that this report increased the clarity about the actions needed in the Danube River Basin and provide a basis for strengthening the political commitment in addressing them. It is, however, still needed to ensure prioritisation and transparency of actions to achieve good water quality across the entire basin.

### **3 Conclusion**

The positive ecosystem trends observed in the Western Black Sea in recent years are largely due to the sudden decrease in pollution emissions following the collapse of the former communist regimes in Central and Eastern Europe.

Despite the difficulties of cooperation among the large number of states within the Danube region there has been important progress in establishing the necessary mechanisms for coordination and cooperation under the framework of the Danube River Protection Convention. GEF and EU support over past decade to middle and lower

Danube countries matched well with their efforts to adjust their legal and policy framework to the EU directives and policies within the completed or ongoing accession process.

The series of regional GEF projects and national pollution reduction efforts should have also played a role and will play a larger role in the future with the Investment Fund for Nutrient Reduction in sustaining the water quality and environmental gains that have already been achieved.

Recently, the EU Water Framework Directive has added strength to the efforts to coordinate actions in support of integrated river basin management. The clear understanding and agreement on the nature of the problems has been reached amongst Danube countries.

The major challenges to achieve the sound management of water resources and sustainability of the ecosystems in Danube Region are:

- Agricultural practices and future development of the sector towards less intensive and less polluting production.
- Investment needed for sufficient treatment of wastewater from municipalities.
- Strategies for industrial development to prevent pollutant releases to waters.
- Transportation policy respecting natural hydromorphology of the rivers.

The Danube countries have achieved significant success in efforts towards cooperative management. The existing mechanisms for cooperation in the frame of the ICPDR and firm commitment of the Danube countries to address the challenges above provide solid and sustainable base for protection and management of water resources in the Danube River Basin.

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