

WETLANDS IN THE DANUBE RIVER BASIN

**An ICPDR issues paper on the role of wetlands in
implementing the EU Water Framework Directive**

(Draft 5 – Final)

September 2004

Summary

This Issues Paper has been drafted by the Ecology Expert Group following a request from the 6th Ordinary Meeting of the ICPDR (December, 2003 in Vienna).

The Issues Paper was prompted by the publication by the EU Common Implementation Strategy of the *Horizontal Guidance Document on the Role of Wetlands in the Water Framework Directive*. This document, approved by the EU Water Directors in November 2003, describes legal obligations to consider wetlands during WFD implementation; and the role that wetland creation, restoration, protection and management can play in achieving the WFD objectives.

The *Wetlands Horizontal Guidance* emphasises that wetlands can provide environmental, socio-economic and cultural benefits. In few European river basins is this truer than in the Danube River Basin. Despite the loss of 80% of wetlands in the last century, Danube wetlands remain valuable. Local, national and river basin scale initiatives are being developed which recognise this. The development of the Danube River Basin District Management Plan, as required by the WFD, provides an opportunity to build on and co-ordinate these initiatives.

This Issues Paper describes the main elements of the *Wetlands Horizontal Guidance* with specific reference to the Danube River Basin. Particular attention is paid to:

- identification of wetlands within the Danube River Basin that can support WFD implementation;
- WFD environmental objectives and wetlands;
- the relationship between wetlands and Heavily Modified Water Bodies (HMWBs);
- protected areas and the WFD;
- wetlands and the pressures and impacts analysis;
- programmes of measures and wetlands; and
- monitoring of wetlands.

The Issues Paper suggests a number of actions that the ICPDR might take to ensure that the *Wetlands Horizontal Guidance* is taken into account during the development of the Danube River Basin District Management Plan. Recommendations in this paper include:

- the elaboration and enlargement of an ICPDR *Strategy and Action Plan for Integrated Management of Danube Wetlands*, including measures for wetland restoration, protection and sustainable management that can contribute to the achievement of the WFD objectives;
- Inclusion in the ICPDR *Strategy and Action Plan for Integrated Management of Danube Wetlands* of transboundary wetland initiatives in Danube sub-basins or reaches – such as the Lower Danube Green Corridor or the trilateral platform for Floodplains of the Morava-Dyje-Danube confluence;
- Pro-active use of the ICPDR *Strategy and Action Plan for Integrated Management of Danube Wetlands* by DRPC Contracting Parties and other organisations as a basis for raising funds for wetland initiatives;
- the long-term development of a wetlands monitoring network in coordination with the TNMN; and
- Measures – such as the establishment of a Danube Wetland Management network – to build capacity for the restoration, protection and sustainable management of wetlands in order to implement the DRPC and the WFD.

1 Introduction

1.1 Background

The purpose of the EU Water Framework Directive¹, as set out in Article 1, clearly includes the protection, restoration and enhancement of wetlands:

The purpose of this Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which:

*a) prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and **wetlands** directly depending on the aquatic ecosystems.*

Moreover, protection, restoration and enhancement of wetlands might in turn contribute to the protection, restoration and enhancement of surface water and groundwater bodies, i.e. to the objectives of the WFD as set out in Article 4.

These points form the central premise of the *Wetlands Horizontal Guidance*² prepared for the EU Common Implementation Strategy for the WFD. The *Wetlands Horizontal Guidance* was officially approved by the EU Water Directors at their meeting in Rome on 24-25 November 2003 following a drafting process that included input from several Danube countries.

Historically wetlands have been an important feature of the Danube River Basin, both for people and for wildlife. While most have been damaged or destroyed by human activities in recent decades, some globally significant wetlands remain intact. Efforts to restore wetlands are increasing not only throughout the Danube River Basin but across Europe.

But how can these efforts be integrated into the process of implementing the WFD in the Danube? More specifically, how can the ICPDR make use of the *Wetlands Horizontal Guidance* as it strives to prepare the first Danube River Basin District Management Plan?

Following discussion of these questions at the 7th Ecology Expert Group meeting (Laufen, 22-23 September 2003) and the 12th River Basin Expert Group meeting (St Pölten, 29 September – 1 October 2003), the ICPDR Ordinary Meeting held in Vienna on 1-2 December 2003 passed a resolution requesting that the Ecology Expert Group should:

...prepare by February 2004 a draft issue paper on “Wetlands in the Danube River Basin” to discuss it in the 13th RBM EG meeting and finalize it by mid 2004 according to the proposed outline.

The Ecology Expert Group in turn asked the WWF International Danube-Carpathian Programme³ to take the lead in preparing the issues paper. Contributions have been received from a number of ICPDR contracting parties and observers and drafts of the paper have been discussed briefly at the 13th RBM Expert Group meeting (Budapest, 26-27 February 2004) and in

¹ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, *Official Journal L 327*, 22/12/2000 P. 0001 - 0073

² *Horizontal Guidance Document on the Role of Wetlands in the Water Framework Directive*, Final Draft Version 8.0, 7th November 2003

³ Prepared by Dr David Tickner, Freshwater Team Leader, WWF-International Danube-Carpathian Programme, with comments from Austria, Bulgaria, Germany, Serbia & Montenegro, Slovakia, Slovenia, the Danube Environmental Forum, the Ramsar Secretariat and the ICPDR Secretariat.

more detail at the 8th Ecology Expert Group meeting (Brno, 22-23 March 2004). This final version was approved by the 9th Ecology Expert Group meeting in Sofia (2-3 September 2004).

1.2 The purpose of this paper

The overall aim of this paper is to offer a preliminary assessment of the extent to which protection, restoration and enhancement of wetlands can contribute to the attainment of good status of water bodies throughout the Danube River Basin and thus successful implementation of the WFD.

Eventually, such measures for wetland protection, restoration and enhancement will need to be integrated into the Danube River Basin District Management Plan (to be prepared by 2009). While it is too early at this stage to comprehensively assess the nature of such measures it is possible in the short term to establish the potential relevance to the Danube River Basin of the *Wetlands Horizontal Guidance* and to provide some recommendations for actions that will lead to appropriate consideration of wetlands within the Danube River Basin District Management Plan.

In meeting these aims, this paper contributes to the ICPDR Ecology Expert Group's Terms of Reference (especially tasks 4.1, 4.2, 4.4, and 4.7).

It should be emphasised that, while some repetition is inevitable, this paper is not meant to duplicate the discussion in the *Wetlands Horizontal Guidance*. Indeed readers are encouraged to consider this paper alongside the *Wetlands Horizontal Guidance* in order to fully understand the discussion and recommendations here.

1.3 The structure of this paper

The following section of this paper considers the need for a definition of the term "wetlands", taken from the *Wetland Horizontal Guidance*, and describes the socio-economic and environmental benefits that wetlands might offer.

Section 3 summarises the major international legislation requiring Danube River Basin countries to restore, protect and/or sustainably manage wetlands

Section 4 sets out some specific background on wetlands in the Danube River Basin and gives examples of existing policy or management initiatives within the Danube River Basin that are seeking to optimize the benefits derived from wetlands.

The application to the Danube River Basin Management Planning process of the *Wetlands Horizontal Guidance* is described in Section 5. Particular attention is paid at the end of this section to the ways in which the *Wetlands Horizontal Guidance* can be taken account of during the preparation, and following the publication, of the Danube River Basin District 2004 Roof Report.

Finally, Section 6 provides concluding comments and recommendations for action.

2 Wetlands and their functions

2.1 What is a wetland?

There are many technical definitions of the term “wetland”. For instance, the Convention on Wetlands (Ramsar, Iran 1971), to which all Danube countries are Contracting Parties, defines wetlands as:

...areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.

The *Wetlands Horizontal Guidance* stops short of providing a standard definition of wetlands but offers a helpful description:

From an ecological perspective, wetlands are heterogeneous but distinctive ecosystems which develop naturally or are the product of human activities. Their biogeochemical functions depend notably on a constant or periodic shallow inundation by fresh, brackish or saline water, or saturation at or near the surface of the substrate. They are characterised by standing or slowly moving waters. Common features include hydric soils, micro-organisms, hydrophilous and hygrophilous vegetation and fauna adapted to chemical and biological processes reflective of periodic or permanent flooding and/or water-logging.

Wetlands are part of the hydrological continuum. They comprise parts of other surface water bodies and may significantly influence their status. When not immediately contiguous to surface waters, wetlands are often linked to these through hydrological pathways. Their common occurrence at the interface between surface waters and agro-ecosystems underlines the potential relevance of wetlands for the protection of surface waters.

There is not space in this paper to discuss the technical merits of different wetland definitions. Instead, as in the *Wetlands Horizontal Guidance*, the paper focuses on the relevance of wetlands to the achievement of the WFD environmental objectives. However, the most important factor to note is that all definitions emphasise the fact that wetlands are part of the hydrological continuum and, in most instances, are linked to surface water and/or groundwater bodies.

Further reference in relation to WFD is given in chapter 5.1

2.2 Wetland benefits

There is considerable evidence in scientific literature of the benefits that wetlands offer in terms of direct socio-economic benefits (such as agricultural activities, forestry, hunting, fishing and recreational opportunities), environmental services (water purification, groundwater recharge, flood protection) and biodiversity.

The relevance of these benefits specifically to WFD objectives, as set out in Article 1, is best summarized in an excerpt from the common text on wetlands inserted into all CIS guidance documents following the decision of an EU Water Directors in their meeting in Copenhagen in November 2002:

Wetland creation and enhancement can in appropriate circumstances offer sustainable, cost-effective and socially acceptable mechanisms for helping to achieve the environmental objectives of the Directive. In particular, wetlands can help to: abate pollution impacts, contribute to mitigating the effects of floods and droughts, achieve sustainable coastal management and promote groundwater recharge.

These benefits are discussed in more detail, and with specific reference to the Danube River Basin, in Section 4.

3 International legal instruments relevant to wetlands in the Danube River Basin

A number of existing international legal instruments oblige governments within the Danube River Basin to take account of the needs of wetlands when setting and implementing policy and determining legislation.

3.1 EU Water Framework Directive

As discussed in section 1 above, the WFD refers to wetlands specifically in Article 1. However, it also mentions wetlands in Recitals 8 and 23 and in Annex VI.

All contracting parties to the Danube River Protection Convention, including EU Member States, Accession Countries and non-Member States have agreed to work together under the aegis of the ICPDR to implement the WFD for those parts of their territories falling within the Danube River Basin.

3.2 Danube River Protection Convention (DRPC)³

The DRPC is the regional implementation of the UN-ECE Convention for Transboundary Water Courses and International Lakes in the Danube basin. Wetlands are referred to at several points in the DRPC, e.g. Article 2(3), Article 2(5), Article 3(2)(d), Article 6 (e), Article 9(1). The EU and all Danube countries except Bosnia Herzegovina are contracting parties to the DRPC.

3.3 Other EU legislation

Obligations relating to the Nitrates Directive⁴, Habitats Directive⁵ and Birds Directive⁶ are separate from the WFD. Nevertheless there are cross-references between these Directives, e.g. Article 6 of the WFD refers to the need to prepare a Register of Protected Areas, including those within the Natura 2000 network established by the Habitats and Birds Directives.

Implementing EU legislation other than the WFD is not specifically a task for the ICPDR. However, EU Member States within the Danube River Basin are currently obliged to implement other EU Directives. Accession Countries such as Bulgaria, Romania and Croatia will also be obliged to ensure full implementation. In so far as it is required to ensure implementation of the WFD, other Danube River Basin countries may also need to implement certain elements of other EU Directives.

3.4 Ramsar Convention

The Ramsar Convention⁷ requires contracting parties to fulfil several obligations including the designation of at least one wetland site for inclusion in the List of Wetlands of International

³ Convention on cooperation for the protection and sustainable use of the Danube River (Danube River Protection Convention), Sofia, 1995

⁴ Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources

⁵ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

⁶ Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds

⁷ Convention on Wetlands, ibid

Importance; the promotion of the conservation and wise use of wetlands through appropriate land-use planning policies; the promotion of training in wetland management; and consultation with neighbouring countries on management of transboundary wetlands and coordination of wetland policies and regulations.

All Danube River Basin countries are contracting parties to the Ramsar Convention and a Memorandum of Understanding between the Ramsar Secretariat and the ICPDR on the observer status of the Ramsar Convention at the DRPC has established the basis for coordinated approaches to protecting and restoring wetlands and their biodiversity in the context of river basin management.

3.5 Other conventions

Other conventions also have implications for wetland management in the Danube. For instance:

- all Danube River Basin countries are signatories to the UN Convention on Biodiversity⁸ which stipulates that contracting parties should conserve biological diversity, use its components sustainably and ensure fair and equitable sharing of resources;
- all Danube countries apart from Bosnia Herzegovina and Serbia & Montenegro have ratified the Bern Convention⁹ which established, in parallel to the Natura 2000 network, the Emerald Network of protected areas in non-EU-countries;
- all Danube countries apart from Bosnia & Herzegovina and Serbia & Montenegro have ratified the Bonn Convention¹⁰ which requires contracting parties to work together to conserve migratory species and their habitats.
- seven Danube countries (Slovakia, Czech Republic, Poland, Hungary, Serbia & Montenegro, Romania and Ukraine) are signatories to the Carpathian Convention¹¹. Article 6 of this Convention sets out requirements on sustainable and integrated water and river basin management, including conservation of wetland ecosystems.
- three Danube countries (Germany, Austria, Slovenia) are signatories to the Alpine Convention (1991).
- Most Danube countries (Slovakia, Slovenia, Croatia, Bulgaria, Romania, Moldova) are signatories to the Espoo Convention¹². It deals with activities causing a significant adverse transboundary impact. Article 2.5 in Appendix III general criteria makes particular reference to areas of special environmental sensitivity or importance (Ramsar sites, national parks, nature reserves and other protected sites).

3.6. Bi- and Multilateral Agreements

There are in the Danube basin various bi- and multilateral agreements dealing with transboundary water and habitat management (e.g. Sava Basin Framework Agreement 2003, Lower Danube Green Corridor Declaration 2000).

⁸ Convention on Biological Diversity, Rio de Janeiro, 1992

⁹ Convention on the conservation of European wildlife and natural habitats, Bern, 1979

¹⁰ Convention on the conservation of migratory species of wild animals, Bonn, 1979

¹¹ Framework Convention on the Protection and Sustainable Development of the Carpathians, Kiev, 2003

¹² Convention on Environmental Impact Assessment in a Transboundary Context (1991)

4 Wetlands in the Danube River Basin

4.1 The state of Danube River Basin wetlands

The following is an excerpt from the ICPDR website¹³:

Danube wetlands play a crucial role in sustaining biodiversity in the basin. Their diverse habitats support a wide variety of species. Wetlands act as natural filters for nutrients and toxic substances, provide sediment and erosion control, flood protection, maintain surface and groundwater resources. They also contribute to climate stability.

Wetland habitats in the Danube river basin have been drastically altered in the last decades. The main cause of wetland destruction has been the expansion of agriculture uses. Drainage and irrigation are partly responsible for the drop in water levels and the removal of wetland and floodplain forests leaving only a few natural forests remained. Some wetlands have gained special international recognition, e.g. under Ramsar Convention and UNESCO Heritage site.

The Danube River, like no other European river, links different natural and cultural landscapes. Despite the fact that 80% of the historical floodplain has been lost during the last 100 years (compared to an average loss across Europe of approximately 60%) the Danube River Basin still incorporates a large variety of wetlands, among them more than 70 sites designated by national governments for inclusion in the Ramsar Convention List of Wetlands of International Importance. Some examples of major wetlands in the Danube River Basin are summarised in the box below.

It is vital to realise that there are many more wetlands in the Danube River Basin which may be smaller in scale and which have not been protected/designated in any way but which may individually or collectively play an important role in achieving good status of water bodies as required by the WFD. The issues set out in this paper are equally relevant to these small-scale wetlands.

Some major wetlands in the Danube River Basin

Name: **Donauauen and Floodplains of the lower Morava and Dyje** (Austria, Czech Republic and Slovakia):

Status: National Park (AT) since 1996 (11,000 ha). Biosphere reserves, nature reserves, protected sites and protected landscape areas as well as Ramsar sites in all 3 countries (trilateral Ramsar Site "Floodplains of the Morava-Dyje-Danube confluence" under preparation).

Description: This wetland complex contains the very rich and dynamic floodplains, side-arms and meadows along the lower Morava and Dyje as well as the forest area along the Danube between Vienna and Bratislava. In total it forms a connecting wetland area of 48,000 ha in three states. The area is subject of a series of internationally funded restoration projects.

Pressures: River regulation, drainage, intensive agriculture, transport infrastructure (roads and bridges), waterway transport. Upstream river regulation has led to gradual drying-up of the riparian zone.

Name: **Neusiedlersee and Fertő-Hanság** (Austria and Hungary)

Status: A transboundary National Park since 1994. World Heritage Site (cultural landscape, 2001),

¹³ http://www.icpdr.org/pls/danubis/danubis_dyn_navigator.show

biosphere reserve (HU, 1979) and Ramsar site (HU, 1989)

Description: A 33,576ha shallow steppe lake with a huge reed belt, adjacent small soda lakes and traditional pastures. One of the most important stop-overs for migrating birds in Europe.

Pressures: Pollution from agriculture and sewage; tourism, drainage, artificially controlled water level.

Name: Szigetköz and Dunajské luhy (Hungary and Slovakia):

Status: Ramsar site (SK), protected landscape areas (in HU since 1987) and nature reserves.

Description: Formerly 29,000 ha of diverse and dynamic floodplain habitats (mainly softwood forests) in the only large inland delta of the Danube with an exceptional transition of the meander and braided zones.

Pressures: Since 1992, heavily impacted by the Gabčíkovo hydrodam complex (diverting 80% of the Danube). Artificial irrigation maintains the remaining side-arm system of 8,000 ha. Intensive forestry, gravel excavation, recreation.

Name: Gemenc-Béda-Karapancsa (Hungary):

Status: Part (27,000 ha) within the Duna-Drava National Park (since 1996; total area is 47,000 ha).

Description: An exceptional example of an old floodplain with big river meanders (largely disconnected), oxbows, extended hard- and softwood floodplain forests and rich biodiversity (especially fishes and birds). Restoration projects were started.

Pressures: Degradation (bed erosion) after the Danube regulation in the 19th century. Intensive forestry and hunting; illegal fishing activities.

Name: Wetlands of the upper, middle and lower Tisza (Ukraine, Slovakia, Romania, Hungary)

Status: The region hosts Ramsar sites (Tisa SK/Felső Tisza HU, in HU Bodrogszug, Kiskőrei tározó, Mártély and Pusztaszer; Stari Begej-Carska Bara in CS, etc.), protected landscape areas and nature reserves.

Description: Network of channels, soft- and hardwood floodplain forests, oxbows, sand banks, cliffs and meadows in- and outside of the flood dikes. The upper part has a rich biodiversity (fishes, macro-invertebrates), the lower section hosts many threatened, endemic and relic species.

Pressures: River regulation and flood protection works, water pollution, fisheries, forestry, tourism.

Name: The karst catchment of the Ljubljana River (Slovenia):

Status: Natura 2000 sites, a Ramsar Site is under preparation that will cover part of the area.

Description: This wetland complex contains the floodplains on the karst poljes, riparian areas in the river valleys and subterranean karst water bodies, and rivers important for hydrology and biodiversity (particularly subterranean endemic fauna) in the catchment. An outstanding characteristic is a system of intermittent lakes, most significantly is Cerknica Lake. The whole catchment area covers about 40.000 ha, Notranjski trikonik alone some 15 200 ha.

Pressures: agriculture, urban and industrial pollution, tourism.

Name: Middle and lower Drava-Mura wetlands (Slovenia, Croatia, Hungary, Austria)

Status: National Park Duna-Drava (HU: part with 23,000 ha), several special zoological reserves and protected landscape areas. A proposal for a transboundary UNESCO Man and Biosphere Reserve along the Drava and Mura rivers (up to Austria), including Kopacki rit and the Danube, has been put forward by NGOs.

Description: A rich mosaic of varied wetland habitats such as oxbows, wet grasslands, riparian forests with high biological and landscape diversity. One of the rare cases in Europe where such a long river section is connected with its alluvial wetlands (262,000 ha). Traditional landscape management supports rich biodiversity.

Pressures: Operation of hydropower plants, river regulation, gravel excavation, deforestation, illegal buildings, water pollution.

Name: Kopacki Rit (Croatia)

Status: Ramsar Site, Nature Park (IUCN category ?); a proposal for a transboundary UNESCO Man and Biosphere Reserve along the Drava and Mura rivers, including Kopacki rit, has been put forward by local NGOs.

Description: 50,000 ha lying between the Drava and the Danube. The richest flood plain of the Danube River Basin. Traditional resource management.

Pressures: Forestry, including clear cutting; hunting; since the Yugoslavian war hardly accessible with some minefields still present.

Name: Gornje Podunavlje (Serbia & Montenegro)

Status: Special Nature Reserve (Habitat and Species Management Area)

Description: A 19,648 ha wetland on the other side of the Danube to Kopacki rit, of which approximately 10,000 ha is floodplain between 1347 and 1433 km of the Danube River course. This spatially and ecologically unique complex, with the mosaic distributed water, marsh, swamp, meadow, bush and forest ecosystems, is characterized by the high biodiversity and significant number of threatened, rare endemic and relic species.

Pressures: Forestry, including clear cutting and Euro-American poplar plantations, hunting, presence of the alien species, illegally built cottages as well as unsuitable water regime are the main threats. The part called Monostorski Rit was cut-off from the main stream of the Danube by dike. Works on re-connection of the main canals and side-arm system with the Danube have been started within the Monostorski Rit and area.

Name: Koviljsko-Petrovaradinski Rit (Serbia & Montenegro)

Status: Special Nature Reserve (Habitat and Species Management Area)

Description: A floodplain area between 1230 and 1250 km of the Danube River course, covering 4,841 ha. along both the right and left banks, and characterized by the well-preserved original ecosystems, diversity of the species and their communities with significant number of threatened, rare endemic and relic species, as well as the landscapes of exceptional beauty.

Pressures: Forestry, with Cutting off autochthonous trees and establishing of Euro-American poplar plantations, water pollution, as well as presence of the alien species, overfishing and illegal fishing with the forbidden tools are the main threats to the flora and fauna of the area. Thick layers of mud and sand, accumulated wood debris and dams (bridges made of timbers and soil) in the by-canals and canals connecting the floodplain with the Danube River disable water influx from the Danube, as well as free water flow within the area. Cleaning of main canals and side-arms in order to provide good connection with the Danube and migration routes restoration, as well as spawning areas restoration have been planned.

Name: Central Sava wetlands including Lonjsko Polje and Obedska Bara (Croatia, Serbia & Montenegro, Bosnia Herzegovina)

Status: Various designations including Special Nature Reserve (Habitat and Species Management Area)

Description: L. Polje: Largest floodplain of Sava river (50,600 ha) with rich habitat and species diversity, including some of the largest and healthiest populations of endangered species in the Danube basin. Traditional land use is in harmony with nature.

O. Bara: Very well preserved floodplain of 29,431 ha. One of principal characteristics of the area is a variety of biotops which provide habitats for a lot of plant and animal species. Besides a lot of widespread species, the area is inhabited with significant number of threatened, rare, endemic and relic species

Pressures: Water pollution. Plans for flood protection and navigation schemes. Forestry, intending to reduce autochthonous forests and enlarge plantations of Euro-American poplar, and unsuitable water regime resulting in very fast eutrophication are the main threats to the area. In order to provide good connection with the Sava, improvement of water exchange and retaining more water, a Water Regime Restoration Project has been started.

Name: **Lower Danube wetlands** (Serbia, Romania, Bulgaria, Moldova and Ukraine)

Status: Various designations including Ramsar sites (e.g. Belene Island and Ibisha Island), UNESCO Man and Biosphere Reserves (e.g. Srebarna Lake) and National/Nature Parks (e.g. Balta Mica a Brailei, Persina nature Park)

Description: Remnants of the rich floodplains along the Danube downstream of the Iron Gates dams. Together with the Danube Delta (see below), recognised by WWF as one of the world's 200 most important ecoregions for biodiversity.

Pressures: Drainage and flood protection for agricultural use; forestry; navigation.

Name: **Lower Prut floodplains** (Romania and Moldova)

Status: Ramsar site (19,152 ha) "Lower Prut" (MD) including a state reserve, proposed as a biosphere reserve; scientific forest reserve Padurea Domneasca (Lord's Forest) (1993; size 6,032 ha). In RO various designations including four protected areas (total of 260 ha) and a proposed Ramsar site.

Description: Floodplain (up to 6 km wide; in RO 8,247 ha – over 50% aquatic) distributed along the lower Prut in a relatively narrow river valley (channel: 60-80 m wide; altitude 2-53 m asl) upstream of the confluence with the Danube, with adjoining river terraces (strongly eroded) and in some places river-cliffs intersected by ravines. High biodiversity with many endangered species (especially fish, mammals and migratory birds). Main biotopes: Pastures, fish ponds, natural lakes (Beleu and Manta are the largest natural lakes in Moldova); reed beds and floodplain forests.

Pressures: River regulation and embankments for flood protection, intensive agriculture and water pollution; in MD illegal use of natural resources and oil exploitation.

Name: **Danube Delta** (Romania and Ukraine)

Status: Transboundary UNESCO Man and Biosphere Reserve, Ramsar Site

Description: 675,000 ha, approximately 80% in Romania, the rest in Ukraine. The most important wetland in the Danube River Basin and the largest reed bed in the world (180,000 ha). Home to Dalmatian pelicans and many other endangered species.

Issues: Drainage and flood protection for agricultural use; forestry; navigation. After the former regime destroyed one quarter of the delta, a number of major restoration projects have started in recent years.

4.2 Benefits from wetlands in the Danube River Basin

There are many examples of relatively intact wetlands in the Danube River Basin providing environmental services at a local scale. For instance,

- during the extreme floods of 2002, Bratislava escaped inundation. It is widely considered that this was largely because of the relatively intact status of the floodplains of the Danube upstream at the Danube National Park in Austria and of those on the Morava River.
- In Austria, the water quality in a 45km stretch of the Danube riverine wetlands in the Danube National Park is sufficiently high to provide 250,000 people with clean drinking water. The Technical University in Vienna has estimated the cost of providing for alternative treatment, in the case of the riverine fringe being damaged, at €6.3 million per year.

For the Danube River, not including its tributaries, a study of recreation, fisheries, forestry and water purification services estimated that the average value per hectare per year of floodplains is 383 EUR, making the entire annual value of all the 1.7 million ha of Danube floodplains equal to €666 million¹⁴. This does not include the flood mitigation services that the wetlands also offer.

The benefits to be derived from restoration, protection and sustainable management of wetlands are now being recognised in the design and implementation of a number of legislative, policy and project initiatives in the Danube River Basin. The box below sets out two examples.

Wetland restoration and pollution reduction in Bulgaria

Since the signing of the *Lower Danube Green Corridor Declaration* in June 2000, Bulgaria has established two protected wetland areas at Kalimok/Brushlen and Persina Nature Park with a total area of 27,000 ha. The *Bulgarian Wetlands Restoration and Pollution Reduction Project* aiming to restore and protect these two wetlands is underway with \$13.28m of funding from the World Bank/GEF, the Austrian Government, the EU and the Bulgarian Government. The objective of this project is to demonstrate and provide for replication of reduction of transboundary nutrient loads and other agricultural pollution flowing into the Danube River and the Black Sea basins while at the same time conserving key target species in the project areas through: i) wetlands restoration and protected areas management programs; and ii) support for stakeholders to adopt environmentally-friendly economic activities in the two project areas.

Floodplain protection and flood control in Germany

In November 1995 the *Länder Working Party on Water* (Länderarbeitsgemeinschaft Wasser – LAWA) published the *Guidelines for Forward-Looking Flood Protection*. In 2003 - as a consequence of the devastating floods on the Elbe River in August 2002 - LAWA elaborated *Recommendations for Action* to speed up the realisation of these guidelines. In both papers the important role of wetlands, restoration of floodplains and renaturalisation of rivers is emphasised. The recommendations for the responsible bodies include limiting land-use in floodplains by designating specific flood areas; improving natural retention by river and floodplain restoration; and re-activating former retention areas and promoting their natural development.

¹⁴ Gren, I-M. 1994. *Valuation of Danube Floodplains*. Report to WWF-Auen Institute (Institute for Floodplain Ecology), Rastatt, Germany.

Note that these benefits can operate at different scales. For instance, one of the primary aims of the UNDP/GEF Danube Regional Project (DRP) is to encourage action throughout the Danube River Basin that will result in reduced nutrient and toxic pollution levels in the Black Sea. To help achieve this, two specific DRP outputs (Output 4.3 on *The Nutrient Removal Capacities of Riverine Wetlands* and Output 1.4 on *Integrated Land-Use Assessment and Inventory of Protected Areas*) are facilitating wetland restoration in different parts of the river basin, including as far upstream as the Slovakian Carpathians and the Drava river. An important factor in the success of these restoration projects to date is the degree of support from local communities who see that there will also be benefits for them through, for example, improving the quality and supply of drinking water, reducing flooding and facilitating an increase in tourist visits.

4.3 Pressures on wetlands in the Danube River Basin

The loss of wetlands in the Danube River Basin over the last two centuries has been startling. Threats still exist to those wetlands that remain. For instance, wetlands throughout the Danube River Basin – together with the socio-economic and environmental functions they provide – are being damaged or destroyed in the coming years by intensive agricultural land-use on floodplains, river regulation for the benefit of waterway transport, other transport infrastructure such as road bridges, construction of hydropower dams, hard-engineered flood defences, inappropriate forestry practices and mineral extraction.

Further consideration of the pressures acting on wetlands is given in section 5.5.

4.4 Ongoing wetlands initiatives in the Danube River Basin

A large number of local or national scale wetlands restoration initiatives have been completed recently, or are underway, within the Danube River Basin. Examples include:

- the restoration of the Isar river floodplain in München, Germany for the purpose of flood control and re-creation;
- joint management planning for the trilateral Floodplains of the Morava-Dyje-Danube Confluence a new trilateral Ramsar site on the borders of Austria, Czech Republic and Slovakia;
- development of a new management plan for Kopacki Rit Nature Park in Croatia, funded by the World Bank, with a view to providing facilities for sustainable tourism;
- development of projects to restore the hydrological regime within the Gornje Podunavlje and Koviljsko-Petrovaradinski Rit;
- a WWF project using EU LIFE funding to restore the floodplain functions of the Middle Tisza Landscape Protection Area in Hungary;
- major restoration/rehabilitation projects funded by EU LIFE Nature programme along the Austrian rivers Danube, Drava, Mur, Lech, Inn and Lafnitz; and
- In addition, a number of NGO initiatives relevant to wetlands and pollution reduction are being funded through the Small Grants programme of the UNDP/GEF Danube Regional Project.

It is impossible to provide in this paper to discuss in depth the potential role of all such projects within the Danube River Basin Management process. However, it is worth describing the details of some larger, river basin or regional-scale initiatives.

ICPDR Joint Action Plan for the Danube River Basin (JAP)

The 2001-2005 JAP is directed towards improvement of the ecological and chemical status of water, prevention of accidental pollution events and minimisation of the impacts of floods. Secondary objectives include improving the living standard of the Danube River Basin population, contributing to the process of accession to the European Union and restoring the region's biodiversity. In the right place, and with the right design, wetland restoration, protection and management can contribute to all of these objectives. It is notable that the LIFE Programme of the EU may finance up to 50% of the cost of restoration projects on actual or potential Natura 2000 sites.

Chapter 3.3 of the JAP refers to practical river and wetland restoration and rehabilitation projects. Task 4.3 of the Ecology Expert Group is to support the implementation of the JAP for restoration/rehabilitation and management of wetlands and floodplains. Annex III of the JAP lists the projects nominated by the Contracting Parties of the DRPC to implement all the projects nominated in the JAP by the end of 2005. The status of the nominated projects is regularly reviewed. Most Contracting Parties are making good progress in JAP implementation.

At present, river restoration/rehabilitation projects are ongoing in 79 project sites covering 257,262 ha of areas along rivers listed in the Annex 3.3 of the JAP. The total project budget is some € 137.85 million. This represents significant progress in JAP implementation. However, the governments of Slovenia and Ukraine have yet to nominate projects for inclusion in Annex 3.3. The JAP acknowledges that wetlands could serve as potential elimination areas for nitrogen and phosphorous but highlights a problem in knowledge of their long-term efficiency in nutrient removal. The JAP also acknowledges that wetlands can mitigate flood peaks under certain conditions and it has been proposed to the ICPDR that review of Annex 3.3 projects should be linked with the activities of the ICPDR Flood Prevention Expert Group.

As yet the majority of projects in Annex 3.3 are primarily included because of their biodiversity benefits. Follow-up actions on wetland restoration and management could be designed specifically to contribute to the attainment of the WFD objectives.

UNDP/GEF Danube Regional Project: Integrated land-use assessment and inventory of protected areas (Output 1.4); Monitoring and assessment of nutrient removal capacities of riverine wetlands (Output 4.3)

Following review from the ICPDR Ecology Expert Group, implementation of first phase activities has now been completed for both of these components related to land-use and wetlands.

The Integrated Land-use Assessment element of Output 1.4 aimed to develop a land-use assessment methodology, to test it in three pilot sites, to implement new land-use concepts in those pilot sites and to disseminate the findings to target groups in the Danube River Basin. The methodology was developed early in 2003 and specific site analysis has since been undertaken in each of the three pilot sites that were selected for Output 1.4 (Olsavica in Slovakia, Virovitica in Croatia and the Elan Valley area in Romania). This analysis was undertaken in co-operation with national and local experts and discussed during site-specific stakeholder workshops in each area in October 2003. The final report for the first phase identifies practical policy and field restoration actions for each site.

Output 4.3 aimed to help assess the contribution that wetlands could make to reduction of nutrient pollution to the Danube River and made recommendations about the establishment of a pilot wetland monitoring programme. The methodology and monitoring approach were revised based on discussions with relevant experts and a mission to potential sites for the pilot

monitoring programme in Bulgaria and Romania. The Bulgarian wetland (also the site of a World Bank/GEF-funded wetland restoration and pollution reduction project – see 4.2 above) will be the site of one pilot monitoring programme. A second site will be identified early in the second phase of Output 4.3.

Lower Danube Green Corridor (LDGC)

The Lower Danube, flowing for more than 1,000 km through Bulgaria, Romania, Ukraine and Moldova from the Iron Gates dams to the Danube Delta, is one of the most valuable ecoregions in the world for freshwater biodiversity. It is also a region of rich cultural heritage where local livelihoods have been closely connected with the river. The Danube Delta is, at approximately 650,000 ha, Europe's second largest Ramsar site as well as a UNESCO Man and Biosphere Reserve and a World Heritage Site. It includes the largest continuous reedbed in the world and one of the last relatively undisturbed, large natural regions in Europe. Besides sheltering a rich diversity of rare and endangered habitats and species - including 320 bird species - the freshwater ecosystems of the Lower Danube performs essential environmental services and provides numerous opportunities for the sustainable development of local communities.

In June 2000, the Environment Ministers of Bulgaria, Romania, Ukraine and Moldova signed a declaration to establish the Lower Danube Green Corridor (LDGC). In doing so, they committed themselves to create a corridor of protected, restored and sustainably-managed wetlands along the Lower Danube. The intention is that the LDGC will lead to improved management of 775,000 ha of existing protected areas and the effective protection of a further 160,000 ha of freshwater habitats. In total, this will involve the restoration of 250,000 ha of freshwater habitats. This makes LDGC the largest international wetlands protection and restoration initiative in Europe.

In establishing and prioritising sites for restoration and protection within the LDGC, the four Lower Danube countries were asked to consider not only hydrological and ecological parameters, but also the socio-economic values of wetlands. The result is a suite of potential projects that will, if implemented, contribute as much to sustainable rural development as to environmental enhancement. The LDGC, when implemented, should also support successful achievement of the WFD environmental objectives.

Several projects already underway are contributing to the implementation of the LDGC including: the Bulgarian World Bank/GEF Wetlands and Pollution Reduction Project discussed in 4.2 above; a World Bank/GEF-funded Agricultural Pollution Reduction project in Romania; a WWF initiative in the Ukrainian Danube Delta with restoration works currently underway for Tataru Island and Katlabuh liman; and various restoration projects being implemented by organisations such as Apele Romane and the Danube Delta Biosphere Reserve Authority in Romania.

5 The *Wetlands Horizontal Guidance* and its application in the Danube River Basin

The purpose of the *Wetlands Horizontal Guidance* is to elaborate a common understanding of the WFD requirements regarding wetlands and identify their role in its implementation. The *Wetlands Horizontal Guidance* builds upon recommendations proposed in the other CIS Guidance Documents and provides a description of how wetlands are relevant to WFD implementation. In addition it describes and provides guidance on the role of wetlands in the achievement of the environmental objectives of the WFD.

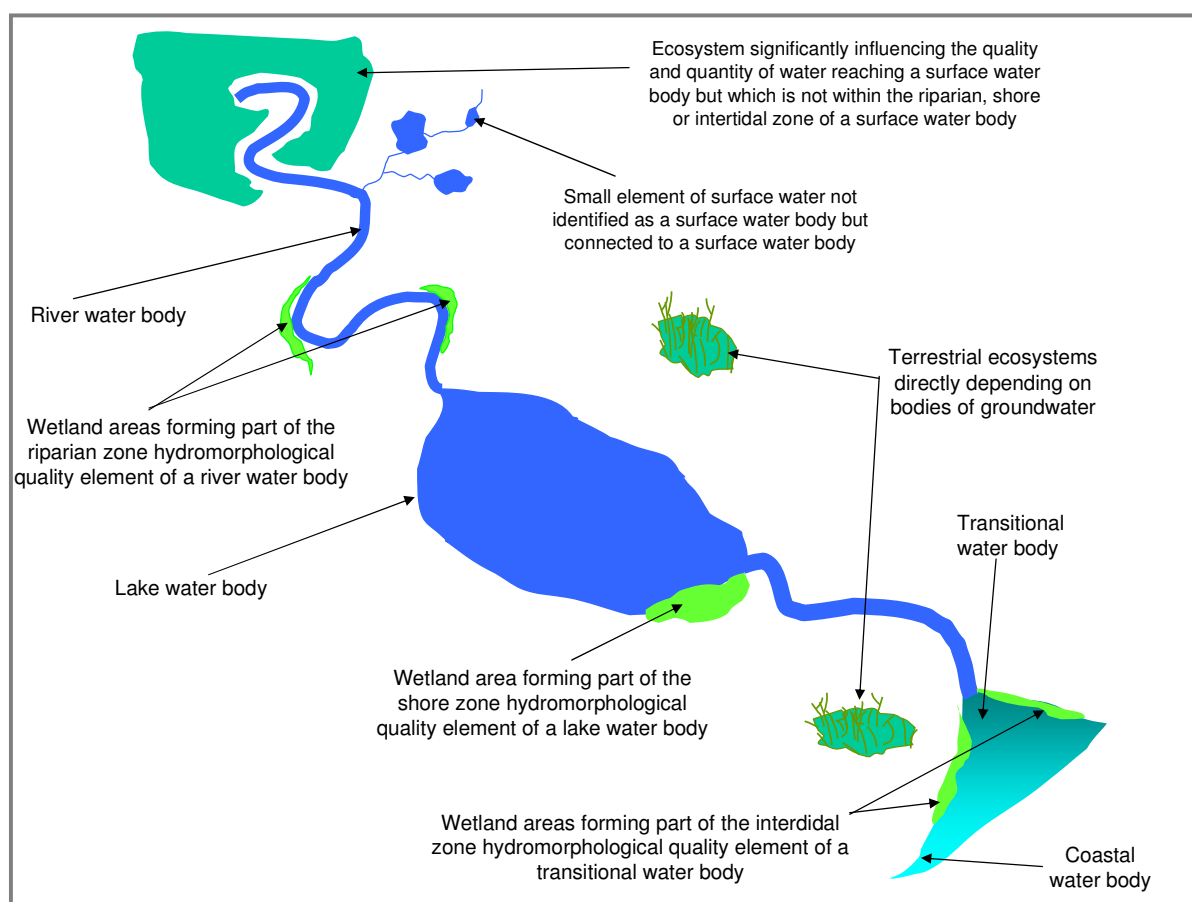
5.1 Identifying wetlands under the WFD

The *Wetlands Horizontal Guidance* identifies five different wetland ecosystem types that may be present in a river basin district. These are summarised in the table below.

Wetland Type	WFD reference	Comment
Wetlands identified as river, lake, transitional or coastal water bodies	Article 2.10	Existing information about the presence and value of wetland features of interest, including biodiversity and cultural significance, may be used to help select water bodies. It is recommended that the multiple role of wetlands within river basin management be given due consideration in the definition of water bodies. For instance, this might mean that a wetland that is known to be especially important for biodiversity – such as the Danube Delta – might be regarded as a water body
Wetlands comprising riparian, shore or intertidal zone hydromorphological quality elements of surface water bodies	Annex V, 1.1 & 1.2	Where rivers are found within naturally functioning floodplains (as in parts of the Drava River and the Lower Danube for example), wetlands in the riparian zone may have important implications for the development of an appropriate reference condition
Wetlands that are terrestrial ecosystems directly dependent on groundwater bodies	Annex V, 2.1.2 & 2.3.2	Terrestrial ecosystems that depend directly on a body of groundwater body will include types of ecosystem that occur in areas where the water table is at or near the surface of the ground.
Wetlands comprising small elements of surface water not identified as water bodies but connected to surface water	Article 2.1 and Article 2.10	Many of the elements of surface water that are not identified will nevertheless be connected to surface water bodies, either permanently or on a seasonal basis. An example might be the oxbow lakes and ponds in the Gemenc part of Danube-Drava National Park in Hungary. In accordance with the CIS <i>Horizontal Guidance on the Identification of Water Bodies</i> such elements will need to be protected or, in some case, enhanced and restored to the extent needed to ensure that any impacts of human activity on them do not compromise the achievement of the environmental objectives of the water bodies to which they are connected
Wetland ecosystems significantly	Term not used in the WFD – refers to part of the area	There may be other wetland ecosystems in river basin which, although they are not adjacent to water bodies and do not therefore form part of the riparian, shore or intertidal zones,

influencing the quality or quantity of water reaching surface water bodies or surface water bodies connected to surface water bodies	of land from which all surface water run-off flows (Article 2.13)	may nevertheless significantly influence the quality and quantity of water reaching those bodies, or reaching small elements of surface waters connected to those water bodies. Competent authorities will need to ensure that the quality and quantity of water entering surface water bodies via these ecosystems is such as to ensure the achievement of the relevant objectives for the water bodies. In doing so, competent authorities may determine to protect, enhance, restore or even artificially create such ecosystems
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The following schematic diagram taken from the *Wetlands Horizontal Guidance* helpfully illustrates the position of the different types within a river basin. Sub-terranean hydrological systems (like the karst areas in Slovenia and in the Slovak-Hungarian border region), not shown in this illustration, should also be considered as a wetland type.



In the Danube River Basin, there will be a need to consider these five ecosystem types in relation to the variety of wetlands that still exist. Technical considerations notwithstanding, there may already be mechanisms in place - through the ICPDR Expert Groups for instance - for ensuring that some of the ecosystem types are taken into account.

However, there is a need for a simple classification of the extent of wetlands in the Danube River Basin using each of the above ecosystem types. If possible the classification should be cross-referenced with the Danube River Basin typology prepared with support from the UNDP/GEF Danube Regional Project. The resulting matrix of Danube River Basin wetlands could then

provide the basis for assessing priorities for action through an elaborated and enlarged JAP and/or for eventual consideration during preparation of the Programme of Measures and the Danube River Basin District Management Plan. The wetland ecosystem classification might make use of existing information from previous studies¹⁵ and existing information from national authorities.

5.2 WFD Environmental objectives and wetlands

Chapter 3 of the *Wetlands Horizontal Guidance* notes that the WFD does not set ecological objectives specifically for wetlands, other than for those wetlands that are part of surface water bodies. However, the WFD does a) set groundwater objectives that include obligations towards these ecosystems, and b) identify the use of wetland functions as a possible means of achieving the WFD objectives.

The most important WFD provisions in relation to wetlands are summarised in the table below.

WFD reference	Obligation
Article 4.1 (a.i)	Obligations to surface waters apply to “open water” wetlands identified as water bodies.
Article 4.1 (a.i); Annex V (1.2)	Prevent more than very minor anthropogenic disturbance to the hydromorphological condition of surface water bodies – including structure and condition at High Ecological Status.
Article 4.1 (a.i); Article 4.5	Protect, enhance and restore wetlands identified as water bodies where this is necessary to support the achievement of a) good ecological status/good ecological potential, b) good surface water chemical status, or c) a less stringent objective.
Article 11.3 (i)	Establish measures to control and mitigate modifications to the structure and condition of the riparian zone, including any wetlands therein, so as to ensure that the hydromorphological conditions of the water bodies are consistent with the required ecological status or potential.
Article 4.1 (b.i & b.ii); Annex V (2.1.2 & 2.3.2); Article 4.1 (b.iii)	Achieve good groundwater status and reverse and significant and sustained upward trends in the pollution concentrations, <i>inter alia</i> , in order to avoid damage to terrestrial ecosystems that directly depend on bodies of groundwater.
Annex IV (v)	Obligations as requested specifically under the Habitats Directive and Wild Birds Directive to take protective or restorative action in the management of wetlands that are included in the register of protected areas.

The *Wetlands Horizontal Guidance* provides useful guidelines on:

- identifying the area of adjacent land that should be included when assessing the biological quality elements of a water body (described in WFD Annex V) and the relationship between these and the hydromorphological quality elements;
- ensuring that wetland condition is incorporated into classifications of ecological status where necessary; and
- identifying groundwater status in relation to dependent wetlands.

These guidelines with their simple classification for wetlands (see 5.1. above) should be used for setting specific environmental objectives for surface water and groundwater bodies in the Danube River Basin.

¹⁵ e.g. the Evaluation of Wetlands and Floodplain Areas in the Danube River Basin (1999) prepared by the WWF Danube-Carpathian Programme and WWF-Auen-Institute under the aegis of the UNDP/GEF Danube Pollution Reduction Programme; and the Inventory of Nature Protected Areas referred to in section 4.3 of this paper.

5.3 The relationship between wetlands and Heavily Modified Water Bodies (HMWBs)

Chapter 4 of the *Wetlands Horizontal Guidance* states that:

Riparian, lakeshore or inter-tidal zones, including the wetlands within these water bodies, constitute part of the hydromorphological characteristics of a water body. Where the condition and extent of these is relevant to the achievement of the environmental objectives for the associated body, modifications to or destruction of these wetlands should be taken into account in the HMWB designation process.

By cross-referencing to the CIS HMWB Guidance Document, the *Wetlands Horizontal Guidance* provides the following advice on incorporating wetlands into the two “designation tests” for HMWBs:

- *Do the restoration measures necessary to achieve good ecological status, as opposed to good ecological potential, have significant adverse effects on the wider environment or the specified uses?* Impacts of heavy modification on riparian, lakeshore or intertidal zones of a water body may result in risk of failure to achieve good status. Wetland restoration can contribute to the measures necessary to achieve good status. In such cases, the designation test may require an assessment of whether restoration measures can be undertaken without having other, negative, effects. For instance, wetland restoration for flood mitigation purposes may adversely affect local farm incomes in some places. Design of wetland restoration projects will therefore need to be carefully thought through and decision-making processes should actively involve all affected stakeholders.
- *Can the beneficial objectives served by the HMWB be achieved by other means, which are a significantly better environmental option, technically feasible and not disproportionately costly?* There may be ways in which wetland restoration or creation can help deliver the beneficial effects in a way that meets the requirements of this designation test. An example of this from the Danube River Basin would be the restoration of wetlands as an alternative means of floodwater storage as described in the draft German Flood Control guidelines (see 4.2).

Given the extent to which a preliminary HMWB designation has been applied throughout the Danube River Basin, particular attention to this element of the *Wetlands Horizontal Guidance* may be found useful.

5.4 Protected areas and the WFD

As noted in 4.3 above, a draft of the Inventory of Nature Protected Areas for the Danube River Basin has been completed, to the extent that availability of data allows. The final version should be ready late in 2004 or early in 2005. Although it is not strictly required, the ICPDR has decided to include this information in its 2004 Danube River Basin District Roof Report to European Commission. In addition, information will be included on other categories of protected area such as those designated for the abstraction of water for human consumption, nutrient sensitive areas and areas protected for economically important fishing.

Chapter 5 of the *Wetlands Horizontal Guidance* notes that any relevant standards and objectives for protected areas should be achieved by 2015 unless stated otherwise in the Community legislation under which sites were designated. Achievement of Favourable Conservation Status for Natura 2000 sites is the most relevant standard here. For the purpose of the current pressures and impacts analysis in the Danube, it will therefore be necessary to consider how

Favourable Conservation Status should be understood in terms of relevant physico-chemical or hydromorphological quality elements. While the ICPDR is not tasked with implementing the Natura 2000 legislation, establishment of a network of protected wetlands will contribute to successful WFD implementation. It is therefore recommended to consider the relationship between Favourable Conservation Status and good ecological and chemical status in the context of the Danube River Basin. If necessary, and if resources allow, they should draw on advice from technical consultants for this work.

The *Wetlands Horizontal Guidance* also notes that Article 10 of the Habitats Directive requires Member States to endeavour to improve the ecological coherence of the Natura 2000 network through appropriate land-use planning and development policies. The results of the first phase of the UNDP/GEF Danube Regional Project, Output 1.4: Integrated Land Use Assessment and Inventory of Protected Areas are relevant here.

5.5 Wetlands and the impacts and pressures analysis

Chapter 6 of the *Wetlands Horizontal Guidance* considers that role of wetlands within pressure and impacts analysis. It is noted that the achievement of the broad range of objectives established by the WFD will require an understanding of a greater number of impact/pressure relationships than has been required by previous European legislation, or is common practice in most Member States.

'The objectives include new ecological objectives, the achievement of which may be compromised by a very wide range of pressures, including point source discharges, diffuse source discharges, water abstractions, water flow regulation, morphological alterations and artificial recharge of groundwater. These and any other pressures that could affect the status of aquatic ecosystems must be considered in the analyses.'

This is particularly relevant to understanding pressures on wetlands, and their relevance to WFD objectives. Whilst the *IMPRESS Guidance* recognises that the initial characterisation process may rely heavily on existing data, it also emphasises the need for Member States to ensure that this can be refined and supplemented during the river basin planning cycle(s) which follow. Less significant elements of surface waters such as small streams, canals and wetlands often play a relevant role in sustaining river basin processes and may act as pressure indicators. Impacts on these may reveal existing pressures that increase the vulnerability of designated water bodies.

By way of illustration, the table below – taken from the *Wetlands Horizontal Guidance* - summarises just some of the pressures and impacts that might act on wetlands. All of these pressures are significant throughout the Danube River Basin.

Pressure	Impact	Information	WFD relevance
Drainage of floodplain wetlands	<p>Changes to physical extent, biological composition of water body.</p> <p>Changes to condition of the riparian zone and its vegetation.</p> <p>Changes to other hydro-morphological elements of the water body, including flow regime, depth, substrate.</p> <p>Changes to the physico-chemical and chemical quality of water reaching water bodies.</p>	Understanding of the interaction between floodplain wetland condition and the physical, chemical and biological condition of the water body.	Objectives for surface water bodies.
Flood embankments resulting in reduction of floodplain and of retention capacity	<p>Changes to physical extent, biological composition of water body.</p> <p>Changes to condition of the riparian zone and its vegetation.</p> <p>Changes to other hydro-morphological elements of the water body, including flow regime, depth, substrate.</p> <p>Changes to the physico-chemical and chemical quality of water reaching water bodies.</p>	Understanding of the interaction between floodplain extent and connectivity and the physical, chemical and biological condition of the water body.	Objectives for surface water bodies.
Drainage or destruction of peatlands and other wetland systems in the wider river basin	Changes to river basin hydrology affecting the quality and quantity of flow reaching downstream water bodies.	Understanding the interactions between wetlands in the wider river basin, hydrological regimes of water bodies, and the elements making up good status.	Objectives for surface water bodies.
Groundwater abstraction	Reduction in water available to support wetland ecosystems	<p>Hydrological regime necessary to support relevant components of wetland ecosystems.</p> <p>Interactions between groundwater bodies and wetland hydrology</p>	Preventing deterioration and achieving good status for groundwater bodies.
Groundwater pollution	Deterioration of quality of water reaching dependent terrestrial ecosystems, including wetlands.	<p>Water quality necessary to support relevant components of wetlands ecosystems.</p> <p>Interactions between groundwater and surface water quality.</p>	Preventing deterioration and achieving good status for groundwater bodies.
Abstraction from surface water bodies	Reduction in amount of water available to support the achievement of relevant conservation objectives for wetland sites in	Understanding of the water needs of Natura 2000 wetlands, including inter-	Objectives for Protected Areas.

	the Natura 2000 network.	actions with relevant water bodies	
Pollution of surface water bodies	Reduction in the quality of water available to support the achievement of relevant conservation objectives for wetland sites in the Natura 2000 network.	Understanding of the water quality needs of Natura 2000 wetlands, including interactions with relevant water bodies.	Objectives for Protected Areas.

It is important to note that the pressures and impacts analysis must include not only current issues but also those they may have effects in the future. The *Wetlands Horizontal Guidance* states that:

This is particularly relevant when considering the possible impacts on water status of major hydromorphological modification projects, for example to support agricultural production or the construction of transport infrastructure. Pressure-impact relationships between wetlands and water bodies will need to be investigated as part of the assessment of such future pressures if river basin planning is to secure the long-term ecological status of water. The relevance of this point to the protection of Europe's few remaining pristine or near pristine floodplain environments cannot be over stated.

The Danube River Basin is home to some of those few remaining near pristine floodplain environments, e.g. parts of the Lower Danube, the upper and middle Tisza River, the central and lower Drava, etc.

One potential source of future pressures and impacts on large stretches of the Danube is increased waterway transport. For example, the EU's TENs-T proposals¹⁶ designate several stretches of the Danube River as "bottlenecks" for navigation – including the stretch between Vienna and Bratislava, most of the Hungarian Danube and most of the Lower Danube between Romania and Bulgaria - that may need to be dredged or otherwise regulated to facilitate more frequent and larger shipping traffic. River regulation in order to improve conditions for navigation if not environmentally sound designated, would have inevitable, and possibly severe, effects on the status of Danube floodplain wetlands, including some of those listed in section 4.1 above. Waterway transport has its merits and there is general acceptance that it will need to play a role in sustainable transfer of goods and people in the 21st century. However, it is important that plans for increased waterway transport take account of the impacts activities will have on water bodies and wetlands. Increasing the transport capacity of water bodies through straightening or deepening the channel is not necessarily the best option. More effective improvements could be achieved through improved logistics and communications, changes to ship design and other infrastructure works (e.g. raising bridges). More specifically, it is important that plans are drawn up in such a way that the risk of failure to achieve the WFD objectives is eliminated or minimised. For the immediate future, having regard to the *Wetlands Horizontal Guidance*, the pressures and impacts analysis for the Danube River Basin District should assess the TENs-T proposals and their potential impacts on floodplain wetlands.

¹⁶ Proposal for a Decision of the EP and of the Council, amending Decision 1692/96/EC, on community guidelines for the development of the Trans-European Networks (COM/2003/564), of 1 October 2003

5.6 Programmes of Measures and wetlands

Chapter 7 of the *Wetlands Horizontal Guidance* emphasises that wetland creation, restoration and management may prove a cost-effective and socially desirable mechanism for helping to achieve the environmental objectives of the WFD. To this end, both basic measures and supplementary measures can include activities relating to wetlands.

The economic analysis required under Article 5 and Annex III of the WFD is designed to help Member States make judgements about the most cost-effective combinations of measures. But:

In many instances, the appropriate evaluation and costing of wetland management measures may reveal the great value of goods and benefits provided by wetlands.

Several examples are given in the *Wetlands Horizontal Guidance* of wetlands being used for socio-economic purposes. There are also examples within the Danube River Basin of economic evaluation of wetland functions (see section 4.2). Between now and the publication of the draft Programmes of Measures in 2008 it is recommended that the ICPDR and competent authorities build on those evaluations and support pilot projects that put theory on wetland benefits into action. In the meantime, the economic analysis to be published in the Danube River Basin District Roof Report for 2004 should take account of the value of wetlands and the potential role that they could play in reaching the WFD objectives.

The Ramsar Convention has elaborated guidelines for wetland restoration in the context of integrated river basin management that could be helpful. With regard to the acknowledgement by the World Summit on Sustainable Development (WSSD) in its Plan of Implementation (paragraph 37d) of the potential role of wetland restoration in reducing the risks of floods and droughts in countries that are vulnerable to them, Ramsar Contracting Parties have, at their COP 8 meeting in 2002, adopted *Principles and guidelines for wetland restoration* (resolution VIII.16) which emphasise the role of wetland restoration in relation to the allocation and management of water for maintaining the ecological functions of wetlands (Resolution VIII.1), integrating the conservation and wise use of wetlands into river basin management (Resolution VII.18), and transboundary action (Resolution VII.19).

5.7 Monitoring of wetlands

Chapter 8 of the *Wetlands Horizontal Guidance* discusses how monitoring of wetlands can help to achieve the WFD objectives. A specific section deals with monitoring of groundwater bodies and dependent terrestrial ecosystems.

Where a wetland is designated as a water body or forms part of a water body (see 5.1 above) monitoring programmes – as set out in Annex V of the WFD – should be extended to include them. In addition, monitoring requirements concerning protected areas are to be carried out according to the requirements set by the specific legislation establishing each area. The monitoring of other wetlands is not required as part of the surface water monitoring programmes. However, in the case of uncertainty about water body ecological status, the assessment of the ecological health and functioning of dependent wetlands may be useful in helping to evaluate the likelihood of failing to meet the WFD objectives.

Much effort, co-ordinated through the MLIM Expert Group, has gone into improving monitoring standards and establishing a Trans National Monitoring Network (TNMN) throughout the Danube River Basin. However, it is recommended to coordinate with the TNMN a more comprehensive wetlands monitoring programme for the Danube River Basin, taking account of the *Wetlands Horizontal Guidance*.

Given existing priorities and limited availability of resources, this is likely to be a long-term task and the initial focus might need to be limited to sites identified in an enhanced JAP and/or in future river basin management cycles, as discussed in section 5.1. Even within this subset of wetlands there would probably need to be some prioritisation of effort. It would also be a considerable technical challenge, especially for small wetlands. Apart from monitoring of basic hydrology and biodiversity, methods for monitoring wetland quality elements are still being developed. The results of the UNDP/GEF Danube Regional Project, Output 4.3 should help on one aspect – the role of wetlands in reducing nutrient pollution.

5.8 Wetlands in the Danube River Basin District 2004 Roof Report and beyond

As discussed in the previous sections, the *Wetlands Horizontal Guidance* makes several recommendations for the inclusion of wetlands in the river basin district characterisation exercise, to be complete by the end of 2004. This exercise, including the general characterisation, analysis of pressures and impacts and the economic analysis, will be the focus of the Danube River Basin District Roof Report, due to be complete in spring 2005.

Following from the *Wetlands Horizontal Guidance* and from early drafts of this Issues Paper, the 2004 Roof Report is likely to include text describing wetlands in the Danube River Basin and the potential role they might play in achieving the environmental objectives of the WFD. However, the river basin characterisation work that forms the basis of the 2004 Roof Report was largely underway before the publication of the *Wetlands Horizontal Guidance*.

6 Conclusions and summary of recommendations

6.1 Wetlands, the Danube River Basin District Management Plan and the DRPC – a “strategy” for Danube wetlands?

There is a clear need to ensure that wetlands and the role they play in achieving the WFD objectives are incorporated into the work of the ICPDR, including the preparation of Danube River Basin District Management Plan and implementing the DRPC. Given that the wetlands issue is a cross cutting issue – potentially impacting on the work of several ICPDR Expert Groups – the ICPDR as the relevant co-ordinating institution in the Danube River Basin should ensure that this takes place.

This includes:

- Elaboration and enlargement of the current JAP wetlands component in order to establish Danube River Basin wetland projects that would contribute to the achievement of WFD objectives and the implementation of the DRPC.
- Following the example set by the ICPDR Flood Protection Expert Group, the aim might be to develop this revised JAP wetlands component into an *ICPDR Strategy and Action Plan for Integrated Management of Danube Wetlands* in 2006 and to incorporate priority projects into the draft Programme of Measures in 2008.
- The *ICPDR Strategy and Action Plan for Integrated Management of Danube Wetlands* should emphasise the need for transboundary co-operation at a sub-basin level for the restoration, protection and sustainable management of wetlands to help meet the environmental objectives of the WFD.
- The first steps should include the development of a simple matrix of potential sites using the five wetland ecosystem types described in the *Wetlands Horizontal Guidance* and the Danube River Basin typology currently being finalised.
- The *ICPDR Strategy and Action Plan for Integrated Management of Danube Wetlands* should describe how each wetland creation, restoration or management projects at these sites would contribute to the WFD objectives, especially through environmental services such as reduction of pollution, flood mitigation, provision of an alternative to HMWBs etc.
- The *ICPDR Strategy and Action Plan for Integrated Management of Danube Wetlands* could then be used pro-actively as the basis for raising funds from the EU, GEF and other sources.

6.2 Monitoring and assessing the role of wetlands in achieving WFD objectives

A work package should be developed that will, eventually, assure, in coordination with the TNMN, wetlands monitoring programme for the Danube River Basin, taking account of the *Wetlands Horizontal Guidance*.

Given existing priorities and limited availability of resources, this is likely to be a long-term task and the focus might need to be limited to sites identified in the *ICPDR Strategy and Action Plan for Integrated Management of Danube Wetlands* and/or in future river basin management

cycles, as discussed in section 5.1. Even within this subset of wetlands there would probably need to be some prioritisation of effort.

It would also be a considerable technical challenge, especially for small wetlands. Apart from monitoring of basic hydrology and biodiversity, methods for monitoring wetland quality elements are still being developed. The results of the UNDP/GEF Danube Regional Project, Output 4.3 should help on one aspect – the role of wetlands in reducing nutrient pollution. The first task would be to establish the extent of current monitoring programmes for a representative selection of wetlands in the Danube River Basin. The aim might be to develop the first elements of this work package in time for 2006 when, according to the WFD, the Danube River Basin monitoring programme must be online. Full implementation may have to wait until the second cycle of river basin management planning.

6.2 Building capacity for using wetlands as a tool in WFD implementation

It is important that awareness is raised among a number of target audiences of the potential role of wetlands in contributing to the meeting objectives of the WFD. A first step in this direction can be taken during phase 2 of the current UNDP/GEF Danube Regional Project (Output 1.4). Those governments in whose territory pilot sites lie (currently Croatia, Romania and Slovakia) would benefit from continued involvement in these activities. Other national governments are encouraged to test the 1.4 methodology for integrated land-use assessment in their own countries.

In addition, governments could also help take forward the work of Output 4.3 (The role of riverine wetlands in nutrient pollution reduction) through supporting the pilot sites (in Bulgaria plus one other site to be determined).

Finally, a Danube wetlands management network, linked either formally or informally to the ICPDR, should be established. The aims of this network would be to a) build capacity for the restoration, protection and sustainable management of wetlands in order to implement the DRPC and the WFD, , and b) ensure strong links between policy measures and best practice in wetland management. The experiences of WWF, Danube Environmental Forum, IAD and the Ramsar Secretariat may be helpful in establishing such a network and these observers to the ICPDR could be invited to enter into a partnership with the ICPDR Secretariat for such a purpose. Project funding would be needed for this measure.