PART II
OBJECTIVES AND SCOPE

OBJECTIVES

The Second Assessment has been developed under the auspices of the United Nations Economic Commission for Europe (UNECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). The Water Convention fosters sustainable management of shared water resources through stable and predictable cooperation. An important obligation for Parties to achieve the Convention's aims is to carry out, at regular intervals, joint or coordinated assessments of the conditions of transboundary waters and the effectiveness of measures taken to prevent, control and reduce transboundary impacts of their activities. Indeed, accurate assessments of the status of water resources, and the nature and magnitude of water problems, are essential for preparing proper policy actions at the local, national and transboundary levels.

The main objective of the Second Assessment is to provide an up-to-date overview of the state of transboundary waters and to identify joint priorities and challenges. This will improve the understanding of the problems and strengthen the knowledge base for identification and implementation of appropriate management measures to reduce transboundary impacts and improve the status of transboundary waters. The Second Assessment is intended to serve as a tool to inform, guide and stimulate further action by Governments, river basin organizations, the international community, including donors, and concerned non-governmental organizations.

Furthermore, the process of preparing the Second Assessment supported exchange of information on the status of waters and the management measures in place or planned. It allowed riparian countries to discuss and highlight needs in transboundary cooperation. The process of preparation of the Second Assessment included a series of subregional workshops which were important events to build capacity in the different countries and subregions and to promote transboundary dialogue and exchange. Also, submitting data for the Second Assessment provided the countries with an opportunity for self-assessment of water problems, available policies and management responses.

A joint assessment is also important to progressively harmonize approaches. This is all the more important in the transboundary context and in a region as broad as the UNECE one, where methods for water assessment and classification differ greatly between States — and not only between European Union (EU) members and non-EU countries. In order to reach a common understanding about the status of shared waters, the existing trends and the actions needed to improve the situation, the availability of reliable and comparable information is of the utmost importance. The preparatory process for the Second Assessment allowed for a discussion of the existing differences in monitoring and assessment systems, the deriving problems regarding comparability of data and the lessons learned from those riparian countries which have harmonized or made compatible their monitoring and assessment systems.

THE WATER CONVENTION

The Water Convention's central aim is to strengthen measures at the, national and transboundary levels to protect and ensure the quantity, quality and sustainable use of transboundary water resources — both surface waters and groundwaters. The Convention takes a holistic approach, based on the understanding that water resources play an integral part in ecosystems as well as in human societies and economies. Its commitment to integrated water resources management (IWRM) replaces an earlier focus on localized sources of pollution and management of separate components of the ecosystem. The Convention requires countries to fulfil certain obligations, from observing general principles to implementing concrete actions. These include:

- To prevent, control and reduce adverse transboundary impacts on the environment, human health and socio-economic conditions;
- To manage shared waters in a reasonable and equitable manner using the ecosystem approach and guided by the precautionary principle and the polluter-pays principle;
- To preserve and restore ecosystems;
- To carry out environmental impact assessments, draw up contingency plans, set water-quality objectives and minimize the risk of accidental water pollution.

The Convention requires Riparian Parties (Parties bordering the same transboundary waters) to enter into specific bilateral or multilateral agreements and to create institutions — joint bodies such as river and lake commissions — to meet these responsibilities. Riparian Parties also have other specific obligations. For example, they shall establish and implement joint programmes for monitoring the conditions of transboundary waters and, at regular intervals, carry out joint or coordinated assessments of the condition of transboundary waters and the effectiveness of measures taken to prevent, control and reduce transboundary impacts. Riparian Parties shall make the results of these assessments available to the public.

SCOPE

The Second Assessment follows in the line of the First Assessment (produced in 2007) and responds to the decision by Parties to the Water Convention to regularly develop regional assessments in order to maintain the status of transboundary waters in the UNECE region under scrutiny, benchmark progress and provide the basis for continuous bilateral and multilateral work under the Convention.

At the same time, the Second Assessment addresses information gaps and shortcomings of the First Assessment and is broader in scope. The following features distinguish the Second Assessment:

- It has a strong focus on IWRM; it highlights achievements and challenges in managing waters in an integrated way on the basis of the river basin, both at the national and transboundary levels.
- Consequently, transboundary surface waters and groundwaters are assessed together, at the level of the transboundary basins.
- Moreover, the geographical scope has expanded. While the First Assessment only covered transboundary aquifers in South-Eastern Europe, the Caucasus and Central Asia, in the second edition transboundary groundwaters in Western, Central, Eastern and Northern Europe are also assessed.
- Legal, institutional and socio-economic issues are highlighted, given their crucial importance for transboundary water cooperation. As national frameworks for water management strongly influence management and cooperation at the transboundary level, the Second Assessment also provides information on national institutional settings for water management (annex I). The legal basis for transboundary cooperation is also examined: bilateral and river basin agreements on transboundary waters, as well as relevant multilateral environmental agreements entered into by UNECE countries and their neighbours, are inventoried (annexes II and III).
- IWRM also entails an ecosystem approach to water management. Therefore, specific attention is devoted to ecological issues, notably through the assessment of selected Ramsar Sites[1] and other wetlands of transboundary importance. Such assessments underline the importance of water-dependent ecosystems in transboundary basins, not least through the various services that they provide. They also show the linkages between transboundary wetland management and management of transboundary waters.
- The Second Assessment recognizes the threats from climate change and seeks to provide a picture of the predicted impacts on transboundary water resources, as well as the measures planned or in place to adapt to climate change.
- The UNECE region is greatly diverse in terms of natural availability of water resources, pressures, status and responses, as well as with regard to the economic and social conditions that strongly influence both the pressures on and the status of water resources and the capacity of countries to implement management responses. Therefore the Second Assessment has a strong subregional focus and highlights characteristics and specificities of five UNECE subregions: Western and Central Europe; South-Eastern Europe; Eastern and Northern Europe; the Caucasus; and Central Asia. These, partly overlapping, subregions were defined for the purposes of the Assessment. The criteria for their delineation are not based on political boundaries but rather with a view to taking into account similarities of water management issues in the transboundary basins. Yet, even within these subregions big differences are observed.

Assessments of transboundary surface waters and groundwaters are structured according to the main discharge basins of regional seas.

The assessments of transboundary river basins include a description of the general characteristics of the basin, their hydrology and hydrogeology; pressures on the quantity and quality of water resources; the status of the transboundary waters; transboundary impacts; responses, including transboundary cooperation; and future trends. The approach generally follows the Driving Forces, Pressures, State, Impact, Responses (DPSIR) framework[2] adopted by the European Environment Agency (EEA) and broadly used under the Water Convention.

The Ramsar Site assessments also roughly follow the DPSIR framework, in a somewhat adapted form. The general description of the wetland area is followed by a description of the main ecosystem services, cultural values and biodiversity values; pressure factors; transboundary impacts and finally by transboundary wetland management issues.

[1] A site included on the List of Wetlands of International Importance under the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention).
[2] See Environmental indicators: Typology and overview. Technical report No. 25/1999. EEA. 1999.

PROCESS

Building on and expanding from the first edition, the Second Assessment has been prepared in close cooperation with the environment and water administrations of some 50 countries. Experts nominated by the ministry of the environment or other ministry responsible for water resources in each country provided data and information. Most remarkably, not only the Parties to the Water Convention but also UNECE members not Parties have contributed to the Assessment process. Moreover, experts from countries outside the UNECE region and sharing waters with UNECE countries — namely, Afghanistan, China, the Islamic Republic of Iran and Mongolia — also participated in the process.

A key step in the preparation of the Assessment was a series of subregional workshops, which allowed experts from the different riparian countries to work together to develop an accurate picture of all transboundary waters in their subregion — both surface waters and groundwaters — and to discuss common issues specific to their subregion. The following workshops were held in the course of preparation of the Second Assessment.

- *South-Eastern Europe* (18–20 May 2009, Sarajevo, Bosnia and Herzegovina), organized with the Regional Cooperation Council, the Global Water Partnership Mediterranean and the Sava River Basin Commission;
- *The Caucasus* (8–10 December 2009, Tbilisi, Georgia), organized with the Ministry of Environment Protection and Natural Resources of Georgia and the Regional Environmental Centre for the Caucasus;
- *Eastern and Northern Europe* (27–29 April 2010, Kyiv, Ukraine), organized with the International Water Assessment Centre (IWAC)— the Water Convention collaborative centre hosted by the Slovak Hydrometeorological Institute — in cooperation with the Ministry of Environment of Ukraine and the Ukrainian State Committee for Water Management;
- *Central Asia* (13–15 October 2010, Almaty, Kazakhstan), organized with the Ministry of Environment Protection of Kazakhstan, IWAC and the Regional Environmental Centre for Central Asia; and
- *Western and Central Europe* (8–10 February 2011, Budapest, Hungary), organized with the Ministry of Rural Development of Hungary, in the framework of the Hungarian EU Presidency.

Information from the workshops was used — in addition to the written input to the datasheets — in developing an overview of the situation in each of the subregions, including the main findings, tendencies and conclusions (section III).

The Convention's Working Group on Monitoring and Assessment was responsible for overseeing the preparation of the Second Assessment: at its meetings draft assessment were discussed and revised by country representatives. Given its broader scope compared with the First Assessment, and the stronger focus on IWRM and governance issues, the Convention's Working Group on Integrated Water Resources Management was also involved in the Second Assessment's preparation. The Second Assessment was finalized and adopted by the Working Group on Monitoring and Assessment at its twelfth meeting in Geneva, held from 2 to 4 May 2011, including a special joint session with the Working Group on Integrated Water Resources Management.

SOURCES OF INFORMATION

The Assessment is essentially based on information submitted by countries in response to specifically designed datasheets. In the cases of the rivers Danube, Elbe, Meuse, Moselle and Saar, Oder, Rhine, Sava and Scheldt, the assessment is derived from contributions by the secretariats of the respective international commissions, mostly based on the official reports under the EU Water Framework Directive (WFD)[3] and the River Basin Management Plans.

In addition, the following sources of information were used:

- Information from the Global Runoff Data Centre for average annual flows;
- Data sets from GlobCover[4] and from LandScan 2008 Global Population Database to address gaps in, respectively, land use/land cover and population information that was not provided by countries;
- The First Assessment of Transboundary Rivers, Lakes and Groundwaters published in 2007, the Inventory of Transboundary Groundwaters prepared by the Task Force on Monitoring and Assessment under the Water Convention and published in 1999, as well as the 2009 inventory of transboundary groundwaters in the Caucasus and Central Asia prepared by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Groundwater Resources Assessment Centre (IGRAC);
- Geographical information system data on transboundary groundwater bodies provided by EEA and the European Topic Centre on Inland, Coastal and Marine Waters, based on reporting by EU member States under the WFD. These data are in a draft stage and have not been quality assured yet;
- Reports of the Intergovernmental Panel on Climate Change and national communications under the United Nations Framework Convention on Climate Change for climate change-related issues. Moreover, some replies by Caucasian countries to a survey conducted by the Water Convention's Task Force on Water and Climate in 2008, which explored countries' adaptation needs and the measures already undertaken, were used as complementary information;
- Environmental Performance Reviews undertaken by UNECE for countries in Eastern Europe, the Caucasus and Central Asia and other countries with economies in transition;
- The European environment — state and outlook 2010 (SOER 2010), prepared by EEA, in particular the thematic assessments of "Water resources: quantity and flows" and of "Freshwater quality".

The source of information is always indicated in the Second Assessment.

[3] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.
[4] GlobCover is a product of the European Space Agency delivering global composites and land cover maps using as input a time series of remotely sensed imaging spectrometer data.

PARTNERS

Several partners joined forces and contributed to the preparation of the Second Assessment:

- The Global Water Partnership Mediterranean assisted in the preparation of the assessment of transboundary rivers, lakes and groundwaters in South-Eastern Europe, as well as the summary of major findings for this subregion;
- IWAC assisted with regard to both substantial and practical areas, in particular through the preparation of pre-filled datasheets and draft assessments, organization of subregional workshops and translations.
- The secretariat of the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) prepared the assessments of Ramsar Sites and other wetlands of transboundary importance in close cooperation with experts on those sites.
- The Global Resource Information Database (GRID) office of the United Nations Environment Programme/Division of Early Warning and Assessment (UNEP/DEWA/GRID-Geneva) prepared basin maps and accompanying graphs using various data sources in addition to those referred to earlier;
- IGRAC, working under the auspices of UNESCO and the World Meteorological Organization and funded by the Government of the Netherlands, prepared the transboundary groundwaters maps.

The majority of the funding for the Second Assessment was provided by the Ministry of Foreign Affairs of Finland. Other donors included the Swiss Federal Office for the Environment; the Swedish Environmental Protection Agency; the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety; the Hungarian Ministry of Rural Development; the Ministry of Infrastructure and the Environment of the Netherlands; and the Ministry of Environment Protection of Georgia.

The Finnish Environment Institute (SYKE) provided technical and substantial guidance to the whole process.

THE RAMSAR CONVENTION

The Convention on Wetlands was signed in Ramsar, the Islamic Republic of Iran, in 1971 and entered into force in 1975. The Convention's mission is the conservation and wise (that is, sustainable) use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world. The Convention uses a broad definition of wetlands that includes swamps and marshes, lakes and rivers, wet grasslands and peat-lands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fishponds, rice paddies, reservoirs and salt-pans.

As of August 2011, the Ramsar Convention has been ratified by 160 countries. These have together designated 1,950 Ramsar Sites for inclusion in the List of Wetlands of International Importance, covering more than 190 million hectares.[5]

The official name of the treaty, the Convention on Wetlands of International Importance especially as Waterfowl Habitat, reflects the original emphasis on the conservation of wetlands primarily as a habitat for water-birds. Since then, the Convention has broadened its scope to cover all aspects of wetland conservation and wise use. Many of the listed Ramsar Sites concern wetland ecosystems that are shared between two or three countries. Thirteen of them have been formally designated as Transboundary Ramsar Sites, nearly all of them in Europe.

EXPLANATORY NOTES FOR READING THE SECOND ASSESSMENT

The Second Assessment includes a number of concepts and approaches which should be explained for the benefit of the reader.

Transboundary groundwaters — aquifers and in the EU also groundwater bodies — which are connected with the surface waters of the basin or located within the basin boundaries are described as part of the basin's assessment. The assessments of those groundwaters that are either not connected with the surface waters of the basin — discharging directly to the sea for example— or for which the connection was not confirmed by the countries, have been placed at the end of the chapter.

Related to groundwaters, both the term aquifer and groundwater body occur widely in this report. An aquifer is the established scientific and technical term for a geological formation or material that is sufficiently porous to store water and permeable enough to transmit water in sufficient quantities that can be economically exploited.

The widespread use of the term groundwater body is of more recent origin. Its common usage is derived from the WFD, in which surface water bodies and groundwater bodies are defined as water management units within river basins. One of the essential steps for EU member States in their implementation of the WFD has been to delineate and characterize bodies of surface water and groundwater. While the European Commission provided guidance on the methods to be used to delineate groundwater bodies, there are still variations in national approaches, partly due to the wide range of geological settings. In most cases, aquifers are subdivided hydrologically into groundwater bodies, although there are cases where groundwater bodies contain more than one aquifer. For the Western and Central Europe subregion, some of the transboundary river basins contain large numbers of groundwater bodies. Where the aquifer containing them is crossed by a national border, the respective groundwater bodies on each side may have been designated as

[5] Data as of July 2011.

transboundary, but not always. This could be a political choice, but even from a hydrogeological point of view, this could be quite rational.[6]

Because of the two different types of groundwater units involved, presenting information in a consistent way in map form at a suitable scale for the whole region covered by this assessment is problematic. The difficulties are especially acute for the Western and Central European subregion, and to some extent also in South-Eastern Europe. Firstly, individual groundwater bodies are in many locations too small to appear at the selected map scale and, secondly, there are many areas where boundary rather than transboundary groundwater bodies have been designated by either or both countries, even where it is clear that a major aquifer traverses the national boundary.

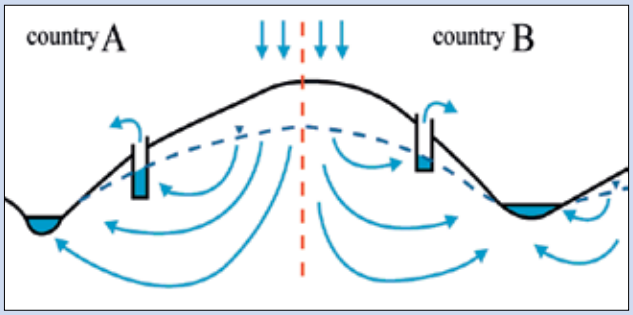
When the information has been sufficient, the transboundary groundwaters have been classified into four types, which were already used in the First Assessment and are illustrated in figure 1 below. In some cases the countries sharing the aquifer classified it differently and then both types are indicated. In some other cases the countries have provided sketches of the aquifers.

In the tables of total water withdrawal in the basin and withdrawals by sector, only consumptive water use related to energy generation was to be included as withdrawal for energy, but some countries have quoted separately the volume of non-consumptive diversion of water, which occurs related to, e.g., hydropower generation.

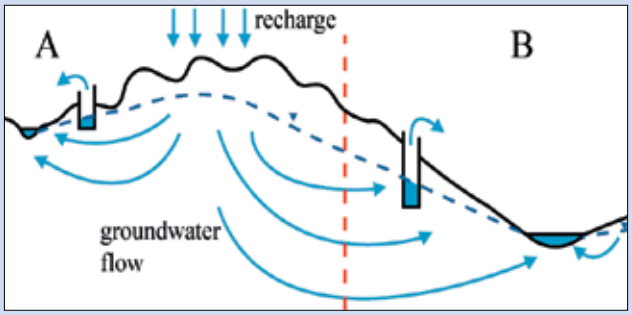
Information on water quality classification is based on national assessment systems, which renders comparison between river basins difficult. Information on the status of water bodies in basins shared by EU member States refers to the classifications in accordance with the WFD. In many countries in Eastern Europe, the Caucasus and Central Asia, the quality status of waters is described using a Water Pollution Index, which is defined on the basis of the ratios of measured values and the "maximum allowable concentration of pollutants for a specific water use" (MAC).

FIGURE 1: General conceptual models (types, numbered 1 to 4) according to which transboundary aquifers have been classified in the Second Assessment

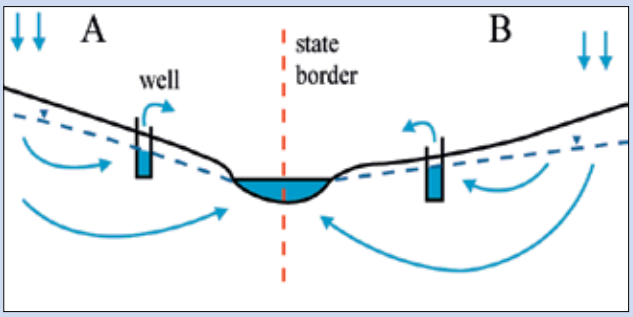
Type 1: State border follows surface water catchment and groundwater divide, little transboundary groundwater flow.



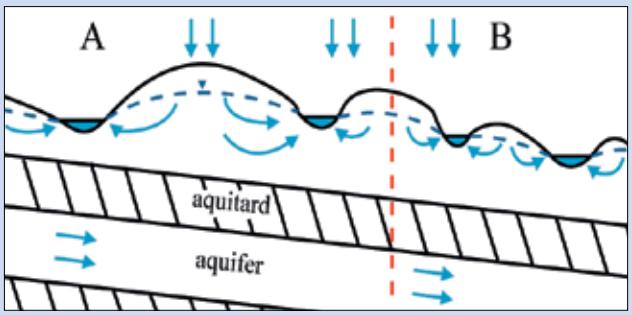
Type 2: Surface water and groundwater divides separate from state border, recharge in one country, discharge in adjacent.



Type 3: State border follows major river or lake, alluvial aquifer connected to river, little transboundary flow.



Type 4: Large deep aquifer, recharged far from border, not connected to local surface water and groundwater.



[6] If the national boundary follows either an elevated watershed recharge area or a major river (types 1 and 3 in figure 1 above), there may be no groundwater flow across the border, and no requirement for groundwater bodies on each side of the border to be considered as transboundary for joint management purposes. They may be considered instead as "boundary" groundwater bodies. In practice the groundwater divide may not continually follow the topographic divide, changing seasonally or over time as a result of pumping, and in such cases there would clearly be a case for joint management of a transboundary groundwater body.