
Interim Overview: Significant Water Management Issues in the Danube River Basin District

icpdr **iksd**

International
Commission
for the Protection
of the Danube River

Internationale
Kommission
zum Schutz
der Donau



Interim overview on the Significant Water Management Issues to meet the requirements of WFD (Directive 2000/60/EC) Article 14 regarding public information and consultation in preparation of developing the 2nd Danube River Basin Management Plan for the implementation cycle 2015 to 2021.

Document number: IC 178

Version: Final

Date: 2013-12-10



Imprint

Published by:

ICPDR – International Commission for the Protection of the Danube River

© ICPDR 2013

Contact

ICPDR Secretariat

Vienna International Centre / D0412

P.O. Box 500 / 1400 Vienna / Austria

T: +43 (1) 26060-5738 / F: +43 (1) 26060-5895

icpdr@unvienna.org / www.icpdr.org

Table of contents

1	Introduction	1
2	Scope and aim of the document	1
3	General and cross-cutting issues	2
3.1	Interrelation between the basin-wide, national/sub-basin and sub-unit level	3
3.2	Long-term visions and management objectives	3
3.3	Basin-wide approach	4
3.4	Joint Programme of Measures (JPM)	4
3.5	Financing issues	5
3.6	Other important activities and emerging issues	5
4	Significant Water Management Issues	9
4.1	Surface waters	9
4.1.1	Organic pollution	9
4.1.2	Nutrient pollution	10
4.1.3	Hazardous substances pollution	12
4.1.4	Hydromorphological alterations	13
4.2	Groundwater	15
4.2.1	Alterations of groundwater quality	15
4.2.2	Alterations of groundwater quantity	16
5	Outlook	17

List of acronyms

BAP	Best Agricultural Practice
BAT	Best Available Techniques
CAP	EU Common Agricultural Policy
DBA	Danube Basin Analysis
DFRM Plan	Danube Flood Risk Management Plan
DRB	Danube River Basin
DRBD	Danube River Basin District
DRBM Plan	Danube River Basin District Management Plan
DRPC	Danube River Protection Convention
DSTF	Danube Sturgeon Task Force
EBRD	European Bank for Reconstruction and Development
EG	Expert Group
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EQSD	EU Directive on Environmental Quality Standards 2008/105/EC
EU MS	European Union Member States
EUSDR	EU Strategy for the Danube Region
FD	EU Floods Directive 2007/60/EC
GEP	Good Ecological Potential
GES	Good Ecological Status
HMWB	Heavily Modified Water Body
IAS	Invasive Alien Species
ICPDR	International Commission for the Protection of the Danube River
IED	EU Industrial Emissions Directive 2010/75/EU
IFI	International Financial Institutions
IPPC	Integrated Pollution Prevention and Control Directive 2008/1/EC
JDS	Joint Danube Survey
JPM	Joint Programme of Measures
MSFD	EU Marine Strategy Framework Directive 2008/56/EC
ND	EU Nitrates Directive 91/676/EC
PE	Population equivalent
RBM	River Basin Management
SEA	Strategic Environmental Assessment
SSD	EU Sewage Sludge Directive 86/278/EC
SWMI	Significant Water Management Issue
UWWTD	EU Urban Wastewater Treatment Directive 91/271/EC
UWWTP	Urban Wastewater Treatment Plant
WFD	EU Water Framework Directive 2000/60/EC

1 Introduction

The sustainable development of the Danube River Basin (DRB) requires the cooperation between the countries jointly sharing this most international river basin in the world. The Danube River Protection Convention (DRPC) and the Danube Declaration 2010 represent the legal, as well as political framework for cooperation and transboundary water management. The **International Commission for the Protection of the Danube River** (ICPDR), established under the DRPC, is the coordinating platform to compile multilateral and basin-wide issues at the “roof level” (basin-wide level) for the DRB.

The **EU Water Framework Directive 2000/60/EC** (WFD) further specifies the required steps for the prevention of deterioration and enhancement of water status by promoting sustainable water use. The Danube and its tributaries, transitional waters, lakes, coastal waters and groundwater form the Danube River Basin District (DRBD). When the WFD was adopted in October 2000, all countries cooperating under the DRPC - in particular as well the Non EU Member States (Non EU MS) - decided to make all efforts to implement the WFD throughout the basin.

Since 2000 the following major milestones were achieved in the DRBD in implementing the WFD:

- 2004 – Accomplishment of the first Danube Basin Analysis Report, compiling relevant information inter alia on the main pressures and impacts on water
- 2006 – Summary report on the monitoring programmes in the DRBD
- 2007 – Interim overview on the Significant Water Management Issues (SWMI) in the DRBD, which are the main pressures on water requiring to be addressed on the Danube basin-wide level
- 2009 – Adoption of the 1st Danube River Basin District Management Plan (DRBM Plan), providing an updated analysis on the main pressures, water status information stemming from the monitoring programmes, and including a Joint Programme of Measures (JPM) towards the improvement of water status in the basin until 2015
- 2012 – Interim report on the progress in the implementation of the JPM

As a first step in the preparation of the second WFD management cycle, covering the 6 years timeframe from 2015 until 2021, a timetable, work program and statement on consultation measures for the development of the 2nd DRBM Plan¹ was adopted by the ICPDR in December 2012 and published for public consultation.

This updated **Interim Overview on the Significant Water Management Issues in the DRBD** was elaborated by the end of 2013 as a step towards the development of the 2nd DRBM Plan by December 2015. The document is made available to the public, **allowing for six months to comment in writing** in order to allow for active involvement and consultation.

2 Scope and aim of the document

The first interim overview on the Significant Water Management Issues from 2007 and the 1st DRBM Plan from 2009 outline the following SWMIs identified in the frame of the ICPDR for the DRBD that affect directly or indirectly the status of surface water and transboundary groundwater:

- Pollution by organic substances
- Pollution by nutrients

¹ <http://www.icpdr.org/main/public-participation-schedule-wfd-efd>

- Pollution by hazardous substances
- Hydromorphological alterations²

These SWMIs were derived on the basis of the requirements of the WFD and mainly relate to quality aspects. For transboundary groundwater bodies, both, the qualitative and quantitative issues are addressed.

The **scope of this document is to provide an updated interim overview on the Significant Water Management Issues** in the DRBD which are in need to be addressed in the 2nd DRBM Plan. Furthermore, the document also **reflects on the steps taken and progress achieved** on different other topics relevant for water management on the Danube basin-wide scale. These topics include sediment management, adaptation to climate change, water scarcity and drought, invasive alien species, and the issue of Danube sturgeons.

Therefore, this updated SWMI Paper is focusing on the progress and changes since the elaboration of the first SWMI Paper in 2007, taking also into account the findings of the 2012 Interim Report on the Implementation of the JPM, and aims to **aid the development of a target-oriented 2nd DRBM Plan and updated Joint Programme of Measures by 2015**. The update is helping to manage this process and to identify the actions needed to address the main pressures on the Danube water environment.

Furthermore, **integration with other sector policies** is an important issue in order to gain synergies and avoid potential conflicts. Work is ongoing to intensify the exchange with different sectors such as inland navigation, hydropower and agriculture, beside efforts towards the coordination of water management with the sustainable management of floods - **EU Floods Directive 2007/60/EC (FD)** – as well as the marine environment and the Black Sea - **EU Marine Strategy Framework Directive 2008/56/EC (MSFD)**.

This document serves to reflect these ongoing developments and outlines the upcoming needs and requirements for the development of the 2nd DRBM Plan. Cross-cutting issues are addressed and the Significant Water Management Issues for the basin-wide scale are identified.

Closely related to these developments, countries are further developing their national and regional strategies and management plans which will complement the 2nd DRBM Plan and, where necessary, address additional Significant Water Management Issues at the appropriate level in accordance with the principle of subsidiarity.

3 General and cross-cutting issues

The following chapter outlines general and cross-cutting issues which are relevant for the management of the DRB on the basin-wide scale. It provides information on the different levels of management and their interrelation, describes the basin-wide approach and the definition of visions and management objectives.

Furthermore, a description of the nature of the Joint Programme of Measures is provided, beside financing issues and an indication of emerging issues which are not formally defined as Significant Water Management Issues for the Danube basin-wide scale but still addressed within the frame of the ICPDR.

² Hydromorphological alterations are human pressures to the natural structure of surface waters such as modification of bank structures, sediment/habitat composition, discharge regime, gradient, and slope. The consequence of these pressures can be impacts on the aquatic flora and fauna and therefore on water status.

3.1 Interrelation between the basin-wide, national/sub-basin and sub-unit level

The DRBM Plan and Programmes of Measures are based on three levels of coordination:

- ⇒ **Part A:** the international, basin-wide level – the Roof Level;
- ⇒ **Part B:** the national level (managed through competent authorities) and/or the international coordinated sub-basin level for selected sub-basins (Tisza, Sava, Prut, and Danube Delta);
- ⇒ **Part C:** the sub-unit level, defined as management units within the national territory.

The information increases in detail from Part A to Parts B and C (see Figure 1).

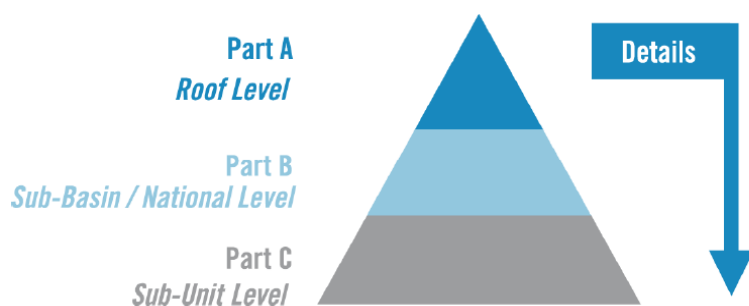


Figure 1: Overall structure of the DRBM Plan showing the increase of the level of detail from Part A to Part B and C.

The investigations, analysis and findings of the DRBM Plan for the basin-wide scale (Part A) focus on:

- rivers with catchment areas $>4,000 \text{ km}^2$;³
- lakes $>100 \text{ km}^2$;
- transitional and coastal waters;
- transboundary groundwater bodies of basin-wide importance.

Waters with smaller catchment and surface areas are part of the national RBM Plans, which are providing a description of measures to be undertaken in these areas.

The content of the DRBM Plan at the Roof level is strongly based on findings and actions at the national/sub-basin level. So far, the Danube countries have developed sub-basin management plans for the Sava in the frame of the International Sava River Basin Commission (BA, HR, RS, SI) and the Tisza (HU, RO, RS, SK, UA). Those plans were elaborated in a higher resolution and level of detail compared to the basin-wide level, beside the fact that additional issues were addressed. In addition, RBM activities are currently under way for the Danube Delta and the Prut.

Furthermore, bilateral/multilateral agreements between individual countries are in place, enabling transboundary cooperation below the Roof level. At the Roof level, the ICPDR serves as the facilitating and coordinating platform between the different DRPC Contracting Parties. Where the boundaries of the DRBD extend beyond the national borders of the countries cooperating under the DRPC (e.g. into Italy or Poland) it is the responsibility of the respective DRPC Contracting Parties to find an appropriate form of coordination with the relevant neighbours.

3.2 Long-term visions and management objectives

The approach on the basin-wide level must be complementary to national level planning and implementation – and vice versa. To enable this approach in practice, **visions and management objectives** on the international scale were defined and included in the 1st DRBM Plan in order to guide the Danube countries towards a commonly agreed goal.

³ The scale for measures related to point source pollution is smaller and therefore more detailed.

Visions and management objectives have been developed for each SWMI and groundwater. The visions are based on shared values and describe the principle objectives for the DRBD with a long-term perspective. The respective management objectives describe the steps towards the environmental objectives in the DRBD in a more explicit way.

EU Member States are obliged to apply the WFD which requires more detailed environmental objectives on a water body level. All other Contracting Parties to the DRPC have signed up to follow the WFD as well. The visions and management objectives serve the purpose to reflect this joint approach among all Danube countries and to support the achievement of the WFD objectives in this very large, unique and heterogeneous European river basin.

The visions as agreed in the frame of the 1st DRBM Plan in 2009 are again indicated in chapter 4 of this document. Since the **visions** describe the principle objectives for the DRBD with a long-term perspective, **no major updates of the visions are expected** to be required for the preparation of the 2nd DRBM Plan by 2015.

The **management objectives** are not yet updated for this document. **Updates will be required for the 2nd DRBM Plan with the perspective of 2021** (timeframe to which the 2nd DRBM Plan refers to). For this update, the ongoing progress in measures implementation, the results of the 2013 Update of the DBA and latest information, i.e. on status assessment, will be taken into account.

3.3 Basin-wide approach

The DRBM Plan follows the principle of the basin-wide approach, as the added value for an international RBM Plan can be summarised in the following ways:

- Water management issues which require basin-wide cooperation to be resolved can be addressed not only by individual countries but jointly by all of them (e.g. nutrient pollution of the Black Sea with special reference to the coastal waters as part of the DRBD);
- Coordination of actions can increase effectiveness and efficiency for an integrated and sustainable water management policy;
- Exchange of experiences and information in order to strengthen capacities in the Danube countries;
- Sharing of national approaches in order to strengthen assessments and to improve their consistency (e.g. sampling and assessment methods, approaches for the definition of ‘Good Ecological Potential’, etc.);
- Communication and information flow is improved (of particular relevance for early warning in case of floods and accidents);
- Enabling the joint assessment of the nature and extent of transboundary problems in relation to water; and
- Creating solidarity between the countries sharing the same river basin.

At the same time, the basin-wide approach has to take the different conditions (e.g. natural conditions, socio-economic aspects, EU MS status) into account in order to properly reflect the diversity within the basin.

3.4 Joint Programme of Measures (JPM)

An updated JPM will be part of the 2nd DRBM Plan and build upon the agreements of the 1st DRBM Plan from 2009, the results of the 2012 Interim Report on the Implementation of the JPM and the 2013 Update of the DBA, as well as on updated information on water status assessment. The JPM will, for each SWMI, include measures of basin-wide importance oriented towards the agreed visions and management objectives for 2021, which will also be included in the 2nd DRBM Plan.

As in the past, the JPM will be firmly based on and coordinated with the national programmes of measures. However, there might be few individual measures which are agreed on the ICPDR level and

which would not be carried out to the extent necessary to address basin-wide concerns, if they were not jointly agreed within the ICPDR (e.g. a feasibility study for the migration of sturgeons and other migratory fish species at Iron Gate I & II or nutrient input to the Black Sea).

The JPM should represent more than a collection of measures from the national level. Appropriate exchange from the international level to national and sub-basin planning processes, and vice versa, will ensure the design of the JPM in the most efficient way for the achievement of the objectives jointly agreed for the basin-wide scale.

3.5 Financing issues

Financing tools and mechanisms are essential for the implementation of the DRBM Plan and the JPM. Discussions on the actions needed for securing the long-term matching of needs and funds for the identified measures already during the planning process is key for ensuring implementation following the adoption of the 2nd DRBM Plan.

It is an overall objective, that the ICPDR promotes information exchange on existing international and EU financing instruments as well as on existing International Financial Institutions (IFI) to exploit them to the best possible extent. Important financing mechanisms and institutions include:

- National funds and financing commitments of the countries;
- EU funding instruments, including the Common Agricultural Policy (CAP), Cohesion Funds, Structural Funds and the LIFE Programme;
- Loans from different IFIs (e.g. EIB, EBRD, World Bank);
- Water pricing policies, i.e. the application of the polluter pays principle;
- Other sources of funding and initiatives, e.g. Global Environmental Facility (GEF), Environment and Security Initiative (ENVSEC), etc.

The EU Neighbourhood Policy will also have to be taken into account as an important funding source. In order to facilitate and secure that funding needs for actions to improve water status are met, the ICPDR initiated a dialogue with representatives of financial institutions and programmes. This dialogue is proposed to be continued towards facilitating the allocation of necessary funding for the measures of the 2nd DRBM Plan and the JPM.

Also the EU Strategy for the Danube Region (EUSDR) provides a framework for the discussion and promotion of project proposals. The ICPDR is actively involved in ongoing EUSDR activities and joint actions are already and should further be undertaken, i.e. in cooperation with the Priority Areas 1a (Inland Navigation), 2 (Energy), 4 (Water Quality), 5 (Environmental Risks) and 6 (Biodiversity).

Finally, a key issue is also to enable access to funding in particular for research projects relevant at the basin-wide scale. This will be central to respond to uncertainties and fill existing knowledge gaps regarding various management issues highlighted in the DRBM Plan (i.e. sediment management, invasive alien species, climate change adaptation).

3.6 Other important activities and emerging issues

Since the adoption of the 1st DRBM Plan in 2009 more intensive work has been done and additional topics were investigated, in order to identify their relevance and significance on the basin-wide scale. This chapter provides an overview on these topics and an examination on the state of play with regard to the

- Potential to be formally defined as a Significant Water Management Issue;
- Aspects of integration into existing SWMIs;
- Identification of knowledge gaps and further research requirements.

Hence, although the following issues are not formally defined as SWMIs, actions are already ongoing or planned for appropriately addressing these issues on the basin-wide level.

Integration with other sector policies

The process of integrating water management with other sector policies gains increased attention and is promoted by the Danube Declaration 2010 but also the EU Blueprint to Safeguard Europe's Water Resources⁴.

On **inland navigation**, following the adoption of the “Joint Statement on Inland Navigation and Environmental Sustainability in the Danube River Basin” in 2007, significant progress has been made towards setting up integrated planning approaches throughout the basin towards more sustainable navigation projects along the Danube and the Sava River. In the frame of yearly meetings, exchange on the experiences with the application of the “Joint Statement” is shared amongst administrations, stakeholders and environmental groups.

A similar integrative process on **hydropower** was launched in 2011 with the elaboration of the “Assessment Report on Hydropower Generation in the Danube Basin” and the “Guiding Principles on Sustainable Hydropower Development in the Danube Basin”⁵. The Guiding Principles outline inter alia important elements on how to deal with existing hydropower facilities, strategic planning approaches for new hydropower projects development and mitigation measures.

Regarding **agriculture**, the dialogue between stakeholders and water management sectors was intensified in the frame of specific events organised by the ICPDR, engaging major businesses and the agricultural sector in the need to develop more sustainable means of production.

Furthermore, floods are a threat to human safety and health. The **EU Floods Directive 2007/60/EC** (FD) and the ICPDR Flood Action Programme set the frame for flood management in the DRBD. Measures taken for flood protection can impact surface water status (e.g. dams and polders) but can also bring synergies towards the achievement of the objectives of both, the FD and the WFD (e.g. the re-connection of adjacent wetlands and floodplains). These inter-linkages were already indicated in the 1st DRBM Plan and will, along with the implementation of the FD, have to be appropriately addressed for a **coordinated elaboration of the 2nd DRBM Plan and 1st Danube Flood Risk Management Plan** (DFRM Plan) by 2015 in order to ensure best possible solutions.

Beyond the scope of the DRBD, the **EU Marine Strategy Framework Directive 2008/56/EC** (MSFD) aims to protect more effectively the marine environment across Europe with the objective of achieving good environmental status of the EU's marine waters by 2020. For instance, actions taken within the DRBD will reduce marine pollution from land-based sources and will protect ecosystems in coastal and transitional waters of the Black Sea Region. Therefore, the **WFD and the MSFD are closely inter-linked**, requiring a coordination of the related tasks.

These **sector policies are closely interlinked with the different Significant Water Management Issues**. Infrastructure projects (i.e. navigation, hydropower and flood protection measures) are of specific relevance for the SWMI “Hydromorphological alterations”, while agricultural production and the pollution of the Black Sea are a specific issue for the SWMIs “Organic pollution”, “Nutrient pollution” and “Hazardous substances pollution” and have to be addressed accordingly within each SWMI.

Quality and quantity aspects of sediment management

The 1st DRBM Plan outlines conclusions on the way forward regarding sediment management in the DRBD and respective actions to be taken for upcoming RBM cycles.

On **sediment quality**, the characterisation in the Danube is primarily based on the results of the Joint Danube Surveys (JDS1 and 2). The monitoring activities discovered that while concentrations of certain substances (organochlorinated compounds) in the solid phase were at low levels, heavy metals and polycyclic aromatic hydrocarbons were occasionally found at elevated concentrations requiring further concern. This issue is investigated during JDS3 in 2013 and 2014.

⁴ COM(2012) 673 final

⁵ Available on the ICPDR website: <http://www.icpdr.org/main/activities-projects/guiding-principles-sustainable-hydropower>

With regard to **sediment quantity**, the 1st DRBM Plan concluded that at the present the sediment balance of most large rivers within the DRBD can be characterised as disturbed or severely altered. Therefore, attention should be given to ensuring the sediment continuum (e.g. improving existing barriers and avoiding additional interruptions, whereas an increase of knowledge and further investigations on potential measures are still needed). However, the availability of sufficient and reliable data on sediment transport is a prerequisite for any future decisions on sediment management in the DRBD. Hence, to propose appropriate measures for improving the situation, a sediment balance for the DRBD has to be developed and additional investigations are needed to identify the significance of sediment transport on the Danube basin-wide scale.

In order to address the indicated issues, further data on sediments for the Danube will be gained in the frame of JDS3, where the monitoring activities also include investigations on quality and quantity aspects of sediments. However, for obtaining a full picture a specific **international project activity on sediment management is needed**. A respective project proposal was elaborated and transmitted in November 2011 for financing to the South East Europe (SEE) Transnational Cooperation Programme but finally not selected. Currently, work is ongoing, based on the existing project proposal, to revise this proposal by adding the relevant cross-sectoral cooperation (i.e. hydropower, navigation) and to submit it together with other stakeholders to a future call of an adequate funding program. This will be undertaken in close cooperation between the ICPDR, the EUSDR and other potential stakeholders involved in sediment management. The results of the project will be integrated in subsequent RBM cycles.

Invasive Alien Species (IAS)

The 1st DRBM Plan highlighted that the Danube River Basin is very vulnerable to invasive species given its direct linkages with other large water bodies (Southern Invasive Corridor connecting Black Sea through the Danube - Danube/Main/Rhine Canal - Rhine with the North Sea). The Danube is exposed to an intensive colonisation of invasive species and further spreading in both north-west and south-east directions throughout the Basin.

Results of the JDS2 showed that invasive alien species have become a major concern for the Danube and that their further classification and analysis is essential for effective river basin management. To achieve a common consensus on how to assess the presence of the invasive species in the Danube and to decide whether the ecological status of the Danube is really significantly impacted by neozoa, the ICPDR is developing a “Guidance paper on Invasive Alien Species as a significant water management issue” for the Danube River Basin. The ICPDR Monitoring and Assessment Expert Group adopted a joint position that IAS should not be considered en-bloc as having a negative impact on the ecological status unless a detailed integrative evaluation would prove this. Therefore the MA EG recommended that the Guidance paper should include a list of Danube IAS indicating their impacts on biocoenosis (dangerous / not dangerous).

The activities are ongoing to collect reliable and high quality data on the distribution of the new taxa using more up-to-date and advanced sampling methodologies in the DRBD. This will be achieved through a special data collection template as well as through the monitoring efforts during the third Joint Danube Survey.

Sturgeon issue

Sturgeons are considered as flagship species for the DRBD and are valuable indicators for water status and the health of the ecosystem. However, sturgeons are today on the brink of extinction *inter alia* due to overexploitation, illegal marketing, disruption of migration patterns and loss of habitats and spawning grounds caused by river engineering works. Hence, urgent measures are needed to stop the decline and prevent disappearance.

The issue was already addressed *inter alia* in the frame of the Bern Convention with the adoption of the Danube Sturgeon Action Plan in 2005 and in the 1st DRBM Plan from 2009 which specified measures (i.e. addressing water quality and the improvement of hydromorphological conditions). In addition, further measures were taken on the national level to prevent sturgeons from extinction, i.e. catchment bans in Bulgaria, Romania and Serbia and more recently in Austria on provincial level.

The issue lately gained broad political attention in the frame of the EUSDR, with the specifically agreed target “*To secure viable populations of Danube sturgeon species and other indigenous fish species by 2020*”. Working towards the achievement of this target, the “Danube Sturgeon Task Force” (DSTF)⁶ was created in January 2012 in the frame of EUSDR Priority Area 6 (Biodiversity), where different organisations from the Danube basin (e.g. WWF, IAD, ICPDR, representatives from national research institutions, Ministries and the World Sturgeon Conservation Society) joined to work towards the issue. The DSTF aims to coordinate and foster conservation efforts in the DRBD and the Black Sea by promoting actions which are outlined in a Strategy and Programme elaborated by the group.

The ICPDR expressed support in resolutions for sturgeon conservation activities and dedicated Danube Day 2013 to the motto “*Get active for the sturgeons*”. Since sturgeon conservation requires a range of different measures (e.g. ex-situ and in-situ measures, actions against illegal fishing and caviar trade, awareness raising, etc.), fields of action where the ICPDR can be active will be discussed, in exchange with the DSTF, for the elaboration of the 2nd DRBM Plan towards integration in the JPM and the different SWMIs.

Water Scarcity and Drought

The role of water scarcity and drought in river basin management is expected to become more relevant over time, particularly with increased attention to climate change. Therefore, the ICPDR became active in elaborating on the relevance of the issue of water scarcity and drought in the DRBD, which was previously not systematically addressed on the basin-wide scale and what is in line with the following specific target agreed in the frame of the EUSDR: “*To address the challenges of water scarcity and drought based on the 2013 update of the Danube Basin Analysis and the ongoing work in the field of climate adaptation, in the Danube River Basin Management Plan to be adopted by 2015*”.

Based on feedback provided by the Danube countries via a specific questionnaire, it can be summarised that water scarcity and drought is not considered as a SWMI for the majority of the countries, but a number of countries consider them as a SWMI on national level. The main sectors which were reported by countries to be affected by water scarcity and drought include agriculture, water supply, biodiversity, other energy production, hydropower, navigation and public health. Water scarcity and drought was reported to be addressed by a number of countries in the national River Basin Management Plans. Specific measures are planned or already under implementation (e.g. increase of irrigation efficiency, reduction of leakages in water distribution networks, drought mapping and forecasting, education of public on water-saving measures, market-based instruments, wastewater recycling and rain water harvesting). A further exchange on the topic in the frame of the ICPDR via the exchange of best practice examples was indicated to be the preferred approach for addressing the issue at this stage.

Hence, it was concluded that water scarcity and drought is not considered as a SWMI for the basin-wide level but exchange on the topic should take place, also in relation to the ongoing discussions on climate change adaptation. Specific chapters on the issue are planned to be devoted in the 2013 Update of the DBA and the 2nd DRBM Plan, which should also reflect on the diversity of the situation within the basin.

Adaptation to Climate Change

In December 2012, the ICPDR Strategy on Adaptation to Climate Change⁷ was finalised and adopted. The Strategy provides an outline of the climate change scenarios for the DRBD and the expected water-related impacts. Furthermore, an overview on potential adaptation measures is provided and the required steps towards integrating adaptation into ICPDR activities and the next planning cycles are described.

⁶ <http://www.dstf.eu/>

⁷ http://www.icpdr.org/main/sites/default/files/nodes/documents/icpdr_climate-adaptation-strategy.pdf

Since adaptation to climate change is a cross-cutting issue, all relevant ICPDR Expert Groups and Task Groups were mandated to fully integrate adaptation to climate change in the planning process for the implementation of the WFD and EFD in the Danube River Basin, specifically for the elaboration of the next DRBM Plan and DFRM Plan. Adaptation to climate change is therefore in need to be addressed and integrated into the different SWMIs and other relevant ICPDR activities, but is not considered as a separate SWMI. Further details on the approach can be obtained from the Strategy.

4 Significant Water Management Issues

This chapter provides an updated **interim overview on the Significant Water Management Issues in the DRBD**. The visions for each SWMI and groundwater are outlined, followed by a preliminary indication of the actions and coordination requirements for the basin-wide level.

A detailed set of measures for each SWMI and groundwater will be compiled in the 2nd DRBM Plan, based on progress achieved in the implementation of the measures as included in the 1st DRBM Plan, the results of the 2013 Update of the DBA and latest information, i.e. on water status. The JPM of the **2nd DRBM Plan will include measures to be implemented by 2021**. Afterwards, the subsequent river basin management cycle for 2027 will include further measures, where necessary.

4.1 Surface waters

Clear inter-linkages exist between measures addressing different SWMIs, specifically between measures for organic pollution and nutrient pollution (and to a certain degree also for hazardous substances pollution).

Nutrient pollution is – just like organic pollution – mainly caused by emissions from agglomerations, industrial and agricultural activities. Therefore, the implementation of measures in order to reduce for instance the emissions of organic pollution (e.g. by the development of urban wastewater treatment facilities) also has clear benefits for the reduction of pollution with nutrients. This fact was already taken into account during the elaboration of the 1st DRBM Plan and will also be an issue for the elaboration of the JPM for the 2nd DRBM Plan.

In addition significant alterations of hydromorphology play an important role resulting in failing good ecological status/potential for many water bodies in the Danube basin. This was also already stated in the 1st DRBM Plan and will remain one of the key issues in the elaboration of the 2nd DRBM Plan.

4.1.1 Organic pollution

The issue:

Significant pollution by organic substances mainly caused by the direct or indirect emission of partially treated or untreated wastewater from agglomerations, industry and agriculture causes significant changes in the oxygen balance of surface waters and as a consequence impacts upon the composition of aquatic species/populations and therefore water status.

Vision

The ICPDR's basin-wide vision for organic pollution is zero emission of untreated wastewaters into the waters of the Danube River Basin District.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ The 1st DRBM Plan included major efforts for the improvement of the urban waste water and industrial sector by upgrading or constructing sewer systems and waste water treatment plants as well as introducing Best Available Techniques (BAT) at the main industrial facilities. Significant investments have been made in this field in the DRBD, resulting in considerable reduction of organic pollution but additional measures should be taken in the future.

- ⇒ The Danube countries committed themselves in the DRPC, inter alia, to implement measures to reduce the pollution loads entering the Black Sea from sources in the Danube River Basin. In the EU Member States (EU MS), urban sewer system and waste water treatment sector development to control organic pollution is regulated through the EU Urban Waste Water Treatment Directive (UWWTD). EU MS are obliged to establish sewer systems and treatment plants at least with secondary (biological) treatment or equivalent other treatment at all agglomerations with a load higher than 2,000 population equivalent (PE). The new EU MS have a considerable delay in the implementation of the UWWTD due to financial limitations. The objectives of the 1st DRBM Plan were related to the accession treaty obligations of the new EU MS which were rather optimistic. Thus, the progress which has been achieved is slower than it was originally planned and the objectives will probably be accomplished with a delay. The transition period obtained by some EU MS for the implementation of the UWWTD requirements was considered as a funding prioritisation criterion (i.e. Romania: most agglomerations between 2,000 and 10,000 PE will be in line with the UWWTD provisions after 2015, with a transition period until 2018, and therefore the agglomerations with more than 10,000 PE have a higher priority). Non EU MS are constructing a specific number of sewer systems and waste water treatment plants that is realistically executable.
- ⇒ Organic pollution stemming from industrial facilities and large farms is also addressed by the Danube countries. For EU MS this is mainly related to the implementation of the EU Industrial Emissions Directive (IED which repeals inter alia the IPPC Directive), as well as a number of specialised EU Directives covering specific activities. It is expected that all relevant facilities in the EU MS will meet the IED requirements according to the legal deadlines. Non EU MS are encouraged to adopt and implement the ICPDR BAT recommendations available for several industrial sectors.
- ⇒ For the 2nd DRBM Plan, further measures to achieve the ICPDR's basin-wide vision for organic pollution should be identified and implemented. Ensuring integration of the implementation of the WFD, UWWTD and IED in EU MS and supporting Non EU MS to achieve progress is a challenge in the Danube River Basin and it should be further observed and managed. For Non EU MS, further efforts should be made to continuously implement and update BAT in the chemical, food, chemical pulping and papermaking industrial facilities or to develop new ones.
- ⇒ Realistic planning of investments is needed in line with the WFD/DRBM Plan requirements and funding availability. Efforts are needed to reinforce the capacity of the countries to identify and prepare environmental investment projects, and to improve access to good practice studies with the aim of facilitating the development of investment projects.

4.1.2 Nutrient pollution

The issue:

Nutrient pollution – particularly by nitrogen and phosphorus - can cause eutrophication of surface waters and contribute to eutrophication in the Black Sea North-Western shelf. Nutrient pollution is a priority challenge, interlinking the freshwater with the marine environment.

Vision

The ICPDR's basin-wide vision for nutrient pollution is the balanced management of nutrient emissions via point and diffuse sources in the entire Danube River Basin District that neither the waters of the DRBD nor the Black Sea are threatened or impacted by eutrophication.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ The 1st DRBM plan includes, on the basin-wide level, basic measures in the urban waste water, industrial and agricultural sectors and the implementation of the ICPDR Best Agricultural Practice (BAP) recommendations as the main measures to address nutrient emissions. The measures under implementation are substantially contributing to the reduction of nutrient inputs into surface waters and groundwater in the DRBD but further efforts are still needed.

- ⇒ Since the Black Sea was significantly suffering from eutrophication and the receiving coastal areas have been designated as a sensitive area under the UWWTD, more stringent treatment technology than secondary treatment is needed at least at the medium-sized and large treatment plants. According to the UWWTD wastewater from agglomerations with more than 10,000 PE in the EU MS of the DRBD have to be subject to tertiary treatment (nutrient removal) or a reduction of at least 75% in the overall load of total phosphorus and nitrogen entering all urban waste water treatment plants (of agglomerations > 2000 PE) has to be achieved. More stringent treatment technology is also strongly suggested for the Non EU MS as well in order to ensure a consistent development strategy in the waste water sector. The implementation of the IED in the EU MS and BAT recommendations in Non EU MS can significantly reduce industrial and agricultural point source nutrient pollution.
- ⇒ The introduction of phosphate-free detergents is considered to be a fast and efficient measure to reduce phosphorus emissions into surface waters. For the large number of settlements smaller than 10,000 PE the UWWTD does not legally require phosphorus removal. A reduction of phosphate in detergents could have a significant influence on decreasing phosphorus loads in the Danube, particularly in the short term before all countries have built a complete network of sewers and waste water treatment plants. The ICPDR has been highly supporting the introduction of the phosphate-free detergents in the Danube countries which committed themselves at ministerial level to initiate the introduction of a maximum limit for the phosphate content of the consumer detergents. A new EU Regulation (259/2012) regarding the use of phosphate-free detergents has recently been put into force for consumer laundry and will be for automatic dishwashing on the 1st of January 2017 that prescribes limitations on the phosphate contents of the detergents.
- ⇒ A key set of measures to reduce nutrient inputs and losses related to farming practices and land management has been identified. Action programmes with basic mandatory measures have been established in the EU MS by either applying the whole territory approach or in so called Nitrate Vulnerable Zones under the EU Nitrates Directive (ND). A set of measures related to the concept of BAP is also recommended to be adopted in Non EU MS.
- ⇒ The measures implemented in the urban waste water sector might have short-term negative impacts if establishment of public sewer systems is not accompanied with appropriate nutrient removal technology before discharging into the recipients. Simple collection and concentrated discharge of waste water without sufficient tertiary treatment usually causes higher nutrient pollution of surface water bodies than dispersed smaller waste water discharges from septic tanks that percolate into groundwater and reach surface waters via base flow.
- ⇒ Due to the longer time necessary for an effective management of diffuse nutrient pollution (longer residence time of groundwater, stored nutrients in bottom sediment of reservoirs) the water quality impacts of any changes in agriculture induced by the implementation of the ND or BAP recommendations will probably not be instantly visible but after several years or even decades only.
- ⇒ Countries should intensify their efforts in accelerating the implementation of measures to reduce nutrient pollution, particularly via diffuse pathways.
- ⇒ The need to further reduce nutrient loads of rivers, transitional, coastal and marine waters necessary to meet the EU policies goals should be further considered through basin-wide nutrient emission estimations, scenario assessment (using tools such as the MONERIS model) and effective measures implementation.
- ⇒ Efforts are needed to ensure necessary financial investments and clarification is required on how to finance measures. Past experience with the implementation of the ND and application of agri-environmental measures have clearly demonstrated the need for financial support out of the EU Common Agricultural Policy (CAP). Countries should make use of the CAP-Reform. Between 2014 and 2020, over 100 billion EUR will be invested to help farming meet the challenges of soil and water quality, biodiversity and climate change from both direct payment and rural development pillars.

- ⇒ Efforts to extend the introduction of phosphate-free detergents to all Danube countries are also likely to be needed.

4.1.3 Hazardous substances pollution

The issue:

Hazardous substances pollution can seriously damage riverine ecology and consequently impact upon water status and affect the health of the human population. Types of hazardous substances include: man-made chemicals, naturally occurring metals, PAH, phenols, endocrine disruptors and pesticides. Reducing hazardous substances emissions is a complex task that requires tailor made strategies as the relevance of different input pathways is highly substance-specific and generally shows a high temporal and spatial variability.

Vision

The ICPDR's basin-wide vision for hazardous substances pollution is no risk or threat to human health and the aquatic ecosystem of the waters in the Danube River Basin District and Black Sea waters impacted by the Danube River discharge.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ The 1st DRBM Plan, building on the improved analytical capabilities and results from JDS2 (2007), provided an improved knowledge on hazardous substances in the DRB. However, it also drew attention to the significant data gap and uncertainty in the current knowledge on pressures due to hazardous substances as well as their impact on water status. Danube countries have taken important steps to fill data gaps in this field but knowledge needs to be improved in the future to appropriately manage hazardous substances pollution.
- ⇒ To close the information gap on hazardous substances pollution the inventory of emissions, discharges and losses required under the EU Directive on Priority Substances (EQSD, Article 5) should be used. As a first step, a Danube case study was developed to make use of the guidelines (Common Implementation Strategy Guidance No. 28) in preparing national inventories on discharges, emissions and losses in accordance with the EQSD and to test the guidelines for specific substances of Danube basin-wide relevance. Templates for the national inventories have been prepared. Based on the case study a draft list of 12 priority substances being relevant for the DRBD has been elaborated.
- ⇒ Appropriate treatment of urban waste water and application of BAT in industrial plants are basic measures and can significantly contribute to the mitigation of hazardous contaminations. Implementation of the UWWTD and IED in EU MS is highly beneficial for the reduction of hazardous substances pollution. In Non EU MS the considerable efforts made in order to develop and improve the waste water sector and industrial technologies have also positive effects on water quality related to hazardous pollution.
- ⇒ The progressive development of the urban waste water sector increases the quantities of sewage sludge that requires disposal. The EU Sewage Sludge Directive (SSD, currently assessed whether a revision is needed) seeks to encourage the use of sewage sludge in agriculture and simultaneously regulates its use in such a way as to prevent harmful effects on soil, vegetation, animals and human beings. Detailed recording is required on the circumstances of sewage sludge application in agriculture and a set of limit values for concentrations of heavy metals in sewage sludge intended for agricultural use and in sludge-treated soils is assigned.
- ⇒ Further efforts are needed to compile the national inventories on discharges, emissions and losses in a comparable and coordinated way. In particular the lack of high quality monitoring data on priority substance discharges from waste water effluents has to be addressed prior to the update of the inventories. This will ensure to have a consistent picture on the point sources of the relevant priority substances. Further information on in-stream concentrations and river loads or modelling tools that can examine sources and pathways can help filling knowledge gaps.

- ⇒ The draft ICPDR list of priority substances will be upgraded using information from JDS3 and the follow-up activities. Furthermore, if the same approach will be applied for the tributaries of the Danube River, additional information can be collected offering a more complete picture on the DRB.

4.1.4 Hydromorphological alterations

A significant number of surface waters in the DRBD are failing to achieve the WFD objectives due to hydromorphological alterations. Interruption of river continuity, alteration of morphological conditions, disconnection of adjacent wetland/floodplains, hydrological alterations and future infrastructure may impact water status and are therefore addressed. Hydromorphological alterations can also have an effect on quantity and quality of groundwater bodies.

Many of those pressures/impacts are caused inter alia by flood protection measures, navigation and hydropower projects. For this reason, efforts towards integration with these sector policies, as described in chapter 3.6, is of major importance and therefore directly inter-linked with the SWMI “Hydromorphological alterations”. Ongoing efforts towards closing the knowledge gap on sediment management and potential measures will be taken into account based on progress achieved.

4.1.4.1 Interruption of river continuity and morphological alterations

The issue:

Dams and weirs in rivers for flood protection, hydropower generation, navigation and other infrastructure projects, are causing barriers for the migration of fish species and their access to relevant habitats and spawning grounds, if they are not equipped with functional fish migration facilities. Structural changes are causing the loss of morphodynamic structures and habitats and as a consequence impacts upon the composition of aquatic species/populations and therefore water status.

Vision

The ICPDR’s basin-wide vision for hydromorphological alterations is the balanced management of past, ongoing and future structural changes of the riverine environment, that the aquatic ecosystem in the entire DRB functions in a holistic way and is represented with all native species.

This means in particular, that anthropogenic barriers and habitat deficits do not hinder fish migration and spawning anymore – sturgeon species and specified other migratory species are able to access the Danube River and relevant tributaries. Sturgeon species and specified other migratory species are represented with self-sustaining populations in the DRBD according to their historical distribution.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ In the 1st DRBM Plan, the number of barriers preventing fish from migration has been identified for the DRBD. As part of the implementation of the JPM, a significant number of fish migration aids and other measures to achieve/improve river continuity and to ensure reproduction and self-sustaining of sturgeon species and other migratory species, is implemented.
- ⇒ For the 2nd DRBM Plan, efforts will be continued to achieve/improve river continuity and habitats in the Danube River and in respective tributaries to ensure reproduction and self-sustaining of sturgeon species and other specified migratory species.
- ⇒ The ecological prioritisation approach for continuity restoration in the DRB will be further developed and updated.
- ⇒ Further steps will be taken regarding the possibility for sturgeon and other important species to migrate upstream and downstream through the Iron Gate I & II dams based on progress achieved.

4.1.4.2 Disconnection of adjacent floodplains / wetlands

The issue:

Among many ecosystem services, wetlands/floodplains and their connection to adjacent river water bodies play an important role in the functioning of aquatic ecosystems by providing important habitats for fish as well as other fauna and have a positive effect on water status. Connected wetlands/floodplains also play a significant role when it comes to retention areas during flood events and may also have positive effects on the reduction of nutrients. Pressures on wetlands are to be considered as significant and need to be addressed by measures where they are impacting negatively the water status of adjacent water bodies.

Vision

The ICPDR's basin-wide vision for is that floodplains/wetlands in the entire DRBD are re-connected and restored. The integrated function of these riverine systems ensure the development of self-sustaining aquatic populations, flood protection and reduction of pollution in the DRBD.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ In the 1st DRBM Plan, the number and area of wetlands/floodplains with the potential to be re-connected to the Danube River and its tributaries, have been identified and measures for the re-connection were agreed and afterwards implemented.
- ⇒ For the 2nd DRBM Plan, efforts will be continued and further measures will be identified for the protection and conservation of existing and the restoration of wetlands/floodplains with reconnection potential to ensure biodiversity, the good status in the connected river, flood protection and pollution reduction.
- ⇒ To determine the implementation steps for restoration and reconnection of lost floodplains and wetlands along the Danube River and its tributaries, a priority ranking needs to be developed and introduced taking flood retention, nutrient reduction, biodiversity conservation objectives and wetland/floodplain re-connection potentials into account.

4.1.4.3 Hydrological alterations

The issue:

Hydrological alterations impact the status of water bodies inter alia due to alterations (increase or reductions) of flow velocities and the flow regime or alterations in quantity and flow dynamics of rivers. Impoundments⁸, water abstraction and hydropeaking⁹ are key pressures that can require measures on the basin-wide scale.

Vision

The ICPDR's basin-wide vision for hydrological alterations is that they are managed in such a way, that the aquatic ecosystem is not influenced in its natural development and distribution.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ In the 1st DRBM Plan, information on the hydrological alterations in the DRBD was collected and measures agreed to be implemented by 2015 in order to address this pressure type. Regarding

⁸ Impoundments are river sections with reduced natural flow velocities caused by artificial transversal structures. For the 1st DRBM Plan information was collected for impoundments with a length of at least more than 10 km for the Danube and more than 1km for the tributaries during low flow conditions.

⁹ Hydropeaking is the artificial water level fluctuation from storage hydropower plants. For the 1st DRBM Plan information was collected for water level fluctuations of more than 1m/day or less in the case of known/observed negative effects on biology due to hydropeaking.

hydropeaking, research projects are ongoing since the knowledge about restoration measures which increase the ecological situation significantly is considered to be generally low.

⇒ For the 2nd DRBM Plan, the following actions are foreseen:

- Impoundments: Most of the impounded water bodies are designated as heavily modified water bodies where the good ecological potential (GEP) has to be achieved. Due to this fact measures to improve the hydromorphological situation in order to achieve and ensure the GEP will be required in many cases.
- Water abstractions: Abstractions of water can alter the quantity and flow dynamics of rivers and therefore negatively impact water status. Further measures will be taken in order to ensure the discharge of ecological flows so that the biological quality elements are in good ecological status respectively good ecological potential.
- Hydropeaking: Most of the water bodies affected by hydropeaking are designated as heavily modified water bodies where the good ecological potential (GEP) has to be achieved. Therefore, the management objective foresees measures on the national level to improve the situation to achieve and ensure the GEP. Hydropeaking and its effect on water status is a very complex issue. Therefore, further respective investigations and scientific studies are needed to increase the knowledge on the relationship of pressure, impact and biological reaction and to define cost-effective mitigation measures.

4.1.4.4 Future infrastructure projects

The issue:

Future infrastructure projects may, next to already existing hydromorphological alterations, have additional negative impacts on water status which are in need to be addressed accordingly.

Vision

The ICPDR's basin-wide vision for future infrastructure projects is that they are conducted in a transparent way using best environmental practices and best available techniques in the entire DRBD – impacts on or deterioration of the good status and negative transboundary effects are fully prevented, mitigated or compensated.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ The 1st DRBM Plan identified that for new infrastructure projects, it is of particular importance that environmental requirements are considered as an integral part of the planning and implementation process right from the beginning. In this regard, the intention was expressed to develop respective processes/guidance. Such processes are ongoing and have been launched for the navigation sector (Joint Statement from 2007), hydropower (Guiding Principles) and efforts are ongoing towards a coordinated implementation of the WFD and FD.
- ⇒ For the 2nd DRBM Plan, the list of future infrastructure projects requiring an SEA/EIA and/or having a transboundary effect will be updated.
- ⇒ Efforts towards integration between different sectors, i.e. water management, navigation, hydropower and flood protection, will be continued.

4.2 Groundwater

4.2.1 Alterations of groundwater quality

The issue:

Groundwater is the major source of drinking water in the Danube River Basin and is often connected with the adjacent terrestrial ecosystems, therefore the demand on its quality is high. Pollution by nitrogen compounds (especially nitrates) from diffuse sources is the key factor affecting the chemical

status of groundwater bodies in the Danube River Basin. The major sources of this diffuse pollution are the agricultural activities, non-sewered population and urban land use.

Vision

The ICPDR's basin-wide vision is that the emissions of polluting substances do not cause any deterioration of groundwater quality in the Danube River Basin District. Where groundwater is already polluted, restoration to good quality will be the ambition.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ The 1st DRBM Plan foresaw reduction of nutrient loads entering groundwaters through the implementation of the EU Nitrates Directive and the EU Urban Wastewater Treatment Directive (UWWTD). Furthermore, the measures applied for surface waters were expected to help achieving good chemical status of groundwater bodies as well.
- ⇒ The reduction of pollution by nitrates will be mainly accomplished by construction of UWWTPs and sewer systems, introduction of nitrate reduction action programmes and the IPPC-related measures.
- ⇒ An appropriate national regulatory framework ensuring prohibition of direct discharge of pollutants into groundwater proved to be an effective tool for protecting groundwater quality. Efforts will have to be taken in making sure that such framework will be effectively implemented in all ICPDR Contracting Parties
- ⇒ Further actions are needed to prevent significant losses of pollutants from technical installations and to reduce the impact of accidental pollution incidents by applying appropriate safety measures.

4.2.2 Alterations of groundwater quantity

The issue:

Next to the production of drinking water, groundwater is subject to other uses such as industry, agriculture, spa and geothermal energy. Groundwater quantity in the Danube River Basin is affected by groundwater abstraction for these uses. Furthermore, groundwater dependent terrestrial and associated aquatic ecosystems not only depend on groundwater quality but also on groundwater quantity. Therefore, groundwater use has to be appropriately balanced and should not exceed the available groundwater resource.

Vision

The ICPDR's basin-wide vision is that the water use is appropriately balanced and does not exceed the available groundwater resource in the Danube River Basin District, considering future impacts of climate change.

Preliminary identification of actions and coordination requirements for the basin-wide level

- ⇒ To ensure balanced groundwater use the registers of groundwater abstractions are in use in those Contracting Parties which share the aggregated transboundary groundwater bodies of basin-wide importance. The measures addressing poor quantitative status include among others licensing of domestic wells, construction and rehabilitation projects, demand management measures, promotion of adapted agricultural production such as low water requiring crops in areas affected by droughts, and construction designs for new groundwater sources
- ⇒ In future RBM planning periods the use of appropriate controls over the abstraction of fresh surface water and groundwater and impoundment of surface waters (including the use of registers of water abstractions) must be put in place in all ICPDR Contracting Parties.
- ⇒ For proper planning of the balanced groundwater use a better understanding of the transboundary groundwater systems is needed. This requires the development of harmonized conceptual models for particular groundwater bodies.

-
- ⇒ The expected development of future water demand and of the impacts of climate change have to be taken into account when identifying water exploitation and protection strategies.
-

5 Outlook

This **Interim Overview on the Significant Water Management Issues in the DRBD** was published in December 2013 and therefore two years before the deadline for the finalisation of the 2nd DRBM Plan in 2015.

The document is made available to the public, allowing for **six months to comment in writing until June 2014** in order to allow for active involvement and consultation. Following, the document will be revised based on the feedback received and endorsed by the ICPDR in December 2014.

This process aids the development of the 2nd DRBM Plan by 2015 based on the issues outlined in this document and comments received.