
Joint Statement on Guiding Principles for the Development of Inland Navigation and Environmental Protection in the Danube River Basin

1 Introduction

This Joint Statement aims to provide guidance to decision makers dealing with inland waterway transport (IWT) and environmental sustainability as well as to water managers preparing relevant riverine environmental and navigation plans, programmes and projects.

The process to develop the Joint Statement has been initiated by the International Commission for the Protection of the Danube River (ICPDR), Danube Commission (DC) and the International Sava River Basin Commission (SRBC)¹.

This Joint Statement was developed in 2007 through a process of intensive, cross-sectoral consensus building between stakeholders with responsibility and interest in navigation, river ecological integrity and water management in the Danube river basin. The process included three stakeholder and expert workshops in April, June and October 2007². During this process the participating stakeholders generated a common understanding on the protection of the riverine environment and the necessary processes and conditions for conducting and developing sustainable inland navigation³ (including the maintenance of existing infrastructure and the development of new navigation projects).

The transboundary context is important when dealing with hydromorphological alterations, environmental and navigation needs in the Danube river basin. This Joint Statement aims to support sustainable and environmentally friendly development and improvement of navigation. It addresses, first of all, structural interventions and measures on rivers serving IWT; non-structural measures will also have to be undertaken to successfully upgrade and sustain IWT economically.

The stakeholders involved in developing this Joint Statement underline that the full respect of the existing legal framework, including all relevant transport and environment legislation (national legislation, EU directives and international requirements), is a pre-condition for any activity in the Danube region.

¹ For further information please visit the respective websites: www.icpdr.org, www.danubecom-intern.org, www.savacommission.org

² For further information see http://www.icpdr.org/icpdr-pages/navigation_and_ecology_process.htm

³ 'Sustainable inland navigation' considers and integrates all three components: environment, economics and social issues.

The planning principles and criteria of this Joint Statement have been developed and agreed upon in the context of the situation for the Danube river basin but could also be used worldwide as a reference for other large river systems comparable to the Danube.

2 Background

2.1 The legal situation

The legal framework for navigation and environment issues in the Danube river basin includes international conventions between countries as well as relevant EU law, policies and action plans.

The work of the International Commission for the Protection of the Danube River (ICPDR) is based on the *Danube River Protection Convention*⁴ as the major legal instrument for cooperation and transboundary water management in the Danube river basin. The ICPDR is a transnational body, promoting policy agreements and setting joint priorities and strategies for improving the state of the Danube and its tributaries.

For the Danube River, the *Convention regarding the Regime of Navigation on the Danube* (Belgrade Convention)⁵ forms the framework for governing navigation between 11 Member States. The Convention, which is coordinated by the Danube Commission, aims to strengthen economic relations in the region and addresses the need for maintaining the entire Danube navigable.

On the sub-regional scale, a *Framework Agreement* has been signed by the Sava river basin countries⁶ to develop navigation and establish sustainable water management. These activities are coordinated through the International Sava River Basin Commission.

In addition several EU policies build the legal framework for water and river basin management in Europe, with the EU Water Framework Directive 2000/60/EC (EU WFD) as most significant regarding the protection of surface waters and groundwater. This includes a requirement for the development of the first river basin management plan for the entire Danube river basin by 2009. By 2015 the main environmental objectives of the Directive have to be achieved by the implementation of the programmes of measures, which inter alia address hydromorphological alterations caused by navigation.

For international river basin districts the EU WFD requires the coordination of international river basin management plans involving also non-EU Member States if possible⁷. In the Danube River basin District the ICPDR is the platform for the coordination of the implementation of the EU WFD on the basin wide scale between 13 Danube countries (see the Danube Declaration⁸).

⁴ Convention on the Cooperation for the Protection and Sustainable Use of the Danube River (Danube Protection Convention), Sofia, 1994

⁵ Convention regarding the Regime of Navigation on the Danube, Belgrade, 1948

⁶ Framework Agreement on the Sava River Basin (FASRB), Kranjska Gora, 2002

⁷ EU WFD Articles 3.4 and 3.5.

⁸ The Danube Basin – Rivers in the Heart of Europe, Vienna, 2004

Many other environmental directives, policies and conventions interface with the EU WFD and need to be considered for comprehensive policy integration related to IWT development⁹, including the EU Habitats and Birds Directives (Natura 2000 ecological network) and the Bern Convention (Emerald network).

The *European Action Programme for the Promotion of Inland Waterway Transport* NAIADES sets an important frame for actions. These include a better integration of IWT in the logistic chain, improving the environmental performance of the fleet and using modern information and communication technologies (e.g. for River Information Services) to improve navigation. An essential element of the NAIADES Action Programme is developing adequate waterway infrastructure. Projects aiming at the improvement of the waterway and transshipment can therefore be co-funded from the EU budget. The Danube is part of a priority project (No. 18) under the Trans-European Transport (TEN-T) guidelines and represents the central transport axis.

At a wider scale the *European Agreement on Main Inland Waterways of International Importance (AGN)*¹⁰ lays down guidelines for the navigability characteristics of inland waterways carrying international traffic. This international agreement has entered into force in a number of Danube countries.

The implementation and integration of all relevant policies is crucial for an appropriate development of IWT and the achievement of the environmental objectives in the Danube river basin. This is the only way in which conditions for IWT and the environment can be improved and protected.

2.2 The current situation of navigation in the Danube river basin

Current economic situation

The political and economic changes taking place in East- and South-Eastern Europe in the last 15 years have created a dynamic emerging economy in the region and generated needs and perspectives for more trade and transport along the Danube. The Danube area is one of the most important economic and cultural regions in Europe with the Danube itself as a central lifeline and transport axis.

The enlargement of the EU has led to an enormous increase and strengthening of economic ties in the Danube Corridor and beyond. Intensification of trade has gone hand in hand with a rapid rise in the amount of traffic. Commercial transport along the Danube corridor has soared growing more than 100% in nearly all Danube countries in the last decade, with by far the largest increase registered in road transit. It is expected that the Danube countries will continue this dynamic economic development in the coming years (with minimum average GDP/capita growth rates of 3-4% per year until 2015) and traffic flows could grow correspondingly.

IWT is, in comparison to air and road transport, seen as more environmentally friendly and energy efficient, and can therefore contribute to sustainable socio-economic development of the region. A multimodal use of available transport possibilities (road, rail and IWT) has to be ensured. Transport policies to promote modal shift, as articulated for example in the EU's 2003 and 2006 Transport White Papers, are driving a wave of proposals for investments in waterway infrastructure, supported by the

⁹ These different directives include e.g. the Birds Directive (79/409/EEC), the Habitats Directive (92/43/EEC), the SEA – Strategic Environmental Assessment – Directive (2001/42/EC), the EIA – Environmental Impact Assessment – Directive (85/337/EEC), the EU Floods Directive, the upcoming EU European Marine Strategy Directive, the Common Agricultural Policy (CAP) and the Cohesion Policy. Relevant Conventions are Ramsar Convention, Bern Convention, Convention on Biological Diversity, Espoo Convention and World Heritage Convention - explanations are given in Annex 1.

¹⁰ AGN, ECE/TRANS/120/Rev.1, UN/ECE, 2006

International Finance Institutions and the TEN-T programme of the EU. The modal shift policies are reflected in the guidelines provided for selection of projects and the appointment of a TENs coordinator for IWT. The guidance also underlines the need to fully respect environmental legislation. These developments lend urgency to the agreement of a joint approach to the development of IWT and environmental protection.

Development of IWT

Inland navigation offers important opportunities to move cargos on the Danube and its tributaries instead of on the roads, in an energy-efficient manner (e.g. with regard to costs of goods transported per tonne-kilometre). It can contribute to mitigating road congestion on some routes. Making more intensive use of the free capacities of the Danube basin waterways can contribute to coping with traffic volumes in a manner that is environmentally and socially friendly, taking advantage of non-structural measures (such as fleet innovation) as well as infrastructure investments. Inland navigation thus needs to participate in future transport growth by maintaining or expanding its current modal-split within the Danube corridor. Forecasts indicate that this could result in a doubling of transport volumes on the Danube within the next 10 years. Currently, the percentage of shipping in total transport volume in the Danube region is below 10%. There is agreement that the framework conditions for inland navigation should be improved in an integrated manner by the ten Danube riparian states, following the objectives of the European Action Programme for the promotion of inland waterway transport NAIADES.

Climate change may have an impact on the further development of IWT in the Danube river basin. As a consequence, navigation management, planning and development need to take the issue of climate change into account. Navigation can make a contribution toward reaching environmental goals such as the Kyoto targets for reducing greenhouse gas emissions.

2.3 The current situation of riverine environment in the Danube river basin

Nature of Large River Systems

Large river systems such as the Danube are highly complex, multi-dimensional, dynamic ecosystems and thus are much more than just longitudinal channel networks. Understanding their high ecological complexity requires comprehensive observations and management at the catchment scale – a holistic approach that is required by the EU Water Framework Directive.

The Danube River can be divided into three main parts -- the upper, middle and lower stretches. Each part is characterised by different abiotic (i.e. non-living) features, hydromorphological structures and biological communities. Abiotic parameters include gradient, grain size, sedimentation, turbulence, oxygenation and water temperature.

“Hydromorphology” is the physical characteristics of the riverine structures such as river bottom, river banks, the river’s connection with the adjacent landscapes and its longitudinal as well as habitat continuity. Anthropogenic structural measures can modify a river system’s natural background conditions and therefore influence its ecological status. Numerous other factors add to the complexity of large river systems. For example, natural disturbances (e.g. floods, droughts) and associated sediment transport variations are among the key elements that constitute the basis for the highly dynamic nature of riverine landscapes and their biodiversity. River ecosystems can have relations and exchange processes with adjoining ecosystems (e.g. via tributaries, groundwater and alluvial floodplain forests). Complex natural driving forces and exchange processes result in frequently changing connectivity conditions and an especially heterogeneous habitat complex. The most important consequence of the ever-shifting mosaic of river habitats and ecotones is that natural riverine environments generally feature outstandingly high biodiversity.

Unlike to many other European rivers, certain sections of the Danube and its tributaries are still home to very typical, natural and dynamic habitat complexes, which are essential for many species. For example, they include the presence of habitats for many important and almost extinct species such as the Danube sturgeon and Danube salmon. The EU Habitats Directive enables Member States to designate such areas as protected, in order to effectively protect, restore and prevent the deterioration of these remaining features.

Effects of navigation on the riverine system

Human activities and uses affect the ecological and chemical status of large river systems in various ways. From an ecological point of view navigation is not the only pressure, activities such as hydroelectric power production and river straightening for flood control are also significant. Of decisive effect are river engineering measures that impair the original hydro-morphological situation (e.g. bed-load transport, morpho-dynamic development of the channel network, exchange processes between rivers and floodplains, groundwater regime) and/or the natural composition of ecological communities (e.g. through barriers for migratory fish species or destruction of riverbank and riverbed habitats and spawning places). Navigation requirements can result in a stabilized, single thread, ecologically uniform river channel, lacking both natural in-stream structures with their gentle gradients and connectivity with the adjacent floodplains. In addition to other hydromorphological alterations this might lead to the loss of species.

In many large river systems riverbed degradation can also significantly lead to severe ecological impairment. Locally increased bed load transport and consequent downstream output of bed material caused by channel construction for the improvement of navigation and/or flood control can in many cases be intensified by a substantial reduction of the bed load input from the upper catchment (e.g. due to retention by flood control measures and/or chains of power plants). Since lateral erosion of originally braiding or meandering rivers is limited by channel stabilisation, these processes can no longer balance out the natural aggradations of the alluvial floodplains. Therefore, on the one hand riverbed stabilisation works and dredging can eliminate ecologically important in-stream structures and lead to a uniform aquatic environment; whilst, riverbed erosion downstream of stabilisation works can lead to a vertical separation and hydrological decoupling of the river from its floodplain habitats.

In addition to hydromorphological impacts, navigation can also have other impacts on the water environment, such as pollution, which will be addressed in the respective EU WFD river basin management plans and in specific projects (e.g. on waste and sewage collection).

From the mechanical point of view, ship traffic causes waves, which can disturb the reproduction habitats of fish, benthic invertebrates, other biota as well as de-root aquatic plants. Ship engines can also cause an unnatural suspension of fine sediments, leading to reduced light for plant and algae growth.

Current situation and future outlook – EU WFD Article 5 Report and the Danube River Basin Management Plan

The EU WFD Article 5 Report (Danube Basin Analysis 2004) represents the first milestone towards the compilation of the national and international river basin management plans. Regarding surface waters, these reports include a characterisation of the natural conditions and a respective pressure/impact analysis concluding which surface water bodies are *at risk of failing* the EU WFD environmental objectives.

The Danube Analysis report prepared by the ICPDR has identified hydromorphological alterations caused by navigation, hydropower generation and flood defence as one of the main factors affecting the ecological integrity of the Danube river basin. These alterations have resulted in disturbance to the lateral connectivity, longitudinal continuity and overall ecological status degradation.

Today, 30% of the Danube River is impounded and 80% of the former floodplains of the Danube have been lost during the last 200 years through intensive hydropower generation, flood protection, navigation and land use.

The Danube River Basin Management Plan will be finalised by the end of 2009 and will include the Joint Programme of Measures, which will address hydromorphological alterations and impacts on the water status. The implementation of the plan by 2015 will aim for the achievement of the environmental objectives and conserve them for all surface waters in the DRB.

3 Balancing navigation and ecological needs - future approach

To enable them to function, both IWT and ecological integrity have certain basic needs. In order to develop mutually acceptable solutions - such needs must first be clearly defined. They are therefore listed below. However, not all needs are fulfilled in all cases. The implementation of a new, integrated planning philosophy (see below) would aim to put this right and will help ensure both sustainable development of IWT in the DRB and the achievement of all required environmental objectives.

A number of efforts are already undertaken by IWT to reduce the impact on aquatic ecological integrity. These include non-structural measures to improve inland navigation on the Danube (e.g. fleet development, new ship technology, inter-modal connections, river information systems).

3.1 Needs of IWT

Navigation is governed by a variety of national and international legislative instruments¹¹ inter alia ensuring safety of navigation. In order to facilitate economic and safe IWT the following points describe the basic needs for all IWT related infrastructure projects

- *Minimum fairway (depth and width) dimensions designed for individual river sections in the context of and based on a strategic understanding of basin-wide IWT requirements including:*
 - *Depth and width of fairway with a view to continuity of availability of sustainable and efficient navigation conditions.*
 - *Curve radius*
- *Construction and maintenance e.g.:*
 - *Low-water regulation by hydraulic structures (e.g. groynes)*
 - *Dredging and refilling of material*
- *Infrastructure to be located taking into account relevant physical and other factors (e.g. proximity to market and connectivity to the wider transport network)*

¹¹ See chapter 2.1 and Annex 1

3.2 Needs of ecological integrity

Riverine ecological integrity in the EU is governed by a number of legal instruments (set out above). The overall achievement of the requirements of the EU WFD and interfacing policies is of paramount importance, requiring attainment of “*good ecological status*” or in the case of Heavily Modified & Artificial Water Bodies “*good ecological potential*” as well as no deterioration in the status of water.

For the preservation/conservation of the ecological integrity of the Danube River, the basic needs are:

- *protected/conserved natural or ecologically high-value riverine landscapes, river sections and aquatic populations,*
- *the restoration of modified/impacted river sections and their adjacent landscapes,*
- *a dynamic and type-specific channel and floodplain environment (regarding in-stream structures, shorelines, side arms and floodplains) supporting a dynamic equilibrium and adequate connectivity conditions,*
- *undisturbed longitudinal and lateral migration of all fish species and other water-related species to ensure their natural and self-sustaining development, and*
- *a balanced sediment budget.*

These needs should be delivered through integrated concepts and plans based upon a basin-wide characterisation/typology of the Danube ecosystem and a process-oriented “Leitbild” approach (using a reference condition/visionary guideline approach including aquatic, semi-aquatic and terrestrial biological communities). Further, basin-wide unified monitoring is required based on existing national WFD compliant monitoring programmes.

3.3 New integrated planning philosophy for a joint approach

In order to improve inland navigation and river system protection in the Danube river basin a common planning philosophy is essential for the success. The prerequisite for future planning for an environmentally sustainable Inland Waterway Transport (IWT) is a common language across disciplines, an understanding of the position of the “other” side and a culture of communication and discussion. In order to guarantee an interdisciplinary approach and broader acceptance of the ongoing and future planning process from the beginning, the ministries responsible for environment, water management and transport, scientists and experts in river engineering, navigation, ecology, spatial planning, tourism and economics as well as representatives of other stakeholders, such as environmental non-governmental organisations and relevant private sector representatives, should be involved.

Existing problems, needs and goals for both, navigation and ecological integrity need to be clearly identified at the level of defined planning regions and river sections as well as in relation to specific existing and future navigation projects. Further, relevant environmental mitigation or restoration measures, should be proposed to prevent the deterioration of the ecological status and ensure the achievement of the environmental objectives. Both pressures and measures should be identified via a common understanding. This goal should be achieved by an interdisciplinary process. Opportunities to improve both the environmental and navigation conditions through a joint approach to projects need to be identified. There are some notable examples of projects such as the planning approach used in the Integrated River Engineering Project on the Danube to the East of Vienna. This general approach should be replicated, even if this particular project did not represent best practice in all respects of SEA procedure.

4 Recommendations

4.1 Integrated planning approach for the Danube river basin

To achieve “good ecological status” or “good ecological potential” for all surface waters and to prevent deterioration of the ecological status - as required by the EU WFD – an integrated planning philosophy is urgently needed. Multi-use riverine landscapes should be the goal (including for example providing for fauna and flora habitats, flood protection, inland navigation, fisheries, tourism). Catchment-wide thinking and cross-border cooperation are challenges calling for multi-disciplinary planning and decision-making processes.

Actions to improve the current situation should be seen from both perspectives IWT and ecological integrity and especially focus on the following areas:

- *River stretches requiring fairway development and associated effects on special ecological qualities and the water status.*
- *River stretches requiring ecological preservation/restoration and associated effects on navigability.*

Due to the fact that IWT plans and projects have environmental implications, there is the need to carry out environmental assessments before decisions are made. This is required by the Strategic Environmental (SEA) Directive (2001/42/EC) for qualifying plans, programmes and policies and required by the Environmental Impact Assessment (EIA) Directive (85/337/EEC) for qualifying projects. Under these procedures, the public can give its opinion and results are taken into account in the authorisation procedure for the projects¹². A culture of integrated planning of navigation and environmental improvement projects is needed to minimise legal costs, delays and sometimes unstable outcomes.

4.2 Integrated planning principles

In order to implement an integrated planning approach for all plans and projects all involved stakeholders need to agree on common planning principles leading to acceptable solutions for ecological integrity as well as navigation. Such planning principles should be applied to every project within the Danube river basin and include at least the following steps, but first and foremost, joint planning of projects seeking both environment and navigation improvements as the key to accelerate the process:

- *Establish interdisciplinary planning teams involving key stakeholders, including Ministries responsible for transport, for water management and environment, waterway administrations, representatives of protected areas, local authorities, non-governmental organisations, tourism, scientific institutions and independent (international) experts.*
- *Define joint planning objectives.*
- *Set-up a transparent planning process (information/participation) based on comprehensive data and including the environmental benchmarks and current standards required for Strategic*

¹² Further details on the directives, and on the Commission’s guidance on the implementation are available on <http://ec.europa.eu/environment/eia/home.htm>

Environmental Assessment (SEA – for qualifying plans, programmes and policies) and for Environmental Impact Assessment (EIA – for projects).

- *Ensure the comparability of alternatives and assess the feasibility of a plan (including the costs and benefits) and/or project (including a reflection of the status quo, alternatives and non-structural measures as well as environmental and resource costs).*
- *Assess if the IWT project has a basin wide/transboundary impact.*
- *Inform and consult the international river commissions in the Danube river basin (ICPDR, Danube Commission, International Sava River Basin Commission) before deciding on new developments, as well as other possibly affected countries.*
- *Respect the Danube River Basin Management Plan 2009, including its Joint Programme of Measures, and the respective sub-basin and national river basin management plans and programmes of measures as the basis for integrated planning and implementation of IWT infrastructure projects, in the mean time respecting already existing environmental legislation requirements.*
- *Define and ensure the prerequisites and goals of IWT as well as river/floodplain ecological integrity, followed by a consideration of the need to prevent deterioration, possible mitigation and/or restoration measures to achieve all environmental requirements.*
- *Ensure that there are no technically viable, environmentally better and not disproportional costly alternative means to achieve the required objective, in line with the requirements of Article 4(7) of the EU WFD.*
- *Seek to avoid or, if this is not possible, to minimise the impacts of structural/hydraulic engineering interventions in the river system through mitigation and/or restoration, giving preference to reversible interventions.*
- *Ensure that, when planning navigation projects, the issue and respective effects of climate change are taken into account.*
- *Use of best practice measures to improve navigation¹³.*
- *Carry out a priority ranking of possible measures to ensure the best possible environmental as well as navigation development effect and use of financial resources.*
- *Ensure flexible funding conditions for projects to enable integrated planning (including the involvement of all stakeholder groups) and adaptive implementation as well as monitoring.*
- *Monitor the effects of measures and – if relevant- adapt them (Examples of possible measures are given in Annex 2).*

4.3 Criteria for river engineering

To implement the above mentioned planning principles the following criteria should be applied during the design phase of navigation projects:

- *Use a case-by-case approach which considers both the ecological requirements for river sections and the basin-wide scale and the strategic requirements of IWT at the basin-wide scale¹⁴ when deciding on adequate fairway width and depth.*

¹³ For best practices with regard to structural measures see e.g. the EU activity papers WFD & Hydromorphology Technical and Case Studies documents: Good practice in managing the ecological impacts of hydropower schemes, flood protection works and works designed to facilitate navigation under the EU WFD; best practice examples which will be developed in the frame of the ICPDR's Danube River Basin Management Plan; best practice for integrated planning approaches as the 'Integrated River Engineering Project on the Danube to the East of Vienna'.

¹⁴ See also Chapter 2.1 (legal situation) and Chapter 3.1 and 3.2 (needs of IWT and ecological integrity)

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- *‘working with nature’ wherever possible through implementation of measures according to given natural river-morphological processes following the principle of minimum or temporary engineering intervention,*
 - *integrated design of regulation structures, equally regarding hydraulic, morphological and ecological criteria,*
 - *implementation of measures in an adaptive form (e.g. river bed stabilisation by granulometric bed improvement, low water regulation by groynes),*
 - *optimal use of the potential for river restoration (e.g. river banks restoration) and side channel reconnection,*
 - *ensuring that flood water levels are not exacerbated and, ideally, are reduced.*

5 Follow-up Tasks

The ICPDR, Danube Commission, and International Sava River Basin Commission seek the approval of the Joint Statement by the end of January 2008.

The ICPDR, Danube Commission, and International Sava River Basin Commission will organise a workshop by mid 2008 on how to ensure the application, monitoring and assessment of the Joint Statement.

All organisations involved in this process will ensure the endorsement, promotion and utilisation of the Joint Statement.

The Danube Commission will organise a special workshop before the end of 2008 on environmentally friendly river development and maintenance techniques for waterway administrations and navigation authorities in the Danube river basin.

The ICPDR, Danube Commission, and International Sava River Basin Commission, including relevant stakeholders, will meet yearly to discuss specific navigational and environmental developments and to highlight good practices in river maintenance projects.

EBU and PIANC will discuss leading an activity to assess the potential of non-structural measures to improve IWT in the Danube river basin in an appropriate forum.

The ICPDR will convene a meeting of ministries responsible for waterway transport, water management, environment and waterway administrations to secure input to the Programme of Measures required under the EU WFD at national, sub-basin and Danube river basin level including the information exchange with relevant stakeholders.

Projects being currently implemented or under concrete planning (see Annex 3) should apply the principles outlined in this Joint Statement. Progress and development of this implementation process should be reported to the ICPDR, Danube Commission and International Sava River Basin Commission by the responsible authorities and/or countries.

Participants in this process will ensure the development, promotion and integration of scientific research regarding biodiversity, effects of river engineering measures on ecological integrity/restoration of river floodplain systems, and climate change.

The initiator(s) of new projects will ensure the best possible exploitation of relevant EU and other international funding [R&D, TEN-T, LIFE, Structural Funds (ERDF), Cohesion Funds, ENPI, etc.] to

guarantee the full implementation of environmental and transport requirements. The use of some of these funds is largely to be decided upon by national governments.

6 Annexes

1. *Background on legal framework*
2. *Examples of possible measures*
3. *List of current IWT projects - to be updated regularly*
4. *List of participating organisations*

Important documents that could not be discussed during the process:

- *List of IWT bottlenecks*
- *List of sensitive river sections*

- end-