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

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Scope

- Main conclusions
  - Caucasus
  - Eastern and Northern Europe
- Progress in the preparation of the second Assessment since November 2009
- Plans for finalization

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Caucasus
Background/setting

- Natural water availability variable, but scarcity aggravated by difficulties and deficiencies in water management
- 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

Caucasus

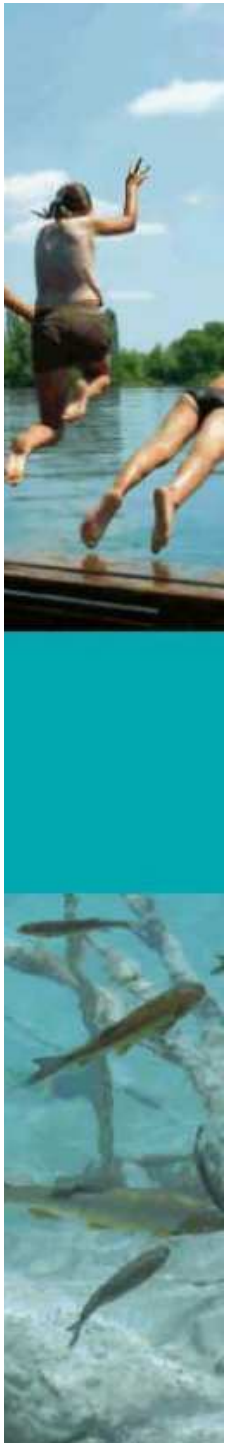
Legal, policy and institutional frameworks for transboundary cooperation

- Progressive approximation towards WFD; other international frameworks include the Water Convention (ratification at different stages) and Tehran Convention
- A lack of formal cooperation between all countries in the Kura basin, a legal framework and joint body lacking; few bilateral agreements (low level of implementation, AZ-GE negotiations encouraging) and joint commissions exist

Caucasus

Legal, policy and institutional frameworks for transboundary cooperation (*cont.)*

- IWRM not applied in general, but positive developments with current/recent water sector reform & new water codes, some basin plans to be initiated
- Groundwater important , esp. in rural areas; groundwater management not integrated with surface waters & not very advanced
- Economic development priority, has implications to water& env.law/regulation



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
- No systematic control of wastewater
- No effective sharing of the few hydrometric stations and no regular exchange of operative flow data

Caucasus
Monitoring *(cont.)*

- A lack of consistency in methods limits comparability; WFD and int. projects support harmonization
- Bilateral monitoring cooperation established between AZ-IR, AM-IR, AM-TR & GE-TR; more needed
- Substantial donor assistance but coordination is a challenge; creation of a joint body would improve, also continuity and effectiveness

Caucasus

Main problems, impacts and status

- Agriculture the biggest water user; substantial water losses in irrigation agriculture; diffuse pollution and salinization among related problems
- 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

Caucasus

Main problems, impacts and status

- Water-related infrastructure, e.g. for hydropower generation, getting developed; concerns about resulting changes in flow regime and sediment transport
- Capacity to predict hydrological extremes probably reduced due to reduction hydrometeorological monitoring activities since the Soviet time
- Drying up of rivers
- Little consideration of ecological flows; other ecological concerns include over-fishing

Caucasus
Climate (predictions)

- With inherent uncertainty and some inconsistency of trends, most of the countries seem to predict a decrease of precipitation and run-off. Some countries report also reduced groundwater recharge and/or level to be predicted. Some indication of increased summer temperatures in observations reported.
- Both consumptive and non-consumptive water uses are expected to increase (TR). Inferred vulnerabilities to cc mainly relate to agriculture sector, its importance for the economy (AM) and the severity of impacts on landuse, cropping patters and irrigation needs (IR)

Caucacus
Climate (study cooperation & adaptation)

- More comprehensive and collaborative study of effects of climate change is needed; considering data requirements & extent of work, subregional cooperation very beneficial
- Some cooperation over regional climate model runs, involving e.g. data exchange (AM, AZ, GE); work on future climate scenarios on-going
- Adaptation measures only started to be considered; Turkey has identified adaptation strategies, Iran developing its national plan

Caucasus
Responses

- Moving to progressive water legislation – illustrated by Armenia's water code – but accompanying proper enforcement and institutional reforms are necessary to make a difference. EU directives and Water Convention provide elements.
- Investment in wastewater treatment insufficient, but progress is made: programme to rehabilitate Tbilisi & Rustavi plants (GE), wastewater collection & treatment infrastructure installed by TR

Caucasus
Responses

- Enforcement of environmental regulation is tightening in GE, with a reduction in violations
- Recent advances in legislation: TR has adopted a series of environmental laws. New environmental legislations in Iran are also expected to reduce impacts on water resources, e.g. from mining.
- No systematic flood zone mapping since the Soviet era; updating of technologies and approaches needed
- Gradual move to basin-based organization of water management (GE)

Caucasus
The way forward

- In some parts of the sub-region, water use is expected to increase, owing to economic development and population increase. Where experienced, water scarcity calls for improving water management in general, and improving water use efficiency and water saving.
- Knowledge base about predicted impacts of climate change needs to be strengthened. Agreement about models and scenarios for cc predictions supports the development of a common understanding , as basis for assessing adaptation needs.

Caucasus
The way forward

- Coordination and finding synergies in the activities supported by different donors is crucial. Response to priority needs of the countries should be ensured by the donors.

Eastern and Northern Europe
Legal and institutional framework

- A number of bilateral agreements in the eastern part are being revised to take into account provisions of WFD. All have also as basis the Water Convention.
- The countries that joined EU in the last enlargements have transposed WFD in their national legislation. Convergence plans for EU water-related directives are made in some of the non-EU countries.

Eastern and Northern Europe
Legal and institutional framework

- Preparation of river basin management plans is well defined with set milestones in the EU countries (WFD); in the east it has been influenced by donor support. Preparation of joint plans with co-riparians across the EU border on the Danube is positive.
- Importance of IWRM principles is acknowledged, but implementation in the eastern part is limited, hindered by e.g. national institutional problems

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Eastern and Northern Europe
Legal and institutional framework

- Basin level institutions (especially river commissions) are more established in the western part of the subregion, facilitating studies, joint plans etc. In the eastern part, river basin approach needs to be applied more vigorously: there are some basins in which there is no basin commission but are just covered by bilateral agreements.

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Eastern and Northern Europe
Legal and institutional framework

- While setting up river basin councils to advice water management authorities is welcome, in the case of transboundary basins their establishment at national level is not sufficient. There are indications of good intentions to invite co-riparians' representatives.
- Expanding representation in the councils with e.g. NGOs and professional organizations would strengthen their expertise, but limited funding for the councils to meet is a constraint.

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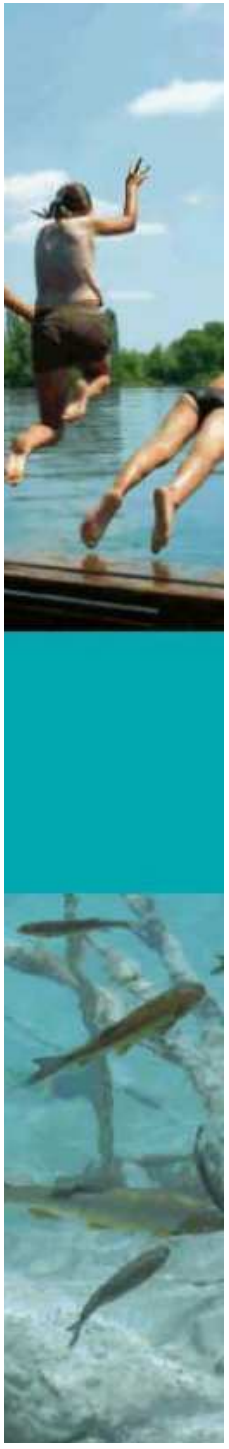
Eastern and Northern Europe
Monitoring

- Harmonizing of monitoring programmes and indicators/criteria used for assessing the status of transboundary basins important for reaching a common understanding as basis for measures. This remains as challenge even where data exchange is well established.
- Data exchange and harmonization of approaches need to be further strenghtened, in particular in basins where the framework for transboundary cooperation is lacking or weak.



Eastern and Northern Europe
Monitoring (*cont.*)

- In the eastern part of the subregion and across the EU border, the different water quality systems make it difficult to compare and agree about water quality status. WFD – which largely sets the monitoring requirements for EU countries - will over time increase harmonization.
- Physical-chemical monitoring emphasized; biological monitoring less developed.
- A number of countries in the eastern part are preparing or implementing a new system of surface water quality standards (some current systems still have MACs as basis), commonly with international project support.

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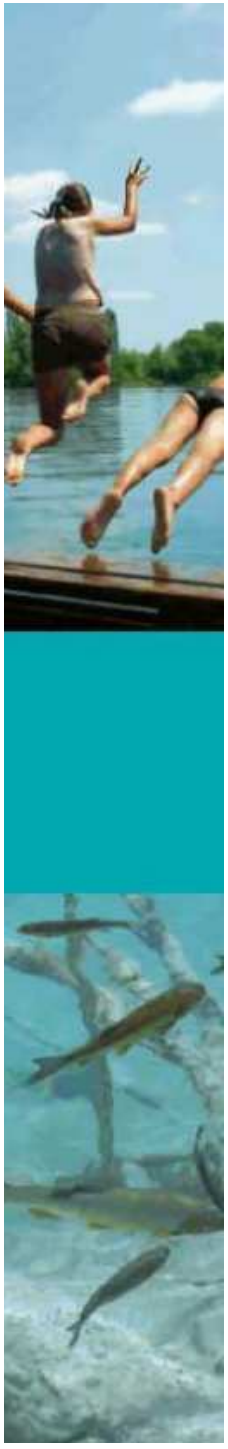

Eastern and Northern Europe
Monitoring (*cont.*)

- Flooding in recent years has drawn attention to the state of flood prediction and increased awareness about the need to cooperate with neighbouring countries. There are some encouraging examples of such transboundary cooperation.
- Use of information technology and GIS in monitoring and data management is increasing; related capacity needs strengthening.

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Eastern and Northern Europe

Main problems, impact and status

- Improvement of water quality has been observed in the past decade, influenced both by implementation of EU's water-related directives and also by reduced economic activities
- Discharges of non-treated or insufficiently treated municipal and industrial wastewaters is a major pressure and wide-spread. Addressing it is constrained by limited funds for upgrading aged infrastructure, especially in the east; in the EU it has driven by Urban Wastewater and Nitrates directives – with substantial cost and extensions to comply. Less pressure from population in the North.

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Eastern and Northern Europe
Main problems, impact and status (*cont.*)

- Agriculture is another major pressure factor in many transboundary basins (organic and nutrient pollution, water use), and practices need to be improved to reduce the impact. In the Danube, pollution by hazardous substances is a significant issue, pesticides among the their sources (including unauthorized ones).
- The impact from the diverse industries (food processing, pulp and paper, chemical, metallurgical etc) is variable, but includes heavy metal and hydrocarbon pollution. In some basins, mining is locally significant.

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Eastern and Northern Europe
Main problems, impact and status (*cont.*)

- Hydromorphological pressure components like interruption of river and habitat continuity have so far been systematically assessed on the Danube, where they are driven by mainly flood protection and hydropower generation. A third of the channels along the main course is either severely modified or totally modified. Assessing this also elsewhere, and in more detail, is recommended. Such changes together with other anthropogenic pressures affect negatively wetlands.

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Eastern and Northern Europe
Climate

- There are some indications in the light of historical data about mean air T increase, and an increase is predicted for the coming 50 years. 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, response measures are aimed at meeting the requirements of water-related directives, notably environmental objectives of the WFD, reaching a good status on waters by 2015. This influences also legislative revision and e.g. rethinking water quality classification system in the eastern neighbours. Addressing one of the key pressures and nutrient sources - urban wastewater discharges – is constrained by limited availability of financing for the substantial investments required.

Eastern and Northern Europe
Response

- Nutrient load reduction measures at basin level in the EU countries is mainly given direction to by the Nitrates Directive and to Urban Waste Water Directive, but the countries are also taking a range of supplementary measures. Practices especially in agriculture need to be improved and e.g. ICPDR has best practices recommendations to non-EU countries. Preparation of river basin management plans jointly helps coordination.

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Eastern and Northern Europe
Response

- Deterioration of the current situation of hydromorphological changes on the Danube should be prevented and measures taken to improve the situation. Basin approach needs to be applied to planning any hydrotechnical measures.
- Many problems are addressed in projects, but follow-up for sustainability is a concern

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Eastern and Northern Europe
The way forward

- Revisions to many bilateral agreements on transboundary waters are expected. The many benefits of institutionalizing transboundary basin level cooperation demonstrated by the operating basin commissions will hopefully motivate such efforts further.
- There is a considerable number of infrastructure projects planned and prepared on the Danube with implications to the status of the basin

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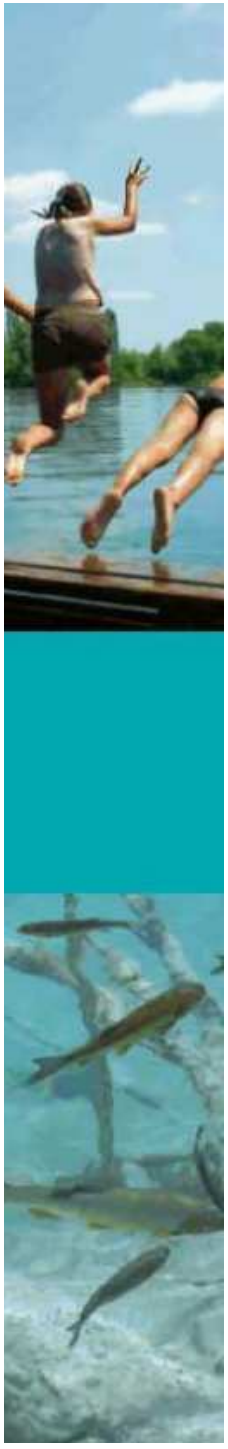

Eastern and Northern Europe
The way forward

- Despite the efforts made by the countries, some pressures on water quality - like untreated and poorly treated wastewaters – will not reduce quickly due to the sheer number of settlements/ agglomerations that do not have their treatment plants meeting the requirements
- Water and health issues seem to have a low priority; more effort should be made to address related problems

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Progress in the Assessment since November 2009

South-Eastern Europe

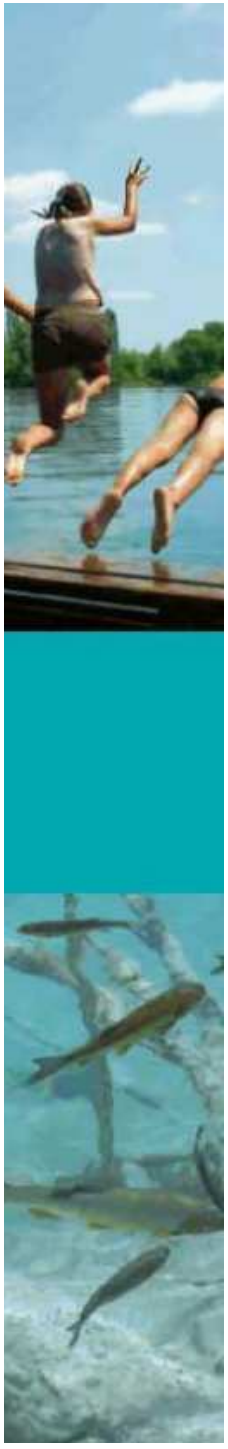
- Amendments and additions post-MoP5 incorporated to the draft assessment (discussed in WGMA)

Caucasus

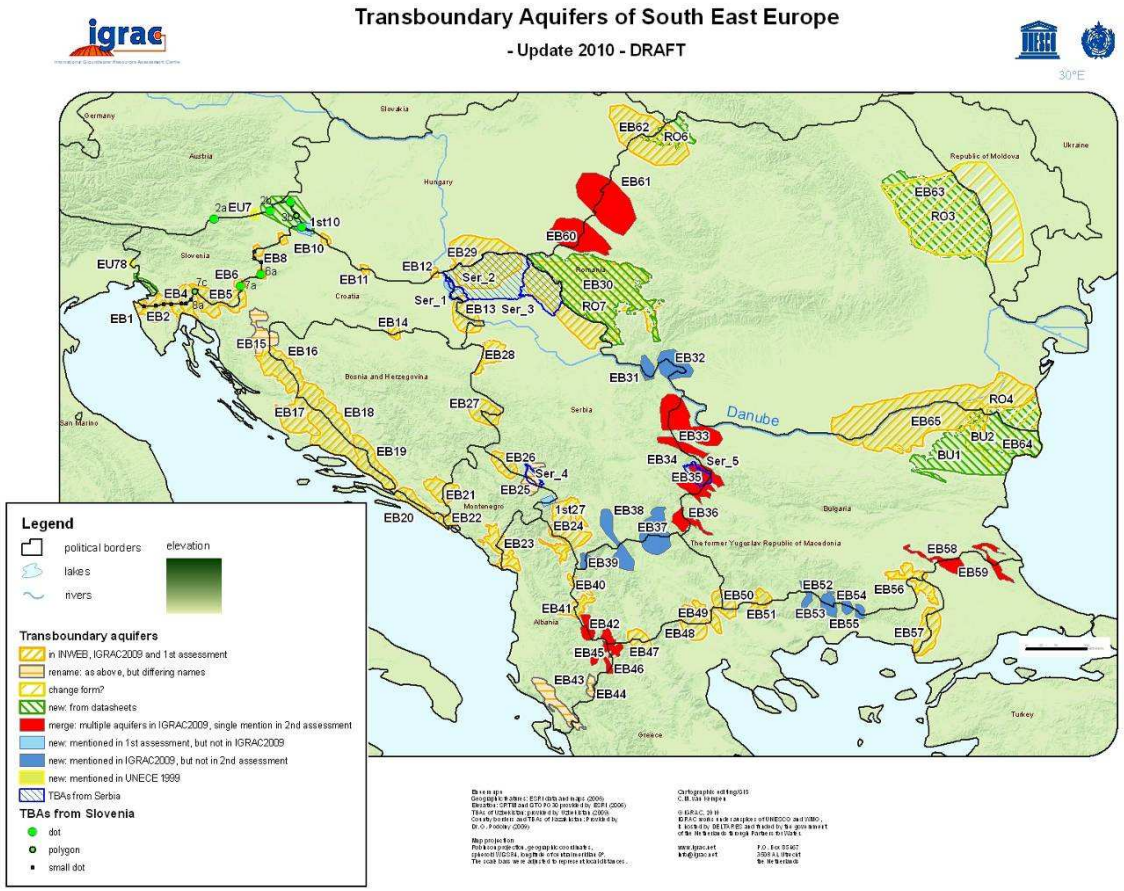
- 8-10 December 2009: subregional workshop on transboundary water management in the Caucasus (Tbilisi, Georgia)
- Draft assessments by basin and a summary presented for review by the countries

Eastern and Northern Europe

- 27-29 April 2010: subregional workshop on transboundary water management in the Eastern and Northern Europe
- A part of the datasheets received completed
- a draft summary presented for review by the countries



Inventory of transboundary aquifers: Draft map of South-Eastern Europe



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About the approach

- Subregional summaries
- A stand-alone Executive Summary to improve dissemination
- More content presented in the form of maps and graphs (expressive, adds to the effect of communication)
- Basin maps with accompanying graphs (landuse/land cover, population, discharges)
- Surface water and groundwater presented both in the assessment text and maps in an integrated way
- Figures provided by the countries used; if gaps remain in information necessary graphs > filled from selected datasets
- Selected thematic maps to be produced (some for use also in the Executive Summary)
- Proposals expected from countries for graphs and maps at basin level

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Prototype basin map: featuring the Sava as example

Gauging stations to link to discharges

Background map as in the 1st Assessment

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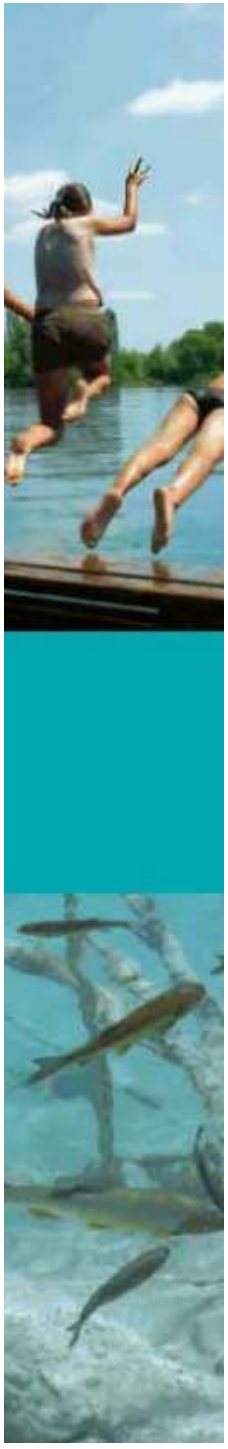
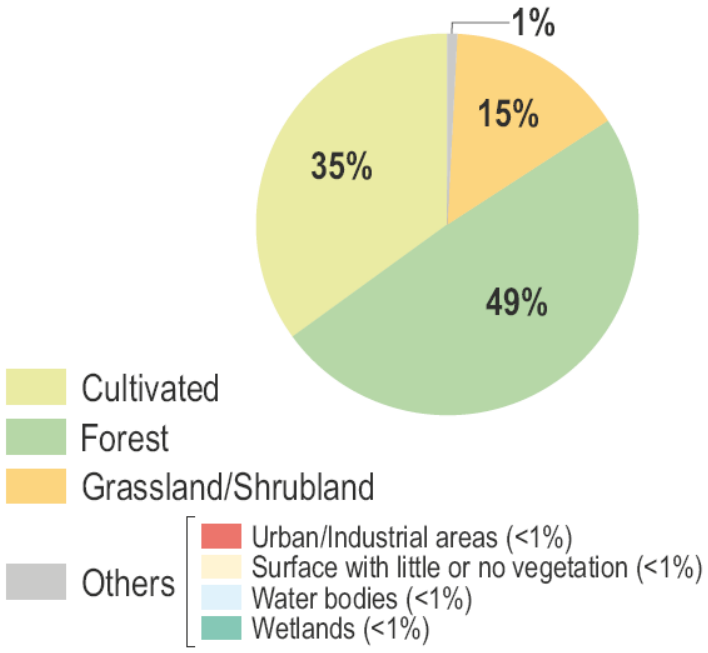
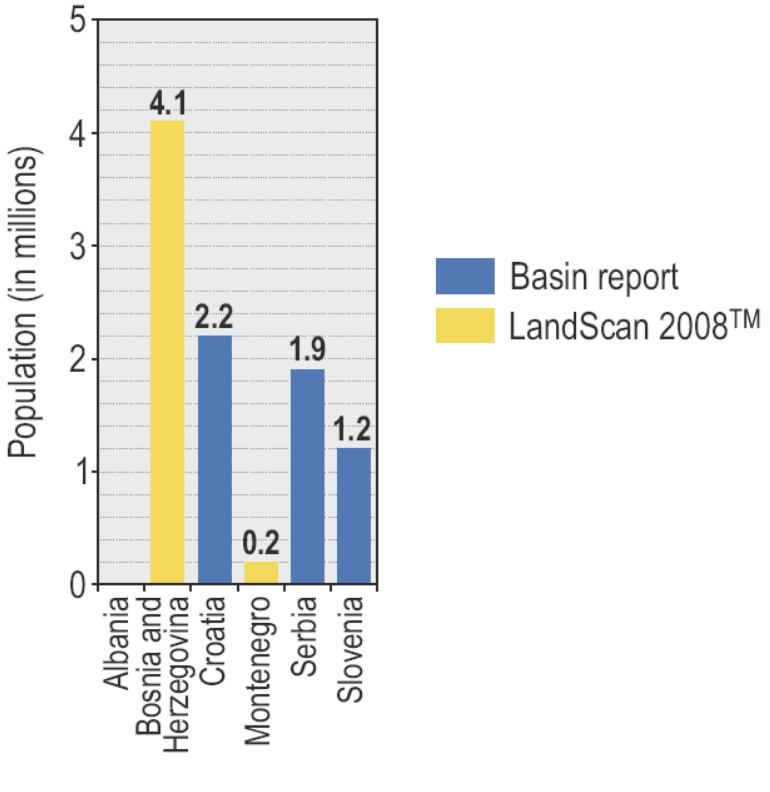
D. Del Pietro, UNEP/DEWA/GRID-Europe



Graphs accompanying the basin maps

Landuse/land cover and population





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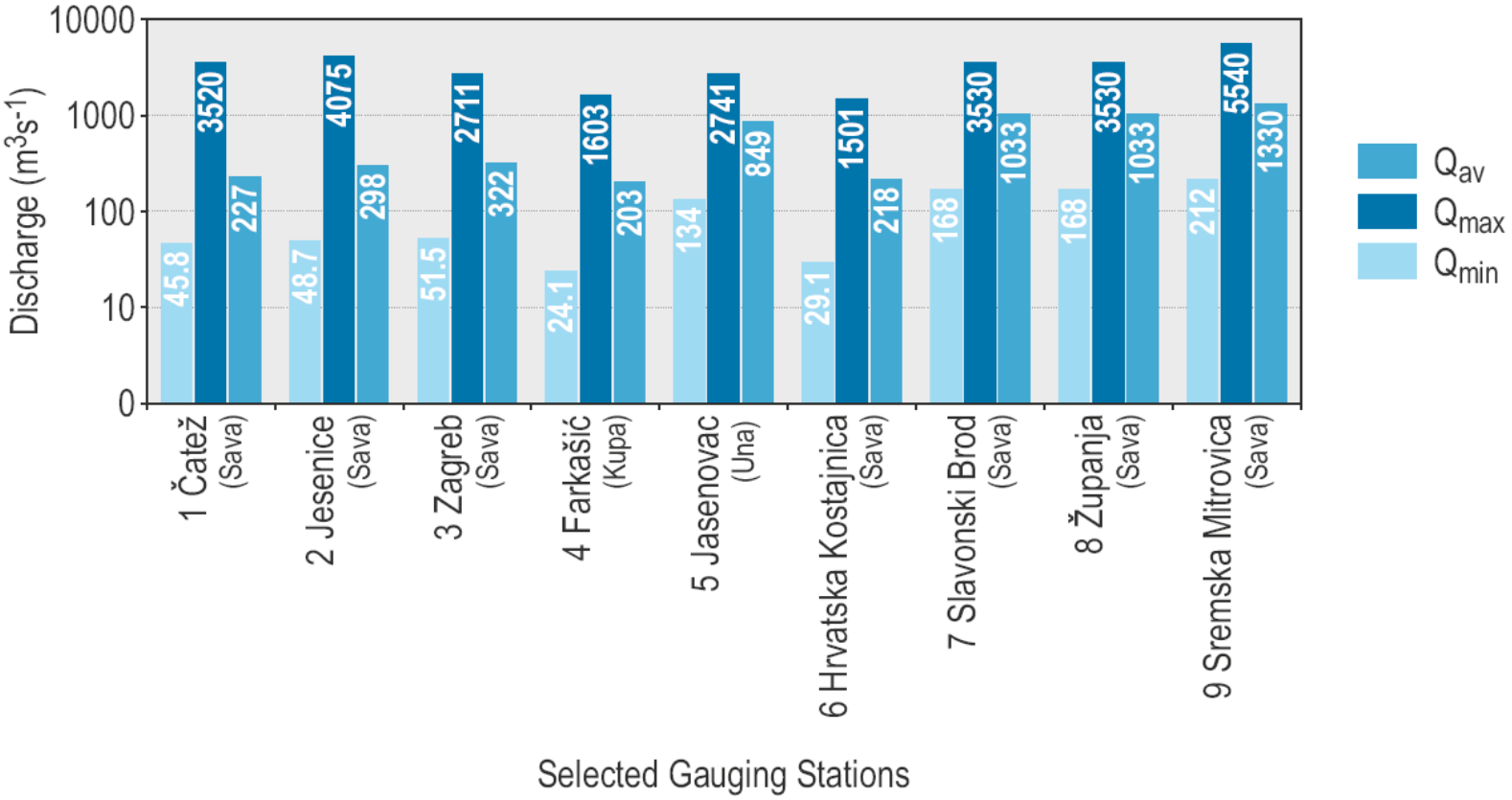
UNEP/DEWA/GRID-Europe

Graphs accompanying the basin maps (2)

Discharges: average, minimum and maximum



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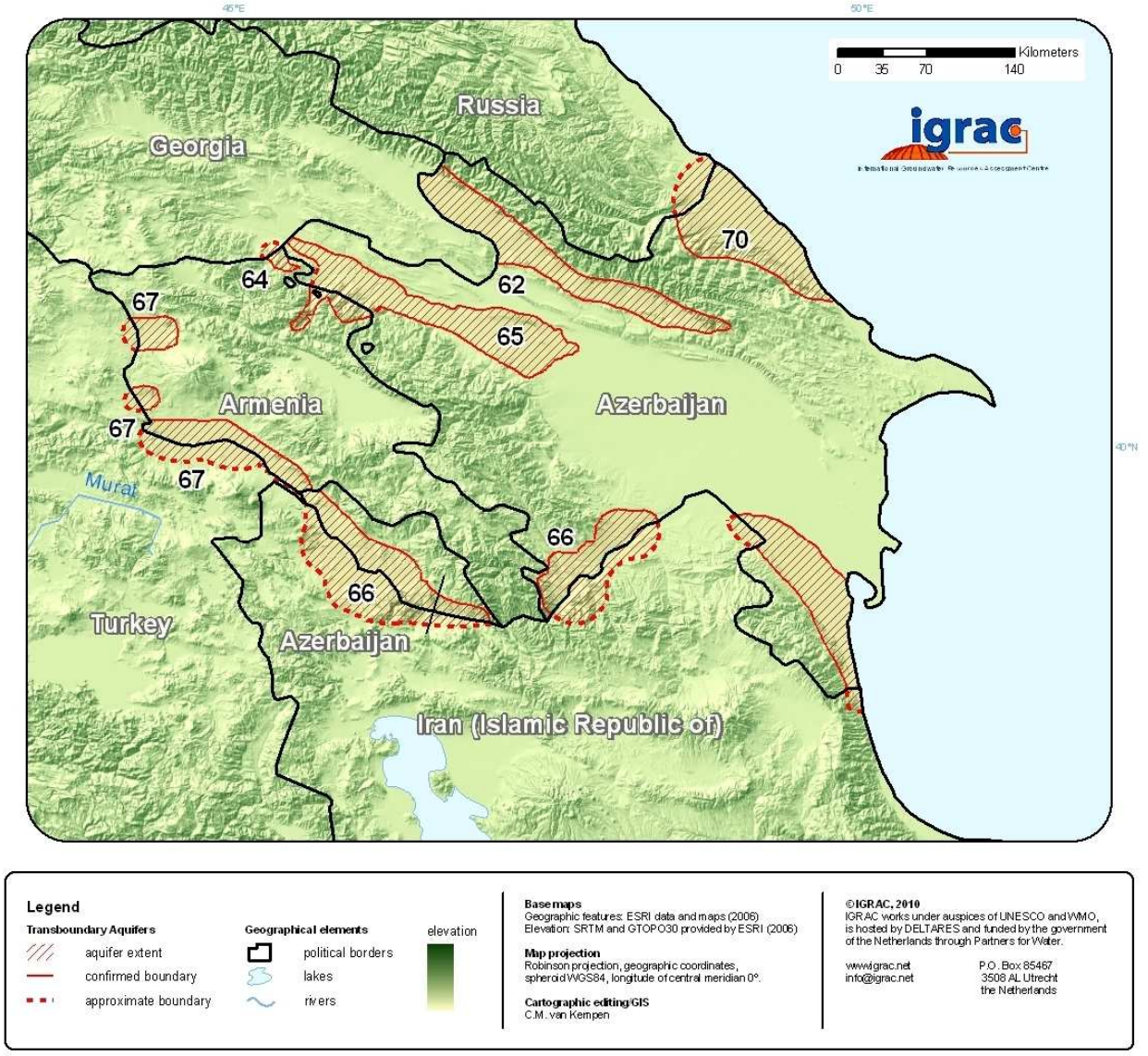
Transboundary aquifers



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Outline of contents (part A)

MAPS

- Surface waters and aquifers in a single map for each subregion
- Overview map of main transboundary surface waters and aquifers in the UNECE region (maybe split in more than one map)
- Possible thematic maps which may partly be the same for the Executive Summary

I. OVERVIEW/SUMMARY (text similar to the one of the executive summary also published separately)

II. OBJECTIVES AND SCOPE OF THE ASSESSMENT

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Outline of contents (part A, continued)

III. MAJOR FINDINGS OF THE ASSESSMENT

Presented by subregions, each having the following sub-sections:

- LEGAL, POLICY AND INSTITUTIONAL FRAMEWORKS FOR TRANSBOUNDARY WATER MANAGEMENT
- MONITORING OF TRANSBOUNDARY RIVERS, LAKES AND GROUNDWATERS
- MAIN PROBLEMS, IMPACT AND STATUS
- CLIMATE CHANGE AND ITS IMPACTS ON WATER RESOURCES
- RESPONSES
- THE WAY FORWARD
  - Trends and recommendations

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Outline of contents (part A, continued)

IV. ASSESSMENT TRANSBOUNDARY RIVERS, LAKES AND GROUNDWATERS
(grouped by recipient sea)

- Chapter 1: DRAINAGE BASINS OF THE WHITE SEA, BARENTS SEA AND KARA SEA
- Chapter 2: DRAINAGE BASINS OF THE SEA OF OKHOTSK AND SEA OF JAPAN
- Chapter 3: DRAINAGE BASIN OF THE ARAL SEA AND OTHER TRANSBOUNDARY WATERS IN CENTRAL ASIA
- Chapter 4: DRAINAGE BASIN OF THE CASPIAN SEA
- Chapter 5: DRAINAGE BASIN OF THE BLACK SEA
- Chapter 6: DRAINAGE BASIN OF THE MEDITERRANEAN SEA
- Chapter 7: DRAINAGE BASINS OF THE NORTH SEA AND EASTERN ATLANTIC
- Chapter 8: DRAINAGE BASIN OF THE BALTIC SEA

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Annexes

- Annex 1: Inventory of transboundary rivers, lakes and groundwaters
- Annex 2: Brief description of the water resources management framework in the countries
- Annex 3: Existing agreements related to the management of transboundary basins/water bodies
- Annex 4: Status of ratification of selected international agreements relevant to transboundary water management
- Annex 5: List of country codes
- Annex 5: List of acronyms and units of measurement
- Annex 6: Illustrations of transboundary aquifer types
- Other annexes as needed

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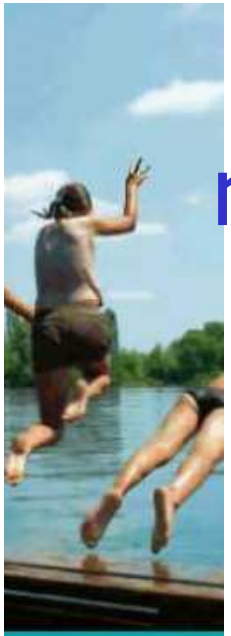

Draft outline of a section for a river basin/aquifer under part IV part B

I. General description of the basin
II. Hydrology and hydrogeology
III. Pressures
IV. Status and transboundary impacts
V. Response measures
VI. Future trends

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Outline of boxes on the assessment of transboundary wetlands with designated Ramsar sites part B

- I. General description of the wetland area
- II. Main wetland ecosystem services and supporting socio-economic services
- III. Biodiversity values of the wetland area
- IV. Pressure factors and transboundary impacts
- V. Transboundary wetland management

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Schedule for finalizing the assessment

- 30 July: countries send the pending datasheets completed and comments to the draft summary of Eastern and Northern Europe assessment
- 31 August: Caucasus countries send amendments and additions to the Caucasus basin assessments and the summary
- Central Asia assessment: September-December 2010
- Western and South-Western Europe: November 2010- April 2011
- By the end of 2010: Countries send their proposals for graphs to be included
- The countries will be contacted for the validation of basin and aquifer maps when draft versions become available
- Delineations of aquifers either as GIS shapefiles or as maps to be sent by the countries at the same time as other input; checking in parallel with the sub-regional assessments
- 4-6 May 2011: Review and endorsement of the sub-regional assessments, overview and the Executive Summary by the Working Group on Monitoring and Assessment
- Editing and translation of the text and finalization of the maps: May-July 2011; printing – summer 2011