
Navigation & Ecology: Process for Joint Statement



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International
Commission
for the Protection
of the Danube River
Internationale
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zum Schutz
der Donau

Precedings of the Workshop II
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1 Protocol

This Workshop was attended by some 35 representatives from governments (7 countries: AT, BG, HR, HU, RS, RO, UA – CZ, DE, MD, SI and SK could not attend), international organisations (European Commission-DG TREN and DG ENV, Danube Commission, ICPDR, CEDA/Rijkswaterstaat, Sava River Basin Commission), NGOs (WWF, DEF, IAD), and other stakeholders (European Barge Union, university Karlsruhe, via donau, Vienna University BoKu, national park Donau-Auen).

The workshop was organised by ICPDR Secretariat and the Romanian Ministry of Transports, Constructions and Tourism, who also generously supported it, including organising the boat excursion.

The objectives of the workshop were to:

- *introduce the already reached common ground (framework for reaching consensus about developing IWT and environment protection in the DRB)*
- *discuss technical possibilities for realising an environmentally sustainable IWT (general view, experience and conclusions from specific river examples)*
- *discuss the ecological and navigational specifics of the Lower Danube*
- *visit and discuss the project “Improvement of the navigation conditions on the Danube between Calarasi and Braila”*
- *present and discuss outline and content of the Joint Statement.*

Summary of Workshop Statements

Philip Weller (Executive Secretary, ICPDR) welcomed all participants and presented regrets from Lucia Ana Varga, ICPDR President 2007 and Secretary of State from the Romanian Ministry for Environment and Water Management, who was unable to come. The local host, Alexandru Serban Cucu, Director General at the Romanian Ministry of Transport, also welcomed all participants on board of the motorship Vrancea which served for the first workshop day both as venue and cruise ship through the current navigation bottleneck between Calarasi and Braila: The current low water of the Danube does not allow to drive the short route to Cernavoda but forces ships to make a detour.

The co-hosts of this process, *Milovan Bozinovic, President of the Danube Commission, and Kemal Karkin, President of the International Sava River Basin Commission, confirmed their full support for this process (i.e. the development of ideas for a transport that does not damage the Danube environment), and their satisfaction with the outcome of the first workshop. Mr Karkin also invited all participants to come to Workshop III on 4-5 October 2007 to Zagreb.*

Mr *Weller* then reminded the participants the overall goal and objective of the process to be achieved during three workshops. This process is a commitment to work together and learn from each other,

aiming to agree upon a statement that will include a set of guiding principles and criteria for development and maintenance of navigation in the Danube (and some tributaries), in a way that effectively protects and improves the environmental situation.

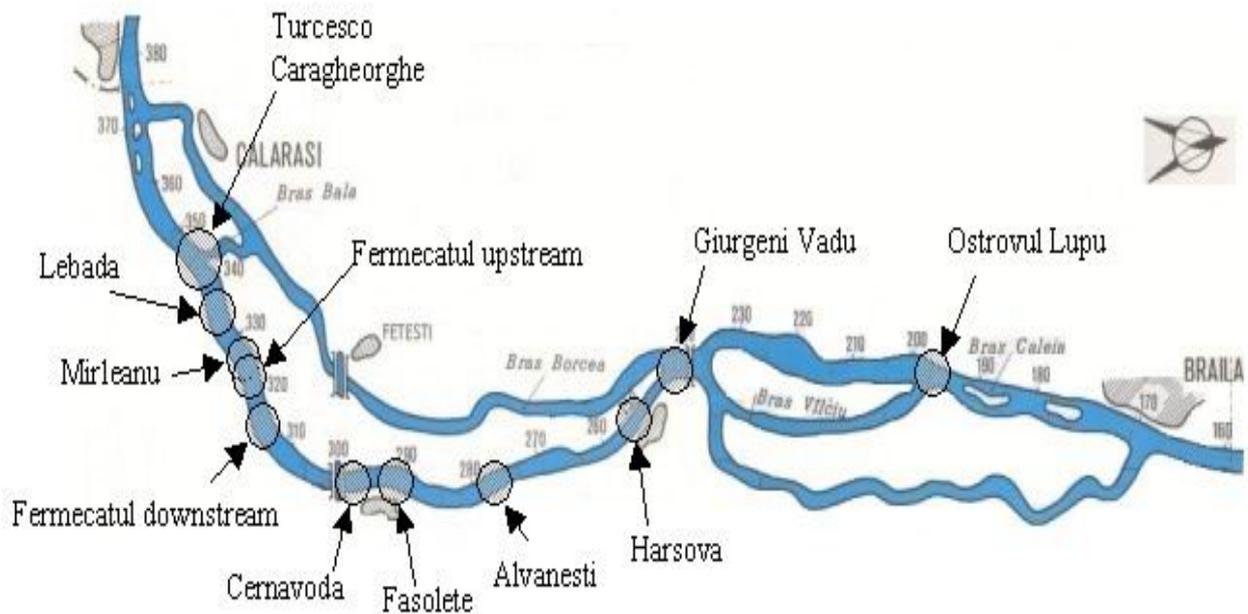
- *The **first workshop** on 25-26 April in Orth/Austria focused on initial facts and views of the different stakeholders. It viewed at a concrete example project in the Upper Danube east of Vienna currently attempting to integrate local needs for ecological improvement and navigation interests. Subsequent comments by participating Parties and stakeholders reflected their high satisfaction with the workshop results which were published on internet and also endorsed at the recent meeting of the ICPDR's Standing Working Group.*
- *This **second workshop** in Romania focuses on specifying and extending the already agreed common ground. More technical discussions and group work shall assess solutions that bring improvements for navigation and for the hydro-morphological situation along the Danube. This workshop also addresses and views the different problems in the lower Danube.*
- *The **third workshop** on 4-5 October will focus on drafting of the Joint Statement, concluding on the agreed facts and basic considerations and precautions (modern technical know-how, integrated development process) that must be acknowledged and articulated in actions at both the larger Danube level but also in specific projects.*
- *It is planned that the **Joint Statement** will be publicly released at the end of 2007.*

[Link to Philip Weller: Summary WS I & Introduction WS II \(PPT\)](#)

Panel I: Presentation of the project “Improvement of the navigation conditions on the Danube between Calarasi and Braila”, and discussion of ecological considerations in improving navigation in the Lower Danube

Alexandru Serban Cucu, Romanian Ministry of Transport, shortly introduced the overall situation of the bottleneck between Calarasi and Cernavoda (Danube – Black Sea canal), which - due to the siltation of the Old Danube branch and the diverted flow of some 80% of river water into the Bala branch - currently requires Danube ships to do a detour of 100 km around the Ialomita island (via Fetesti – Harsova). The ISPA project shall reverse these navigation conditions (back to the state in the 1950s) and is complemented by a similar second ISPA project addressing the upstream bottlenecks in the Romanian-Bulgarian river section.

Alexandru Balcu, Technum-Trapez-Tractebel Consultants consortium, then gave a comprehensive presentation about the ISPA project “**Technical Assistance for the Improvement of the Navigation Conditions on the Danube**“ in the rkm 375-175 section, including the Ialomita and Braila floodplain islands. Natural river processes have developed a network of river channels, islands and sand bars. Around 1920 the new Bala arm developed into an 11 km long and rather narrow (90 m) short-cut from the Old Danube to the Danube's second arm (called Borcea). Over time, the Old Danube silted up and, in spite of intensive dredging (until 1990 and up to 700,000 m³/year), receives only 20% of the Danube flow, so that the fairway depth decreased to less than 2,50m (on almost 160 days/year). Navigation therefore is diverted through the Bala and Borcea arms (80% of waters), forcing a 110 km (i.e. via Fetesti – Harsova) detour of the ships driving to the Danube-Black Sea canal at Cernavoda. In addition, the water supply for irrigation and the Old Danube wetlands as well as for the cooling system of the Cernavoda Electrical nuclear power plant became very reduced.



Critical Points on the Calarasi – Braila Sector (copied from the Balcu ppt presentation at the ICPDR workshop)

Overall ISPA project task was to provide feasibility studies, environment impact assessments and public consultations for 3 Measures: Measure 1 of the ISPA project¹ has the objectives to

- *Provide a sustainable mobility for this river section by river training works that meet the Danube Commission recommendations (-2.50 m minimum depth under ENR);*
- *Develop a package of small-size measures to ensure best conditions for a high economic return.*

For the Calarasi-Braila section, priority measures, detail design and tender documents were prepared. The scope of works asked the Consultants to avoid the further degradation and “aging” of the Danube river bed by designing a balance between maintenance and dredging works and structure works diverting the river flows into the Old Danube arm. Minimal interventions shall assure the natural conservation of the river and affect only low water levels. Activities included geotechnical, topographical and bathymetrical surveys of the river bed (hydrodynamics and sediment transport), the mathematical modelling of scenarios with their expected changes, and the design of technical solutions and related cost-benefit analyses.

Result is the designed redirection of the Danube flows by corrective works in 8 critical points/sectors points (3 to be realised in stage 1, 7 in stage 2 at least one year later). At the Bala branch entrance, the construction of a 2.1 km long guiding wall (crest 5 m above ENR; made of faggot matraces and rocks of 70-300 kg) and a bottom sill (crest at mean flow level; 195 m long) shall increase the flow into the Old Danube to 40%, this will be complemented by river and bank protection and dredging works.

¹ Measures 2 and 3 were not presented at the workshop. Measure 2 refers to the Correction of the Danube riverbed in order to fit out the Danube’s fairway in accordance with European requirements for the Batin sector (km 531 – km 521). Measure 3 is the Extension of Calafat port infrastructure and systematization of the port rail device.

The Epurasu side-arm in the nearby Old Danube will be cut off by another bottom sill (variable crest at mean flow level; 580 m long); similar works are foreseen at Lupu island as well as, in stage 2, in the other critical points (in these, all bottom sills will have two culverts of 1 m diameter to allow water supply and movement of fauna).

The EIA indicates that dredging works would be limited to 312,000 m³ (to be discharged into the river) and floods not affected by the new infrastructure. Most works shall be done with floating equipment; the bottom sills and jetties built in July-August and November-February when sturgeons are not expected to run. Monitoring will address hydrology, morphology and ichthyology.

Impacts on ichthyofauna: In the central part of the two sills, the crest has been lowered to create a nappe of min. 3.20m height over the sills with the intention to enable sturgeon movement during minimum flow periods. The project further provides funds for monitoring the impact of works on protected flora and fauna species. In the Calarasi-Braila section, a restocking of Sturgeons, *Cyprinus carpio*, *Silurus glanis* and other species of fish as result of the monitoring activity interpretations is planned.

As the technical design and public hearing of the EIA were already conducted, the project is expected to soon enter into the tendering phase.

[Link to Alexandru Balcu: Technical Assistance for Improvement of Navigation Conditions founded by EU and Romania \(ISPA measure 2002 RO 16 PA 011\) \(PPT\)](#)

Discussion

In the course of the boat travel through parts of the project site (Bala arm), lively discussions were held among the workshop participants. WWF expressed its satisfaction, that the improved bottom sills would less impede sturgeon migration than expected but that still the velocities would be too high, and that the largely disconnected small arms in other locations will be subject to lowered water quality and feeding conditions. It was stressed that the selection of a specific mathematical model can influence the result, and that a physical model would be needed for such an intervention. Some participants stressed that the chosen technical solution is not necessarily the best one and that more independent experts should be involved into the scenario discussions (ecological objectives to be included).

Georg Rast, WWF, presented the **Ecological considerations on improving the waterways at Calarasi-Braila and Lower Danube**. He first talked about major pressures and threats on Danube River system relating to improvement of navigation condition (decades of river training works aimed at an enlarged and reliable fairway), opposed to the critical situation of Sturgeons, who are sensitive to hydro-morphological alterations and have at the Lower Danube the best remaining habitat in the whole Black Sea region. Rast also addressed the deficit in sediment balance which WWF currently tries to quantify in the Danube region, and government plans for additional structural interventions (ports, bridges, nuclear power plants such as Belene/BG) in the lower Danube. He reminded the “no deterioration clause” of EU Directives (e.g. WFD for all water bodies, also relevant for floodplains, delta) and international Conventions. Climate change is expected to result in a prolongation of low flow periods and in deteriorating navigation conditions. WWF expects that the Calarasi-Braila ISPA project will impact sturgeon migration.

Rast concluded with recommendations to avoid structural impacts, to maintain the ecological functions (work *with* natural river structures not against) and to *jointly* assess alternative technical options. Before implementation, the ISPA project should be subject to new variants assessments in a transparent form, also analysing the long-term effects on morphology.

[Link to Georg Rast: Improvement of navigation conditions on the Danube \(Calarasi-Braila and Lower Danube\) - Ecological concerns? \(PPT\)](#)

Panel II: Technical possibilities for realising environmentally sustainable IWT

Markus Simoner, via donau, talked about “**Improvement of IWT through non-structural measures - Environmentally sustainable improvement of IWT on the Danube**”: After presenting his company *via donau*, the Austrian national waterway operator, he provided figures on the environmental performance: IWT has a low contribution to total traffic emissions (1.5% of total traffic energy consumption), lower emissions of CO₂, HC and NO_x than road but a high age of engines. Other, non-structural ecological impacts come from ship-borne waste (used oil, bilge water, others), cargo-related waste (washing water, slops) and pollution through ship accidents. The vessels are currently being innovated in a number of fields (propulsion, construction, logistics, engine emissions), also the EU-NAIADES programme (including its national Action Programmes) will contribute to environmental improvements. Simoner informed that the future WANDA Interreg project will develop transnationally coordinated ship waste management concepts. Environmental improvements are also expected from DoRIS (Danube River Information Services), providing better fairway information and traffic management (reduced accident risk) and currently under development in all Danube countries (already over 300 ships are equipped with it). The Austro-Romanian COLD project (Container Liner Service Danube) provides a feasibility study to attract global container transport to the Danube (trade between Asia and Central Europe); INES (Inland Navigation eLearning System) is a free-of-charge eLearning platform for Danube stakeholders. *Via donau* also offers several manuals on Danube navigation. More information can be downloaded from www.via-donau.org Simoner concluded that transport price (70-80% are stand-by and 20-30% are operating costs) and service quality are the competitive factors for Danube navigation. The (reliable or varying) status of the waterway is related to the freight volume that can be transported but competitiveness equally depends on the presented non-structural measures.

[Link to Markus Simoner: Environmentally sustainable improvement of IWT on the Danube \(PPT\)](#)

Martin Deusch, Austrian Economy Chamber, presented the written statement of the European Barge Union (EBU) on “**Inland Navigation and Environmental Sustainability in the Danube River Basin**”. EBU represents the interests of IWT on a pan European level and deals with the future development of the IWT transport and industry. EBU stresses that inland navigation is an environmentally friendly mode of transport but more measures are needed to further reduce NO_x, SO_x and PM (particulate matter, i.e. soot) in order to restore the environmental advantage that IWT had compared to trucks. This effort should include the introduction of low sulphur fuel, of new ship engines (may take even longer than 2012) and of innovations in ship technology (lighter weight, higher energy efficiency and safety). The paper provides illustrating graphs and figure.

[Link to: EBU-Statement on Inland Navigation and Environmental Sustainability in the Danube River Basin, 25 June 2007 \(Text\)](#)

Pol Hakstege, Rijkswaterstaat/Netherlands, spoke on behalf of the Central European Dredging Association (CEDA) about “**Improvement of IWT taking into account the sediment dynamics and its management possibilities - Environmental aspects of dredging and dredged material management**”. CEDA is an independent international professional association for any activity related to dredging and dredged material management in Europe, Africa and the Middle-East. CEDA

members are port authorities, government organisations, public works, dredging companies, shipyards, consultancies, educational and research establishments, associations and services (insurers, brokers, bankers, lawyers). It aims to generate and disseminate knowledge (see www.dredging.org). In August 2007, its new publication “Environmental Aspects of Dredging“ will be published as an expert guidance for planning and designing dredging works. CEDA also offers training seminars on “Environmental Aspects of Dredging”.

Hakstege presented the many needs for undertaking dredging as well as the short-term and long-term environmental impacts. Decision-making on dredging needs a site specific assessment to determine mitigation or compensation, as he illustrated in various examples (use of special equipment and operation methods). Every dredging should assess the entire chain of actions, starting from the site investigation and looking at the possible options to destinate dredged material. Cost assessments differ in each country but need to include environmental and disposal costs but. Hakstege concluded with the following Lessons Learned:

Points to consider in planning for dredging

- *Dredging and relocating dredged material – per definition – have impacts on the natural and man-made environment. The impacts can be positive or negative, short term or long term. It is of utmost importance that all possible effects should be predicted and assessed in a scientifically sound and reliable manner so that, if necessary, appropriate control measures to avoid or mitigate unwanted impacts can be introduced.*
- *For instance, short-term effects like turbidity can be mitigated using environmentally friendly dredging and placement techniques. Examples are the use of special dredging equipment, such as watertight grabs, to reduce re-suspension and loss of dredged material, the use of silt screens at the dredging site to prevent dispersion of suspended solids and controlled placement using diffusers. Increase of turbidity due to dredging does not necessarily has to be a problem, this should be judged taking the background values into account as well as the quality of suspended solids. Background values of suspended solids are related to natural phenomena (as sediment naturally moves down rivers) and man-made causes, such as navigation.*
- *To mitigate ecological effects it may be necessary to restrict dredging to certain periods in order to take seasonal variations into account. Permanent loss of habitats may have to be compensated by creating similar habitats at different locations.*
- *Each dredging project is unique, which means that local conditions have to be taken into account. These include natural conditions, such as hydro-morphology, ecology and sediment quality - of which sufficient data should be available- and legislative and socio-economic conditions.*
- *Characterisation of sediments (physical, chemical, biological, toxicological, presence of debris etc.) is necessary to determine dredging requirements and the destination of dredged material.*
- *Respecting river dynamics in preparing dredging activities is needed in order to avoid adverse effects downstream, both on water quality, ecology, maintenance of fairways and other legitimate water uses.*
- *Decision-making on dredging and relocating dredged sediments need a site-specific assessment, with early involvement of all interested stakeholders, especially in sensitive/protected areas dealing with contaminated sediments, to determine if there are unacceptable effects and if they can be sufficiently mitigated or compensated. Dredging in compliance with Nature legislation (Bird and Habitats Directives, Natura 2000 SPA) is possible if specific mitigation and compensation measures are taken.*
- *Dredging is of increasing importance, not only for the economy but also for the environment. Dredging is not only needed for navigation and other functions such as flood management, winning minerals and creation of land, but also to clean-up the aquatic environment. In order to comply with the requirements of the WFD on water quality and ecology, dredging may be necessary in the future in the Danube river basin to remove or isolate contaminated sediments. In this respect source control to reduce existing sources of contamination is imperative.*

- *After dredging there are several options for the destinations of dredged material. The first option to consider is relocation at a different location into the river or within the estuary, in order to maintain the sediment balance and prevent erosion.*
- *If this is not feasible, use of dredged material in the aquatic system should be considered and assessed on environmental impacts. An example is the filling of existing depressions in the riverbed with dredged material. Use of suitable dredged material for construction purposes on land (e.g. roads and dikes), or in case of non-pollution to improve farming conditions, requires dewatering and possibly other forms of treatment. A next option is unconfined aquatic placement. For the heavily contaminated material a confined disposal facility may be the best option either under water or on land.*
- *Important cost factors are the quality of sediments to be dredged, the scale of the operation, logistics and the type of destination of dredged material. Imposing environmental restrictions leads to more expensive dredging and placement methods with a lower production rate. The costs for destinations show a sharp increase from relocation and disposal to treatment and use. A balance has to be found between economy and the environment.*
- *Legislation for fresh water dredging has been laid down in a number of European Directives (WFD, Nature legislation, Waste Directive etc.), which are now in a process of implementation into national legislations. For the Danube countries it is very important that the required environmental quality standards (water, sediment, biota) are clarified and harmonised to a certain extent. For dredging and management of dredged material in the marine environment the London Convention, which is global in nature, and the regional Black Sea Convention are the main frameworks of legislation. The Dredged Material Assessment Framework (DMAF) of the London Convention is a carefully drafted and widely reviewed and accepted approach to dredged sediment management. In situations where little regulatory guidance is available, the DMAF, even if it is not legally required, may provide a useful guidance.*

Selected references:

CEDA: www.dredging.org; Environmental aspects of dredging, ed. N. Bray, August 2007

PIANC: www.pianc-aipcn.org Envicom, reports on dredged material management can be ordered on-line.

SedNet: www.sednet.org; Contaminated Sediments in European River Basins, report can be downloaded.

[Link to Pol Hakstege: Environmental aspects of dredging and dredged material management \(PPT\)](#)

*Hans-Helmut Bernhart, professor at the University Karlsruhe, Institute for Aquatic Environmental Engineering, presented his experiences about the “**Improvement of IWT through structural measures (ecology-sensitive maintenance and upgrading of the waterway, the embankments and river habitats)**”. He introduced rivers as living and sensitive systems, characterized by bank erosion and pioneer habitats, that were ignored when developing IWT with ever-growing ship units and modern waterways classification (draught, curve radius and travelling speed were defined from an economical perspective). The purely technically orientated improvement of the shipping conditions did not consider the hydrological and morphological restrictions in rivers, which over the last decades were transformed into canalized and dammed expressways, with grave consequences for the rivers ecology (loss of habitat structures and typical species). The new linear and monotone structures, e.g. uniform river embankments massively protected by riprap to prevent side erosion, favoured the deepening of the river bed with other negative impacts on the natural environment.*

In the future, a new design philosophy for improvement of the still natural waterways is necessary and has to be based on the already existing legal requirements (WFD). Alternative regulating measures which allow a further natural development of the rivers have to be adapted to the individual local conditions and must include ecological needs (e.g. variety of habitats). The aim is to minimize the interference with the given natural condition of a river system. For Bernhart, the transfiguration of complete river sections without considering fluvial processes is no longer acceptable. Instead, targeted

local measures, e.g. groins, training structures, stabilising of fords, in near-natural execution have to be adopted, such as on the Elbe river.

Long-term experience from European rivers shows that the impact of the planned measures on the given flow conditions and in particular on the sediment transport has to be investigated. This requires profound knowledge of the runoff conditions and detailed hydrological and mathematical modelling as the basis for a well-balanced and integrated construction suggestion.

An example for a still one-sided approach is the planning of the Vidin-Calafat bridge (BG-RO Danube). This crucial decision was made without concern of navigation needs and the impact on the river bed itself. Also the example from the Bavarian Danube (river stretch Straubing-Vilshofen) shows that old-fashioned ideas still exist and conflict with flood protection needs; an alternative concept with structural measures integrating the river dynamics (no impoundment) already exists. By contrary, on the Austrian Danube and on the Rhine River (the waterway with the highest ship traffic in Europe), solutions to improve the ecological condition of the river system are already realized. In combination with measures for flood control this can lead to a remarkable ecological improvement of the river.

The experience of the last decades lead to the conclusion that all concerned interests have to be evaluated and included into the design process for any action on a river. Since inappropriate measures for the improvement of the shipping conditions may have great impact on the river system those works require intuition.

[Link to Hans-Helmut Bernhart: Improvement of IWT through structural measures \(PPT\)](#)

[Link to Hans-Helmut Bernhart: Improvement of IWT through structural measures \(Text\)](#)

Panel III: Basis for the Joint Statement

Reinhard Vorderwinkler, Austrian Ministry of Transport, spoke² about the “Economic background for IWT development – Socio-economic Background of the Danube Corridor”. The political and economic changes taking place in East- and South-Eastern Europe within the last 15 years have created dynamic emerging economic areas and generated trade along the “Danube Belt”. After the fall of the Iron Curtain and the political stabilisation in South-Eastern Europe, the Danube region is developing and converging in political, social and economic terms. The Danube area will again unfold as one of the most important economic and cultural regions in a unified Europe with the Danube as 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. 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 more than 100 % in nearly all Danube countries within the last decade, the by far largest increase was registered in road transit. The traffic flows are expected to grow even more in the next years due to the forecasted economic development of the Danube countries (minimum average GDP/capita growth rates of 3-4 % per year until 2015).

Coping with traffic volumes in a manner that is environmentally and socially-friendly, calls for a more intense use of the free capacities of the Danube waterway. Inland navigation shall participate in future transport growth and maintain its current modal-split within the Danube corridor. This would mean a **doubling of transport volumes on the Danube within the next 10 years** (from 30 to 60 mio. tons/year until 2015-2020). To achieve this goal the framework conditions for inland navigation must be improved in an integrated manner by the ten Danube riparian states, following the objectives of the European Action Programme for inland waterway transport NAIADES.

² The presentation and the summary paper were prepared by Simoner & Schramm/via donau.

[Link to Reinhard Vorderwinkler /via donau: Socio-Economic development in the Danube corridor \(PPT\)](#)

[Link to Markus Simoner & Christian Schramm \(via donau \): Socio-Economic development in the Danube corridor \(Text\)](#)

Helmut Habersack³, Vienna University of Natural Resources and Applied Life Sciences, Institute of Water Management, Hydrology and Hydraulic Engineering, then explained his views about **“Ecology, navigation and sustainable planning in the Danube River Basin”**. Large river systems as the Danube are much more than just longitudinal channel networks. Especially in the low-gradient middle, tail water and delta reaches the natural river channel systems together with their wide alluvial floodplains clearly have to be addressed as complex ecological unities. The EU Water Framework Directive (WFD) requires this approach.

River straightening for flood control and/or navigation purposes is a serious pressure. Of crucial importance are river engineering measures that impair the original hydromorphological situation and/or the natural composition of ecological communities (e.g. migration barriers or devastation of habitats). Navigation needs leading to a stabilized, single thread river channel, create a monotonous aquatic environment.

Locally increased bed load transport and consequently downstream output of bed material caused by channel construction for the improvement of navigation and/or flood control is in many cases additionally intensified by a substantial reduction of the bed load input from the upper catchment (e.g. due to retention by torrent control measures and/or chains of power plants).

The above examples clearly show that conservation, protection and sustainable use of ecologically intact river-floodplain systems - as required by the EU-WFD - urgently need a **new planning philosophy**. This is also valid to achieve sufficient results related to navigation pressures. Instead of one-sided measures and uses, multi-usable riverine landscapes must be the goal to achieve WFD requirements. Catchment wide thinking and cross border cooperation are future challenges calling for multi-disciplinary planning and decision processes.

The prerequisite for future planning approaches for an environmentally sustainable Inland Water Transport (IWT) is **a common language across disciplines**, necessary to understand the problems of the “other” side and a special communication and discussion culture. For an interdisciplinary approach and broader acceptance of the ongoing and future planning process, the Ministries of Environment, Water Management and Transport, scientists and experts in river engineering, navigation, ecology, spatial planning and economics as well as representatives of the various stakeholders have to be involved from the beginning.

As a **first step**, existing problems and needs for both, navigation and ecology within certain planning regions, river sections and/or of specific existing/future navigation projects need to be clearly identified. Navigation pressures, which can impact river ecology, also need to be clearly defined. Further, relevant environmental restoration measures, should be proposed, that prevent the deterioration of the ecological status and ensure the achievement of the environmental objective. Both issues on pressures and measures should become a common understanding. The extended document includes a list of basic navigation needs, measures and pressures as well as environmental measures for discussion.

As a follow-up the involved parties should discuss all the issues in more technical detail in the frame of **common workshops**. This will support the development of the common understanding for the needs of ecology in correspondence with navigation and vice versa. Economic issues need to be taken

³ See also the extended paper by Habersack, Jungwirth & Vogel.

into account. Thereafter, the **concrete planning phase** can be initiated. A **steering group** could be established to coordinate the process. Main issues to be addressed include e.g. the minimum water depth required for navigation, the extent of river restoration and the procedure of an adequate measure implementation to be either realised along a whole project reach or in an **adaptive process**.

Planning principles should be commonly agreed by stakeholders, politics, navigation and ecology, leading to a river engineering solution that creates a winning situation for ecology and navigation. Only via the accepted planning principles the designing of measures can be continued and will enable modified scenarios, which will be assessed and – if needed – improved. Within the planning and discussion period both, ecology and navigation have to be willing to find a compromise and to agree to a set of measures. River engineering plays a central role in suggesting and designing suitable and technically sound measures.

The identification of navigation pressures on the riverine ecology and the design of corresponding integrated measures to simultaneously improve navigation and ecology will support the achievement of required and jointly agreed objectives.

The measures should clearly reflect that the aims of navigation and ecology are weighted equally. However, a follow-up mechanism would be useful to develop this in detail. Needs for ecology and navigation have to be specified for the basin-wide and sectional scale. These issues should be discussed within the workshops of the *Joint Statement on Inland Navigation and Environmental Sustainability in the Danube River Basin*.

[Link to Helmut Habersack: Ecology, Navigation and Sustainable Planning in the Danube River Basin \(PPT\)](#)

[Link to Habersack et al.: Ecology, Navigation and Sustainable Planning in the Danube River Basin \(Text\)](#)

Alexander Zinke, Zinke Environment Consulting for Central and Eastern Europe, Vienna, presented the draft paper providing an **“Overview on IWT projects in the Danube River Basin”**. As a follow-up to the Workshop I in Orth/AT, a list of major IWT projects was compiled. It summarises some 20 ongoing and future navigation projects in the Danube River Basin and is of preliminary character. This first list is based on the Danube Basin Analysis 2004 (WFD Roof Report), ANNEX 6: *Future Infrastructure Projects affecting Hydromorphological Conditions in the Danube River Basin*, but has updated information and is complemented with new projects.

It was found that the local interpretation on the relevance and current status of these waterway projects varies a lot among stakeholders, depending on their standpoint, political interest and information. The list is not definite or complete but will have to be updated in certain intervals.

Workshop participants were asked to verify and **comment the list by 15 July 2007**; also to send illustrative information about each project to the ICPDR Secretariat. The finalised list shall be attached to the Joint Statement in the course of Workshop III:

[Link to Alexander Zinke: IWT Projects in the Danube Region \(PPT\)](#)

[Link to the List: IWT Projects in the Danube Region \(Text\)](#)

As a special example of new IWT projects, the following presentation was made:

Marina Babic-Mladenovic, Institute for Development of Water Resources “Jaroslav Cerni” - Belgrade, presented the **“Unstable Bed and Banks of the Danube River at the “Apatin Sector”**: In

this area along the border between Croatia and Serbia (rkm 1406-1399 near the city of Apatin) and 35 km downstream the border with Hungary, the Danube river bed is considered as unstable and unfavorable for navigation. The flood in 2002 divided the river flow in two parts (around Apatin sand bar), caused left (= Serbian) bank erosion and river bed deepening (up to -13 m). The left bank protects Apatin city with its harbour (winter shelter), shipyard and city beach, while the right bank along the famous Kopacki rit Zoological Reserve is at risk of erosion. Serbian experts therefore developed a project “Stabilisation and improvement of the Danube river bed at Apatin”, which aims at establishing fairway dimensions according to the recommendations of the Danube commission. Deliveries shall be a feasibility study, design, variant discussion, cost estimation and work execution. The project is subject of the bilateral commission with Hungary and will be subject of the new bilateral commission with Croatia. A Serbian feasibility study (incl. field investigations of flows and sediments, hydraulic modeling and preliminary design) was already conducted in 2004-2006.

[Link to Marina Babic-Mladenovic: Unstable Banks at the Danube River in the Apatin Sector \(PPT\)](#)

Concluding discussion:

The following points were made by participants (no attempt is made here to give any priority):

- *Reconcile ecology and navigation, focus on joint thinking, not on pre-fixed positions*
- *Joint discussion and cooperation are a chance to achieve something*
- *Share experiences from other river (sections)*
- *Disseminate better information about all projects;*
- *Address the riverine landscape – not just the waterway;*
- *Modernise old-fashioned technical solutions; include ecological objectives into planning and design*
- *There is a lack of a vision how to deal with a dynamic river, such as the lower Danube*
- *Take into account the local characteristics*
- *Critique has to be expressed and discussed; projects need to be feasible and meet the law (e.g. WFD)*
- *Do not overload this Process, it can only give guidance.*

Continuation of the Workshop on 26 June (hotel Confort/Bucharest)

Statement by *Gheorghe Constantin, Ministry for Environment and Water Management, Romania*: He welcomed all participants and excused again the absence of Mrs Varga, State Secretary. He then presented a written statement about the “Ecological and Economic Rehabilitation of the Romanian Danube Floodplain as a Background for the National Strategy concerning Flood Risk Management”. This was developed as a consequence of the 2006 flood event and aims at combining classical flood protection (dykes) with natural storage areas. This programme should serve to integrate agricultural land use and wetlands with flood management, and should be connected with development related to navigation.

Philip Weller summarised the results of the day 1.

[Link to Philip Weller: Results of Day 1 \(PPT\)](#)

Work Group Discussions

Philip Weller and Marike van Nood introduced the group work which was focusing on two tasks:

- *First a cross-sector reflection within the two interest groups about the main needs of environment resp. IWT over the next 20 years, and then*
- *A discussion of the future work at Danube basin and project level (mix of participants).*

Results: Prerequisites for achieving an ecologically sound IWT along the Danube

1. Working Group IWT stakeholders

Facilitators: Birgit Vogel and Alexander Zinke

Rapporteur: Cesare Bernabei

Task: *Needs of ecology for the next 20 years?*

Vision: The joint approach for IWT and ecology has to be holistic including commonly understood procedural and technical requirements to fulfil common environmental requirements, preservation and conservation

Detailed Outcomes:

- *preservation/conservation of ecosystems (existing flora and fauna)*
 - *e.g. ensure fish migration*

- *implement appropriate range of structures to improve environmental condition*
 - *use of mix of measures*
- *define pressures/measures directly related between navigation and riverine landscapes / environment / traditional land use*
- *IWT has to comply with legal environmental requirements*
- *define expectation in relation to relevant EU Directives and legal frameworks (WFD, FFH, Flood Directive, Natura 2000, etc.)*
- *define implementation frame and scheme*
- *define realistic/pragmatic environmental requirements*
 - *What is the minimum set of requirements?*
- *international harmonisation*
- *apply existing knowledge (research) on vessel design*
 - *fleet upgrade – transitional period*
- *cooperation between IWT and ecology towards environmental friendly design*
- *develop visionary guidelines*
- *ecological vision development*
- *development of Danube wide research.*

[Link to WG 1: Environmental Needs seen by IWT Stakeholder \(PPT\)](#)

2. Working Group Environmental Stakeholders

Facilitators: Marieke van Nood and Matthias Jungwirth

Rapporteur: Carl Manzano

Task: *Needs of IWT for the next 20 years?*

Vision for the Danube 2027 - Navigation needs as seen by environmentalists

- *Clear conditions: draught-width, including under changing conditions*
- *Planning security, including security on environmental standards, infrastructure developments and subsidy schemes. One way to achieve this is by integrated planning (cf joint statement navigation – environmental sustainability)*
- *Funding for fleet improvements and make it more flexible*
- *Improved intermodal operability*
- *State aid, flexible legislation and resources should be made available for this*
- *Integrate tourism (will enhance profits and support maintenance of natural areas).*

[Link to WG 2: Navigation Needs seen by Environmental Stakeholder \(PPT\)](#)

3. Working Group A: Basin wide approach for integrating IWT and ecology in the Danube River Basin

Facilitators: Birgit Vogel and Alexander Zinke

Rapporteur: Reinhard Vorderwinkler

What are issues on basin wide scale?

- ***Preamble to address the preconditions of the Joint Statement***
 - *Legal framework (all relevant directives and requirements)*
- ***Define IWT project***
- ***Define ecological frame/conditions***
 - *type-specific scale: basin wide, upper-middle-lower Danube*
- ***Prerequisites from IWT side (including non-structural measures) – state-of-play***
- ***Definition of navigation pressures on ecology and relation to environmental measures***
 - *priority ranking in terms of effects and benefits for both ecology and navigation*
- ***Benchmarks and standards***
 - *exist for navigation and need to be clearly specified for ecology*
- ***Avoidance of impacts***
 - *give priority to non-deteriorating measures*
 - *respect different starting conditions in DRB.*

Precondition for Joint Planning

- *Mutual trust*
- *Effective and transparent information exchange between stakeholders*
- *Sufficient data basis (current/future IWT projects, environmental conditions/ measures/scenarios, etc)*
- *Flexible funding conditions to ensure the feasibility of sound planning and implementation*

Planning philosophy

- ***Problem description as a starting point***
- ***Reference document Habersack et.al***
 - *Planning and engineering in harmony with natural riverine processes*
- ***Monitoring of joint process/implementation success (adaptive approach)***

How can IWT benefit from other structural and environmental measures to be implemented in the DRB?

- *projects are in most cases multifunctional*
- *mutual effects are to be discussed in frame of planning process*
 - *benefits to be defined and ensured*

Climate Change, IWT and Ecology

- ***Climate change will be a challenge for both IWT and ecology***
 - *appropriate environmentally friendly solution have to be discussed and found according to the joint planning philosophy*
 - *Develop appropriate responses.*

[Link to WG 3: Basin wide approach for integrating IWT and ecology in the Danube River Basin \(PPT\)](#)

4. Working Group B: How to plan current and future IWT and environment measures in an integrated way?

Facilitators: Marieke van Nood and Matthias Jungwirth

Rapporteur: Helmut Habersack

General introduction

- *Development of navigation is important (10 countries, connection to the sea)*
- *Equally important are the ecological needs, conditions*
 - *Methods are essential, taking into consideration all scientific knowledge to achieve aims, e.g. new ships, sturgeons*
- *See navigation and ecology as equal partners*

Recommendations for a new planning approach

For all projects:

- *Comparing Leitbild - current situation*
- *Early involvement of all stakeholders*
- *Common understanding of problems, needs, pressures and measures*
- *Benchmarks?*

Parts of new planning approach

General and esp. in specific projects:

- *Integration of various themes (e.g. navigation, ecology, flood protection) in the planning phase (synergies...) from the beginning*
- *Include international experts viewing projects as they are developing*

- *Sava Commission: all three themes are included*
- *Participation is important, including navigation NGOs, involve stakeholders very early (responsibility for member states and for international commissions), at different levels, be transparent in the process*
- *Organisational questions: different commissions had a certain historic commitment, have now to include more than political obstacles (how to enlarge the group of partners?)*
- *In the WFD implementation national measures programs and an overall program on a basin scale are developed (aiming for a good ecological status) which have to be treated in a participation process*
- *Also navigation has to be included*
- *Opportunities that WFD offers should be fully exploited for participation*
- *BEFORE Environmental Impact Assessment (EIA) is performed a discussion on alternatives should be done to reach integrated measures*
- *Agree on some harmonized procedures and criteria on evaluating possible consequences of measures (binding), EIA national and/or internationally for every project, view single measures within a basin view / framework*
- *Integration of ecology and navigation should be done early, not only when the EIA is performed*
- *Information of all relevant projects within and across the Danube river basin countries, impacts etc, there is necessity for member states to report to the commissions, to notify...*

Criteria for projects

- *Does a project interrupt migration? Sturgeons? There should be also a clarification about this, improving the knowledge; should be also done for other knowledge gaps*
- *Does an intervention have downstream and/or upstream impacts on water quality?*
- *Are non-structural measures considered?*
- *Have alternatives been analysed / evaluated?*

Environmental impact assessment

- *Early in the process (all groups should be involved from the very beginning)*
- *Wide range of alternatives (including boundary conditions, open discussion)*
- *Possible advisory board from internationally recognised experts*
- *Public participation – information e.g. via commissions, both international and national*
- *How to deal with uncertainty (before EIA)*
 - *If consequences are not clear / known measures should not be realised, develop knowledge asap*
 - *Adaptive management should be applied, including monitoring to react on uncertainty*
 - *Find measures that can cope best with uncertainty, start with less impacting measures.*

Measures

- *Navigation measures – e.g. depth/width should be variable to optimize the measures (regarding safety etc.), overview where are optimal options / problem areas, where one way traffic etc. (Danube Commission provides bottleneck overview before Oct. 07)*
- *minimum engineering intervention,*
- *design criteria should be in line with river sections boundary conditions*
- *Ecological measures – e.g. lateral connectivity*
- *critical areas, habitats etc. should be identified, ICPDR and NGOs will/should prepare a list (including areas which have to be protected and areas where improvement is necessary)*
- *Mitigation measures - see list (should be checked and reported back to ICPDR office until 15th July 2007).*

[Link to WG 4: How to plan current and future IWT and environment measures in an integrated way ? \(PPT\)](#)

Comments from plenary discussion:

Address also SEA as a tool.

NGO list of critical habitats will be drafted by 15 July.

Next Steps towards the Joint Statement

Philip Weller reminded the Participants of the overall Process steps. Proposal for the Joint Statement is as follows:

Basis documents will be the

- *Background papers for IWT Development*
- *Ecology, Navigation and Sustainable Planning in the Danube River Basin*
- *Overview of IWT Projects in the Danube River Basin.*

The **drafting process** will consist of

- *Agreement at WS II on the table of contents and character of the Joint Statement*
- *Establishment a Drafting Team (10 persons max.)*
- *Presentation of a draft statement to all participants by September 3, 2007*
- *A three week period (i.e. by 24 September) for comments prior to Workshop III*
- *Revised draft prepared for discussion at Workshop III*
- *Finalization of a final edited draft*
- *Circulation of a final draft for written agreement by end of October / early November*
- *Public Presentation of Common Statement in December 2007.*

The **Table of Contents** should be composed of:

- *Introduction*
- **Key Statements of Agreement**
 - *Current Situation Development of Navigation*
 - *Understanding of Water and River Ecosystems*
- **Conclusions**
 - *Principles and Criteria for Achieving Ecologically Sustainable Navigation*
 - *Processes*
 - *Technical Issues*
- **Follow-up Tasks**
- **Appendix**

[Link to Philip Weller: Next Steps to develop the Joint Statement \(PPT\)](#)

Comments by Participants:

DEF asked to add into **chapter 3b**) Technical Issues also “**Ecological Measures**”.

Romania asked that in **ch. 1 Introduction** the focus should be on infrastructure (not just “incl.”)

SECI asked to **define “infrastructure”** (are ports, bridges etc. also addressed)

Austria suggested to take “other infrastructure” also into account.

Habersack suggests to replace the **title of ch. 3** Conclusions by “**Recommendations**”.

Weller explained that basically all Process participants are members of the **drafting group** and that the max. 10 members will be communicated to all participants via e-mail in July. **Interest to be members was expressed by: DEF, IAD, WWF, SC, DC.** In addition, one representative from **each Danube reach** should be involved.

ICPDR Secretariat will coordinate this process and send a memo to all members. Any other comment can be expressed between 3 and 24 September as well as during Workshop III.

DEF asked how a common national understanding of the Joint Statement will be secured, i.e. will it be **translated into all DRB languages?** It was agreed that this will be subject of Workshop III.

Open Issues for Workshop III

- *Summary of the Workshop II will be prepared and available on internet*
- *Presentations and Working Group results will also be uploaded*
- *Draft list of projects needs update: input should be provided by 15 July*
- *Comments on Habersack et.al. paper (mitigation measures) are invited by 15 July*
- *Any other additional information or text will be circulated by Participants.*
- *NGOs will draft a list of critical habitats by 15 July 2007*

- *Danube Commission will draft a list of navigation bottlenecks by end Sept. 2007*
- *The English version of the EIA of the Romanian ISPA project will be linked.*

Wrap up and outlook towards Workshop III

Milovan Bozinovic: Danube Commission is prepared to adopt the future Statement and recommends to present it at the EfE Conference in October 2007 in Belgrade. It will be important to continue speaking about this Process and raise consciousness.

Philip Weller concluded that the workshop started with a strong support by all participants to this Danube IWT process. Also, this cooperation between Basin and Navigation Commissions is already proven as mutually beneficial.

The presentations and related discussions in Calarasi and Bucharest have shown the importance of joint discussions and that there is a lot of common ground and growing mutual understanding.

Workshop III of the Joint Statement Process discussing the draft Joint Statement will be organised on invitation of the the Sava Commission and held on 4-5 October 2007 in Zagreb.

2 Agenda

Sunday, June 24

Arrival of participants at Hotel Confort / Hotel Skygate in Bucharest

Monday, June 25

08:15 Bus travel from hotels in Bucarest to Calarasi/Danube

11:00 departure of a vessel from Calarasi to Cernavoda

Venue: Motorship Vrancea (cruise from Calarasi to Harsova)

11:15	Welcome	<p><i>Milovan Bozinovic</i> <i>President, Danube Commission</i></p> <p><i>Kemal Karkin</i> <i>President, International Sava River Basin Commission</i></p>
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11:30	Introduction to Workshop II Summary of Workshop I and introduction to Workshop II	<i>Philip Weller</i> <i>Executive Secretary, ICPDR</i>
12:00	<i>Presentation of the project “Improvement of the navigation conditions on the Danube between Calarasi and Braila”, and discussion of ecological considerations in improving navigation in the Lower Danube</i> Ministry of Transport (RO) and ISPA project consultants	<i>Alexandru Serban Cucu</i> <i>Director General, Ministry of Transport (Romania) and</i> <i>Alexandru Balcu, Trapec</i>
12:25	WWF International	<i>Georg Rast, WWF</i>
12:50	Discussion and view of the ISPA project site (bifurcation Old Danube – Bala arm)	
13:30	<i>Lunch</i>	
14:30	Introduction to the afternoon session <u>Expert presentations:</u> Technical possibilities for realising environmentally sustainable IWT:	<i>Philip Weller</i> <i>Executive Secretary, ICPDR</i>
14:45	Improvement of IWT through non-structural measures (logistics, ship technology, River Information Services, pollution reduction) EBU Statement on Inland Navigation and Environmental Sustainability in the Danube River Basin	<i>Markus Simoner</i> <i>via donau</i> <i>Martin Deusch,</i> <i>European Barge Union</i>
15:05	Improvement of IWT taking into account the sediment dynamics and its management possibilities	<i>Pol Hakstege</i> <i>on behalf of Central European Dredging Association (CEDA)</i>
15:30	Improvement of IWT through structural measures (ecology-sensitive maintenance and upgrading of the waterway, the embankments and river habitats)	<i>Hans-Helmut Bernhart</i> <i>University Karlsruhe, Institute for Aquatic Environmental Engineering</i>

	and river habitats)	
16:00	<i>Coffee Break</i>	
16:30	<i>Basis for the Joint Statement:</i> Economic background for IWT development	<i>Reinhard Vorderwinkler, Austrian Ministry of Transport</i>
	Ecology, navigation and sustainable planning in the Danube River Basin	<i>Helmut Habersack University of Natural Resources and Applied Life Sciences, Vienna Institute of Water Management, Hydrology and Hydraulic Engineering</i>
17:00	Overview on IWT projects in the Danube River Basin Discussion	<i>Alexander Zinke Zinke Environment Consulting for Central and Eastern Europe</i>
17:30	Wrap-up	<i>Philip Weller Executive Secretary, ICPDR</i>
18:00	<i>Dinner on vessel</i>	
22:00	<i>Estimated return in Bucharest</i>	

Tuesday, June 26

Venue: Hotel Confort in Bucharest (Calea Bucurestilor 255A, close to Otopeni Airport)

9:00	Welcome	<i>Georghe Constantin (on behalf of Lucia Ana Varga, President 2007, ICPDR), Romanian Ministry of Environment and Water Management</i>
	Wrap-up of day 1 and presentation of the questions for the groups	<i>Philip Weller Executive Secretary, ICPDR, Marieke van Nood, EC-DG ENV and Birgit Vogel, ICPDR</i>

9:30	Work group discussions: Prerequisites for achieving an ecologically sound IWT along the Danube	
	WG IWT (IWT stakeholders): Needs of ecology for the next 20 years?	
	WG ENV (environment stakeholders): Needs of IWT for the next 20 years?	
10:30	WG A: How to prepare future IWT projects?	
	WG B: How to integrate the planning of current and future IWT and environment measures?	
12:30	<i>Lunch</i>	
13:30	Feedback from the Working Groups	
14:30	Next steps towards the Joint Statement	<i>Philip Weller</i> <i>Executive Secretary, ICPDR</i>
15:00	<i>Coffee Break</i>	
15:30	Wrap up and outlook towards Workshop III	<i>Philip Weller</i> <i>Executive Secretary, ICPDR</i>
16:00	<i>Closure of the Workshop</i>	

3 List of Participants

Name	Organisation
Ms BABIC-MLADENOVIC Marina	Ministry of Agriculture, Forestry & Water Mgmt / Directorate for Water
Mr BALCU Alexandru	TRAPEC (Tractebal Project – Managers, Engineers & Consultants)
Mr BERENCSI Miklos	Ministry of Environment and Water / WFD Department
Mr BERNABEI Cesare	EC DG Energy and Transport

Mr BERNHART Hans Helmut	University of Karlsruhe, Institute for Aquatic Environmental Engineering
Mr BOZINOVIC Milovan	Danube Commission
Ms BRATRICH Christine	WWF International Danube-Carpathian Programme / Department for Freshwater
Mr CONSTANTIN Gheorge	Ministry of Environment
Mr CUCU Alexandru Serban	Ministry of Transports, Constructions and Tourism / General Directorate of Environment
Mr DEUSCH Martin	European Barge Union
Mr. GETSEVICH Yevgeniy	Delta Pilot
Ms GJORESKA Aleksandra	Southeast European Cooperative Initiative (SECI) / Stability Pact for SEE
Mr GRIGORESCU Aurelian	TRAPEC (Tractebel Project – Managers, Engineers & Consultants)
Mr HABERSACK Helmut	University of Natural Resources and Applied Sciences, Vienna
Mr HAKSTEGE Pol	CEDA/Rijkswaterstaat
Ms HULEA Orieta	WWF International Danube-Carpathian Programme
Ms IVANOVA Di Desislava	Ministry of Transport, Executive Agency for Exploration & Maintenance of the Danube River
Mr ISAKOVIC Dusan	Ministry of Capital Investment / Department for Transport
Mr JUNGWIRTH Matthias	University of Natural Resources and Applied Sciences, Vienna
Mr KARKIN Kemal	International Sava River Basin Commission (ISRBC)
Mr KUTZENBERGER Harald	International Association for Danube Research (IAD)
Mr MANZANO Carl	National Park Donauauen
Ms MAMIC VUSIC Srecka	Ministry of the Sea, Tourism, Transport and Development / Directorate for Inland Waterway Navigation
Ms MEHMEDOVSKI Senaida	Ministry of Communication and Transport
Mr MILKOVIC Zeljko	International Sava River Basin Commission (ISRBC)
Ms MOISI Petruta	DEF Secretariat

Ms MUNTEANU Cristina-Laura	WWF International Danube-Carpathian Programme
Mr NAGL Gerhard	DEF Water Policy Team Co-ordinator Hydromorphology
Mr RAST Georg	WWF International Danube-Carpathian Programme / Department for Freshwater
Mr RUBEL Oleg	DEF Secretariat
Mr SIMONER Marcus	via donau
Mr SOARE Romeo	River Administration of the Lower Danube Galati
Mr STADLER Richard	Ministry for Agriculture, Forestry, Environment and Water Management
Mr SUCIU Ioan	Ministry of Transport
Mr TOEGEL Robert	via donau
Ms VAN NOOD Marieke	EC DG Environment – Unit Water & Marine Protection
Ms VARGA Lucia Ana	Ministry of Environment
Ms VOGEL Birgit	International Commission for the Protection of the Danube River (ICPDR)
Mr VORDERWINKLER Reinhard	Federal Ministry of Transport, Innovation and Technology
Mr WELLER Philip	International Commission for the Protection of the Danube River (ICPDR)
Mr ZINKE Alexander	ICPDR - Consultant (Zinke Environment Consulting for Central and Eastern Europe)