



# The Second Assessment of Transboundary Rivers, Lakes and Groundwaters: Status and Finalization

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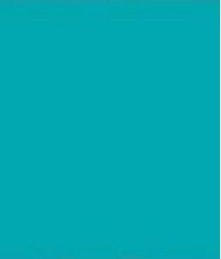
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# Outline

- Progress in the preparation of the second Assessment since July 2010
- Main conclusions
  - Central Asia
  - Western Europe
  - Eastern and Northern Europe
  - Caucasus
  - South-Eastern Europe



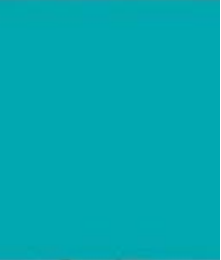
# Process of preparation

- Workshop on Western and Central Europe (8-10 February 2011, Budapest)
- Workshop on Central Asia (13-15 October, Almaty, Kazakhstan)
- Special session of the WGMA (15-16 December 2011, Bratislava)
- Workshop on Eastern and Northern Europe (27-29 April 2010, Kiev)
- Workshop on the Caucasus (8-10 December 2009 in Tbilisi)
- Workshop on South-Eastern Europe (18-20 May 2009 in Sarajevo)



# Production

- Agreements with consultants/partners to:
    - Translate text into Russian
    - Produce surface waters maps and graphs
    - Produce groundwater maps
    - Edit text
    - Produce text and maps of the executive summary
    - Layout out publications
    - Print
- => Deadline for inputs 20 May 2011



# Western and Central Europe

## Background and setting

- Water management dominated by the EU WFD
- Cooperation is most advanced, including on transboundary wetlands <= historical reason, economic development, navigation



# Western and Central Europe

## Legal, policy and institutional frameworks for transboundary cooperation

- Strong legal framework for water management and pollution control
- IWRM well established => RBMPs
- Integration of water quantity and water quality needs to be strengthened
- Slower identification of groundwater bodies, in particular of transboundary ones
- WFD not enough for transboundary cooperation
- Many examples of effective cooperation at multilateral and bilateral levels, including on wetlands



# Western and Central Europe Monitoring

- WFD envisages consistency of approach but still many differences and problems of comparability and inter-calibration
- WFD required changes in monitoring => comparability with historical data?
- Monitoring of hydromorphological characteristic?



# Western and Central Europe

## Main problems, impacts and status

- Efforts to reduce point source pollution: nutrients, BOD, hazardous substances
- Pressure from agriculture dominant: pollution and (over) abstraction (including of groundwater)
- Point sources: landfills, mining, untreated waste waters, urban environment => more local
- Hydromorphological changes major pressure = > 16% of surface water bodies heavily modified or artificial
- Ecological impacts: loss of biodiversity, disruption of migration





# Western and Central Europe

## Climate change

- Current climate variability: growing floods and droughts
- Significant changes in yearly and seasonal water availability (differences north/south)
- Impacts on water quality
- Changes in land use, irrigation demand
- Impacts on other sectors: navigation, hydropower generation
- Highest potential for adaptation: progress at national and transboundary level



# Western and Central Europe Response

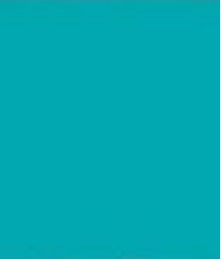
- From water supply management to water demand management
- Growing attention to water quantity aspects but still existing incentives for agriculture (pricing) discourage water savings
- More efforts needed to reduce water losses
- Investments in water treatment plants
- Efforts to reduce pollution from agriculture (Nitrate Directive)
- Restoring river hydromorphology remains a challenge but ongoing ecosystems restoration



# Western and Central Europe

## The way forward

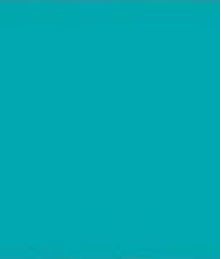
- Recent efforts in environmental policies have brought fruits but long-term political commitment is needed
- Need to strengthen the integration of European policy and avoid conflicts with sectoral policies
- Need to address climate change impacts and change in land-use
- Strengthen transboundary cooperation for effective implementation of EU WFD



# Central Asia

## Background and setting

- Differences in socio-economic development and availability of resources
- High dependence on transboundary waters but no effective regional framework for cooperation and conflict between uses
- Security and stability risks
- Sectoral and economic interests dominate over environmental concerns



# Central Asia

## Legal, policy and institutional frameworks for transboundary cooperation

- Weakness of the cooperation framework for the Aral Sea Basin, some positive developments for other basins
- IWRM not applied, neither at national nor at transboundary level, but some steps in the right direction
- GW management has low priority



# Central Asia

## Monitoring

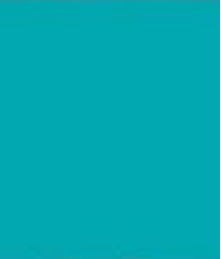
- Weak monitoring and assessment
- Monitoring of water quality almost non-existent
- No effective exchange information
- Gaps in monitoring groundwaters, glaciers and snow cover
- Weakness of forecasts



# Central Asia

## Main problems, impacts and status

- Man challenge: how to use water resources taking into account countries interests and ecosystem needs
- Agriculture biggest consumptive water user => desertification and land degradation in Aral Sea
- Hydropower important and growing sector
- Safety of more than 100 large dams due to ageing and inadequate maintenance
- Legacy of industrial pollution of Soviet era
- Untreated or insufficiently treated urban/municipal wastewaters



# Central Asia

## Climate change

- Glacial systems are decreasing in size and volume
- Predicted increased aridity and evapotranspiration => increased irrigation requirements
- Knowledge base needs to be strengthened
- Adaptation still at the planning stage





# Central Asia

## Responses

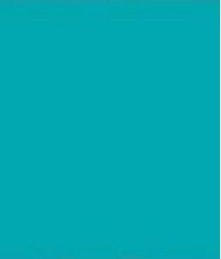
- Reform of national water legislation towards IWRM
- Bilateral cooperation agreements on shared water resources and recognition of the need to strengthen regional framework
- Some cooperation on development water infrastructure, their maintenance and security
- Some efforts to increase water efficiency



# Central Asia

## The way forward

- Strengthen transboundary cooperation, including its legal and institutional basis
- Involvement of non-UNECE countries => entry into force of the amendments to the Water Convention
- Improve water efficiency, develop more effective irrigation systems
- Water, ecosystems, land management and overall sustainability
- Monitoring needs to be improved as well as climate change research and cooperation



# Caucasus

## Background and setting

- History in the Soviet Union influences the institutional and legal setting; recovery from environmental degradation
- Past & unsolved political conflicts as obstacle for transboundary cooperation; more political willingness needed for progress
- Economic development priority, has implications to water and environmental framework



# Caucasus

## Legal, policy and institutional frameworks for transboundary cooperation

- IWRM in general not applied but positive progressive approximation towards WFD; the Water Convention and Tehran Convention
- A lack of formal cooperation in the Kura basin, a legal framework and joint body lacking; few bilateral agreements (low level of implementation, AZ-GE negotiations encouraging)
- GW management not very advanced



# Caucasus Monitoring

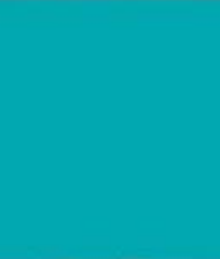
- After a post-Soviet decline in monitoring, some improvement in recent years
- Slow progress in biological monitoring, weak integration of groundwater and surface water
- Problems in quality assurance in sampling, processing & analytics and data comparability
- No effective exchange information, low cooperation outside international projects



# Caucasus

## Main problems, impacts and status

- Agriculture the biggest water user
- Pollution from wastewater discharges (organic, bacteria) a widespread problem
- Pollution from both controlled and uncontrolled dumpsites
- Some basins affected by heavy metal pollution from mining; mining less of a pressure now than earlier
- Pressures from development of hydropower
- Ecological concerns: overfishing



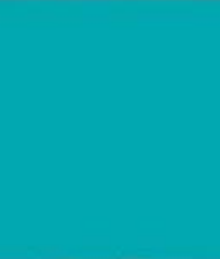
# Caucasus Climate

- Decrease of precipitation and run-off are predicted
- Both consumptive and non-consumptive water uses are expected to increase
- Inferred vulnerability of agriculture sector
- More research is needed and more cooperation
- Adaptation measures only start to be considered



# Caucasus Responses

- Moving to progressive water legislation and IWRM
- Accompanying proper enforcement and institutional reforms are necessary to make a difference
- Investment in wastewater treatment insufficient, but progress is made







# Caucasus

## The way forward

- Greater political commitment to transboundary cooperation
- Water use is expected to increase => need to improve water management in general, water use efficiency and water saving.
- Need to balance economic development and environmental protection to ensure long-term sustainability
- Reduce pollution from point and diffuse sources
- Coordination, synergies and long-term sustainability of international assistance projects

# Eastern and Northern Europe

## Background and setting

- Differences EU/non-EU: water resources management frameworks, socio-economic conditions, transboundary cooperation
- EU legislation influences across the EU border
- High dependence on transboundary water resources



# Eastern and Northern Europe

## Legal and institutional framework

- Transboundary cooperation dates from 1990s: some bilateral agreements are being revised to take into account provisions of WFD and IWRM, still many bottlenecks, in particular across the EU border.
- Growing scope of cooperation but in many cases too sectoral and not covering the whole basin
- Need to strengthen institutions for cooperation, especially in the East. Danube good example.
- In EU countries IWRM advanced based on WFD, in the East approximation to EU WFD thanks to donor support



# Eastern and Northern Europe

## Monitoring

- Where joint bodies are established better data exchange. Harmonization of approaches remains a challenge in many cases
- Difficulties across the EU border  $\leq$  different approaches
- Weak exchange of data between different national authorities
- Physical-chemical monitoring emphasized; biological monitoring less developed
- Flooding has drawn attention to flood prediction need to cooperate with neighbouring countries. Encouraging examples of such cooperation.



# Eastern and Northern Europe

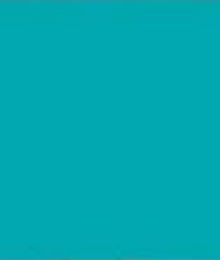
## Main problems, impact and status

- Improvement of water quality observed in the past decade,
- Discharges of non-treated or insufficiently treated wastewaters a major wide-spread pressure
- Agriculture another major pressure (quantity and quality)
- Industrial pollution variable (food processing, pulp and paper, chemical, metallurgical, mining)
- Assessment of hydromorphological pressures uneven



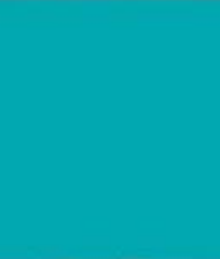
# Eastern and Northern Europe Climate

- . Due to the large N-S extent of the subregion, predicted impacts vary.
- Some predictions of increase in the frequency and intensity of extreme events, even though there are significant regional and local variations.
- A better quantification of predicted impacts on water resources and a better understanding about their spatial distribution is needed.



# Eastern and Northern Europe Response

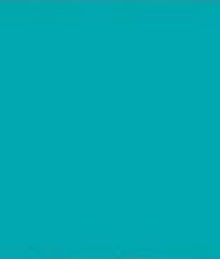
- In the EU part, transposition of EU WFD and aim to reach good status by 2015
- Reducing pollution from waste water is constrained by limited availability of financing for the substantial investments required
- Nutrients from agriculture are also addressed (but less effectively)
- Efforts to strengthen transboundary cooperation, new bilateral agreements and initiatives
- Assistance projects to improve IWRM, cooperation, joint monitoring but concerns of sustainability



# Eastern and Northern Europe

## The way forward

- Benefits of institutionalizing transboundary cooperation should motivate further efforts
- Considerable number of infrastructure projects planned and prepared with implications to the status
- Despite efforts, pressures on water quality will not decrease quickly
- Need to increase access to sanitation, especially in rural areas => health benefits

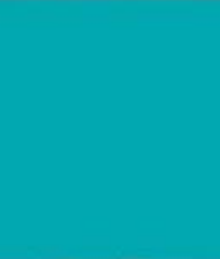




# South-Eastern Europe

## Background and setting

- Transboundary basins cover about 90 per cent of the region
- EU Accession process is main driver in the region



# South-Eastern Europe

## Legal and institutional framework

- Considerable progress in lawmaking but deficiencies in implementation and enforcement.
- Development in the legal framework, importance of EU approximation (in particular WFD) but uneven level of advancement
- EU WFD and the UNECE Water Convention are the two main regional frameworks that support water management and cooperation. Their consistency and complementarity a great asset
- Uneven level of cooperation: some very good examples (Sava, promising Drin) while many basins in which there are no agreements, or very old or non-implemented one. Behind difficulties: low political priority, finances, institutional capacity, conflicting interests



# South-Eastern Europe

## Monitoring

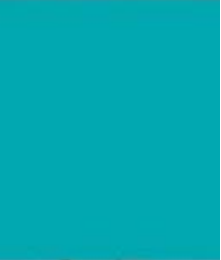
- All countries have a certain level of monitoring of surface waters. quality or quantity monitoring needs improvement or still needs to be established
- Less information available about aquifers especially on quality
- Opportunities of reform to improve coordination between sectors and strengthening monitoring
- EU Member States: monitoring, assessment and reporting activities are mostly steered by the obligations of EU water-related Directives. Implementation variable
- In most transboundary basins: information exchange still very weak and information produced in riparian countries is not harmonized. Joint monitoring & assessment almost do not exist



# South-Eastern Europe

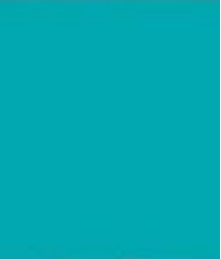
## Main problems, impact and status

- Agricultural pressures
- Impacts of economic development (hydropower and tourism); Tourism a pressure but hopefully also a positive incentive
- insufficiently treated and/or untreated wastewater: despite Investments still areas/cities with very low treatment and collection
- Mining: risk of potential accidents, including those caused by extreme weather events
- Climate change impacts: one of the most affected regions with growing scarcity
- Challenges in the management of karstic groundwater



# South-Eastern Europe Climate

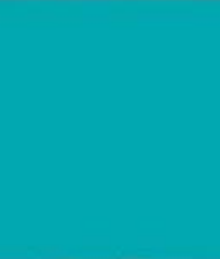
- Among those subregions projected to be most severely hit by climate change
- Decreasing summer rainfall, average run-off and low summer flows are projected, as well as increasing frequency and severity of droughts, the risk of floods, and other extreme weather events.
- This is expected to result in an increased water availability/demand gap, the deterioration of water quality as a result of decreased flows as well as in other important impacts such as damage to human health and settlements, soil degradation, and loss of inhabitable and arable land and natural habitats
- Economic activities depending on water will be adversely affected. which will exacerbate the already demanding challenge of balancing competing demands among different uses



# South-Eastern Europe

## Responses

- All countries, at a different pace, are making steps towards basin management plans: 1) EU countries: preparation of RBMPs (EU WFD); 2) Non EU MS: Croatia, FYR of Macedonia; and 3) the Sava Commission
- Good agricultural practices to address overuse of water, nutrient & pesticide pollution etc. needed or such measures have been implemented
- □ Wastewater collection and treatment systems and solid waste management: in EU MS in accordance to the respective Directives; efforts also made in non-EU countries. Significant amount of financial resources needed - a major challenge
- Protection zones for drinking water have been established in many cases, but relevant measures are reported as needing improvement for the majority of the aquifers (efficiency of measures varies)



# South-Eastern Europe

## The way forward

- Transboundary water cooperation needs to be strengthened and not only rely on external assistance + strengthen joint bodies + improve exchange of information and joint monitoring and assessment
- Strengthen intersectoral cooperation and RBM plans, and application of IWRM Approximation to the EU: need to take advantage of it and accelerate it, including application of EU laws (in particular waste water treatment), strengthen enforcement
- Dams: Planning of new infrastructure and operation of the existing ones should take into account the upstream-downstream needs and considerations, including possible negative impacts on the ecosystem services and economic activities as well as the evolving climatic conditions
- Agriculture and climate change: improve water efficiency

