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International Commission for the Protection of the Danube River
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REPORT

to

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Policy and legal reforms and implementation of investment projects for pollution control and nutrient reduction in the Danube River Basin Countries

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PREFACE

The Danube is the most international river in the world. Thirteen countries together comprise 99% of the territory of the basin and a further five countries have small amounts of land area in the basin. These thirteen major countries and the European Union signed the Danube River Protection Convention in 1994, that committed them to coordinated management of water resources.

To coordinate the work under the Convention the International Commission for the Protection of the Danube River (ICPDR) was founded. The ICPDR has established a secretariat based in Vienna and developed a work group structure involving the input of experts from each of the countries.

This report summarizes achievements that have been realized through work of the countries under the ICPDR. A focus of this analysis is on identifying the challenges that remain in order to streamline and target the implementation of the Strategic Partnership towards its objectives and indicators for further reinforcement of cooperation in the Danube – Black Sea Region.

In elaborating this report, emphasis has been given to the role of the ICPDR as a legal platform of cooperation among Danube countries. The report also presents activities and results of the ICPDR work relevant to D-BS Strategic Partnership objectives. In particular the report addresses the status of implementation of the ICPDR Joint Action Programme (JAP), the ICPDR-BSC Memorandum of Understanding (MoU), introduction of policy and legal reforms and implementation of investment projects in the municipal, industrial and agricultural sectors for pollution control and nutrient reduction in the Danube basin including cooperation with donor organizations and International Financing Institutions.

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EXECUTIVE SUMMARY

The report summarizes achievements that have been realized through work of the countries under the ICPDR. A focus of this analysis is on identifying the challenges that remain in order to streamline and target the implementation of the D-BS Strategic Partnership towards its objectives and indicators for further reinforcement of cooperation in the Danube – Black Sea Region.

In elaborating this report, emphasis has been given to the role of the ICPDR as a legal platform of cooperation among Danube countries. 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. The main objective of the Convention is the sustainable and equitable use of surface waters and groundwater and includes the conservation and restoration of ecosystems. To coordinate the work under the Convention the International Commission for the Protection of the Danube River (ICPDR) was founded. The ICPDR has established a secretariat based in Vienna and developed a work group structure involving the input of experts from each of the countries.

From the early 1990s the European Commission and the United Nations Development Programme/Global Environment Facility (UNDP/GEF) have supported the building of capacity at the regional and national levels to develop mechanisms for cooperation under the DRPC. Currently UNDP/GEF is providing 17 million USD financing under the Danube Regional Project to support the countries of the region and the ICPDR in adopting new policies and measures for nutrient reduction and for sustainable river basin management. Specific projects have been targeted at industrial pollution, agriculture and supporting river basin management planning.

The first part of the report is presenting the mandate, role and objectives of the International ICPDR. The ICPDR Contracting Parties are: European Union, Germany, Austria, Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Bulgaria, Romania, Moldova, Ukraine and Serbia & Montenegro. Bosnia and Herzegovina is a participant with consultative status. 10 organisations have observership status to the ICPDR.

A second substantial section of the report addresses the status of implementation of the ICPDR Joint Action Programme (JAP), with particular attention to the introduction of policy and legal reforms and implementation of investment projects in the municipal, industrial and agricultural sectors for pollution control and nutrient reduction in the Danube basin.
The JAP 2001-2005 reflects the general strategy for the implementation of the DRPC for the respective period. It deals i.a. with pollution from point and diffuse sources, wetland and floodplain restoration, priority substances, water quality standards, prevention of accidental pollution, floods prevention and control and river basin management. Important successes of Danube countries in implementing the JAP include: Trans-national Monitoring Network (TNMN) operational with 79 sampling stations, Analytical Quality Control (AQC) programme to ensure quality and comparability of data, Emissions Inventories updated for point and diffuse sources of pollution, AEWS operational and upgraded, Action Plan for Sustainable Flood Protection in the Danube River Basin developed, Accident prevention system in place, Habitat and species protection areas defined and measures to restore and protect wetlands and floodplains under implementation..

There has been substantial legislative reform and in particular the implementation of EU community law within the DRB countries. 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.

The total investment foreseen in the JAP period 2001-2005 to respond to priority needs is estimated to be about 4.404 billion €, with priority 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 €

Recent reviews of activities conducted under ongoing EU DABLAS project highlight that many investment and actions are happening. The DABLAS project has, however, highlighted both the implementation efforts and deficits. This is especially the case for those EU Directives that require substantial administrative reform and financial investments.
It is expected that the EU Danube – Black Sea Task Force (DABLAS) shall play a coordinator and facilitator role to foster political commitment and to assure implementation of the program and projects for pollution reduction and sustainable management of water resources and ecosystems in the wider Black Sea region. Political support and commitment are already mobilized to facilitate the implementation of investment projects and to enhance the cooperation between participating countries and the financing instruments of the EU, bilateral donors and International Financing Institutions (in particular EBRD, EIB, WB etc).

Considerable attention is given in the report to the implementation of EU Water Framework Directive. The WFD places obligations on member states to implement measures to achieve specific environmental objectives for water bodies including rivers, lakes, groundwater and estuaries. The EU as well as ICPDR member countries have agreed that the ICPDR will provide the platform for the coordination necessary to develop and establish the River Basin Management Plan for the Danube Basin. Required under the WFD are a series of reports which document the responsible authorities for water management in each country, analyse and determine baseline and reference information to achieve a characterisation of the waters, a pressure and impact analysis, and a programme of measures which will eliminate or reduce those pressures and impacts. The final product is the Basin Management Plan. The Danube River Basin Management Plan has been divided into two parts. Part A (roof of the DRBMP) gives relevant information of multilateral or basin-wide importance, whereas Part B (national input to DRBMP) gives all relevant further information on the national level as well as information coordinated on the bilateral level. "River Basin Management Plans" (RBMPs) will provide the context for setting out a comprehensive programme of measures designed to achieve the objectives that have been set for water bodies.

This report is also reviewing the progress and effectiveness of implementing the work programme of the Memorandum of Understanding between the ICPDR and BSC in achieving the mid and long term goals. Indicators relevant for the assessment of the environmental status of the Black Sea, indicating changes over time in Black Sea ecosystems due to nutrient inputs from the Danube River are agreed by the DBS JTWG.

Building long term sustainability in the participation of Danube countries is the focus of the last part of the report. The major measure of success to assure long-term sustainability of the ICPDR activities is the country's commitment to continue to financially and technically support the Expert Groups activities. The financial support for the ICPDR activities by the countries and strong commitment to the work indicates a positive attitude for sustainability. Success will depend on thorough implementation of actions and commitments of the countries and on effective and coordinated contribution of the international community.

1 Mandate, role and objectives of the ICPDR

"The Danube is a river that binds and connects people. It is also a river that connects important parts of Europe. Irrespectively of their relations with the EU, all peoples of the Danube share in the celebration of being part of the Danube basin and at the same time share the responsibility to protect this river and its ecosystems".

Catherine Day, ICPDR President

1.1 Background

The Danube River Basin is by far the most transboundary river basin in the world in terms of number of interconnected countries - 18 countries contribute with small or large land areas. Initiatives, with a view to finding appropriate solutions to the common pursuit of the long-term development and management of Danube waters have been developed over recent decades.

The Environmental Programme for the Danube River Basin was established in 1991, with the aim to build regional cooperation for water management and to initiate high priority actions, which would support the finalisation and implementation of the Danube River Protection Convention (DRPC). The DRPC is a legally binding instrument, which provides a substantial framework and a legal basis for cooperation between the contracting parties. Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Romania, Slovakia, Slovenia, Serbia and Montenegro, Ukraine and the European Union have signed the DRPC. The ratification process is currently under way in Bosnia and Herzegovina.

The main objective of the Convention is the protection and sustainable use of ground and surface waters and ecological resources, directed at basin-wide and sub-basin-wide cooperation with transboundary relevance.

In order to achieve substantial progress in implementing the Convention the following overall strategic goals and targets have been agreed:

- maintain and improve the status of water resources;
- prevent, reduce and control water pollution;
- improve the environmental conditions of the aquatic ecosystems and biodiversity;
- contribute to the protection of the Black Sea from land-based sources of pollution.

1.2 Activities for transboundary cooperation in water management and pollution control

The ICPDR is acting as a platform coordinates joint activities and actions focused on enhancement of policies and strategies aiming at sustainable use of the water and the natural resources of the Danube Basin.

The Signatories to the Convention agreed on 'conservation, improvement and the rational use of surface and groundwater in the catchment area', to 'control the hazards originating from accidents' and 'to contribute to reducing the pollution loads of the Black Sea from sources in the catchment area'. They also agreed to cooperate on fundamental water management issues by taking 'all appropriate legal, administrative and technical measures to at least maintain and improve the current environmental and water quality conditions of the Danube River and of the waters in its catchment area and to prevent and reduce as far as possible adverse impacts and changes occurring or likely to be caused'. The Danube River Protection Convention (Article 8) also foresees the need to develop 'joint action programmes aimed at the reduction of pollution loads both from industrial and municipal point sources as well as from non-point sources'.

In response to challenges posed by DRPC, the Danube countries have established the International Commission for the Protection of the Danube River (ICPDR) to strengthen regional cooperation. It is the institutional frame not only for pollution control and the protection of water bodies but it also sets a common platform for sustainable use of ecological resources and coherent and integrated river basin management. International organizations such as UNDP, GEF, UNEP, the World Bank and UNOPS as implementing agency, as well as the European Union (who is contracting party to the ICPDR) are providing significant support to the ICPDR and to the individual member states to fulfil their obligations under the DRPC.

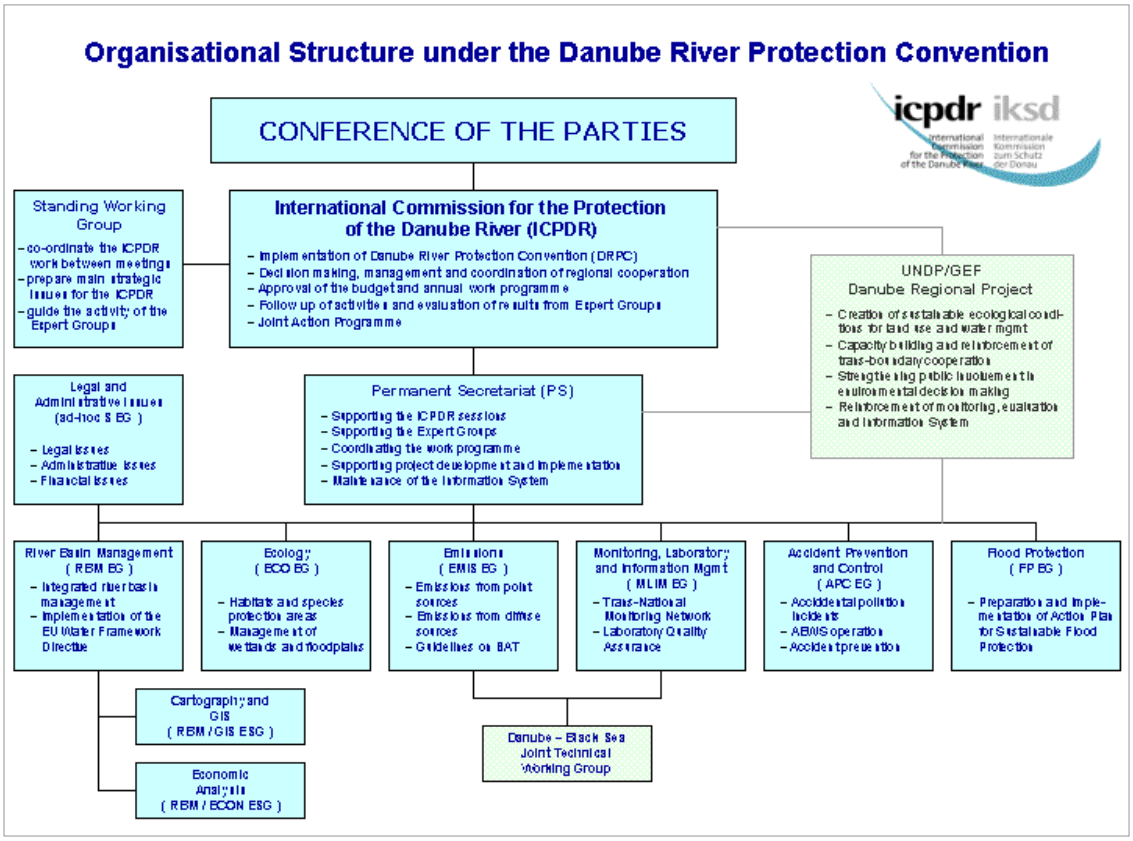


Fig. 1. Organisational structure under the Danube River Protection Convention

Of current major importance is the GEF UNDP Danube Regional Project (17,2 million US$ for a 5 year period) which is reinforcing the activities of the ICPDR to provide a regional approach to the development of national policies and legislation and the definition of priority actions for pollution control with particular attention to achieving sustainable ecological effect within the Danube River Basin and the Black Sea Region.
A similar project (total investment 9 million US$) has been developed for the Black Sea, which will reinforce the actions for nutrient reduction in the Black Sea and to strengthen the cooperation between the Danube and the Black Sea Commissions. The actions of both projects are reinforced by the GEF-World Bank Partnership Program, which is providing financial support for investment projects (70 million in GEF Grants and 210 million in loans).
The ICPDR set up a Secretariat based in Vienna, which coordinates the work of the countries under the Convention and the work of the Expert Groups in particular. Expert Groups for Monitoring, Laboratory and Information Management Systems (MLIM), Emissions (EMIS), Accident Prevention and Control (APC), Ecology (ECO), Flood Protection (FP), and River Basin Management (RBM) have been created. The organisation chart of the ICPDR can be seen in Figure 1. Each Expert Group is composed of at least one expert from each country and meets twice or perhaps three times a year to undertake the work needed. Of importance, it is the experts from the countries who do most of the work needed in each of the groups. The Expert Groups report regularly to the ICPDR on their work progress and/or seek guidance from the ICPDR on issues of policy.

2 Members of the ICPDR, regular contributions and special funds

2.1 Members of the ICPDR

2.1.1 ICPDR – Membership

The ICPDR Contracting Parties are: European Union, Federal Republic of Germany, Republic of Austria, Czech Republic, Slovak Republic, Republic of Hungary, Republic of Slovenia, Republic of Croatia, Republic of Bulgaria, Romania, Republic of Moldova, Ukraine and Serbia & Montenegro. Bosnia and Herzegovina is a participant with consultative status.

2.1.2 ICPDR – Observership

The following organisations are observers to the ICPDR: Danube Commission, World Wide Found for Nature, International Association for Danube Research, RAMSAR Convention, Danube Environmental Forum, Regional Environmental Centre for Central and Eastern Europe, Black Sea Commission, Global Water Partnership - Central and Eastern Europe, United Nations Educational, Scientific and Cultural Organization – International Hydrological Programme and International Association for Water Works in the Danube Basin.

2.2. Annual contribution to the budget of the ICPDR since 1998 by contracting parties

The contribution keys for the period 2001 to 2005 were agreed upon at the 1st Plenary Session of the ICPDR (Vienna, Austria on 29 October 1998) taking into account whether a Contracting Party (CP) is an EU member state, in the process of accession to the EU or none of both as the criterion for the CP´s capability to contribute to the budget.
Furthermore a two-stage development of contribution keys (2001 to 2005 and 2006 to 2010) was agreed anticipating a revision of the keys for the period 2006 to 2010 prior to 2006. The payments of first year contribution of new a CPs was set to 5%. It was agreed that these contributions would be transferred into the Working Capital Fund.

In 2004, the ICPDR has received payment for all countries with exception of Ukraine (which has promised payment by the end of the year).

The ad-hoc Strategic EG of the ICPDR has revised the structure of budgetary contributions for the period 2006 to 2010. Consideration was given to:

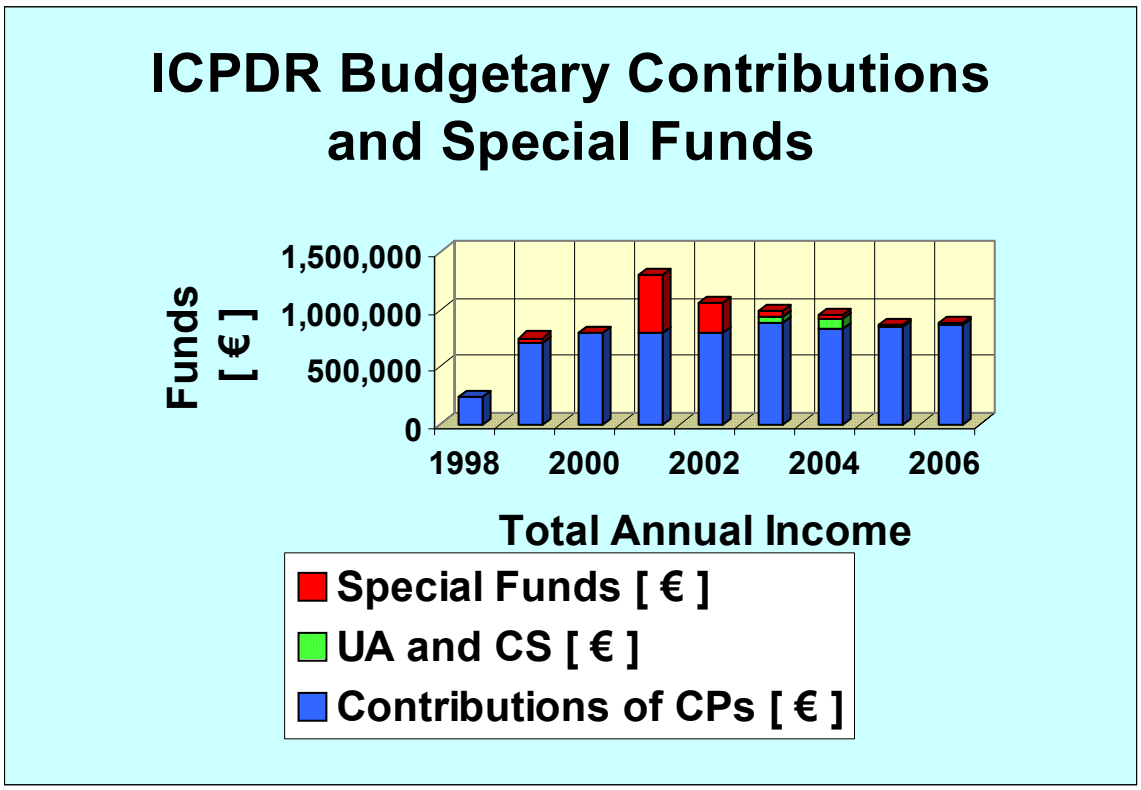
- the criterion whether a CP is an EU member state by 2006;
- a group of four countries that are not yet EU member states or in the next wave of accession and their economic circumstances do not allow an equal share to the budget;
- the request of Moldova that a 1% contribution is realistic for the foreseeable future, and since the economic situation in Ukraine is similar, a 1% contribution was also proposed for Ukraine. The contributions from these two CPs would be kept at this low level up to 2008, and then be raised to 3% in 2009 and 5% in 2010;
- the acknowledgement that the contribution from the EC remains at 2.5%.

In 2007 the contribution keys for Moldova and Ukraine for the years 2009 and 2010 shall be revised. In the event of a new CP joining ICPDR the contribution keys will be reduced in an amount equal to the additional contribution from the new CP. From the year 2006 onwards, for a transitional period of five years, modified contribution keys as specified in the Table 1.

Table 1. Proposal on the contribution keys for the period 2005-2010

Proposed Development of Contribution Keys for the Period 2005 to 2010 [%]						
CPs	2005	2006	2007	2008	2009	2010
	Proposed Contribution Keys					
Germany	12.8233	11.2500	10.8250	10.4000	9.7341	8.7500
Austria	12.8233	11.2500	10.8250	10.4000	9.7341	8.7500
Czech Republic	10.6875	11.2500	10.8250	10.4000	9.7341	8.7500
Slovakia	9.2636	11.2500	10.8250	10.4000	9.7341	8.7500
Hungary	10.6875	11.2500	10.8250	10.4000	9.7341	8.7500
Slovenia	10.6875	11.2500	10.8250	10.4000	9.7341	8.7500
Croatia	9.2636	7.0000	7.6375	8.2750	8.2739	8.7500
Bosnia-Herzegovina						
Serbia and Montenegro	5.00	7.0000	7.6375	8.2750	8.2739	8.7500
Bulgaria	5.00	7.0000	7.6375	8.2750	8.2739	8.7500
Romania	9.2636	7.0000	7.6375	8.2750	8.2739	8.7500
Moldova	1.00	1.00	1.00	1.00	3.00	5.00
Ukraine	1.00	1.00	1.00	1.00	3.00	5.00
EC	2.50	2.50	2.50	2.50	2.50	2.50
Total	100.00	100.00	100.00	100.00	100.00	100.00

Fig. 2. The ICPDR Budgetary contributions and Special Funds



3 Institutional mechanisms of basin wide cooperation

3.1 Background

In the ten years since the signing of the Convention, the International Commission for the Protection of the Danube River (ICPDR) has been established and matured as the forum for cooperation among the Danube countries. All the countries of the Danube have been actively participating in the Expert Groups of the ICPDR and achieved important progress in their joint efforts to manage this shared river system.

The work undertaken under the DRPC has been reinforced by the adoption of a commitment to utilise the EU Water Framework Directive (WFD) as a basis for organising water management efforts. All the Contracting Parties of the Convention have committed themselves to implement the WFD although less than half the parties are currently EU Member States. This commitment has been made with a political objective of legally harmonising the countries of the Danube more closely with the European Union, and in recognition of the value of this comprehensive legislation in providing (i) a regional approach to the development of national policies and legislation and, (ii) a framework for further assessment and identification of measures needed by Danube countries to ensure the basis for sustainable water management.

These existing mechanisms have been supported by the UNDP GEF Danube Regional Project.

3.2 Activities of selected ICPDR Expert Groups

3.2.1 MLIM EG

The Laboratory and Information Management Expert Group is responsible for co-ordinating and evaluating the Trans-National Monitoring Network (TNMN) for water quality in the Danube River Basin. It is responsible for setting up programmes aimed at improving the laboratory analytical quality assurance. It facilitates the preparation and exchange of (in-stream) water quality and quantity information among the Contracting Parties.

The DRP has provided assistance to Danube countries to develop, upgrade and reinforce capacities monitoring of water quality, laboratory and information management. In addition, the results of the Joint Danube Survey (JDS), carried in 2001-2002 has provided comparable biological and chemical characteristic data along the Danube in the main river bed as well as in the major tributaries.

3.2.2 EMIS EG

The Emission Expert Group is responsible for developing actions to control pollution from point and diffuse sources through regularly updating emission inventories. It establishes action programmes to reduce pollution, e.g., from municipalities, industry and agriculture.

Several activities concerning industrial sector were successfully undertaken: (i) revision of policies and relevant existing and future legislation for industrial pollution control and identification enforcement mechanisms on a country level, (ii) discussion on existing ICPDR BAT concepts and relevant complementary measures for the introduction of BAT, in addition to the experience of the introduction of cleaner technologies to reduce the emissions of toxic substances and nutrients in particular in various Danube countries, (iii) up-dating the basin-wide inventory on industrial and mining sectors, and (iv) improvement of methodology of collecting information on discharges to facilitate the combined approach of screening pressures and impacts basin-wide.

An important output is the Recommendations on Best Available Techniques at Agricultural Point Sources.

3.2.3 APC EG

The Accident Prevention and Control Expert Group is responsible for steering and evaluating the effectiveness of the Accident Emergency Warning System (AEWS) for the Danube River Basin. The

Danube AEWS is activated in the event of transboundary water pollution danger or if warning threshold levels are exceeded.

To facilitate the assessment of risk of (i) industrial sites (ongoing activities), and of (ii) contaminated sites (closed-down waste disposal sites and industrial installations in flood-risk areas) reported by the Danube countries, a specific methodology was developed to (i) identify potential ARS and (ii) establish a ranking system to evaluate a real risk. This methodology will allow countries to take prompt actions at priority ranked old contaminated sites.

The APC EG has also been supported by the DRP to (i) reinforce operational conditions of PIACs, and for (ii) the maintenance and calibration of the Danube Basin Alarm Model (concept for calibration options for the DBAM and the outline for the DBAM calibration manual), in order to predict the propagation of the accidental pollution and evaluate temporal, spatial and magnitude characteristics in the Danube river system and to the Black Sea. The assessment of definition of messaging formats of AEWS has been completed as well as the concept and definition of detailed software requirements (application design). The new communication software was developed and successfully tested by national PIACs.

3.2.4 RBM EG

The work of the River Basin Management Expert Group focuses on facilitating the implementation of the EC Water Framework Directive, in particular on the preparation of the Danube River Basin Management Plan.
All Danube countries stated their firm political commitment to support the implementation of the WFD in their countries, and to cooperate in the framework of the ICPDR to achieve a single, basin-wide coordinated Danube RBM Plan. Consequently, the ICPDR decided that it would provide the platform for the coordination necessary to develop and established the River Basin Management Plan for the Danube River Basin.
The implementation of the WFD is a demanding process for the Danube countries due to its extremely challenging timetable, complexity of possible solutions to scientific, technical and practical questions. Support was given by the UNDP GEF DRP for capacity building in specific countries and overall for the development of standardized methodologies and guidelines for sub-river basin management plans and for the methodology for the aggregation of the sub-river basin management plans to a basin wide management concept.
The existing results prove the benefit of a close link between basin wide environmental objectives and an appropriate legislative framework provided by the EU WFD. It provides an excellent basis for the implementation of the Danube River Basin Management Plan given commonly shared principles such as a basin-wide holistic approach.

3.2.5 ECO EG

The main tasks of the ECO/EG are linked to the preparation of an inventory of protected areas that are part of the riverine ecosystem in the DRB in line with WFD, and to provide guidance for the monitoring of habitat and species protection areas according to EC Habitats Directive and WFD.
The ECO EG supervised the development of an inventory of protected areas, starting from a core data set that was developed in 2003. The draft inventory from October 2003 lists around 250 sites officially nominated to ICPDR by Danube countries. This list served to select 55 “Water-related Protected Areas for Species and Habitats of basin-wide Importance” for the WFD Roof Report 2004/2005, i.e. national parks, biosphere reserves, Ramsar sites and other internationally important national protected areas.
ECO EG has evaluated progress in implementation of the ICPDR Joint Action Programme 2001-2005 for restoration/rehabilitation and management of wetlands and floodplains.

4 Mechanisms for regional cooperation with the BSC - Danube – Black Sea Joint Technical Working Group (DBS JTWG)

The Memorandum of Understanding between the ICPDR and the BSC was signed by the Presidents of the two Commissions on 26 November 2001 in Brussels at the occasion of the Ministerial Conference convened for the creation of the DABLAS Task Force.

The ICPDR and the BSC Secretariats in cooperation with the UNDP GEF Regional Projects for the Danube and the Black Sea have convened, until now, four meetings of the DBS JTWG, which was established to the MoU.

The purpose of the first meeting was to discuss new terms of reference, the work programme, and the composition of the Working Group. The modalities to assess nutrient inputs and hazardous substances into the Black Sea, the establishment of a monitoring system for measuring input loads and for the evaluation of the ecological status of the Black Sea have been discussed. The second meeting focused on the selection of indicators relevant for the assessment of the environmental status of the Black Sea , indicating changes over time in Black Sea ecosystems due to nutrient inputs from the Danube River. At the occasion of the 3rd DBS JTWG meeting, the Work Programme has been revised to respond to the tasks related to the "Implementation of WFD requirements in regard to achieving the good status of coastal waters in the Black Sea". The Work Programme has been approved by the ICPDR 1st StWG meeting (June 2003, Prien). The most recent group meeting assessed the availability of the information on the indicators on state of the Black Sea agreed by JTWG, revision of the work program, and information on the progress with development monitoring and assessment in both Commissions.

Taking into account that the ICPDR has already developed major tools for monitoring and assessment for water quality control (TNMN, AQC), it has been recognized that the BSC needs to deploy special efforts to reach similar conditions of monitoring and emission control in the Black Sea Convention area. Only then, joint reporting as required by the MoU can successfully be implemented.

In the course of the implementation of the WFD, JAP and MoU, the necessity of strengthening and the further development of ties between the ICPDR and BSC was often underlined. In this connection the ICPDR and the UNDP GEF DRP expressed readiness to render where appropriate overall assistance and aid in enhancing the efficiency of cooperation with the Black Sea Commission.

5 Development of policies and regulatory measures in implementing the DRPC

5.1 Steps forward in adapting policy instruments to new challenges

Since 1992 the European Community (PHARE and TACIS programs) and the UNDP/GEF (Danube Pollution Reduction Program-1997 to 1999) have supported the efforts of the Danube countries to develop the necessary mechanisms for effective implementation of the DRPC. The Danube Environmental Program Investments 1992 –2000 has included 27 million USD from the EU Phare/Tacis, and 12.4 million USD were provided by the UNDP/GEF.
This support has enabled the elaboration of a regional Strategic Action Plan (SAP) based on national contributions and the development of a Transboundary Analysis to define causes and effects of transboundary pollution within the DRB and on the Black Sea.

Assistance has been provided to the Danube countries, the ICPDR EGs, and the ICPDR Secretariat to reinforce the national capacities in terms of policy/legislative reforms and enforcement of environmental regulations (with particular attention to the reduction of nutrients and toxic substances). An important goal was to assure a coordinated, harmonised and transferable approach basin wide of policy and legislative measures introduced at the national level of the participating countries.

5.1.1 Strategic Action Plan

The Strategic Action Plan provides guidance concerning policies and strategies in developing and supporting the implementation measures for pollution reduction and sustainable management of water resources enhancing the enforcement of the DRPC.

According to the Strategic Action Plan, the main problems in the Danube River Basin that affect water quality use are: (i) high loads of nutrients and eutrophication, (ii) contamination with hazardous substances, including oils, (iii) microbiological contamination, (iv) contamination with substances causing heterotrophic growth and oxygen-depletion; and (v) competition for available water.

The SAP outlined regional policies and strategies for pollution reduction and environmental protection in response to the Danube River Protection
The objectives and target of the SAP considered (i) the development of national policies, regulations and actions, (ii) the development of coherent approaches to pollution reduction and transboundary cooperation, (iii) reinforcing of coordination of interventions in relation to sub basin area, (iv) encouraging transboundary cooperation for pollution reduction in Significant Impact Areas.

5.1.2 Transboundary Analysis

The Transboundary Report (TAR) provide 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. TAR defined priorities for control and management strategies at the regional and national levels.

Regional assessments such as the Black Sea Transboundary Diagnostic Analysis have indicated that the Danube River Basin is the largest pollution contributor to the Black Sea in general and the Western part of the Black Sea in particular. A significant fraction of the nutrients (58%-nitrogen, 66%-phosphorus) received by the Black Sea come from the Danube River and these loads have resulted in the occurrence of severe eutrophication problems.

Based on the National Review Reports more than 500 hot spots, in three sectors (municipal, industrial and agricultural) have been identified and ranked.
In association with the work on the Danube Water Quality Model (DWQM) updated comprehensive estimates of N and P emissions to surface waters of the Danube Basin were made for 1996 - 1997. The sums of these estimates are:

- 898 kt/y of N - i.e., approximately 246 kt/y from point sources and 652 kt/y from diffuse sources.
- 108 kt/y of P - i.e., approximately 47.5 kt/y from point sources and 60.1 kt.y from diffuse sources

Updated estimations of point source emissions of N and P by country, were available for the TDA (May 1999) for (i) storm weather overflow, (ii) industry with and without treatment, (iii) municipal waste water management and (iv) effluents from agricultural WWTPs as follows:

Table 2. N and P from point sources, 1999

Country	D	AT	CZ	SK	H	SI	HR	BA	FRY	RO	BG	MD	UA	Total
N	20	24	13	14	19	12	8	8	32	74	18	1	3	246
P	1.2	2.2	2.6	3.0	5.4	1.5	1.4	3.2	9.8	12.0	3.6	0.2	1.1	85

Updated estimations of diffuse source emissions of N and P by country (May 1999) for (i) base flow, (ii) direct discharges from private households, (iii) erosion, runoff, (iv) discharge of untreated manure, (v) surface runoff / forests and others and (vi) N fixation were as follows:

Table 3. N and P from diffuse sources , 1999

Country	D	AT	CZ	SK	H	SI	HR	BA	FRY	RO	BG	MD	UA	Total
N	100	72	19	40	63	12	27	29	74	157	16	12	31	652
P	5.8	4.6	0.8	2.6	7.8	1.3	2.7	1.9	7.9	15.6	2.5	2.0	4.6	133

Based on the Causal chain analyses of the three main sectors, the core problems that emerged for the middle Danube basin were as follows:

- for the agricultural sector - "unsustainable agricultural practices"
- for the municipal sector - "inadequate management of municipal sewage and waste"
- for the industrial sector - "ecologically unfriendly industry".

For the lower Danube region, the corresponding core problems were considered as follows:

- for the agricultural sector - "missing implementation of sustainable agriculture"
- for the municipal sector - "inefficient management of waste waters and solid waste"
- for the industrial sector - "pollution prevention and abatement from industry not achieved"

Over the last 200 years, many floodplains have been cut-off from the river systems as to allow human uses, such as energy and agricultural production, river transport or settlements development. Today, only a fraction of the Danube basin floodplains continues to fulfil their natural functions because more than 80% of the original floodplain along Danube and its tributaries have been destroyed. The UNDP/GEF-PRP analysis on wetland areas and floodplains 1999 has shown that a total of 350,000 ha of floodplains are still existing with a potential to restore additional 300, 000 ha. To focus attention on the effects of water pollution and other human interventions, 51 “Significant Impact Areas” have been identified in 1999 in the Danube River Basin, which were in particular affected by industrial pollution, COD and toxic substances as well as from excessive nutrient loads.

5.1.3 Joint Action Programme of the ICPDR

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 JAP deals i.a. with pollution from point and non-point sources, wetland and floodplain restoration, priority substances, water quality standards, prevention of accidental pollution, floods prevention and control and river basin management.

In the frame of the Danube Pollution Reduction Program 1999, based on the results of the Transboundary Analysis, an investment portfolio has been developed with particular attention to nutrient reduction. All the measures, projects and programs proposed to reduce emissions from both point and non-point sources of pollution will improve water quality, considering a reduction of 50 % in Chemical Oxygen Demand (COD) emissions and 70 % in Biological Oxygen Demand (BOD) emissions and other toxic elements, and thus reduce transboundary effects within the Danube River Basin. Once implemented, these measures would further substantially contribute to reducing nutrient transport (Phosphorus by 27 % and Nitrogen by 14 %) to the Black Sea to further improve, over time, environmental status indicators of Black Sea ecosystems of the western shelf. A total of 421 projects for

5.66 billion USD, primarily addressing hot spots have been identified for municipal, industrial and agricultural projects.

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 emission, 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 priority 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.

It is expected that the EU Danube – Black Sea Task Force (DABLAS) shall play a coordinator and facilitator role to foster political commitment and to assure implementation of the program and projects for pollution reduction and sustainable management of water resources and ecosystems in the wider Black Sea region. Political support and commitment are already mobilized to facilitate the implementation of investment projects and to enhance the cooperation between participating countries and the financing instruments of the EU, bilateral donors and International Financing Institutions (in particular EBRD, EIB, WB etc). In this frame, the two Commissions for the protection of the Danube and the protection of the Black Sea will play a vital role in protecting transboundary waters and ecosystems in the wider Black Sea Region.

5.1.4 Implementation of the EU WFD (RBM Plan)

On December 22, 2000 the Water Framework Directive 2000/60/EC (WFD) came into force. The EU Member States (at the time this was Germany and Austria in the Danube basin) are obliged to fulfil this Directive. The 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 organizations and citizens.

The WFD places obligations on member states to implement measures to achieve specific environmental objectives for water bodies including rivers, lakes, groundwater and estuaries. The WFD requires that for most surface water bodies, the target of "good ecological status" should be achieved within 15 years of adoption of the Directive. For water bodies that already achieve this status and those at "high ecological status" the objective is to maintain this. Some water bodies may not be capable of achieving "good status", simply because they have been heavily physically modified, for example, in the case of engineered river channels or flood defence measures. If so, a more appropriate ecological quality objective may be set – "good ecological potential". In case of disproportionate costs to achieve a specific goal, a derogation of the timetable could be acceptable.

"River Basin Management Plans" (RBMPs) will provide the context for setting out a comprehensive programme of measures designed to achieve the objectives that have been set for water bodies. One of the key features of the Directive is its incorporation of economic considerations. For example, adequate cost recovery for water services, and economic analysis of water use and review of the environmental impact of human activity to support the development of the River Basin Management Plans are included. Consequently, public consultation plays an important part in their preparation.

The EU as well as ICPDR member countries have agreed that the ICPDR will provide the platform for the coordination necessary to develop and establish the River Basin Management Plan for the Danube Basin.
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 fulfil 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.
The ICPDR RBM EG is responsible for coordinating the technical work amongst the 13 participating countries and according to the implementation time frame as set by the EU. All Contracting Parties have agreed to make all efforts to arrive at a coordinated international River Basin Management Plan for the Danube River Basin.

The work of the International Commission for the Protection of the Danube River is concentrated on the development of a joint basin management plan and a harmonization of methodologies and approaches for conducting the analysis needed. The first major step in that work which has been greatly benefiting of UNDP GEF DRP support – the characterization of the basin – is completed and forms the basis for identifying the problems and additional efforts and actions needed to reduce pollution, and minimize other pressures negatively influencing the quality of water in the basin.

5.2 New policy guidelines for pollution control and nutrient reduction in the DRB

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 and the UNDP GEF DRP have contributed to long-term economic prosperity and increased opportunities for investments to reduce pollution and protect natural resources.

Countries in the DRB have increasingly recognised 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.

In addressing environmental concerns, the Danube countries share certain principles: the precautionary principle, best available technology (BAT), best environmental practice (BEP), control of pollution at the source, the "polluter pays" principle and the related "user pays" principle, the principle of integrated river basin management approach, the principle of shared responsibilities, respectively the principle of subsidiarity.

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.

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 waste water 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.

With regard to agricultural policies it is worth mentioning that the current low use of agricultural pesticides in the countries of the DRB presents a unique opportunity to develop and promote more sustainable agricultural systems before farmers become dependent again upon the use of agro-chemical inputs. There is concern that with EU enlargement and the expansion of the Common Agricultural Policy (CAP) into the DRB countries joining the EU there is a risk of increasing fertilisers and pesticide use due to (i) increasing areas cultivated with cereals and oilseeds due to the availability of EU direct payments for farmers growing these crops in the new Member States, (ii) increased intensification of crop production, including the greater use of mineral fertilisers and pesticides, particularly in the more favourable areas with better growing conditions, and (iii) a reduction in mixed cropping and an increase in large-scale cereal monocultures in some areas dependent upon agro-chemicals for crop protection.

The selection of the most appropriate policy instruments to control diffuse pollution coming from agricultural activities, including nutrient and pesticide pollution of the DRB countries will depend also upon the establishment of a clear policy strategy for controlling pollution, together with clear policy objectives in line with DRPC and JAP.

In response to this concern, the UNDP GEF DRP has assisted the DRB countries in providing guidance on the development of policies and legal and institutional instruments for the agricultural sector to assure reduction of nutrients and harmful substances with particular attention to the use of fertilizers and pesticides. Inventories of agricultural pesticide use and of fertilizer and manure use have been completed in 2003. A concept of BAP and opportunities for promoting it through agricultural policy changes has been also proposed in early 2004.

The following section summarizes the policy and legislation achievements in the countries.

In general terms, the 13 DRB countries can be categorized and characterized as follows: **Germany** and **Austria** have substantially reformed their regulatory regimes to assure the functioning of their democracies and market-based economies, with all legislation in compliance with the "highest environmental standards". Significant efforts are also required for EU member states for reaching an acceptable level of implementation. The experience of the **new Member States** having joined EU in May 2004 is an important information for other Danube countries.

The core of water legislation in **Austria** is the Water Right Act, which was revised in 2003 to accommodate the EU Directives principles. Austria is currently engaged in developing an Ordinance defining water quality objectives for rivers as well as for lakes and an Ordinance for the management of the Austrian Water Data Register.

In March 2004, the **Czech** Ministry of Environment prepared the updated State Environmental Policy for 2004 – 2010. Considerable attention is paid to wetland ecosystems, to rehabilitation of aquatic biotopes, to **effective** and sustainable protection of surface and ground water bodies, to harmful contaminants, to integrated water protection and management. Through river basin management plans, measures to protect wetlands and floodplains shall be implemented. The use of wetlands and water resources should be sustainable in view of economic pressures and global changes, and this includes principles referring to landscape and environmentally sound agricultural practice, wetland and floodplain uniqueness, restoration, remediation and rehabilitation of damaged wetlands areas.

Slovenia has developed appropriate legislative tools that outline the objectives and strategies for environmental regulation and water management. The lately approved Environmental Protection Act (May 2004) primarily focuses on pollution from point sources and is consistent with EU environmental requirements. The 1999 National Environmental Action Programme (NEAP) established a more balanced relationship between the environment and economic sectors and introduced a system of economic incentives to encourage manufacturers and consumers to use resources in a more "environmentally successful" manner. The Water Act considers the whole water policy such as protection of water, water use, management of water and protection of water depending ecosystems.

The National Environmental Programme of **Hungary** includes substantial provisions and measures for the conservation and management of surface and groundwater resources. Some of the key targets and approved policy directions are: regulation development to encourage sustainable and economical water use; improvement of water quality for the main water bodies (Danube and Tisza Rivers, Lake Balaton); gradual increase (to a level of 65%) of the number of settlements with sewers; at least biological

treatment of wastewater from sewers; nitrate and phosphorous load reductions for highly protected and sensitive waters. By 2003 the Hungarian legislation on water quality protection was fully harmonized with the EU regulations, including the appropriate institutional setup.

The implementation of the **Slovak** water management and protection policy is in compliance with EU water policy, i.e the WFD, aiming at achieving of good water status for all waters by 2015. The legislative tools for achieving policy objectives have been prepared. All EC directives have been transposed into the national law system. The transposition was finished in 2004 through an updated version of the Water Act (no. 364/2004). Main priority in relevant sectors (urban wastewater, industrial wastewater, land use, wetlands) is the implementation of EC directives' requirements (urban and industrial wastewater during the transition periods), namely reduction of nutrients and priority substances and creation of effective water management that will be able to promote sustainable water use based on long - term protection of available resources.

The **need** to implement a unified policy on the environment and the use of natural resources, which integrates environmental requirements into the process of national economic reform, along with the political desire for European integration, has resulted in the review of the existing environmental legislation in **Moldova**. The current priorities for water management include the strengthening of institutional and management capability through improvement of economic mechanisms for environmental protection and the use of natural resources, setting internal environmental performance targets and controls, self-monitoring, review of current legislation in line with European Union legislation, and the adjustment or elaboration on a case-by-case basis of implementation mechanisms.

Bosnia and Herzegovina is faced with major challenges in the environmental and water management area. Among specific objectives for environment is the development of an environmental framework in Bosnia and Herzegovina based on the Acquis. The most important issues in the environment sector will be identified in the Environmental Action Plan, which is being developed with World Bank support. The EU is supporting a Water Institutional Strengthening Programme, which is complemented by two Memoranda of Understanding (2000, 2004) between both Entities and the EC.
The proposed schedule for approximation with EU indicates a new Water Law and a Law on Environment, compatible with the Acquis, to enter into force by January 2005.

Since the WFD was adopted, numerous and diverse activities were initiated in **Serbia & Montenegro** to further develop and implement the Directive. The water management is faced with serious tasks that require, above all: (i) the creation of a system of stable financing for water management, (ii) the reorganization of water management sector, and (iii) the revision of water legislation and related regulations, in compliance with requirements of European legislation.

The remaining accession countries Romania, Bulgaria, Croatia as well as those non accession countries are experiencing the historic opportunity of European integration, which is the most important driver of reforms but brings great challenges at the same time:

The adoption in 1999 of the Strategy for the Integrated Water Management marked the beginning of the reforms in the water sector in **Bulgaria** in line with the WFD and assumed obligations under international instruments. Several other programs such as Environmental Strategy to implement the ISPA objectives, the Program for the UWWT Directive implementation or the National Strategy for Management and Development of the Water Sector until 2015 complete the picture of on going efforts in Bulgaria towards complying with EU legislation.

In **Croatia**, the **current** basic environmental and water legislation and regulations (such as the Water Act, Water Management Financing Act, State Water Protection Plan) will be revised to meet the EU directives requirements within the frame of two CARDS projects expected to start at the end of 2004.

Romania is about to close Chapter 22 on harmonisation of environmental legislation with EU requirements. Basic **water** legislation (Water Law) and implementing regulations, standards and ordinances regulations have already been fully harmonised with the EU directives.

Ukraine has not yet updated the environmental policy act (the Principal Direction, 1998). The update version of the Sustainable Development Strategy, however, has been recently submitted for approval by the Parliament. The Program of the Development of Water Economy is in force but still specific

legislation on water management is missing. The current Governmental Action Plan is a comprehensive document which integrates economic, social and environmental concerns. Efforts are currently undertaken to finalise in 2005 the revision of the Protocol on the Protection of the Black Sea Marine Environment against Pollution from Land-Based Sources, in line with WFD principles. The Water Code of Ukraine harmonised with EU Directives is submitted as well for approval.

5.3 New instruments of environmental policies in the DRB

The environmental policy of the past can be described as source, substance, and media - orientated. Recent approaches try to connect isolated instruments such as directive based regulations - by integrating existing measures into a comprehensive framework for sustainable development (market – based instruments and/or voluntary agreements). The main instruments used in the DRB countries today are often grouped into three main clusters: (i) directive based regulations, (ii) market – based instruments and (iii) voluntary agreements.

According to the JAP, a joint decision for a voluntary agreement (Detergent industry (AISE) and the ICPDR) on promoting the introduction and use of phosphate-free detergents to the market of the Danube countries should be formulated. There are several voluntary agreements between governments and industry to limit the use of phosphates in detergents by the detergent industry. In some countries such as Germany the voluntary agreement is in effect equivalent to a "ban" of phosphates in household laundry detergents.

The UNDP GEF DRP has already started to provide support to the ICPDR on the identification of best alternative to introduce voluntary agreements instruments. As this process can only be successful in a partnership with all relevant stakeholders, the detergent industry is actively involved in the dialogue.

5.4 Barriers to the implementation

Regulatory challenges facing Danube Countries are significant. Progress is slow but the governments are gradually adopting modern regulatory and policies instruments to improve the quality of the regulatory environment and management practices to send a clear signal to the foreign and national financing institutions on their needs for investments.

Enforcement and compliance are considered as the main barriers to the effective implementation of the EU Directives and the ICPDR JAP. The difference between high regulatory standards and compliance capacity of the regulated bodies, without having designed flexible compliance schedules prevent authorities from effectively enforcing their regulatory instruments. Lack of a unifying concept on policies instruments choice and implementation across various levels of government still exist in some countries (e.g Moldova, Ukraine, Serbia & Montenegro) where decentralization and democratization of structures has not yet taken place. In some countries, problems with decentralization are associated with absence of subsidiarity principle approach (clarifying of competencies by all authorities – in government, in regions, districts and municipalities).

Additionally, costs for fulfilment of EU directives requirements will increase of water services prices. Implementation of Directive 76/464/EEC cost requires education of state water administration concerning new permits for discharging of waste waters. Sometimes, weak enforcement is associated with ineffective penalties system or with inconsistencies between the current structure/content of the laws, and the conflicts and overlapped provisions in various other laws.

Other barriers impeding the implementation are linked to the insufficient capacity building, lack of access to water and environmental relevant information, absence of public participation mechanisms in the environmental decision-making process. High investment needs, sometimes more demanding national legislation than that at the EU, administrative burdens, and insufficient co-operation between governmental institutions can complete the barriers picture.

6 Reporting on the Joint Action Program implementation

6.1 Progress of implementing policy and regulatory measures at national level in relation to JAP requirements

Responding to the DRPC requirements, the Danube countries have developed the Joint Action Program (JAP), which includes policies and strategies for improvement of water quality, pollution reduction and wetland restoration. 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 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.

6.2 Policy objectives, priorities and general principles for water management and pollution control and reduction

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 an appropriate incentive structures, redefining partnerships with stakeholders, and strengthening financial sustainability of environmental services. 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.

The water legislation was amended, or is under revision, according to the EU Directives in most of the countries. All DRB countries currently have now in place more or less comprehensive systems of environmental and water sector-related policies and strategies, which 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.

In this context, all countries have developed a hierarchic system of short, medium and long-term objectives and principles which usually reflect the need to ensure preservation of a sound environment for the future generations, protection of drinking water resources, conservation of biodiversity and reducing environmental pollution. The specific water management and pollution reduction related objectives are differentiated by sectors (municipal, industrial, agricultural) and impacted area (significant impact areas). 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.

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

The status of water-related policy and programmes in the DRB countries can be assessed in general terms as follows:

Table 4 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 especially 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-environmental 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	State Water Protection Plan	Strategy for WFD

Country	Explicitly formulated policy objectives for water management and pollution control	Programmes especially dealing with water management and pollution control	Programmes especially dealing with WFD implementation
	objectives in the current legislation: National Strategy for Environmental Protection, 2002 State Water Protection Plan, 1999 Environmental protection Plan Nature Protection Act, 1999 Water Act, 1995	Strategy and Action Plan	implementation
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 municipal 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 2000-2010	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 and 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 harmonised with EU Directives (expecting approval)

6.3 Status of legislation dealing with water management and pollution control and reduction

Except for Germany and Austria, the adequacy of the legal framework for water resources management has to be viewed against the background of political, economic, administrative and social changes which have taken place in the particular DRB countries during the previous years of transition. The legal framework consists of a hierarchic system of decrees, laws, directives, ordinances, regulations and standards on different administrative levels. In a number of countries, numerous laws and regulations were adopted a long time ago and have been frequently amended during the years of transition. A fundamental reform and modernization in line with EU Directives has not been undertaken. Due to the complexity of this task it can be anticipated that the completion of the ongoing reform process will take several years before the relevant legislation has reached an acceptable level of compliance with international requirements.

Danube countries in which the legal framework for environmental management of water resources and ecosystems has to be considered as fully adequate and in consistence with international requirements

are the EU members and the accession countries. In the non accession countries there are still essential deficits and problems that are mainly linked to the historical structures and the lack of streamlining and compatibility of interacting legislation on the various administrative levels. The improvement of the respective legislation is an essential prerequisite for accession and current efforts of the respective countries indicate this commitment.
The status of water-related legislation in the DRB countries is presented in the Table 5.

Table 5 Status of water related legislation in the DRB countries

Country	Main existing legal provisions for water management and pollution control	Proposed measures regarding water management and pollution control
DE	Fully appropriate legislation The Water Resources Policy Act, Fertilizer Act, Fertilizer Ordinance, etc.	Implementation
AT	Fully appropriate legislation Water act, and Acts on the adoption of EU Directives UUWT, IPPC, etc.	Implementation and ordinances for enforcement
CZ	Complete set of legislation, such as: State Environmental Policy, 2004 Act on Environmental Protection, 1992 Water Act, 2002 Act on Agriculture, etc.	Remaining Directives to be implemented Enforcement of legislation Ownership transfer in agricultural sector Clarification of competencies among all parties
SK	Appropriate legislation fully harmonized with EU Water Act, 2004- Natura Protection Act, 2003 Environmental Protection Act, 1999 GD No 491/2002 Coll. MO 249/2003 Act No on IPPC No 245/2003 Coll.	Implementation of updated legislation Finalize harmonization of legislation under the competencies of local authorities Increase share of population connected to sewage and wastewater treatment plants Increase water quality for drinking water Implement Program of measures against flooding
HU	Appropriate legislation fully harmonised with EU directives Act LIII of 1995 on the General Rules of the Protection of the Environment Act LVII of 1995 on Water Management Nature Protection Act Government Decree No. 221/2004. (VII. 21.) on certain rules of river basin management Government Decree No. 220/2004. (VII. 21.) on the rules of the protection of the quality of surface waters Government Decree No. 119/2004. (VII. 21.) on the protection of groundwater	Improve the institutional structures and clarify responsibilities Implement the adopted legislation Ministerial decree on the observation and monitoring of ground waters Ministerial decree on the observation and monitoring of surface waters
SI	Environmental Law, 2004; Water Act, 2002; Nature Conservation Act, 2002; IPPC; UWWT	Regulations for enforcement and compliance
HR	Law on Environmental protection, 1999; Nature Protection Act; Water Act; Water Management Financing Act	Compliance plans Water quality standards by water classes; Standards on hazardous substances; Effluent standards: maximum allowed concentration of hazardous substances
BA	Explicit legal provisions in the Water Laws (RS, 2002 and F BiH, 2003)	New Water Law, expected 2005 New Environmental Law, expected 2005
CS	Legislation not fully satisfactory. Law on water and Law on water management financing under preparation Law on Environmental Protection, 1991	Harmonisation with EU water and environmental legislation Involvement in transboundary cooperation within the frame of international conventions

Country	Main existing legal provisions for water management and pollution control	Proposed measures regarding water management and pollution control
	(Serbia) and 1996 (Montenegrin)	
BG	Explicit policy objectives and appropriate legislation in place Environmental protection Act Water Law, amended 2003	Implementation rules for complying with EU legislation
RO	Explicit policy objectives and appropriate legislation in place Environmental Protection Law Water Law Environmental protection strategy	Implementation rules for complying with EU legislation
MD	Law on Biological Security Law on Environmental Protection Law on payment for environmental pollution Water Code Ecological Funds	Revision of system of standards, including water quality standards, emission standards, and effluent standards Strengthening capacity building Restructuring institutional arrangements
UA	The specific legislation on water management is under revision	Water Code, harmonised with EU Directives expecting approval

6.4 Pollution reduction from point sources of pollution

6.4.1 Emission inventories

to assess emissions a multitude of input parameters have to be collected at a specific investigation areas and including all potential sources of pollution to water and types of sectors (municipal, industrial and agro-industrial). In addition to their international reporting requirements, the national authorities use the emission information for tasks such as water resources planning and management to permitting processes. Therefore, collection of input data needs to be performed in such a way that supports any emission relevant decision. Emission inventories are developed by Danube countries based on a systematic approach which can facilitate compiling emission inventories basin wide and delivering of results in an easily accessible and user-friendly form. Assistance is foreseen from the UNDP GEF DRP on the design a new methodology to collect and process emissions in line with EU regulations.

Regulation of point sources and diffuse sources is achieved through emission limits and best practices. The Danube countries use a number of methods to tackle the task of controlling emissions:

- Preparing emissions inventories of municipal, industrial and agricultural point sources. Based on these inventories, the reduction of water pollution that can be achieved by implementing the various measures and the amount of investment needed and other costs involved are calculated.
- The elaboration of Best Available Techniques (BAT) for municipal and industrial wastewater discharges, including the setting up of a timetable for their step-by-step implementation.
- The elaboration of the common principles regarding the minimum monitoring required for wastewater discharges.
- Preparing regular progress reports on the Joint Action Programme implementation tasks.
- Preparing a list of priority pollutants and/or groups of pollutants, relevant for the Danube River Basin, which should be urgently eliminated or stringently reduced
- Estimating and evaluating pollution loads from diffuse sources, and developing strategies and proposals for Best Environmental Practice (BEP) that aim to reduce these loads with associated timetable.

The EMIS inventory developed in the ICPDR has expanded in scope to collect data from all settlements having more than 10,000 inh., on industrial pollution-prevention activities as well agricultural discharges. Therefore, the emission inventories include:

Municipal Emissions

- all municipal sources with more than 10,000 PE (waste water treatment plants, irrespective of the type of treatment, as well the municipal sources without treatment, discharging into the riverine environment. Discharges of substances from the ICPDR List of priority substances were also considered.

Industrial Emissions

- all direct industrial discharges which are bigger than 2 ton/a COD or 1 ton/a BOD are reported according to EPER. Additionally, reporting to the ICPDR List of priority substances is included.

Agricultural emissions

- all agricultural emissions from agricultural sources (farms) with more than 2000 pigs, more than 30 000 chicken, more than 2000 dairy cows, and more than 1000 sheep. Food industry sources were reported under the industrial inventory. Additionally, reporting to the ICPDR List of priority substances is included.

A comparative analysis shows for example that Austria reported in 2000 a number of 79 municipal discharges and 13 industrial plants. For 2002, Austria reports 240 municipal wastewater treatment plants and the same number of industrial units. Likewise, Romania registered 53 municipal wastewater treatment plants in 2000 and 116 in 2002, while for industrial plants, 100 were reported in 2000 and 87 in 2002.

6.4.2 Achieved and expected pollution reduction from point sources

A review of reporting on point sources of pollution in 1997, 2000 and 2002, for municipal and industrial sources, and 2000 and 2002, for agro-industrial sources, such as the reduction of BOD, COD, N and P loads in the discharges is quite considerable (Fig.4). For municipal discharges, 160,408 t/a BOD, 131,585 t/a COD, 2,240 t/a TOT-N, and 6,575 TOT-P t/a have been reduced in the period 1997-2002. The first graph shows the number of sources reported in the years 1997, 2000 and 2002. Hungary, Moldova, Slovakia registered more than 50% reduction of Tot-P from 1997 to 2000. Yugoslavia (Serbia & Montenegro) reported only few sources (Fig 3).

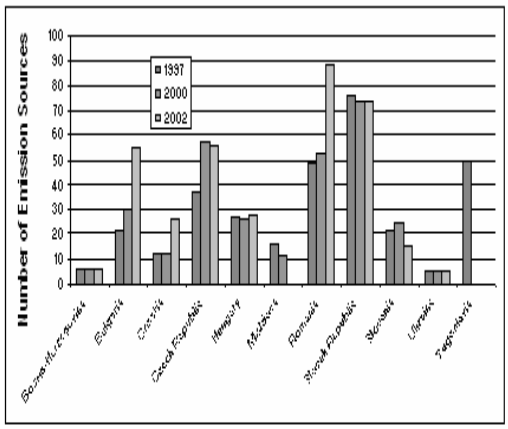


Fig. 3 Number of point sources reported

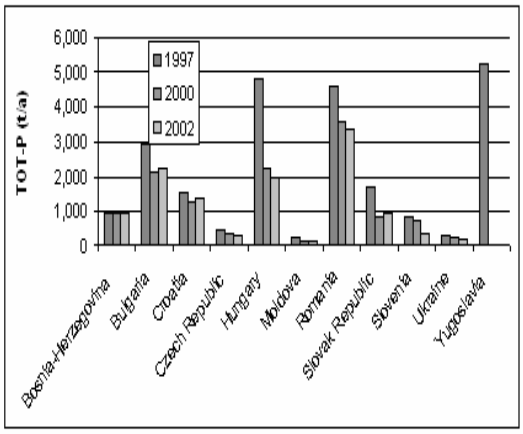


Fig.4 TOT-P from municipal point sources

For industrial discharges, 26,877 t/a BOD; 29,534 t/a COD; 3, 437 t/a TOT-N; and 1,575 TOT-P t/a have been reduced in the period 1997-2002.

Table 6. Estimated compliance costs for UWWT and IPPC Directives Directive

Danube country	Population 2000, mil inh	Estimated cost for UWWT (mill.€)	Estimated cost for IPPC (mill €)
Bulgaria	8	2,056 (65%)	3,261 (300-400 facilities)
Czech Republic	10	1,164 (74.9%)	3,725 (1,088 facilities)
Hungary	10	1,678 (60% sewage and 22% treatment)	1,761 (970 facilities)
Romania	22	1,385 (sewage)	806 (2,900 facilities)
Slovak Republic	5	499 (54.7%)	1596(540 facilities)
Slovenia	2	914 (sewage)	50 (108 facilities)

The progress with respect to wastewater treatment varies widely. Each Danube accession country made estimates of the cost of implementing the more demanding directives (Table 6), particularly the Urban Wastewater Treatment Directive (UWWT) and Integrated Pollution prevention and Control (IPPC).
The UWWT Directive is expected by all countries to be the most expensive, with a total investment cost of around 15 billion €, and an average per capita cost of 235 €.

Pollution coming from point industrial units is partly addressed by the IPPC (Integrated Pollution Prevention Control), and partly by a number of specialised directives covering specific sectors. The closure of many heavily polluting industrial activities has contributed to a decrease of industrial pollution. Meeting the requirements of the IPPC Directive by the deadline of 2007, is one of the more demanding parts of EU environmental legislation, and requires high investment for technology and clean production processes.

Several Danube countries have already been granted a longer transition period for the IPPC Directive, justified by relatively high investments required for outdated equipment.

In **Czech Republic**, the Act on IPPC came into force on 1 January 2003, and progress has been made with the establishing of an IPPC Agency. Implementation of IPPC Directive in **Hungary** had challenged the country's environmental administration, as the permitting system is revised. Effort is still required to transform the **Slovakia**'s infrastructure to comply with the EU Drinking Water and UWWT Directives. With regard to IPPC, the Slovak Republic still has to introduce integrated permits and strengthen IPPC permitting capacity. Slovenia requested an extension to 2015 for implementation of the Urban Waste Water Treatment Directive to provide adequate collection and treatment of waste waters in the 135 agglomerations with p.e.> 2,000. A four year transition period has been granted so that 15 facilities can meet the requirements of the IPPC Directive. Integrated permitting under IPPC came into force in January 2003 in **Romania,** which has until 2015 to achieve compliance for all facilities.

6.5 Pollution reduction from diffuse sources

The estimation of the nutrient emissions into surface water of Danube river basins, by point sources and various diffuse emissions has been calculated using a harmonized inventory for point and diffuse sources of pollution based on the model MONERIS (MOdelling Nutrient Emissions in RIver Systems). Whereas point emissions from waste water treatment plants and industrial sources are directly discharged into the rivers, diffuse emissions into the surface waters reflect the sum of different pathways. Seven pathways (Fig. 5) are considered: point sources; atmospheric deposition; erosion; surface runoff; groundwater; tile drainage; urban surface water runoff. The model allows estimation of nutrient emissions to the surface water on a very large geographical scale and provides quantification of nutrient emissions to the surface water at the catchments level (rather than administrative units), in order to optimally support the river basin approach. Large data limitations, however, impeded a realistic simulation of reality. Therefore, it expected that future MONERIS calculation will be based on an updated and complete set of data, distributed among river basins identified as in the overview map of the Danube RBM Plan (Map1).

The share of different human sources compared to the total nutrient pollution is provided by Fig. 6.

In many Danube countries, the increasing importance of non-point sources is connected with decreasing pollution from point sources, due to the reducing of economical activity. The total pollution from

nitrates and acidification is significant, less for phosphorus, and is diverse in different regions of the DRB. The inputs are dependent on population density, percentage of treated wastewater disposal, intensity and way of farming and the level of atmospheric deposition. The Nitrates Directive requires development and application of codes of good agricultural practices, identification of zones vulnerable to nitrate pollution, and implementation of special action programmes in these zones.

The ICPDR EMIS EG has developed in line with Article 7 of the DRPC a Recommendation on BAT at Agro-industrial Units including (i) technical in-plant measures for the reduction of wastewater volume and abatement of pollution load, (ii) reduction of pollution load by end-of-pipe measures, and (iii) environmental management improvement actions. The Contracting Parties will implement the recommendation from January 2006 and report each 2 years from 2007.
To ensure significant nutrient loads reduction from diffuse sources of pollution, the Danube countries have identified measures that address policy and legislation-related actions, institutional strengthening and capacity building, raising public awareness and strengthening public participation in nutrient reduction initiatives.

Fig 5 Diffuse nutrient pollution by pathways for the total Danube river systems (1998-2000)

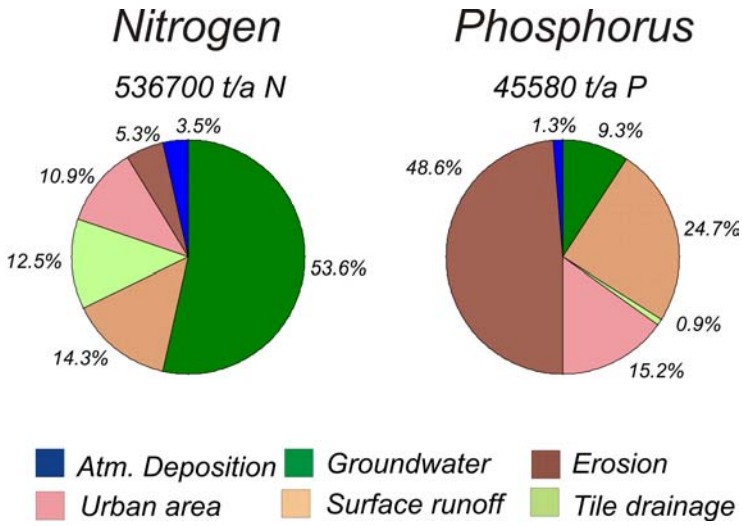
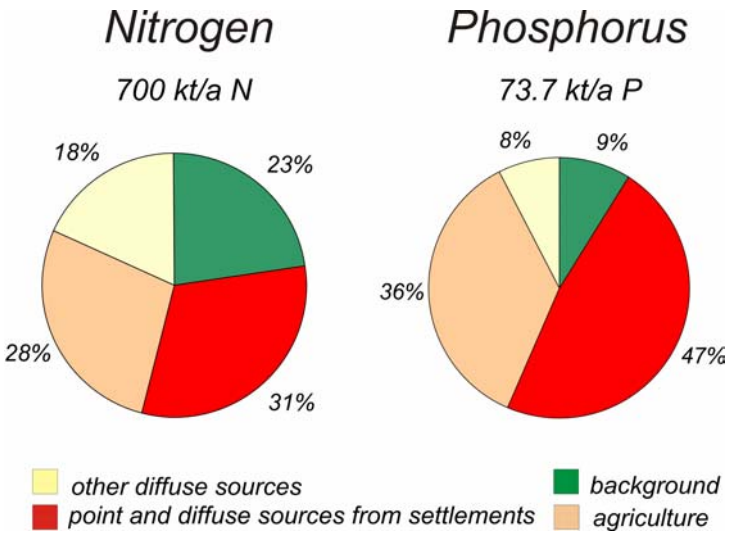


Fig 6. Diffuse nutrient pollution by sources for the total Danube river systems (1998-2000)



The Danube countries have introduced various legal, financial and economic measures to control diffuse pollution. To facilitate the understanding of progress of implementing policy and regulatory measures at national level to the JAP requirements, various country measures to control diffuse pollution are presented below:

In accordance with EU-regulation 1257/99 **Austria** has elaborated the programme-planning document "Rural Development". A precondition for participation in the different subsidy-programmes is the fulfilment of minimum demands regarding environment, hygienic and animal protection and the integration of "good agricultural practice". The main part of this programme-planning document is the agro-environmental programme "ÖPUL". Austria applies ÖPUL not only in certain sensitive areas but as horizontal approach in the whole agricultural area. To promote progressive environmental practices in regions with intensive agricultural land use, various regional subsidy programmes against nitrates were included into the nation-wide programme "ÖPUL 2000". The regional programmes and some co-operative agreements were negotiated between the Federal Government, the Länder, farmers associations and water suppliers. As a result, a first success of the preventive water protection programmes can be seen: the concentration of nitrate in groundwater is decreasing.

The main principles of the Austrian water protection programs in the framework of ÖPUL 2000 include: (i) interdisciplinary co-operation between representatives of water management and agriculture, (ii) the practicability of the measures, (iii) a fair financial compensation of the services of the farmers, (iv) appropriate conditions for farmers with high intensities of livestock, (v) an additional control of the farmers not participating in the programme, (vi) comprehensive public information and consultation, and (vii) permanent direct contact to the concerned communities and involved farmers through information, guidance and educational campaigns.

The arable area is more than 66% of the total territory of **Hungary** and a further 19% are covered by forests. In Hungary, the main portion of diffuse pollution comes from agriculture. The most important pollutants are nitrogen and phosphorus, and out of the total inputs in the Danube Basin, about 60% of N and 40% of P originate from diffuse sources. The investigation of the sources and pathways of nitrogen has shown that on river basin level, the importance of agriculture for N emissions into surface waters is evident: about half of the input is from agriculture. The main existing national programs in connection with the reduction of diffuse pollution refer to the reduction of nutrient pollution, agro-environmental practices and environmental program of site remediation.

The government in **Romania** has introduced BAP, including erosion control and clean manure handling and Low Input Sustainable Agriculture (LISA) as to achieve an effective integration of ecological techniques, with lowest possible input levels. It is expected that in future the content of nutrients will continue to decrease.

Efforts are already taken in Romania to implement the following measures: (i) elaboration or improvement of national laws, regulations and normative regarding agricultural production in line with environmental requirements, (ii) organisation of an informational and monitoring system concerning agricultural activities, (iii) organisation of pilot demonstration farms, (iv) organisation of training courses, seminars and workshops for farmers, (v) development of the dry farming and irrigation within the areas affected by droughts, (vi) develop animal husbandry outside of villages and rural settlements, etc.

The most important non-point sources that affect **Slovenian** surface and ground waters are: agriculture, dispersed settlement and atmospheric depositions (mostly caused by transport & traffic). According to NEAP complex measures to reduce this are implemented or in preparation. Slovenia has introduced the Code of Good Agricultural Practice. Some measures are: (i) since January the 1st 2003 the limit value for annual input of organic nitrogen disposed with animal manure is limited to 170 kg/ha, (ii) the whole Slovenian territory is claimed to be vulnerable area, (iii) annual input of phosphorus is limited to 120 kg per/ha while annual input of phosphorus is limited to 300 kg/ha, and each individual farm has to have a fertilisation plan made by Agricultural Advisory Office.

For **Czech Republic**, the main part of diffuse pollution comes from agriculture, atmospheric depositions and soil erosion. The increasing importance of non-point sources is connected with the decrease of pollution from point sources. The share on the total pollution is essential in nitrates and acidification, less in phosphorus, and is diverse in different regions of the Czech Republic, in dependence on population density, percentage of treated wastewaters disposal, intensity and farming practices and the level of atmospheric deposition.
Recent results of research on demarcation of vulnerable regions threatened by nitrates in compliance with the Council Directive 91/676 EEC show, that the area of surface and ground waters afflicted by nitrate pollution occupies 42,5 % of the total agricultural land, which represents 36% of the whole Czech Republic territory. For vulnerable regions special action programmes comprising measures for nitrate pollution reduction from the agricultural sources are under implementation.

The main source of diffuse pollution influencing water quality in the **Slovak Republic** is agriculture. Studies have indicated that agriculture can contribute as much as 40% of the nitrate pollution of water bodies. The following three factors were found to be the major causes of agriculturally related diffuse pollution: (i) high, and often unnecessary, applications of mineral and organic fertilisers to the soil (especially before 1989), (ii) water erosion on arable land caused not only by unsuitable soil type and topography, but also by inappropriate choice of crops, plant rotation and soil cultivation, and (iii) incorrect crop choice and rotation in the vicinity of potable water sources. Three codes which embrace the current legislation have been produced by the Ministry of Soil Management (Agriculture) of the SR: Code of Soil Protection (1996), Code of Good Application of Fertilisers (2000), and Code of Good Agricultural Practice for the Protection of Water Resources (2002).

The economic transition process has caused significant reduction of industrial and agricultural production, thus temporarily reducing production-related pollution loads as well in **Croatia**.

6.6 Wetlands restoration and floodplain management. Inventory of protected areas

Wetlands, in particular floodplains connected to rivers, act as nutrient filters and a significant proportion of the projected N and P removal in the Danube River Basin is assigned to this sector in the JAP (Table 7).

Table 7 Expected nutrient reduction from wetlands

Expected Nutrient Reduction in the Danube River Basin				
Sector	**Nitrogen**		**Phosphorus**	
	tons/year	%	tons/year	%
Wetlands	29,872	36,8	2,989	14,7

Among the 13 Danube River Basin countries, a total of 323 million € investment projects have been listed in the wetlands sector. Measures include 23 projects: floodplain restoration, revitalisation of river banks, reactivation of former flow channels, and conservation of endangered species and habitats.
17 wetlands projects, representing a total of 200,000-300,000 ha of potential area to be restored are estimated to achieve N and P reductions of up to 29,872 tons/year and 2,989 tons/year, respectively. Compared to nutrient reduction attained through municipal wastewater treatment investments, the cost efficiency of the wetlands restoration efforts is quite high, considering that the 158 municipal projects evaluated in the DABLAS (2002) program were estimated to achieve N and P reductions of 35,406 tons/year and 7,050 tons/year, respectively, for a total investment of 3,189 million €. In addition come other (economic) benefits as a result of floodplain restoration (flood retention, recreation, genetic diversity, biomass production for agriculture and forestry etc.). The favourable cost effectiveness of wetlands restoration versus municipal wastewater treatment is further evident in the following comparison of 2 investment projects achieving similar nutrient reduction:

Table 8. Estimated reduction for case studies

Project	Sector	Estimated Nutrient Reduction (t/a)		Est. Cost mio €
		N	P	
Zagreb, HR Nutrient Reduction	Municipal	4305*	876*	27*
Gemenc, HU Wetlands restoration	Wetlands	4050**	405**	5***

*DABLAS project, 2002/03
**UNDP/GEF, Danube River Basin Pollution Reduction Programme Report, June 1999
***ECO EG, Midterm report on the status of implementation of the JAP wetlands projects, June 04

The planned nutrient removal upgrade of the Zagreb (HR) municipal wastewater treatment plant is estimated to cost 27 million € to achieve an annual reduction of 4,305 tons of N and 876 tons of P. For comparable nutrient reduction results, restoration of the wetlands in the Gemenc (HU) area will require ca. 5 million €.
Besides nutrient removal, municipal wastewater treatment projects achieve many other societal and environmental benefits, such as improved sanitation and decreased organic matter loading (BOD).

ICPDR has also been supporting the development of a regional inventory of protected areas. Following the decisions of the ECO EG a core data set (with connections to Natura 2000/Emerald and Ramsar inventories) was compiled in 2003, listing about 250 sites. Out of these, 55 sites are of basin-wide importance.

6.7 Improvement of water quality monitoring and upgrading TNMN

6.7.1 Upgrading TNMN

The Danube countries have decided to upgrade TNMN to reflect the requirements of the Article 8 of the WFD and to take into account the WFD CIS process. The TNMN shall be revised to provide a coherent and comprehensive overview of ecological and chemical status within the Danube River Basin. For TNMN, the Danube countries have considered 79 sampling stations, 52 determinands in water and 33 in sediment. The revision will be done gradually with the aim to have the TNMN upgrade functional by 2006. Figure 7 provides information on the annual loads of inorganic nitrogen at monitoring stations along the Danube.

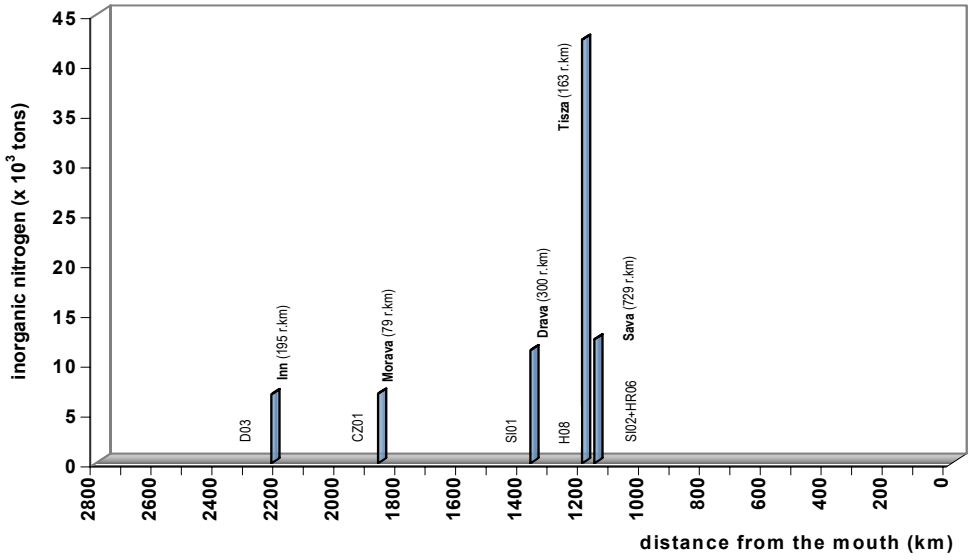


Fig 7 Annual loads of inorganic nitrogen at monitoring stations on selected Danube tributaries, year 2000

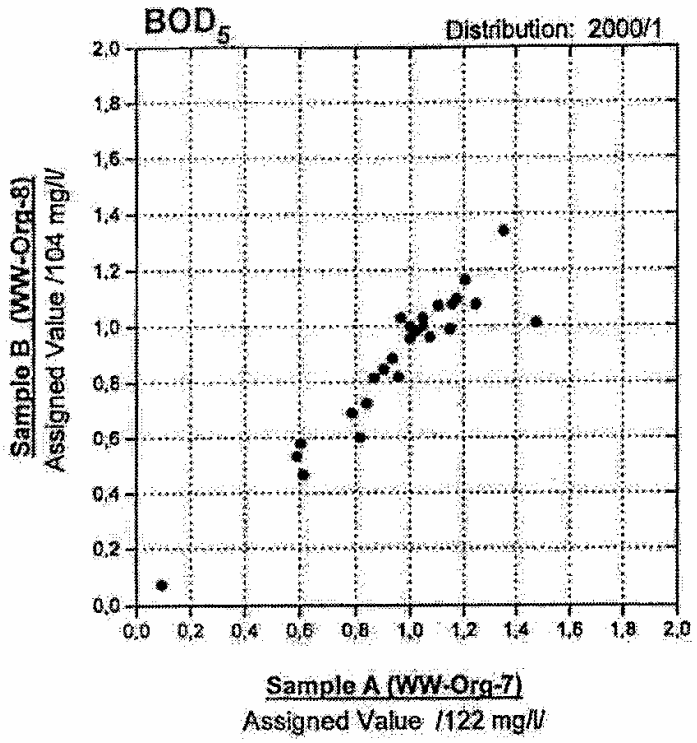
6.7.2 Joint Danube Survey

An expedition, referred to as Joint Danube Survey (JDS) was launched in August 2001 to investigate the quality of the Danube River along its 2,581-kilometer-long stretch from Regensburg in Germany to its mouth in the Black Sea. JDS was initiated by the ICPDR to improve the validity and comparability of water quality data received from its regular monitoring programme- TNMN. The mission of the ten scientists from Germany, Austria, Slovakia, Hungary, Yugoslavia, Bulgaria and Romania was to collect and analyze samples taken from the Danube River for 140 different parameters ranging from biological indices and chemical pollutant levels to indicators about the state of aquatic flora, fauna, and micro-organisms. The main objectives of the JDS were to: (i) produce a homogenous data set for the Danube River based on a single laboratory analysis of selected determinands, (ii) identify and confirm specific pollution sources, (iii) screen the pollutants as specified in the EU Water Framework Directive, (iv) provide a forum for riparian/river basin country participation for sampling and inter-comparison exercises, (v) facilitate specific training needs and improve in-country experience, and (vi) promote public awareness.

The results of the JDS include: surface water, sediment, mussels and biological samples collected from 98 sampling sites, suspended solids samples collected from 63 sections of the Danube, and fifteen parameters (e.g., conductivity, dissolved oxygen, nitrites, nitrates, total coliforms, faecal coliforms) analysed on-board. All samples were sent in regular intervals to the JDS Reference Laboratories for analyses of more than 80 additional determinands

6.7.3 Analytical Quality Control (AQC) in the DRB

Efforts have been undertaken in order to harmonise analytical activities within the DRB countries related to TNMN, as well as implementation and operation of an Analytical Quality Control (AQC) programme to ensure quality and comparability of data. As a consequence, 36 TNMN laboratories reported results that provided information on their analytical performance: in general, the analytical results for synthetic samples were better than the results for the real water samples (results influenced by the matrix effect). For most of the general parameters and nutrients a good performance was observed. Problems were reported for analysis of cyanides.



Similarly, performance for the organic pollutants (e.g. COD, BOD, MBAS, TOC, AOX) was relatively good. Analyses of BOD have improved significantly and AOX results were excellent.

Fig. 8 BOD variation in the reported values

The analytical performance in case of heavy metals was moderate. The analyses of arsenic and mercury have improved significantly in comparison with the results from previous years.

The area where improvement is still required is the analysis of organic micropollutants. Especially in the analysis of sediments the data could not be evaluated. The most probable reason was a poor sample pre-treatment. Fig. 8 shows variation in the reported values of BOD in AQC water samples.

6.7.4 Load assessment programme

The load assessment program, initiated in 2000, is integrated in the TNMN efforts with the view to produce reliable and consistent trend analysis of concentrations and loads of substances diluted in water or attached to sediments. Danube countries have agreed to use the Standard Operational Procedure (SOP) developed in the frame of EU Phare Project "Transboundary Assessment of Pollution Loads and Trends" (1998) for its operation in the Danube River Basin. Loads are calculated for BOD5, inorganic nitrogen, ortho-phosphate-phosphorus, dissolved phosphorus, total phosphorus, suspended solids and chlorides (voluntary). Minimum sampling frequency is at least 24 per year.

6.8 Definition of basin wide priority substances and water quality standards (ICPDR list of priority substances)

The ICPDR EMIS EG prepared a proposal for the List of Priority Substances consisting of 2 separate annexes: Annex A, 33 substances, in accordance with the Annex X of the EU WFD (Article 16 of the WFD requires the Commission to establish a list of priority substances and to identify the priority hazardous substances) and Annex B, divided into two groups – B1: General Parameters (COD, NH4-N, Total N, Total P) and B2: Danube Specific Priority Substances (As, Co, Zn, Cr). In line with WFD, for priority substances, the 'combined approach' has to be applied, i.e. harmonised European emission controls and water quality standards will be elaborated for all substances. Therefore, with support of the UNDP GEF DRP, the work of EMIS EG will be directed to identification of harmonised emission control strategies, while MLIM EG will follow the development of quality standards for priority substances.

6.9 Revision of the Accident warning system and definition of preventive measures

6.9.1 Operation and upgrade of the Danube Accident Emergency Warning System

A substantial upgrade in terms of effectiveness and cost-efficiency of the AEWS was carried out in 2003 with support of the UNDP GEF Danube Regional Project. The satellite-based communication was replaced by a web-based communication using Internet and SMS messages to become an integral part of the ICPDR information system (Danubis). A series of tests of the web-based system were performed in summer/autumn 2003 in all Danube countries to debug the software, to check the technical setup of national GSM operators and to train staff of Principle International Alert Centres. The final test of the upgraded system performed on 14 June 2004 proved that the system is perfectly working. The implementation of the new system necessitated a revision of basic AEWS documents.

6.9.2 Inventory of accident risk spots in the Danube River Basin

Experiences with consequences due to several accidental spills has shown that inadequate application of precautionary measures at accident risk spots (ARS) could lead to harmful effects to humans as well as to the environment. For this reason the ICPDR APC EG elaborated in 2001 a basin-wide inventory of potential accident risk spots. For estimation of a real risk at a particular site a set of checklists was elaborated and made available to the Danube countries. In 2003 the existing potential ARS Inventory was supplemented by data from Austria and Bosnia and Herzegovina. To advance with the risk estimation a pilot project on demonstration of ARS checklists application is expected to start during phase 2 of the UNDP GEF DRP.

6.9.3 Inventory of contaminated sites in flood-risk areas

During heavy rainfall, floods can create pollution and health risks, if precautions are not taken to minimize them. Nitrogen and other non - point-source pollutants may leach from agricultural lands, and the resulting nutrient load may severely stress aquatic ecosystems. It is extremely important to determine the actual risks of polluted floodplain sediments and to predict changes in this ecological risk when sediment is displaced. The 2002 severe flood events in the DRB countries have led to re-

examinations of traditional approaches to flood management. The response of the ICPDR to this problem was elaboration of an inventory of contaminated sites in flood-risk areas in the Danube River Basin which was finalised in 2003 (261 contaminated sites). The ICPDR 6th Ordinary Meeting in December 2003 approved the Safety Requirements for Contaminated Sites in Flood-risk Areas and recommended their application at national level. In addition to the adoption of the Safety Requirements and taking into account the relevance of a general precautionary principle, the ICPDR also encouraged the Danube countries to establish the policy framework and take the necessary measures to prevent any future contamination of sites in flood-risk areas.
For an initial risk assessment of all submitted "candidate" sites a so called M1 methodology was developed. This methodology is based on assessment of toxic potentials of soil or waste taking into consideration harmful substances to be expected in a certain type of waste or in a specific industrial branch, correlated with the size of the contaminated area. The M1 methodology also served to rank the contaminated sites identified in the national inventories. The results of this evaluation provide the final list of contaminated sites which are considered that passed through the M1 methodology. The appropriate methodology for flood risk assessment (M2) is under development. After finalization of M2 step a list of sites posing a high risk of contamination of water bodies during floods will be available.

6.10 Country progress in policy reforms

Development and enforcement of environmental law and policy, economic instruments, strengthening of public participation and capital investments are main tasks of the GEF Strategic Partnership on the Danube Black Sea basin over the period of 2001-2007. Through the formulation process, six objectives with indicators of success were adopted for the entire 6 year period.

The indicators and the measurable results in terms of policy reform for participating countries in the DRB are described in Table 9. The number of countries for each concept/approach introduced was considered as a basis of measurement. For indicator C), the measures were divided in four groups: (i) integrated river sub-basin management of land, water and ecosystems, (ii) biodiversity projects for wetlands and floodplain conservation, (iii) enforcement by legal authorities and, (iv) holistic approaches to water quality, quantity and biodiversity of aquatic ecosystems.

Table 9 shows that most countries started related policy reforms and concrete projects, and that a substantial progress is already achieved after 4 of the 5 years of the JAP, even if this is yet not the case for all countries.

Table 9.Country progress in policy reforms

Country		AT	BA	BG	HR	CZ	DE	HU	MD	RO	CS	SK	SI	UA
A) Indicator By 2007, 100% of the participating countries introduce one or more policy or regulatory measures (including P-free detergents) to reduce nutrient discharges in the agricultural, municipal, or industrial sectors, to restore nutrient sinks (wetlands, flood plains), and to prevent and remediate toxics "hot spots"		X	X	X	X	X	X	X	X	X	X	X	X	X
Measure: number of countries:13														
Result 2004: 100%														
B) Indicator By 2007, 50% adopt multiple policy measures, towards goals of maintaining the 1997 levels of nutrient inputs to the Black Sea, and reducing toxics contamination in the basin		X		X		X	X	X	X	X		X	X	
Measure: number of countries: 9														
Result 2004: 69%														
C) Indicator: By 2007, all countries in the basin begin nutrient sink restoration (wetland restoration) and non-point source discharge reduction through (i) integrated river sub-basin management of land, water and ecosystems, (ii) biodiversity projects for wetlands and floodplain conservation, (iii) enforcement by legal authorities and, (iv) holistic approaches to water quality, quantity and biodiversity of aquatic ecosystems		X		X	X	X	X	X		X		X	X	
Measure: number of countries: 9 **Result 2004: 69%**	(i) integrated river sub-basin management	X		X	X	X	X	X	X	X		X	X	X
Measure: number of countries: 11 **Result 2004: 84%**	(ii) biodiversity projects	X		X	X	X	X	X		X		X	X	
Measure: number of countries: 9 **Result 2004: 69%**	(iii) enforcement	X	X	X	X	X	X	X	X	X	X	X	X	
Measure: number of countries: 12 **Result 2004: 92%**	(iv) holistic approaches	X		X	X	X	X	X	X	X	X	X	X	X

7 Implementation of the EU Water Framework Directive

7.1 Progress in developing the Danube River Basin Management Plan in line with the WFD

The Water Framework Directive ensures integrated water resources management on river basins. River basin authorities will be required to monitor water quality and quantity, set quality standards, establish rules for water abstraction and waste water discharge permits, and develop action plans to ensure that agreed quality objectives will be met. Public participation in the process is essential. The Directive is particularly demanding in requiring Member States to achieve "good ecological status" and "good chemical status" for all surface and ground water, by 2010. Implementing the water policy legislation will be very demanding and costly for all new members, in administrative, financial and political terms.

In addition to preparing a roof report, the 6th Ordinary Meeting of the ICPDR concluded that all countries should send their national reports to the ICPDR as the platform for coordination. The ICPDR has not yet received the national reports from the EU-Member States: Germany, Austria, Czech Republic, Slovak Republic, Hungary and Slovenia.

The first main output of the joint efforts to implement the EU Water Framework Directive in the Danube River Basin are the Roof Reports 2003 and 2004. The work related to WFD implementation is coordinated by the RBM EG.

The WFD Roof report 2003 (Art. 3.8 and Annex I) was finalised on April 16, 2004 and sent to the European Commission as an informal information on June 22, 2004. In addition, the national reports of the Non-EU-Member States (Croatia, Serbia and Montenegro, Bulgaria, Romania and Moldova) were sent to the Commission. Bosnia i Herzegovina has recently sent its National WFD Report 2003 to the European Commission. Ukraine is currently not in a position to report on WFD implementation.

The WFD Roof report 2004 has been prepared in line with Art. 5, 6 and Annexes II, III, IV of the WFD. The report having reporting deadline at March 22, 2005 deals with the characterisation of surface waters and groundwater, with the assessment of significant pressures and impacts, and with the economic analysis of water uses. The UNDP GEF DRP has provided financial support for the drafting of the Roof report.

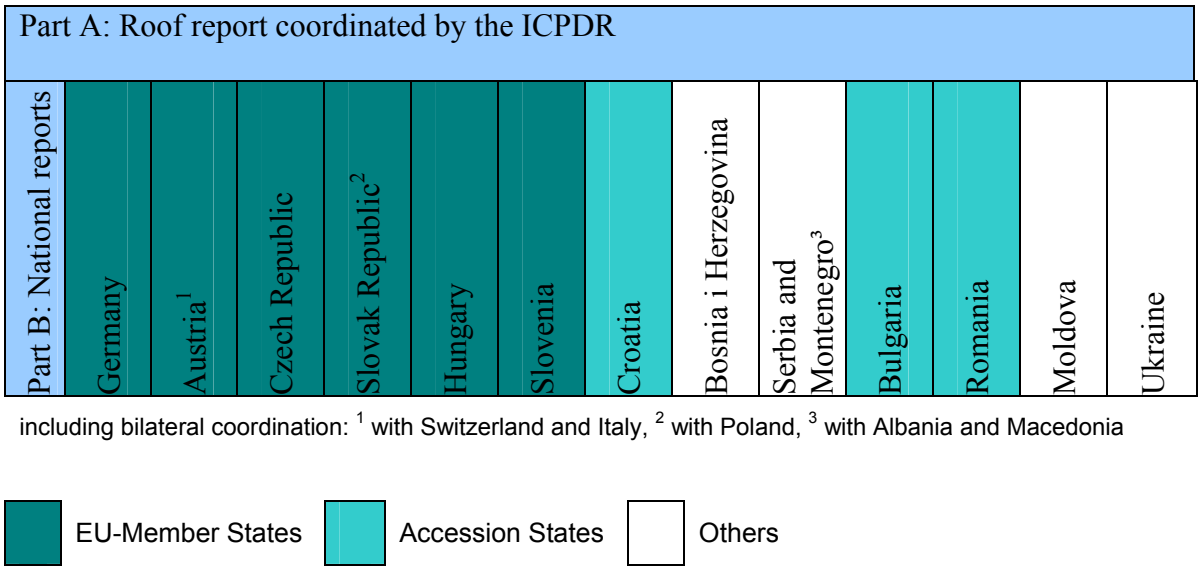
Each state will deliver the roof report (Part A) together with its own national report (Part B). In addition, the ICPDR will informally send the European Commission a copy of the roof report and a copy of the national reports (Part B) of those countries not obligated to report to the European Commission. The final report will be presented at the Ministerial Meeting in December 2004.
One of the objectives of the Water Framework Directive is specifically to make sure that different objectives are achieved through a cost effective and comprehensive decision-making process.

The Danube River Basin Management Plan has been divided into two parts. Part A (roof of the DRBMP) gives relevant information of multilateral or basin-wide importance, whereas Part B (national input to DRBMP) gives all relevant further information on the national level as well as information coordinated on the bilateral level (Fig 9).

Part A – Roof report

The Roof report deals with information of basin-wide importance. This includes, in particular, an overview of the main driving forces of multilateral or basin-wide relevance and the related pressures exerted on the environment. The analysis is based on available data resulting from past and ongoing programmes and projects. The overview will include effects on coastal waters of the Black Sea as far as they are part of the DRBD, since their status could be a reason for designating the whole DRBD as a sensitive area.

Fig 9. Structure of the report for the Danube River Basin District



Part B – National reports

The National reports give all relevant further information on the national level as well as information coordinated on the bilateral level. 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.

The Danube states cooperating under the DRPC report regularly to the ICPDR on the progress of WFD implementation in their own states. These national reports serve as a means for exchanging information between the states and for streamlining the implementation activities on the national level.

7.1.1 Harmonization of methodologies and reference conditions (i.e. criteria for significant pressure and impact)

7.1.1.1 Characterisation of surface waters types and harmonised system for reference conditions

According to Annex II 1.1 WFD "Member States shall identify the location and boundaries of bodies of surface water and shall carry out an initial characterisation of all such bodies …".

The first step in the analysis is the identification of the surface water categories. It has been agreed that the following surface waters are potentially of basin-wide importance and are therefore dealt with in the Roof report:

- all rivers with a catchment size of > 4 000 km²
- all lakes and lagoons with an area of > 100 km²
- the main canals.

These surface waters are shown on the Danube River Basin District overview map (Map 1).
The surface water body categories have been identified on the national level. For each surface water category, the relevant surface water bodies within the river basin district need to be differentiated according to type (Annex II 1.1 (ii) WFD). The state of implementation of WFD varies strongly between the countries in the Danube River Basin, especially for the development of surface water typologies and the definition of their reference conditions.
With support from UNDP GEF DRP, the typology of the Danube River has been developed in a joint activity by the countries sharing the Danube River. The Danube typology therefore constitutes a harmonised system used by all Danube countries. On the basin-wide level, the Danube countries have agreed on general criteria as a common base for the definition of reference conditions. These have then been further developed on the national level into type-specific reference conditions. The Danube flows through or borders on territories of 10 countries (Germany, Austria, Slovak Republic, Hungary, Croatia, Serbia and Montenegro, Bulgaria, Romania, Moldova and Ukraine) and crosses four ecoregions (9 – Central Highlands, 11 – Hungarian Lowlands, 10 – Carpathians, and 12 – Pontic Province). The

Danube typology was based on a combination of abiotic factors of System A and System B. The most important factors are ecoregion, mean water slope, substratum composition, geomorphology and water temperature. The typologies of the Danube tributaries were developed by the countries individually. Workshops enhanced the exchange of information between the countries and allowed for a streamlining of approaches. In addition, stream types relevant on transboundary water courses were bilaterally harmonised with the neighbours. The common factors used in all DRB typologies are ecoregion, altitude, catchment area and geology.

7.1.2 Identification of significant pressures

The WFD requires information to be collected and maintained on the type and magnitude of significant anthropogenic pressures, and indicates a broad categorisation of the pressures into:

- point sources of pollution,
- diffuse sources of pollution,
- effects of modifying the flow regime through abstraction or regulation, and
- morphological alterations.

In addition, there is a requirement to consider land use patterns (e.g. urban, industrial, agricultural, forestry) as these may be useful to indicate areas, in which specific pressures are located.
The pressures and impacts assessment follows a four-step process:

1. describing the driving forces, especially land use, urban development, industry, agriculture and other activities which lead to pressures, without regard to their actual impacts;
2. identifiying pressures with possible impacts on the water body and on water uses, by considering the magnitude of the pressures and the susceptibility of the water body;
3. assessing the impacts resulting from the pressures; and
4. evaluating the likelihood of failing to meet the objective.

The analysis is based on screening of emissions (pressures) according to certain criteria, which determine what ‘significant pressure’ means.

The ICPDR Emission inventory is the key data base for the assessment of emissions from point sources on the basin-wide level. It includes the major municipal, industrial and agricultural point sources and identifies the total population equivalents of the municipal waste water treatment plants, the industrial sectors of the industrial waste water treatment plants, and the types of animal farms for the agricultural point sources. In addition, it includes information on the receiving water and data on some key parameters of the effluent such as BOD, COD, P and N.
The criteria defined by the ICPDR EMIS EG consider pressures from point sources, especially from substances referred to in Annex VIII WFD, to the Urban Waste Water Treatment Directive (91/271/EEC), to the Integrated Pollution Prevention and Control Directive (96/61/EC) and to the Dangerous Substances Directive (76/464/EEC).

7.1.2.1 Definition of significant point source pollution on the basin-wide level

A comparison of the significant point source emissions with the complete list of point sources in the emission inventory illustrates that only few point sources are responsible for about half of the point discharges into the Danube River system. From this it can be concluded that reduction of emissions (organic substances and nutrients) from these sources would lead to a remarkable reduction of the total point source pollution. This also visible in the results of the DABLAS 2002 estimates of municipal investments in the DRB. (Table 21).

Table 10. Discharges from significant point source according to the criteria, per sub basins.

	COD t/a	BOD t/a	N t/a	P t/a
Municipal sources				
01 Upper Danube	11584	1741	7756	313
02 Inn	1316	206	474	33
03 Austrian Danube	604	130	248	14
04 Morava	898	100	189	20
05 Váh-Hron	14899	4248	2102	349
06 Pannonian Central Danube	94759	32304	11618	1495
07 Drava-Mura	14970	5802	2291	418
08 Sava	83649	37102	6005	1358
09 Tisza	37507	14327	4883	1029
10 Banat-Eastern Serbia	13261	4247	2679	619
11 Velika Morava	0	0	0	0
12 Mizia-Dobrudzha	64057	29149	5064	1254
13 Muntenia	59917	29861	15602	1844
14 Prut-Siret	25314	9869	2751	215
15 Delta-Liman	744	272	50	4
16 Romanian Black Sea Coast	10297	2801	910	87
Total Danube river basin district	**433775**	**172159**	**62622**	**9053**
Industrial sources				
01 Upper Danube	7346	49	20	8
02 Inn	8469	375	305	20
03 Austrian Danube	4825	196	12	9
04 Morava	1911	136	130	19
05 Váh-Hron	8294	2681	96	4
06 Pannonian Central Danube	16424	3515	352	13
07 Drava-Mura	29718	6083	185	52
08 Sava	33965	6772	310	374
09 Tisza	16622	3315	331	32
10 Banat-Eastern Serbia	1158	120	20	2
11 Velika Morava	0	0	0	0
12 Mizia-Dobrudzha	9244		0	0
13 Muntenia	16173	5166	2312	5
14 Prut-Siret	4456	903	136	1
15 Delta-Liman	982	0	24	15
16 Romanian Black Sea Coast	842	242	390	
Total Danube river basin district	**160427**	**29555**	**4625**	**555**
Agricultural sources				
07 Drava-Mura	2	1		1
08 Sava	191	41	107	3
09 Tisza	2263	579	749	
10 Banat-Eastern Serbia	357	104	57	16
13 Muntenia	2040	1085	881	57
14 Prut-Siret	285	1074	326	5
15 Delta-Liman	901	206		
Total Danube river basin district	**6039**	**3089**	**2121**	**82**

In 2000, the total nutrient point discharges into the Danube was about 163 kt/a nitrogen and 28.1 kt/a phosphorus. Fig 10 and Fig 11 show the difference in the present state of the nutrient point source discharges within the Danube countries. For nitrogen it is shown that the lowest point N discharges are in Germany with 4 g/(Inh.·d) per connected inhabitant followed by Austria, Ukraine and Moldova. The picture for phosphorus presented in Fig 11 is similar to that for nitrogen Fig 10, but the differences between the countries are much larger. This is due to the fact that the specific P point discharges reflect, not only the state of the P elimination in waste water treatment plants, but also the existing use of phosphorus in detergents, and discharges from direct industrial sources. For this reason the specific P emissions are above 4 g/(Inh.·d) for Bosnia i Herzegovina, Croatia and Serbia and Montenegro. The medium level P emissions for Czech Republic and Slovak Republic result from the fact that some WWTPs have additional P elimination.

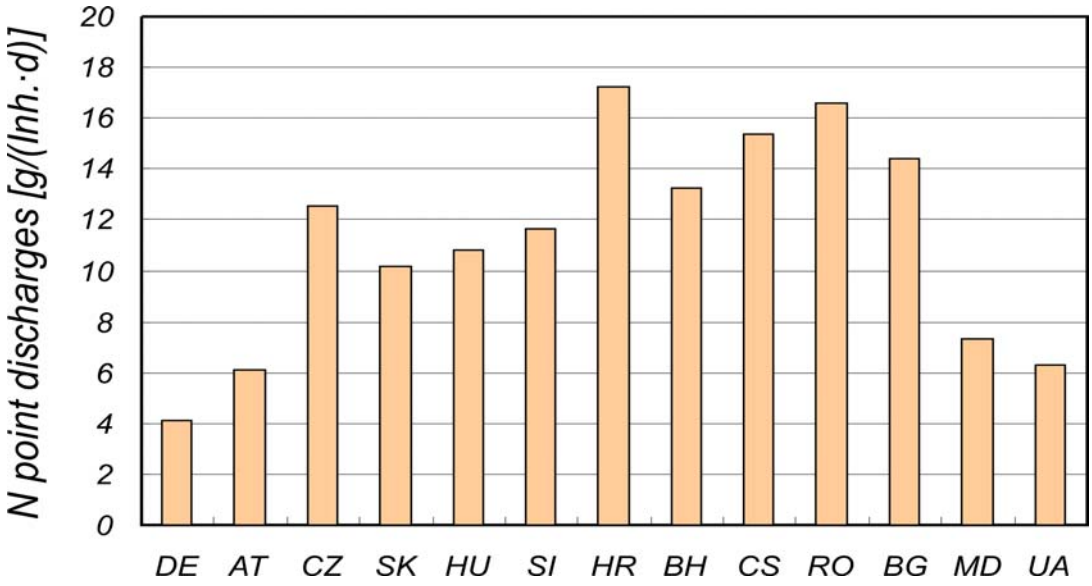


Fig 10 Inhabitant specific N discharges from point sources 1998 to 2000 (2004).

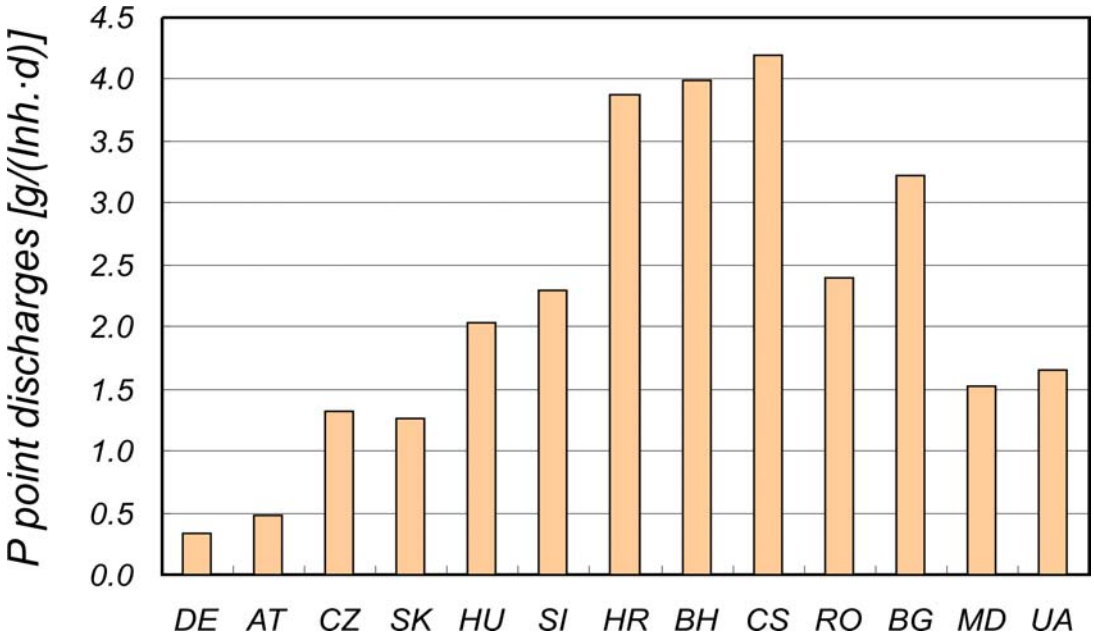


Fig 11 Inhabitant specific P discharges from point sources 1998 to 2000 (2004).

7.1.3 Development of DRBD Overview map and preparation of thematic maps

The main objective of WFD implementation is the development of a Danube River Basin Management Plan. The Danube River Basin covers 801,463 km² and territories of 18 states including EU-Member States, Accession States and other states that have not applied for EU Membership. According to Article 3.3 of the WFD "Member States shall ensure that a river basin covering the territory of more than one Member State is assigned to an international river basin district".

In addition to the Danube River Basin, the small coastal basins of the Black Sea tributaries lying on Romanian territory between the eastern boundary of the DRB and the coastal waters of the Black Sea have been included in the Danube River Basin District.

Table 11 Area of the Danube River Basin District

	Territory	**Official area** (km^2)	**Digitally determined area** (km2)
Danube River Basin (DRB)	18 countries		801,463
Black Sea coastal river basins	Romania	5,198	5,122
Black Sea coastal waters	Romania and Ukraine		1,242
Danube River Basin District (DRBD)			807,827

The Danube River Basin District covers: the Danube River Basin, the Black Sea coastal catchments on Romanian territory, and the Black Sea coastal waters along the Romanian and partly the Ukrainian coast.

7.1.4 Development of public participation strategy

Active involvement in planning procedures leads to shared responsibilities and higher acceptance of measures in the WFD implementation process. The ICPDR – being the co-ordination platform for the implementation of the WFD on issues of basin-wide or multilateral concern - has taken this new challenge as a basis to reviewing its ongoing practice. The ICPDR started an active process towards defining a "Danube River Basin Strategy for Public Participation in River Basin Management Planning 2003-2009" and consequently developing an "ICPDR Operational Plan". The basic principles of the "Danube River Basin Strategy for Public Participation in River Basin Management Planning 2003-2009" were approved in June 2003.

Based on Article 14 of the WFD, the objectives of this strategy are to (i) ensure public participation in the implementation of the WFD, especially concerning the development of the Danube River Basin Management Plan, (ii) facilitate the establishment of effective structures and mechanisms for public participation that will continue operating beyond the first cycle of river basin management planning, (iii) provide guidance to national governments on how to comply with their obligations under the WFD by providing practical support and guidance in addressing public participation, and (iv) inform key stakeholders about the structures for public participation and public involvement at the various levels.

The activities at ICPDR level were developed in detail and summarized in the "ICPDR Operational Plan", adopted in December 2003, which provides a description of the activities at the roof level, including a timetable and a workplan. The Operational Plan is seen as a planning tool, which is regularly adjusted to the needs of the ICPDR.

7.1.5 Development of economic indicators

According to Article 5 and Annex III of the WFD, an economic analysis of water uses has to be carried out with the aim of assessing the importance of water use for the economy and assessing the socio-economic development of the river basin.

The Roof report deals with (i) the assessment of the economic importance of water uses, and (ii) projection of trends of key economic indicators and drivers up to 2015. The report contains basic information regarding the characteristics of water services and illustrates the differences in terms of the connection rates of the population to public water supply. Discussions on the characteristics of water uses was based on the economic structure of the Danube countries, which show differences mainly aroused from the varied importance of the agricultural sector. While in Bulgaria, Croatia and Romania around 10 percent of GDP is generated from agriculture, this share is between 1 and 3.7 percent in the remaining countries. The share of industry and electricity generation is more consistent between the countries which reported these data. To facilitate understanding of the projecting trends in key economic indicators and drivers up to 2015, assessment of key economic variables for developing baseline scenario was concluded. The UNDP GEF DRP offered support for the Danube countries in undertaking the economic analysis for the WFD.

7.2 Progress on National reports

The WFD Roof report 2003 (Art. 3.8 and Annex I) was finalised on April 16, 2004 and sent to the European Commission as an informal information on June 22, 2004.

7.3 Response to bilateral an multilateral agreements

Bilateral agreements are in place between almost all states in the Danube River Basin District. Most of them have been adapted as to respond to issues related to WFD implementation. In few occasions, in the absence of formally approved bilateral agreements and commissions, regular meetings are organised to facilitate cooperation.

The ICPDR serves as the platform for coordination in the implementation of the WFD in the Danube River Basin District on issues of basin-wide importance. 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.

8 Implementation of the JAP / National Investment Programmes

8.1 National investments for pollution reduction and nutrient control in the DRB since 1998 and efficiency of funding mechanisms

8.1.1 Estimation of total investment since 1997 for all Danube River Basin countries

Within the frame of Joint Action Program, both structural/investment and legal/policy reforms projects that address nutrient reduction are being introduced for the period 2001 – 2005. According to the JAP, the total investment required for the 245 priority point source projects for all 13 DRB countries amounts to about 4,404 million €. The structure of the identified investment requirements by sector is as follows:

Table 12. Total investments per sectors, 2001-2005.

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

Table 13. Projects and investments per country in the DRB

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

The total investments required for structural projects for 2001—2005 is 3.9 billion € while for non – structural measures only 0.9 billion €.

An evaluation is currently carried out within the frame of EU DABLAS II project, based on the implementation of the ICPDR Joint Action Programme, addressing municipal, industrial, agro-industrial, wetland restoration, and agricultural & land use projects. The project is assisting the ICPDR in reporting and evaluating the accomplishments realised in the countries in the Danube River Basin, in terms of policies, legislation, regulations, and investment projects, which have been implemented in line with the ICPDR Joint Action Programme and taking into account EU water related directives, in particular the EU Water Framework Directive. The compiled information will provide a clear picture of the results achieved by the individual Danube countries, the policy and legal reforms under preparation, the gaps to be filled and the investment projects, which need further technical and financial support. The results will also be used as a baseline for evaluating subsequent progress at the national and regional levels.

Considering preliminary results of the on-going DABLAS II project, a total of 292 projects are reported (completed and proposed) in the 11 Danube countries (without Germany and Austria). 71 projects will be completed by 2005. The structure per sectors and total costs for these projects are provided in Table 14 and Fig. 12.

Table 14. Summary table of completed and proposed projects, per sectors

	Municipal	Industrial	Agricultural	Land use	Wetlands	Total
No of Projects	185	55	18	11	23	292
Million €	3,768.6	81.4	80.9	6.2	30.8	3,966.7

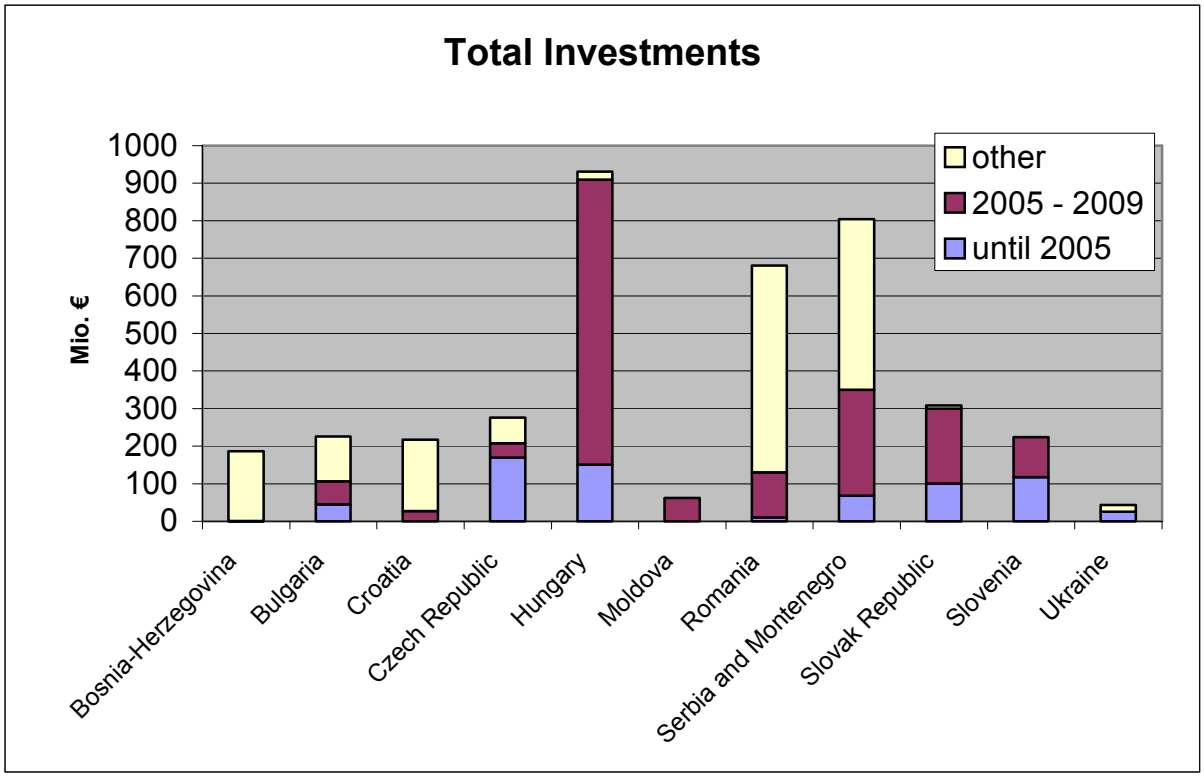


Fig 12. Total investment costs per country, for all sectors, DABLAS 2004

8.1.2 Estimation of financial requirements for identified priority projects (up to 2009)

The anticipated composition of the funding of the identified priority projects in the JAP across the DRB countries is as follows:

Table 15. JAP funding schemes

Funding component	Million ε	(%) – Structure
National funding contribution	1,716	39 (%)
International loans:	1,163	26 (%)
International grants:	663	15 (%)
Not secured funding components:	862	20 (%)
Total:	4,404	100 (%)

National and local sources accounted for just under half of the funding for 45 fully-financed municipal wastewater treatment projects in Czech Republic, Hungary, Slovakia, and Slovenia.

EU funding sources represented 23% of the financing for the 45 secured projects, while international financial institutions (including EBRD, EIB, WB, GEF) contributed 12%. Approximately 21% of the funding was from unspecified sources.

More than 2,500 Million ε are estimated for an additional 113 municipal projects in 11 countries (BA, BG, CS, CZ, HR, HU, MD, RO, SK, SI, UA). These projects have partial funding secured or are in the planning stages. At the time of compiling the DABLAS municipal data in 2002, 40% of project financing was allotted to EU sources and 29% from national/local funds. An additional 6% was indicated from IFIs, and 25% of the funding was unspecified.

Table 16 Funding sources schemes

Breakdown of Funding Sources, DABLAS Municipal Sector		
Funding Source	45 Projects fully financed 623 Million €	113 Projects partial or no financing 2,567 Million €
National, Local	44%	29%
EU	23%	40%
IFIs (EBRD, WB, EIB, GEF)	12%	6%
Unspecified	21%	25%
Source: DABLAS project, 2002		

According to the last report (DABAS, 2004), the total investment cost for 198 projects proposed to be completed by the end of 2009 is 2,351 million €, of which only 911.5 million € are secured.

8.1.3. Achieved and expected results for above existing and proposed projects in terms of reduced pollution in BOD, COD, N and P

The estimates of the nitrogen and phosphorus reduction for point sources and diffuse sources as presented in the JAP for 2001-2005 are summarized below:

Table 17. Estimates of JAP expected reduction for the period 2001-2005

Country	Nutrient loads (DWQM 1994/98)		Anticipated national emission reductions in JAP				Expected national load reduction	
			Point Sources		Diffuse sources			
	N (t/y)	P (t/y)	N (%)	P (%)	N (%)	P (%)	N (t/y)	P (t/y)
Germany	68,000	3,700	6.0	2.0	10.0	3.0	10,891	185
Austria	77,000	3,800	5.1	10.6	10.0	3.0	11,650	518
Czech Republic	15,000	1,100	7.3	5.6	10.0	3.0	2,591	95
Slovakia	30,000	1,700	8.6	8.6	15.0	10.0	7,074	318
Hungary	31,000	3,800	21.6	40.1	15.0	10.0	11,358	1,902
Slovenia	20,000	1,300	26.2	62.6	15.0	10.0	8,233	944
Croatia	23,000	2,200	6.6	10.9	15.0	10.0	4,959	459
Bosnia and Herzegovina	36,000	2,200	13.1	38.8	10.0	10.0	8,300	1,073
Serbia and Montenegro	72,000	7,000	9.4	69.5	10.0	10.0	13,993	5,563
Bulgaria	23,000	4,000	11.7	15.0	10.0	10.0	4,983	999
Romania	121,000	12,700	9.8	12.5	10.0	10.0	23,960	2,861
Moldova	8,000	1,400	86.3	64.6	5.0	5.0	7,298	975
Ukraine	28,000	4,000	1.7	1.6	10.0	5.0	3,286	265
Total	**552,000**	**48,900**	**10.3**	**23.8**	**10.9**	**8.2**	**118,576**	**16,156**

The results in the table indicate that with the implementation of structural (projects) and non-structural measures (policies and legislation), the total annual nutrient reduction will be about 119,000 tons for nitrogen (22%) and 16,000 tons for phosphorus (33%). It has been assumed that about half of the nitrogen reduction will come from the rehabilitation of point sources (waste water treatment) and the other part from nutrient reduction from diffuse sources, in particular from change of agricultural practices (Tables 18 and 19).

The total pollution reduction as a result of the implementation of the JAP proposed priority point source projects including waste water from urban areas, which are not connected to WWTP, is anticipated to be in the following ranges:

Table 18. Estimates of JAP expected reduction N and P per sectors for the period 2001-2005

Expected Nutrient Reduction in the Danube River Basin point and diffuse sources of pollution				
Sector	Nitrogen		Phosphorus	
	tons/year	%	tons/year	%
Municipal	38,770	47,7	11,348	55,7
Industrial	6,933	8,5	5,000	24,5
Agriculture	5,697	7,0	1,034	5,1
Wetlands	29,872	36,8	2,989	14,7
Total	**81,272**	**100**	**20,371**	**100**

Table 19. Estimates of JAP expected reduction per sector and total projects JAP 2001-2005

Expected Nutrient Reduction in the Danube River Basin point sources					
	Municipal	Industrial	Agricultural	Wetlands	Total point sources
No of Projects	157	44	21	23	245
N (t/y)	33 300	3 400	6 700	15 100	58 500
P (t/y)	5 500	3 700	1 100	1 800	12 100
BOD (t/y)	221 000	39 700	9 500	5 900	276 100
COD (t/y)	398 900	78 700	15 000	32 400	525 000

The updated (DABLAS, 2004) list of total investments completed and proposed in 11 Danube countries, for all sectors, with the achieved and expected pollution reduction is presented in the Table 20.

Table 20 Summary table of load reduction from completed and proposed projects, per country for all sectors

Country	Total projects	Total cost Mio €	Pollution Reduction (t/a)			
			Red BOD	Red COD	Red Tot-N	Red Tot-P
BA	16	186.5	15,140	25,226	2,054	533
BG	59	225.8	18,678	25,250	1,934	396
HR	15	217	7,390	14,976	5,052	1,041
CZ	42	283.6	-239	-3,293	1,432	131
HU	17	930.7	6,059	29,618	4,266	584
MD	43	62.5	279	-2,107	556	11
RO	23	680.6	9,495	14,361	3,412	744
CS	10	804.1	129,879	190,221	12,508	3,243
SK	42	308.6	5,424	12,277	1,584	65
SI	16	223.6	131	0	70	77
UA	9	43.5	1,217	217	913	177
Total	292	3,959.10	193,453	306,746	33,781	7,002

8.1.3.1 Implementation of the JAP, national investment programmes municipal sector

Extensive municipal wastewater development is under implementation throughout the basin. In many of the upper Danube countries, tertiary upgrades (nutrient removal) have been made or are planned. At the same time, sewerage coverage and baseline wastewater treatment (primary and secondary/biological) are increasing in the middle and lower Danube countries. Nutrient removal technologies are expanding in the region, in response to the Urban Wastewater Treatment Directive, and the overall wastewater flow will continue to increase for a number of years.

The first selection of priority projects at a regional scale carried out by the ICPDR within the frame of EU DABLAS project was carried out in 2002. The revision of lists of national projects of the Joint Action Programme and selection of municipal priority projects has shown that among the 158 projects,

45 are fully funded with a total of 622 mil. €. The investment need for the remaining 113 projects is 2,567 mil. €, of which 2,121 mil. € are not yet secured.

Among the 11 Danube River Basin countries (excluding Austria and Germany), approximately 625 million € were invested by 2002 in 45 municipal wastewater projects, achieving reductions of 7,246 tons N/year and 1,259 tons P/year, which represent 19% for N and 11% for P of the total expected nutrient reductions (Table 21). These completed projects are situated in the four recent EU: Czech Republic, Hungary, Slovakia, and Slovenia. Roughly 2,500 million € are estimated to realise more than 100 other municipal projects throughout the basin.
The projects differ in size from >1,000,000 population equivalent (Belgrade, Bucharest, Budapest, Sarajevo, Zagreb) to ca. 10,000 PE. Project preparedness is also highly variable, ranging from projects that are missing <10% of the total investment demand, to projects that have outdated or non-existent plans and no funding secured (Table 22).

Table 21. Emission reduction in selected Danube countries, DABLAS 2002

Country	Total Projects	Total Investments (Mio. EUR)	Red. BOD (t/a)	Red. COD (t/a)	Red. Tot-N(t/a)	Red. Tot-P(t/a)
CZ	14	156.0	170	106	856	47
HU	9	142.3	9,231	20,126	1,802	442
SK	7	41.6	1,143	1,650	295	61
SI	15	282.7	25,265	42,461	4,293	709
Total Sum	45	622.6	35,809	64,343	7,246	1,259

Table 22 Summary of Municipal Priority Projects, reported in 2002

Country	Projects		Funding (mil. €)			PE of WWTP's 158 proj.	Pollution Reduction (tons/a)			
	Total	Fully Financed	Total 158 pr.	Secured 113 pr.	Not Secured 113 pr.		BOD	COD	Total N	Total P
BA	6	0	145.2	0.6	144.6	1,680,000	15,190	26,559	3,727	593
BG	26	0	203.2	0	203.2	1,998,193	18,681	27,822	1,936	396
HR	15	0	217.0	0	217.0	2,576,800	7,198	15,302	4,820	983
CZ	18	14	178.9	0	22.8	1,431,520	170	106	872	56
HU	17	9	879.7	105.5	631.8	4,964,765	34,792	66,198	6,001	1,447
MD	12	0	32.4	0.9	31.3	778,000	604	438	543	11
RO	18	0	674.5	168.8	505.7	5,708,000	9,495	14,418	3.412	744
CS	7	0	350.1	89.7	260.4	3,080,000	71,574	54,223	7,050	1,749
SK	15	7	164.3	80.2	42.5	1,688,780	4,832	7,096	1,748	132
SI	16	15	300.8	0	18.1	1,022,100	25,755	43,261	4,383	723
UA	8	0	43.5	0.4	43.1	1,278,400	1,218	1,968	914	216
Total	158	45	3,189	446	2,121	26,206,55	189,509	257,397	35,406	7,050

According to the preliminary reporting to the JAP (DABLAS, 2004), for 56 completed and proposed municipal projects, a total of 668.9 mil € were spent or are required until 2005. The total reduction (achieved and expected) of pollution load, for municipal wastewater treatment plants is: 15,675 t/a BOD; 21,372 t/a COD; 5,390 t/a Tot-N and 920 t/a Tot-P.

From the same reporting source, the total municipal wastewater treatment plants included in the database (completed and proposed) is 185 investments, with a total cost of 3,768.6 mil €, and with an achieved and expected reduction of 190,847 t/a BOD; 297,650 t/a COD; 33,299 t/a Tot-N and 6,904 t/a Tot-P.

From the national reports on the JAP implementation, Austria and Germany reported:
In Austria, between 1959 and 1999 investment in wastewater treatment plants and sewerage totalled to about 25.000 Mio. € (price level 2000). Financial promotion by the State had an important role in

fostering waste water treatment and in-plant water protection measures of communities and industry. The annual BOD-load of the total wastewater is reduced by 95 %, the annual COD-load by 91 %, and the nutrient loads of P by 83 % and of N by 68 % (2001). Committed investments concern raising the degree of service by central wastewater treatment facilities in the reach < 15.000 PEQ and upgrading of large sewerage and treatment facilities (e.g. the city of Vienna).

Germany has significantly achieved high standards of emission reduction und water pollution control. Current investment in the water sector in the German part of the Danube River Basin is at the level of about 1,8 billion € per year of which 1,5 billion € is spend for communal wastewater treatment facilities (including 3rd stage for nutrient removal). With these investment Germany responds to EU Water Directives and in particular the Urban Waste Water Directive. Concerning the ongoing projects indicated in the ICPDR JAP, further investments of 234 million € for Germany are foreseen for the period from 2001 to 2005.

8.1.3.2 Implementation of the JAP, national investment programmes industrial sector

A total of 55 projects are preliminarily reported as complete or proposed for industrial wastewater treatment plants, with a total cost of 79.8 million €. Until 2005, 9 investments in the industrial sector will require 18.8 million €.

The total reduction (achieved and expected) of pollution load, for total (55) industrial wastewater treatment plants is: 2,606 t/a BOD; 9,096 t/a COD; 43 t/a Tot-N and 2 t/a Tot-P.

8.1.3.3 Implementation of the JAP, national investment programmes agro-industrial sector

A total of 18 projects are reported as complete or proposed for agro-industrial wastewater treatment plants, with a total cost of 81.383 million €. 337 t/a Tot-N and 61 t/a Tot-P expected to be reduced.

8.1.3.4 Implementation of the JAP, national investment programmes land use sector

A total of 11 land use projects are reported as complete or proposed, with a total cost of 6.2 million €.

8.1.3.5 Implementation of the JAP, national investment programmes wetlands and floodplain restoration

Based on the available data, the assessment of the anticipated nutrients reduction from agricultural non point sources of pollution shows values ranging between 10 and 25 % for nitrogen and between 3 and 25 % for phosphorus.

Among the 13 Danube River Basin countries, a total of 23 investment projects have been listed in the wetlands sector; including floodplain restoration, revitalisation of river banks, reactivation of former flow channels, and conservation of endangered species and habitats with a total cost of 323 million €.
According to the most recent estimates (DABLAS, 2004) 17 projects are reported as complete or proposed for wetlands and floodplain measures in the 11 Danube countries. Until 2005, 5 projects are reported as complete or proposed for wetlands and flood plain, with a total cost of 0.5 million €. Still for 79 on going projects (257,262 ha) an amount of 137.850 mil € are assured.

National Progress, Wetlands Sector
Nearly 23,000 ha of wetlands area are under restoration in **Austria** at a total estimated cost of approximately 28 mio €. Among the 10 Austrian wetlands projects, 4 are completed and the other 6 are under construction. The projects were started between 1999 and 2004, and the latest date of completion is set at 2009. The majority of the projects are co-funded with the EU Life Nature program and various Austrian public budgets. The WWF is co-financing a few of the projects, and there is one transboundry project (Lafnitz River Valley), shared between Austria and Hungary.
61.8 million € are earmarked to realise 13 wetlands and floodplain projects in **Germany**, covering a total of 7946 ha. The 13 projects were each started in 2001-2002, one project is completed, and the other ones are schedule to finish between 2005 and 2020. The Bavarian government is fully or partially financing the projects, and only 2 of the 13 are co-financed with EU funds.

27,500 ha of wetlands and floodplain restoration is planned for two areas in **Bosnia-Herzegovina** for a estimated total investment of 11.4 million €, which also includes costs for de-mining the sites prior to implementation. Project financing has not yet been secured for these investments. In the Republic of Srpska, integrated management of the Bardaca wetland was implemented in January 2002 with an investment budget of 0.506 million €, partially financed by the EU Life Third Countries fund. The Bardaca project is to be completed in 2005.

The World Bank financed a pre-feasibility study in 2001-2002 for wetlands and floodplain restoration in **Bulgaria**. In July 2002, a 13.28 million USD project was begun to restore more than 2,200 ha in 2 project areas. This project, scheduled for completion in 2008, consists of wetlands restoration, protected area management, and promotion of environmentally friendly economic activities. There is a transboundry component with Romania.

Serbia-Montenegro has identified 4 projects covering a total of 16,862 ha. The total estimated investment demand for the wetlands and water regime restoration projects is 2.652 million €, and a 1.56 million € project to restore the wetlands within the Obedska Bara Special Nature Reserve started in 2001 with Stability Pact (REReP) co-financing. One other restoration project commenced in 2003 and the other 2 are in the planning stage. There are 24 wetlands and floodplain restoration projects under implementation in the **Czech Republic**, for a total investment of more than 8 million €. The projects, scheduled for completion between 2004 and 2008, are primarily financed with national funds (State Program for the Revitalisation of River Systems).

There is a large, transboundary (**Croatia** with **Hungary)** project at the Kopacki Rit wetland (Danube-Drava region). In September 2002, a feasibility study was financed from the Hungarian Government (20%) and GEF (80%) to evaluate restoration of the Gemenc wetland (Danube-Drava Region). The estimated restoration cost of this expansive wetland is 5 million €. Restoration of the Hanság area wetland started in 2001 with financing with national funds and the Dutch government (20%). One other wetland has been nominated (Bodrogzug-Tisza area).

Based on a May 2003 assessment, two restoration EU Life Nature funded projects in **Moldova** were scheduled to start in 2004. These 2 areas cover an area of 2,250 ha and the total combined investment is estimated at 2.1 million €.

Partial funding for project development was secured for two restoration projects in **Romania**: Lower Prut (620 ha) and Calarasi (3,000 ha). Three other, considerably larger projects are also included on the nominated list. The total area of wetland and floodplain restoration covers nearly 80,000 ha.

Three projects, covering approximately 18,000 ha, have been nominated in **Slovenia**. Under Natura 2000, financed from the EU Life Nature fund, one of the projects was implemented in 2000-2003: preparation of a management plan for the Triglav National Park peat bogs. Proposals have been submitted to EU Life Nature for the other two projects, which are planned for 2005.

Two of the eight **Slovakia** restoration projects have been completed, and the other six are under implementation. The eight projects cover 7,850 ha and a total of 2.6 million € have been allocated. Financing has been obtained from a variety of sources, including the UNDP/GEF project, GEF/World Bank, EU Life Nature, Slovak-Swiss Revolving Fund, Dutch MATRA Pre-Accession Program, and SAPARD.

8.2 Efficiency of existing mechanisms to facilitate funding of investment projects

The distribution of funding sources for municipal investments reported in 2002 is presented in the following table.

Table 23. Project Financing, Municipal Sector, reported in 2002

Breakdown of Funding Sources, DABLAS Municipal Sector		
Funding Source	**45 Projects fully financed 623 million €**	**113 Projects partial or no financing 2,567 million €**
National	44%	29%
EU	23%	40%
IFIs (EBRD, WB, EIB, GEF)	12%	6%
Unspecified	21%	25%
DABLAS project, 2002		

The most recent estimates of funding have been assessed within the frame of DABLAS II project: only 55 projects are fully financed from the total of 384 projects completed and proposed.

8.3 Role and mandate of DABLAS

At the occasion of the Ministerial Conference on 26 November 2001 in Brussels a joint declaration on the "Protection of Water and Water related ecosystems in the wider Black Sea Region" has been signed. To implement the Declaration, the DABLAS Task Force has been created to reinforce cooperation between countries of the Danube-Black Sea Region and to bring them together with donors and international financial institutions. The mandate of the DABLAS Task Force is to facilitate financial arrangements for the implementation of projects for pollution reduction and rehabilitation of ecosystems. During its first meeting on 1 March 2002, the Terms of Reference, the Work Programme and other key issues as project database, project prioritization, project financing etc. have been discussed. A "Working Group on Prioritization" has been created.

To reinforce the capacities of the Danube and the Black Sea Secretariats, the DG Environment has provided financial support to carry out revisions of the database and selection and update of project files of priority projects. In 2002 an update of municipal investment projects in the DRB addressing nutrient reduction goals has been achieved within the frame of EU DABLAS project. A total of 158 investments projects for municipal wastewater treatment for the 11 Danube River Basin countries were identified of which 45 are fully funded with a total of EUR 622 mil €. The total investment required for the remaining 113 projects is 2,567 €.

An on going second EU DABLAS project "Evaluation of policies, regulation, and investment projects implemented in the last five years in DRB in line with EU directives and regulations" has been developed with the view to compile information and to provide a clear picture of the results achieved by the individual Danube countries, the policy and legal reforms under preparation, the gaps to be filled and the investment projects, which need further technical and financial support. The results (available December 2004) will also be used as a baseline for evaluating subsequent progress at the national and regional levels.
The existing ICPDR-DABLAS database is currently being revised to include municipal, industrial, agro-industrial, wetland restoration, and agricultural & land use projects. The project will include two main tasks:

(i) The implementation of policies, regulations and measures of compliance in line with the provisions of the ICPDR Joint Action Plan be evaluated at the national level, taking into account:

- the transfer of EU water related directives (Nitrates Directive, Urban Waste Water Directive, IPPC Directive, Water Framework Directive, etc) into national policies, regulations, and compliance mechanisms,
- the estimated cost for reforms concerning institutional and legal measures and direct investments that have been carried out to respond to new water related regulations (pollution reduction targets).

(ii) The implementation of investment projects, for municipal, industrial and agro-industrial projects, measures for wetland restoration, agricultural reforms and land use planning will be analyzed, taking into account:

- projects implemented in the past five years taking into account type of project (technical description), investment cost, financing modalities and achieved results in terms of compliance with EU directives and pollution reduction (BOD, COD, N and P)
- projects under implementation or in pipeline, which are well prepared and do not need any further technical or financial support, taking into account same description as above, indicating expected results
- projects in preparation, which need further technical and financial support; these projects are described as above, indicating the needs for technical and financial support for project preparation and/or project implementation and the expected results.

8.4 Role and mandate of Danube (and Black Sea) Investment Facilities

The idea to develop a fund or a facility that could facilitate the implementation of priority projects on pollution reduction in the Danube River Basin came to reality. Two such facilities were created, one for the Danube and one for the Back Sea. For Danube Basin, creation of such facility is the logical and viable consequence of the donors financial efforts to assess the water environment of the and of the lists of priority investment objects. Such a fund was conceived to promote project preparation to the status "bankable" and to furnish investment funds for their realization. Background of such a concept is the weakness of the transition countries of the Danube Basin in investment planning and fund raising.
Since the number of EU countries in the DRB has increased, it is expected that there will be less economic difficulties for these countries, but still severe budgetary restraints will remain with non accession countries. In total, progress in environmental investments might be still be slow as the largest burden will be still borne by countries.

The Danube Investment Support Facility (CARDS) and the Black Sea Investment Facility (TACIS) have started working. The aim of these investment facilities is to assist the international financing institutions with the definition and preparation of priority projects in the Balkan and Black Sea countries, with particular attention to the DABLAS priority projects. Furthermore the Commission has identified funds for a Project Broker to work on further developing the priority projects in the Black Sea Region.

8.5 Cooperation with other IFIs

At the occasions of DABLAS Task Force meetings and as well as during joint DABLAS/PPC events, the IFIs and Donors have expressed their high level of interest in the DABLAS priority projects. Interest from the IFIs and Donors has been shown in providing finance for 20 of the DABLAS projects. The type of financial or technical assistance foreseen to be offer within the DABLAS region are generally grant financing, loan financing and project preparation assistance.
Generally IFIs and Donors provided an indication of the funds available, either as designated in budgets (e.g. EuropeAid) or based on past lending trends or future business plans (e.g. EBRD).

Up to now, the projects which were at a concept stage did not attract significant interest from IFI and Donors. 10 of the projects presented did not attract any interest from the IFIs and Donors as they had not been developed beyond the early stages but also because they originated from the countries in early stages of transition. Currently IFI and Donor mechanisms are aimed at supporting projects that have already reached a pre-feasibility stage from the more credit worthy countries. Countries with limited experience in carrying out projects or who do not have any projects at a more developed stage will need help in identifying sources of technical assistance to identify and developing projects to a pre-feasibility stage.

8.6 Development and management of project data base and selection of priority projects

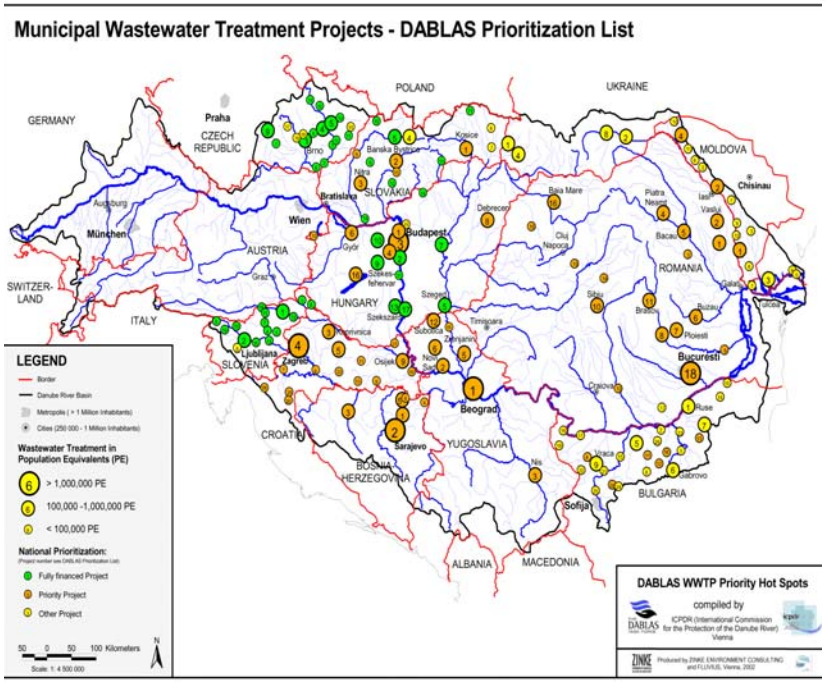
To select priority projects at a regional scale, the ICPDR Secretariat carried out the project “Development of an Operational Framework for Prioritisation of Projects”, in 2002. One of the tasks was to design, develop and make operational the Danube database for prioritisation of municipal investment projects. The database is further extended with other priority sectors and will be developed as an interactive tool to be used for evaluating remaining needs for investments and policy measures on a regional, national, and sector basis. The current DABLAS database for investment projects in the Danube River Basin countries is accessible under www.icpdr.org.
Prioritisation criteria for municipal projects were developed and grouped into the following five categories: Environmental impact, Black Sea impact, Finance-ability, Technology efficiency and Compliance. Project data and prioritisation criteria were programmed into the database.

Prioritisation ranking was made for 113 projects (Table 24). The regional ranking results include the total score ranking for the first 20 projects and for the other projects, and the ranking for each of the 5 criteria categories. The DABLAS project is a regional undertaking, so regional ranking was considered to be an important first step (Map 2). The ranking results were also separated on a country basis to evaluate the prioritisation results at the national level. Of the 113 projects evaluated, only 20 are reasonably well prepared and have secured partial financing.

Table 24. Municipal priority investment projects in the DRB, 2002.

SUMMARY OF RESULTS

Country	Projects		Funding for 113 projects (mil. EUR)		
	Total	Fully Financed	Total Investment required	Investment Secured	Investment Not Secured
Bosnia & Herzegovina	6	0	145.2	0.6	144.6
Bulgaria	26	0	203.2	0	203.2
Croatia	15	0	217	0	217
Czech Republic	18	14	22.8	0	22.8
Hungary	17	9	737.3	105.5	631.8
Moldova	12	0	32.2	0.9	31.3
Romania	18	0	674.5	168.8	505.7
Slovak Republic	15	7	122.7	80.2	42.5
Slovenia	16	15	18.1	0	18.1
Ukraine	8	0	43.5	0.4	43.1
Yugoslavia	7	0	350.1	89.7	260.4
Totals	**158**	**45**	**2,567**	**446**	**2,121**



Map2. DABLAS municipal investments prioritisation map

9 Progress and effectiveness of implementing the work programme of the MoU

9.1 Achieving mid - and long term goals

As part of the MoU, the ICPDR and BSC have agreed to the following common goals:

- The long-term goal in the wider Black Sea Basin is to take measures to reduce the loads of nutrients and hazardous substances discharged to such levels necessary to permit Black Sea ecosystems to recover to conditions similar to those observed in the 1960s.
- As an intermediate goal, urgent measures should be taken in the wider Black Sea Basin in order to avoid that the loads of nutrients and hazardous substances discharged into the Seas exceed those that existed in the mid 1990s.

An analysis of the load of P and N along the Danube River and for the main tributaries was calculated for the period 1950 – 2000 with MONERIS ("Modelling Nutrient Emissions in the Danube River System"). Based on MONERIS calculation and results of the Project Nutrient Management in the Danube River Basin and its impact on the Black Sea" (DANUBS), it can be concluded that the nitrogen load in the fifties was between 200 and 250 kt/a N and for phosphorus the load was in a range of about 15 kt/a P. The highest load of nitrogen was estimated for the period of 1988 to 1992 (550 kt/a N) and was only 2.5 times higher than in the fifties. For phosphorus the highest load was about 42 kt/a P, which was 2.9 times higher than in the fifties. This highest level was realized in the period 1983-1987.

The present load in the Danube of both P and N is below the values of the early seventies and reduced by about 20 to 30 % (N) and 40 to 50 % (P), respectively, compared to the maximum values. The causes for the changes of the nutrient loads are change of wastewater treatment for N (Fig. 13) and P (Fig. 14), changes of N-surplus in agriculture and phosphorus use in detergents.
Based on analysis of the past, possible changes for the future are calculated. This analysis shows that a potential for further reduction of nutrient loads exists at least for P. For nitrogen this potential is lower.

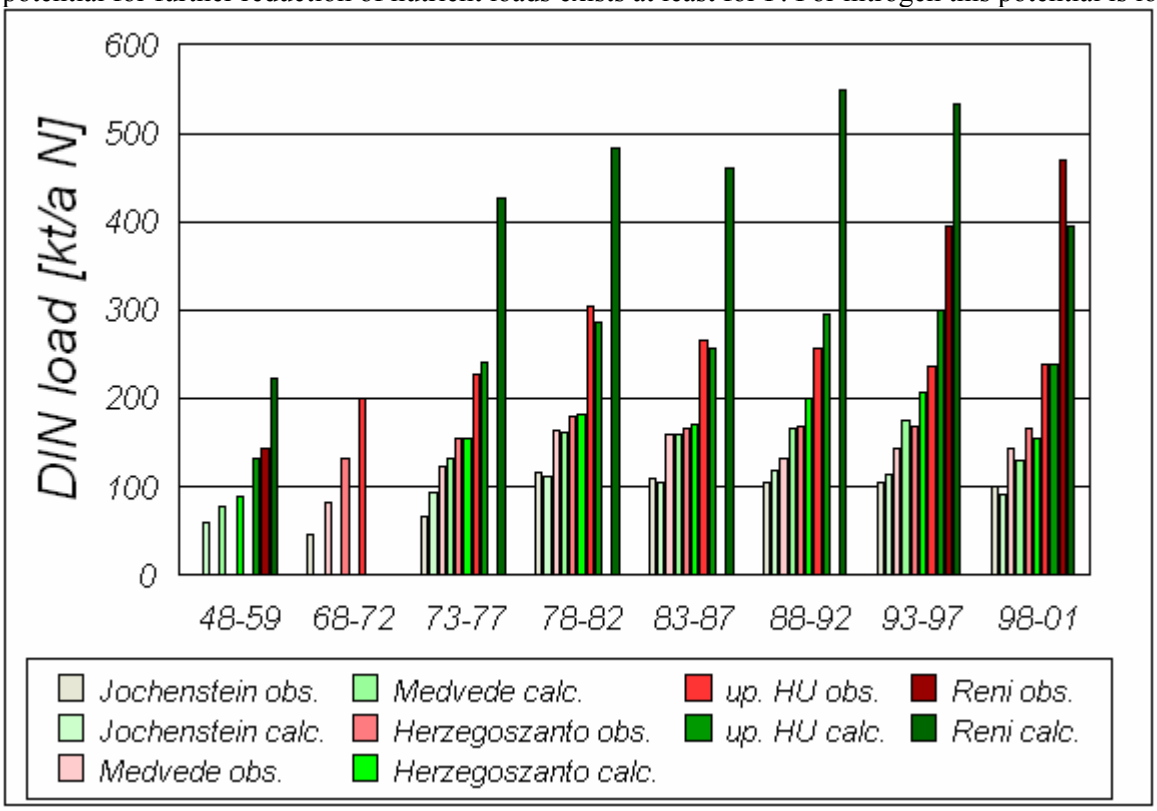


Fig. 13 Historical development Danube river basin N load 1949-2001

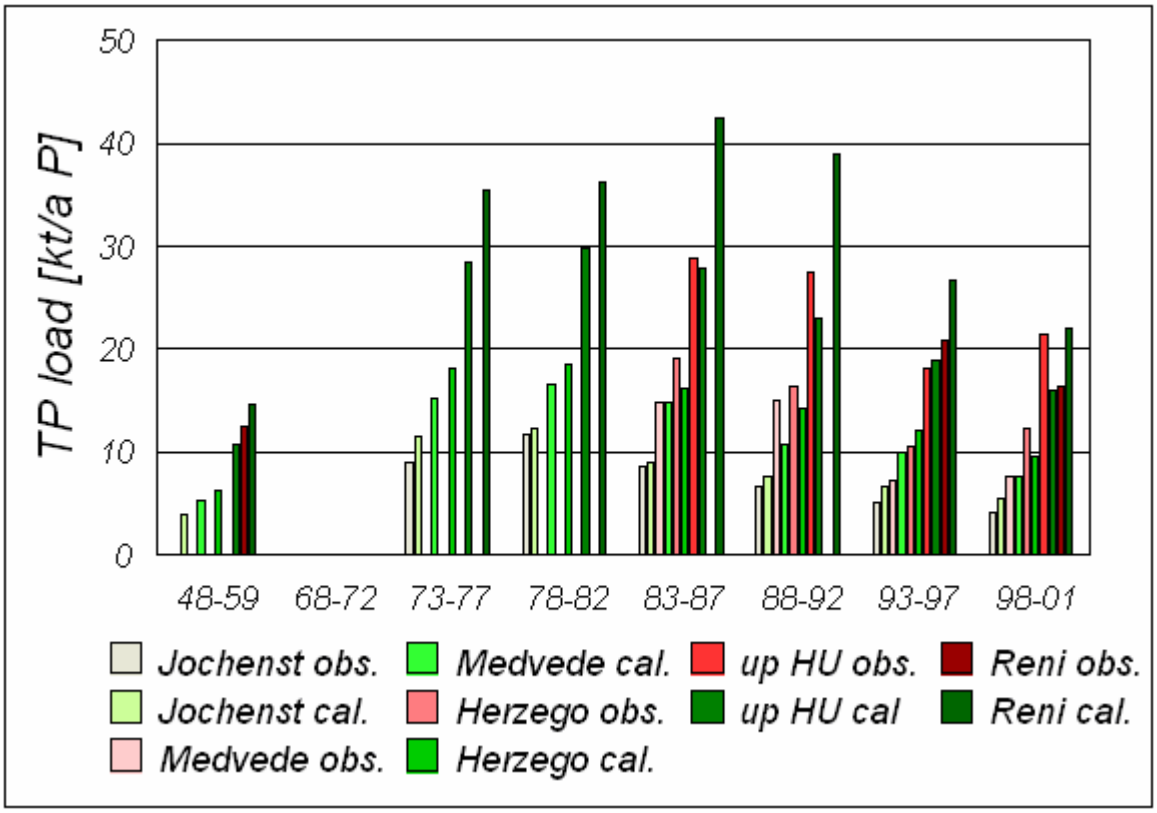


Fig. 14. Historical development Danube river basin P load 1949-2001

9.1.1 Monitoring and evaluation indicators

Three groups of indicators are selected to track the short and long-term impacts of nutrient reduction actions and measures within the Danube river basin: process (Table 25), stress reduction (Table 26) and environmental status (chapter 9.1.1.1).

Table 25. Monitoring and evaluation: Process Indicators

Process indicator in place	Description	Measure	
		Target Actual	Target 2007
Development and implementation of new policies, legislation, framework for cooperation and mechanism for compliance	Number of countries agreed to implement DRPC, WFD, UWWTD, IPPC, ND, CAP, etc	13	3 more countries
	Number of partners involved in ICPDR BSC MoU implementation	3 Danube countries ICPDR Secretariat EGs Chairperson	
	Number of implementing mechanisms in place	JAP Inter ministerial mechanisms in place Set up of DBS JTWG and development of its Work program	Not set
	Number of regulations, recommendations, guidelines, plans of actions, methodologies, reporting formats, etc in place or adapted	BAT for 5 industries developed and implemented BAP concept developed TNMN methodology M1 for pollution during floods Formats for data collection and reporting on JAP, emission inventories, TNMN and DABLAS	Implementation secured Voluntary agreement on the use of phosphate free detergent proposed and in place
Introduction of new challenges in response to international requirements	Number of requirements introduced in the DBS JTWG work program	Requirements on coastal zone management introduced	Implementation secured
	Number of driving forces, principles and approaches considered in various scenarios	Political (accessions, reforms, etc), economical, social driving forces considered River basin management approach	
	Dialogue with policy makers to define scenarios for nutrient reduction and bridge the gap between the scientific and technical and policy dimensions	Contact with HoDs representatives of agricultural sector, detergent industry, scientists and researchers	Intensification of dialogue Involve all stakeholders in the making decision process with clarified responsibilities

Process indicator in place	Description	Measure	
		Target Actual	Target 2007
Communication, involvement, information	Response from countries, involvement of stakeholders as to improve achievements of the expert groups and working group	Participation in the EGs, DBS JTWG, workshops, regional projects (MONERIS, daNUbs, DABLAS), joint efforts (JDS, TNMN, etc)	Continue
	Flow of information and transfer within the administrative bodies and to the public	Access to the ICPDR databases available Information partially supplied in the JTWG	Improve data relevance, credibility, reliability and collection
Capacity building	Level of expertise	Expertise improved from scientific and technical point of view	Expertise in various fields need to be improved (economic instruments, cost effectiveness, environmental accounting systems, etc)
	Level of knowledge and understanding of the processes and of technical and operational tools	Enhanced knowledge and understanding of processes related to nutrient input, transformation, losses and reduction effects Understanding of the water quality needs of Natura 2000 wetlands, including inter-actions with relevant water bodies.	Continue to improve knowledge Objectives for Protected Areas met
	Use of information provided by the implementing tools	Training of staff on the use of the ICPDR tools: TNMN, Emission inventories, Accidental risk inventories, inventory of fertilisers etc.	Increase quality of monitoring and improve emission data collection and processing
Demonstration, transferability, replicability	Number of replications or demonstrative actions using lessons learned from various case studies, workshop, Roof report work, etc.	Shared experience with other international river basins	Improve and disseminate practices Monitor and evaluate progress

Table 26. Monitoring and evaluation: Stress Reduction Indicators

Stress reduction indicator	Description	Measure		
		Target 2001	Target Actual	Target 2007
Reduction of discharges from point sources of pollution	Number of hot spots - point sources – reduced from total of 513	513	124	300
	Number of municipal wastewater treatment plants achieved	156 plants	45 plants	158 plants
	Quantities of organic loads and phosphorus from municipal wastewater treatment plants reduced	N: 31,500 (t/a) P: 7,400 (t/a) BOD: 181,000 (t/a) COD: 351,000 (t/a)	N: 7,246 (t/a) P: 1,259 (t/a) BOD: 35,809 (t/a) COD: 64,343 (t/a)	N: 31,500 (t/a) P: 7,400 (t/a) BOD: 181,000 (t/a) COD: 351,000 (t/a)
	Number of rehabilitation / upgrading of existing WWTP and new construction of WWTP for agro-industrial units.	21 plants	9	21
	Quantities of nutrients reduced from agro-industrial wastewater treatment plants	N: 6,700 (t/a) P: 1,100 (t/a) BOD: 9,500 (t/a) COD: 14,900 (t/a)	N: 2,806 (t/a) P: 0,700 (t/a) BOD: 5,800 (t/a) COD: 6,440 (t/a)	N: 6,700 (t/a) P: 1,100 (t/a) BOD: 9,500 (t/a) COD: 14,900 (t/a)
	Number of countries having no significant untreated discharge into the water from agro-industrial units	13	6	13
Reduction of pollution from diffuse sources	% of area specific diffuse pollution loads reduced	Not set	40	100
Application of fertilisers	% of reduction of application of fertilisers	Not set	50	Not set
Effect of wetlands	% of efficiency of wetlands against nutrient reduction	23 proposed wetland projects	Low efficiency in reducing nutrients	Continue
	Avoided cost for alternative solution for environmental services benefits offered by wetlands	Not set	7.2 mill $ /a	Increase number of wetlands providing environmental services
	Number of objectives for protected areas achieved	Not set	Relevant conservation objectives for wetland sites in the Natura 2000 met	Complying with all objectives of the protected areas
Amounts of phosphorus	% of reduction of phosphorus transported to the Black Sea	Not set	50 comparing with 1990	

9.1.1.1 Environmental status indicators

The ICPDR has developed its monitoring and evaluation system and has identified the indicators for pollution reduction (emission inventories) and environmental status (TNMN).

Indicators relevant for the assessment of the environmental status of the Black Sea, indicating changes over time in Black Sea ecosystems due to nutrient inputs from the Danube River are agreed by the DBS JTWG:

- Nutrient concentrations in the water column - [N, P, Si (total/available)]
- Secchi depth
- Turbidity
- Chlorophyll-a
- Macro-algae (indicative species) presence/absence
- Oxygen content
- Phytoplankton (key groups in numbers, biomass, and average volume of cells)
- Zooplankton –(biomass and percentage of key groups, number of Noctiluca)
- Macro - zoobenthos (biomass, percentage of key groups)
- Pollutants – inorganic and organic

The results of daNUbs project in the Danube and Black Sea show improvement of water quality status. Considering the objective for Black Sea to return to nutrient values of the 60s, the assessment shows that the situation of the Black Sea has significantly improved since the 1980s.

9.1.2 Coastal zone – part of the Danube river basin district

The primary goal of the Water Framework Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater in order to prevent further deterioration and to protect and enhance the status of aquatic ecosystems. For this purpose it introduces the river basin approach and stipulates the development of integrated and co-ordinated river basin management plans. The 'river basin district' is the main unit for the management of river basins and means "the area of land and sea together with their associated groundwaters and coastal waters" (Art. 2 (15) WFD). 'Coastal water' are defined as "surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters measured" (Art. 2 (7) WFD).
The Danube river basin district will include the coastal waters of Romania along the full length of its coastline as well as the Ukrainian coastal waters extending along the hydrological boundaries of the Danube river basin. The coastal waters of Bulgaria have been assigned to another district.

The workprogram of the DBS JTWG was revised to accommodate the requirements of the EU WFD regarding coastal waters.

9.1.3 Reporting mechanisms in place/under discussion

The ICPDR Water Quality Yearbook contains data for year 2002, 2001 and 1997 as reference year according to the intermediate objective of not exceeding level of nutrients observed in 1997. The annual reports shall feed the five years reports and follow the same structure of data. The five years report shall reflect trends, natural variability, target values and reference condition. Information contained in the five years report would serve for JAP reporting.
The Trans National Monitoring Network of ICPDR is well established and provides high quality data at the same time it shall be refined in order to meet the requirements of WFD in particular for coastal waters. The system of quality insurance and quality control is in place. All ICPDR countries are committed to report necessary information according to requirements of WFD. The information for coastal waters in line with WFD is to be provided by Romania and Ukraine as it was agreed within the RBM/EG. The Danube is considered as point pollution source therefore loads to the Black Sea calculated at the last station in Danube (near Reni) are of particular interest for the Black Sea.

The ICPDR proposed two ways of reporting for the Danube pollution loads to the DBS JTWG. The standard way is to use the results from the ICPDR load assessment programme at the Reni sampling site. In case that these data are not available, the loads can be calculated using the average annual discharge values and the average annual concentration of a particular determinand at the Reni sampling site. The existing results from the load assessment programme (i.e. from 1996 – 2004) can be used while the alternative load assessment method (calculation using average monitoring values from Reni profile) would be applicable only to nutrients and not for heavy metals.

For future reporting to the DBS JTWG, the ICPDR agreed to include all parameters proposed by BSC into the ICPDR load assessment programme starting from 2005 (for the sampling site Reni). An inevitable precondition for this upgrade is the availability of AQC results in the responsible laboratory. For the assessment of heavy metals both filtered and non-filtered samples should be analyzed. Silicate can be included into the reporting procedure provided the satisfactory AQC results will be achieved.

In response to the reporting obligations, analysis and synthesis of data will be undertaken by the BSC and presented to the ICPDR by the end of September 2004. The BSERP has analyzed the quality of data and applicability of information on indicators collected. This information will be used to assist in further development of the monitoring system of the Black Sea. The BSC will prepare a statement on historical data and on the methodology for the development of the Black Sea monitoring system necessary for collecting the data on 10 agreed indicators. Analytical quality control system for the Black Sea monitoring programme has to be developed.

The DBS JTWG is further assisted by the UNDP GEF DRP in identifying appropriate modalities for the implementation and developing of a monitoring system for commonly agreed process, stress reduction and environmental status indicators for the Black Sea.

10 Sustainability of the project results reflected in the ICPDR activities after UNDP GEF co-financing ends

10.1 Building long term sustainability in the participation of Danube countries

Sustainability is the focus of attention in all activities of the ICPDR. The UNDP GEF Danube Regional Project has the intent of capacity building that will strengthen Danube institutions' ability to maintain the water sector in a state of constant upgrading, to reduce water pollution and assure integrated river basin management and transboundary cooperation.

After UNDP GEF support ends, deliverables will be in nation's hands.

The major measure of success to assure long-term sustainability of the ICPDR activities is the country's commitment to continue to financially and technically support the Expert groups activities. The financial support for the ICPDR activities by the countries and strong commitment to the work indicates a positive attitude for sustainability. An important contribution to sustainability would come from the development of national institutional mechanisms – such inter-ministerial structures to control nutrients, where project beneficiaries gradually assumed increasing responsibilities for project activities during implementation, and particularly following completion in implementing legal reforms (CAP, Nitrates Directive, WFD, etc).

10.2 Further EC support to build national capacities for implementation of EU directives and regulations for water quality control and pollution reduction

The European Union, which provides the most important direct assistance to former and current accession countries as Czech Republic, Hungary, Slovenia, Slovakia, Bulgaria and Romania, has put in place the following financing mechanisms:
EU Stability Pact : Presently 2.2 to 2.5 billion ε are pledged and 700 millions ε for emergency assistance are available, out of which about 2 billions ε will be available for Danube countries;
ISPA Funds : For the period 2000 to 2006 a total of 7 billion ε are programmed out of which about 50 % are foreseen for Danube accession countries;
SAPARD Funds are available specially for agricultural development; Danube accession countries might be eligible for about 1,8 mil ε;
PHARE Fund : For the period 2000 to 2006 a total of 10,56 billion ε are programmed, out of which 50% will be available for Danube accession countries.

The total commitments from the European Union for environmental measures, in particular for water management and waste water treatment for accession countries in the Danube River Basin can be estimate to reach at least 12,5 billions ε for a period of 7 years. Considering a total population of about 50 million people in the central and lower Danube River Basin, the per capita investment would be € 36 per year or € 250 per inhabitant for the total planning period of seven years.

The high cost of achieving EU environmental compliance is a formidable challenge for the new member states, Bulgaria and Romania, and non accession countries.
Since the beginning of accession negotiations, the EU has stressed that at least 90% of the cost of environmental compliance must be borne from countries' own sources, representing 2-3% of GDP for many years to come (Communication from the European Commission on the Challenge of Environmental Financing in the Candidate Countries, COM (2001) 304 Final). Mechanisms of financing include contributions from national environmental funds, national and local budgets, commercial financing, and public-private partnerships.

In the past few years, the **EU** has provided an overall amount of 2.5 billion EUR per year in assistance to the 10 new member states, and this amount is expected to increase three-fold following accession. **PHARE** was originally created in 1989 to support Hungary and Poland in developing their economies, but was quickly expanded to cover all the CEE countries and the CIS. With an annual budget of 1.56 billion EUR for the period 2000-2006, the Phare programme is split between technical assistance (30%), and support for economic development in the more impoverished regions of the accession countries (70%).

The annual **ISPA** budget of approximately 1 billion EUR is divided between environmental (50%) and transport (50%) infrastructure projects. ISPA has been instrumental in providing financial assistance in project development of municipal wastewater investments among the recent accession countries (CZ, HU, SI, SK) and Bulgaria and Romania. ISPA is designed to phase into the **Structural Funds** that will be available following entry of the 10 new member states. For the period 2004-2006, 21.7 billion EUR have been allocated in the Structural and Cohesion Funds. As with the ISPA during the pre-accession process, 50% of the Cohesion Funds are earmarked for environmental investment.

The Special Programme for Agricultural and Rural Development (**SAPARD**) manages an annual budget of 0.52 billion EUR, to finance rural community projects such as management of manure storage facilities for complying with the Nitrates Directive, agricultural water resource management, forestry, and land improvement. Distribution of SAPARD funds, managed by the individual countries, has come under some criticism for not providing more assistance to organic farming, rural development, and agro-friendly projects.

Even with EU support, the accession countries will be faced with funding gaps for achieving environmental compliance. International Financial Institutions (**IFIs**), such as EIB, EBRD, WB, and GEF will continue to play an important role in financing environmental investment projects. Many of the new member states have implemented programmes for creating incentives to further engage the **private sector**, and these efforts will likely expand in the subsequent years.

10.3 Estimates on the cost for reforms and investments

The 10 recent new member states have fully transposed their regulatory frameworks in line with EU environmental requirements, but realising actual compliance will require significant time and financial resources. The total environmental investment needed by all of the 10 new member states is between 80 and 100 billion ε. Among the Danube River Basin countries, the total environmental costs range from 2,723 mil ε for Slovenia to 10,000 mil ε for Hungary and the Czech Republic. The second tier of accession countries, Bulgaria and Romania, require even more to achieve compliance: 11,000 mil ε and 17,000 mil ε, respectively:

Table 27 Estimated total environmental costs to meet EU standards

Country	Population	Total environmental costs to meet EU standards
Bulgaria	8.2 million	11,000 mil ε
Czech Republic	10.4 million	10,000 mil ε
Hungary	10 million	10,000 mil ε
Romania	22.4 million	17,700 mil ε
Slovak Republic	5.4 million	4,005 mil ε
Slovenia	1.99 million	2,723 mil ε

The **Urban Wastewater Treatment Directive** is expected to be the most expensive water quality requirement to implement, accounting for 8% (Slovenia) to over 45% (Romania) of the total estimated environmental compliance investment. The new member states have been granted transitional periods for implementing the UWWT, as much as 10 years beyond the 2005 deadline stipulated in the directive.

Shorter transition periods were reached for complying with the IPPC Directive, the most significant challenge facing the industrial sector. Industrial restructuring has been underway in the region for several years, but meeting the IPPC Directive requirements by the 2007 deadline will be a major challenge for many CEE enterprises. Estimated costs complying with the IPPC Directive among the Danube River Basin countries ranges from 50 mil ε for Slovenia to 3,725 mil ε in the Czech Republic:

> Nobody can deny that the Common Agricultural Policy, with excessive subsidies, have also created a lot of environmental problems including the nitrates problem," admits Margot Wallström. "It is important to reform the Common Agricultural Policy in such a way that we do not invite the new member states to repeat the mistakes by the old member states so to say. And of course, they have an advantage in that they have not been using so much pesticides or fertilisers and they have not had a very intensive agricultural sector."

In the agricultural sector, the **Nitrates Directive** is the most relevant EU environmental legislation. Agricultural nitrate pollution is generally much lower in CEE than in intensely farmed portions of western EU countries, primarily because the CEE agricultural sector is still recovering from the collapse of former Soviet Union markets and the break-up of former communal farms. However, many intensive animal husbandry operations throughout CEE are faced with significant financial burdens for improving manure storage and handling facilities.

The new member states did not receive transition periods for **nature conservation** compliance. The Birds and Habitats directives are usually not considered as investment-heavy legislation, but balancing conservation efforts with infrastructure improvements is paramount. For example, many transportation projects in the region threaten potential Natura 2000 sites. There is an agreed need to accelerate the process of identifying areas to be protected.

The high cost of achieving EU environmental compliance is a formidable challenge for the new member states, Bulgaria and Romania, and several Balkan countries that have negotiated Stabilisation and Association Agreements (SAAs) with the EU to bring their countries closer to EU standards.
Since the beginning of accession negotiations, the EU has stressed that at least 90% of the cost of environmental compliance must be borne from countries' own sources, representing 2-3% of GDP for many years to come.

The reforms should concern institutional and legal measures. For Czech Republic, for the water sector, it will be required for 5 years period 1,130 – 1,500 million €, and for 10 years period 2,260 – 3,000 million €.

Values related to the direct investments within the Morava River which have to be carried out to respond to new water related regulations are estimated to reach a total amount of 200 – 250 million € for period of 5 years. Cost assessment for implementation of the WFD is about 10 mil. € for years 2003 – 2015, of which for years 2004 – 2006 is presupposed amount 2.6 mil €. State budget is the main source of finance. No additional institutions are requested. In the 1992–2002 period, the State Environmental Fund of the Czech Republic spent 1.1 billion € and supported the various environmental and water related investments, of which construction or reconstruction of 1,115 waste water treatment plants and sewer systems and 1,295 projects to decrease the burden on nature and the landscape.

Moldova is committed to implement the WFD and the ICPDR JAP. A detailed revision of needs in terms of legislation to respond to WFD is not yet done. The needed investments for JAP implementation is: 296.7 Mio. € for municipal wastewater treatment plants, including sewerage systems, 111.2 Mio. € for industrial wastewater treatment plants, and 85.0 Mio. € for restoring and protecting the wetlands.

For Bosnia, the financial allocation for 2002-2004 is 25,6 mil €.

From Slovene EcoFund 0,211 million € were spent on wastewater treatment and 1,875 million € for wastewater collection systems as part of the NEAP priorities only in 2002.
Romania is the recipient of funding from the EU-ISPA Programme that provides support for the transport and environment sectors, with an annual allocation of EUR 208-270 million for the period 2000-06.

The two first Danube EU member countries Germany and Austria have significantly achieved high standards of emission reduction and water pollution control. In 1997 and 1998 Germany invested more then 2.88 billion € for pollution reduction measures to respond to EU Water Directives and in particular the Nitrate Directive. Current investment in the water sector in the German part of the Danube River Basin is at the level of about 1.8 billion € per year of which 1.5 billion € is spent for communal wastewater treatment facilities (including 3rd stage for nutrient removal). From 1993 to 1999 Austria invested about 936 million € per year for municipal wastewater treatment including nutrient removal facilities. Concerning the ongoing projects indicated in the ICPDR JAP, further investments of 234 million € for Germany and 264 million € for Austria are foreseen for the period from 2001 to 2005.

11 Conclusions

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. The EU Water Framework Directive has added strength to the efforts to coordinate actions in support of integrated river basin management and pollution control and reduction.

Added to these elements has been the support provided by the UNDP /GEF Danube Regional Project.

The mechanisms for cooperation exist and agreement on the nature of the problems has been reached. It will nonetheless be important that many individual actions are taken that in total will add up to a cleaner and healthier Danube.

Recent reviews of activities conducted under ongoing DABLAS project highlight that many investment and actions are happening. In addition there has been substantial legislative reform and in particular the implementation of EU community law within the DRB. The DABLAS project has, however, highlighted both the implementation efforts and deficits. This is especially the case for those EU Directives that require substantial administrative reform and financial investments.

Sustainable development in the DRB requires continue and enhanced international cooperation. Success will depend on thorough implementation of actions and commitments of the countries and on effective and coordinated contribution of the international community.

The International Commission for the Protection for the Danube River is assisting in providing a forum for the necessary dialogue, understanding and action needed to meet the challenges that exist.