



**Economic and Social  
Council**

Distr.  
GENERAL

ECE/MP.WAT/2009/8  
28 October 2009

ENGLISH ONLY

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**ECONOMIC COMMISSION FOR EUROPE**

MEETING OF THE PARTIES TO THE CONVENTION ON  
THE PROTECTION AND USE OF TRANSBOUNDARY  
WATERCOURSES AND INTERNATIONAL LAKES

Fifth session  
Geneva, 10–12 November 2009  
Item 6(a) of the provisional agenda

ASSESSMENT OF THE STATUS OF TRANSBOUNDARY RIVERS, LAKES AND  
GROUNDWATERS

**SUMMARY OF THE ASSESSMENT OF TRANSBOUNDARY RIVERS, LAKES AND  
GROUNDWATERS IN SOUTH-EASTERN EUROPE**

Note by the secretariat

*Summary*

This document was prepared pursuant to decisions taken by the Working Group on Monitoring and Assessment at its tenth meeting (Bratislava, 10–11 June 2009; ECE/MP.WAT/WG.2/2009/2, paras. 8–44) and by the Working Group on Integrated Water Resource Management at its fourth meeting (Geneva, 8–9 July 2009; ECE/MP.WAT/WG.1/2009/2, paras. 44–48). It presents the main conclusions and trends drawing upon the detailed assessments by basin and aquifer presented in documents ECE/MP.WAT/2009/9, ECE/MP.WAT/2009/10 and ECE/MP.WAT/2009/11. Collectively, these four documents make up the draft assessment of transboundary waters in South-Eastern Europe (SEE) to be considered by the Meeting of the Parties. SEE is the first subregion under review in the framework of the second Assessment and the experience gained with the preparation of the SEE assessment will inform the rest of the preparation process.

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## I. BACKGROUND AND PROPOSED ACTION BY THE MEETING OF THE PARTIES

1. The subregional assessment of transboundary waters in South-Eastern Europe (SEE) covers transboundary rivers, lakes and groundwaters shared by two or more of the following countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Hungary, Montenegro, Romania, Serbia, Slovenia, the former Yugoslav Republic of Macedonia and Turkey.<sup>1</sup> It has been prepared by the secretariat with the assistance of Global Water Partnership Mediterranean (GWP-Med) on the basis of information provided by SEE countries. The present document contains the main findings, tendencies and conclusions of the SEE assessment. It draws upon the assessments of the different transboundary rivers, lakes and groundwaters in SEE that are presented in documents ECE/MP.WAT/2009/9 (transboundary waters discharging in the Black Sea), ECE/MP.WAT/2009/10 (transboundary waters discharging in the Adriatic Sea) and ECE/MP.WAT/2009/11 (transboundary waters discharging in the Aegean Sea).

2. The SEE assessment has been prepared under the Convention's Working Group on Monitoring and Assessment and the Working Group on Integrated Water Resources Management. An important first step in the assessment preparation was the Workshop on Integrated Transboundary Water Resources Management in South-Eastern Europe (Sarajevo, 18–20 May 2009) that was jointly organized with the Regional Cooperation Council, GWP-Med and the International Sava River Basin Commission with the financial assistance of Sweden and Switzerland. The SEE assessment was also discussed at the tenth meeting of the Working Group on Monitoring and Assessment at its tenth meeting (Bratislava, 10–11 June 2009) and at the fourth meeting of the Working Group on Integrated Water Resources Management (Geneva, 8–9 July 2009).

3. The assessment of transboundary waters in SEE also contains assessment of a number of selected Ramsar sites<sup>2</sup>: Lake Skadar/Shkoder and Buna/Bojana River, the Prespa Lakes and the Drava-Danube confluence. These assessments were prepared in cooperation with secretariat of the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) and the Parties to that Convention. Besides these three, there are important transboundary wetland areas elsewhere in SEE e.g. the delta of Maritsa/Evros/Meric River (a part of it is also a Ramsar site) as well as important human-made wetlands, such as reservoir lakes and fish farming ponds along the Drava, Mura and smaller rivers in SEE. Very extensive river floodplains, temporary flooded grasslands and fens provide a number of services such as water storage, groundwater replenishment and support for livestock farming and biodiversity. The transboundary lakes Ohrid and Dojran are also of great socio-economic and cultural importance. Along the Adriatic and Aegean Seas an important number of coastal lagoons, salt pans, and river delta wetlands exist in Albania Croatia, Greece, Montenegro and Slovenia. The same is true for the Black Sea coast of Bulgaria, Romania and Turkey.

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<sup>1</sup> An inventory of all transboundary waters included in the SEE assessment is contained in annex II.

<sup>2</sup> Wetlands designated as internationally important under the 1971 Ramsar Convention on Wetlands.

4. The assessment is essentially based on information received from SEE countries through pre-filled questionnaires. Unfortunately, not all SEE countries completed the questionnaires or submitted information in other forms. Moreover, for some basins and especially a number of aquifers, little information was provided. When no new information was provided, it was necessary to revert back to the information contained in the *First Assessment of Transboundary Rivers, Lakes and Groundwaters*<sup>3</sup>, which reduces the novelty value of this second edition. While for some basins and, especially, aquifers information might be severely limited. In other cases, the lack of information submitted by countries is particularly striking when similar information has already been compiled for the purposes of reporting under the European Union (EU) Water Framework Directive<sup>4</sup> and could have been easily made available.

5. The preparation of the assessment and the quality of the final product have suffered from delays by SEE countries in nominating responsible experts and submitting the completed datasheets and delays in or even failures to reply to queries from the secretariat on clarifications concerning the information submitted. The total lack of response from some countries made it difficult for the secretariat to plan its work taking into account delays in submission of materials.

6. To avoid a similar situations arising with the other subregions, Parties and non-Parties should be aware of the very tight preparatory schedule of the assessment and should provide the required inputs in a timely manner. Early nomination of experts responsible for the assessment also greatly speeds up the work. The secretariat for its part tries to facilitate the work of country experts and draw the lessons from the assessment of SEE. Revisions have been made to the datasheet according to the comments provided to streamline and make more explicit what exactly is expected.

7. The Meeting of the Parties may wish:

(a) To take note of the assessment of transboundary rivers, lakes and groundwaters in South-Eastern Europe presented in documents ECE/MP.WAT/2009/8, ECE/MP.WAT/2009/9, ECE/MP.WAT/2009/10 and ECE/MP.WAT/2009/11;

(b) To express its appreciation to the designated experts from Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Romania, Serbia, Slovenia, Turkey and the former Yugoslav Republic of Macedonia, as well as GWP-Med and the secretariat of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) for the substantive work done;

(c) To express concern for the fact that not all countries in SEE contributed to the preparation of the assessment, and that the information provided is in some cases insufficient;

(d) To invite Parties and non-Parties to provide amendments and additions to the information contained in document ECE/MP.WAT/2009/8, ECE/MP.WAT/2009/9, ECE/MP.WAT/2009/10 and ECE/MP.WAT/2009/11 **by 31 January 2010**.

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<sup>3</sup> Available at: <http://www.unece.org/env/water/publications/pub76.htm>.

<sup>4</sup> 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.

## II. INTRODUCTION

8. There are 13 major transboundary rivers and four major international lakes as well as more than 50 transboundary aquifers in SEE. With transboundary basins covering about 90 per cent of the area of SEE and more than half of these being shared by three or more countries, cooperation for effective shared water resources management is of particular importance, so as to ensure the resources' protection and sustainable use.

9. There is an increasing understanding in the subregion that cooperation on transboundary waters provides opportunities for the creation of synergies and benefits for all parties involved. There is also an increasing consensus that countries should work to create a sustainable framework of cooperation at the transboundary level that will allow for sharing these benefits.

10. Nevertheless, there are still numerous obstacles in achieving this objective that derive from the interdependence and the potential conflict that exist among different uses. Non-harmonized legal and institutional frameworks and varying infrastructure development and, in some cases, diverging priorities and conflicting interests among riparian countries as well as political unrest in specific parts of the subregion, add to a complex picture.

11. A remarkable number of actors active in the subregion are supporting sustainable water resources management and transboundary cooperation. The role of the EU, several United Nations agencies and other international organizations, as well as of donor countries and non-governmental organizations (NGOs) has been important in this regard.

## III. LEGAL, POLICY AND INSTITUTIONAL FRAMEWORKS FOR TRANSBOUNDARY WATER MANAGEMENT

12. The establishment of integrated water resources management (IWRM) in shared basins depends largely on the water management frameworks at the national level. These are either under a reform process or have been through one recently. The EU *acquis communautaire* and in particular the EU Water Framework Directive<sup>5</sup> (WFD) constitute the basis for this reform process both for the countries that are members of the EU and, to a certain extent, also for those that are not yet members.<sup>6</sup> The Stabilization and Association Process and the EU Accession

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<sup>5</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for European Community action in the field of water policy.

<sup>6</sup> Greece, Slovenia, Bulgaria and Romania are members of the EU; Greece is the oldest one.

Croatia has been a candidate country for EU membership since 2004. The Stabilization and Association Agreement (SAA, the contractual basis for relations between each individual country and the EU) with the EU was signed on 29 October 2001 and entered into force on 1 January 2005. Accession negotiations opened on 3 October 2005. On 12 February 2008, the Council adopted the new Accession Partnership (AP) for the country.

Turkey is a candidate country for EU membership. Accession negotiations started in October 2005. Since then, the EU provisionally closed one chapter and opened negotiations on seven chapters. Environment is not among them. On 18 February 2008, the Council adopted a revised AP with Turkey.

The former Yugoslav Republic of Macedonia has been a candidate country for EU membership since 2005. The SAA was signed on 9 April 2001 and entered into force on 1 April 2004. On 18 February 2008, the Council adopted the AP for the country.

Processes have played an important role calling for integration of policies and supporting priority water management-related investments. These processes in the different non-EU countries, and hence the reform of water sector, have progressed at a different pace depending on the evolving cooperation framework with the EU as well as the prevailing socio-economic situation and administrative capacities. Adoption and implementation of “demanding” legal instruments such as the EU WFD require enhanced institutional capacities, and have proved a challenging task.

13. Overall, progress in lawmaking is considerable; new laws on water are planned to be adopted in cases where such steps have not been taken yet, e.g. in Albania and Serbia. Nevertheless, there are deficiencies in the area of implementation and enforcement. The reasons are manifold. In some cases, even new laws lack key elements such as definitions, precision of rights and obligations, setting of standards, and they fall short of determining procedural stages. Many are framework laws and require the adoption of secondary legislation and a set of regulations; steps have been taken, but there is still a long way to go.

14. The overall administrative capacity is another important reason despite the ongoing reforms. Overlapping competences and fragmentation of responsibilities among different institutions and management agencies often occur and so does a lack of effective coordination among the different ministries/authorities. Insufficient human, financial and technical resources are an additional barrier. The situation gets more complicated when efforts are made for more decentralization and management at the local level.

15. The aforementioned difficulties do not come as a surprise, since the setting up of a properly functioning legal and institutional framework needs considerable time and resources to develop. Reforms have started only in the near past in an environment of transition, political instability, limited resources and often poor social cohesion. Difficulties are more evident for sectors that need major capital investments, such as those with wastewater treatment and solid waste management. It has to be kept in mind that even EU Member States, although markedly ahead, are still struggling with similar challenges. Nevertheless, overall progress at the national level is evident in all non-EU member countries, especially in Croatia and the former Yugoslav Republic of Macedonia, which have been candidates for membership since 2004 and 2005, respectively.

16. The institutional frameworks for water resources management vary. In all cases though, there is a ministry with the prime responsibility for the development and implementation of

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Albania is a potential candidate country for EU accession. On 18 February 2008, the Council adopted a new European partnership with Albania. The SAA with the country was signed on 12 June 2006 and entered into force on 1 April 2009.

Bosnia and Herzegovina is a potential candidate country for EU accession. The SAA was signed on 16 May 2008; it will enter into force once its ratification process is completed. A new European partnership with Bosnia and Herzegovina was adopted by the Council on 18 February 2008.

Montenegro is a potential candidate country for EU accession. On 15 October 2007, Montenegro signed the SAA, which will enter into force once its ratification process is completed. A European partnership with Montenegro was adopted by the Council on 22 January 2007.

Serbia is a potential candidate country for EU accession. On 29 April 2008, the EU and Serbia signed the SAA; ratification is pending. On 18 February 2008, the Council adopted the new European partnership for Serbia. Consultations with the Serbian authorities covering a range of reform issues are conducted through the Enhanced Permanent Dialogue process (EPD).

policies and the preparation of the relevant legislation. Nevertheless, responsibilities in different fields are shared by a range of institutions and authorities holding competences that touch upon water and natural resources management and environment in general.<sup>7</sup>

17. IWRM at the basin level has only partially been adopted in the countries that are not EU Member States. There is a history of efforts at the level of strategic planning (strategies, action plans etc.) and legislation adoption that provides a basic framework for management at the basin level and includes provisions for integration. However, implementation and enforcement remain considerable challenges.

18. As far as the EU Members States are concerned, water resources management is practiced at the basin level pursuant to the EU WFD. The River Basin Management Plans (RBMPs) are the main tools in this regard. Information submitted is not sufficient to assess the level of preparation of RBMPs in each country covering the part of shared water bodies extending in its territory; relevant information, where this was provided, is presented in chapter VI (“Responses”).

19. With regard to shared water bodies, the countries have pursued their management from a predominantly national perspective. The level of cooperation varies, even among different basins shared by the same two countries. In general, this has been influenced by political and socio-economic developments at the regional and national levels, evolving needs and bilateral relations. Given the limited capacity, the process of approximation to the standards of the EU in recent years has in some cases had adverse effects on transboundary cooperation. As the transposition of the EU *acquis* and the implementation of new pieces of legislation have been a priority for most of the countries, the institutional burden linked with this effort in combination with restricted human resources have, often, left transboundary cooperation to be a lower priority. Nevertheless, progress, although slow, has been achieved at the transboundary level. Agreements and memorandums of understanding have been signed, and joint work has been undertaken in several cases.<sup>8</sup>

20. The legal agreements and arrangements vary in terms of geographic coverage – covering all waters shared by contracting parties or only specific basins – as well as in terms of scope. Some concern specific issues such as protection against natural and civic disasters (Croatia-Bosnia and Herzegovina, Croatia-Slovenia), navigation (Croatia-Bosnia and Herzegovina), flooding and seasonal drought (Bulgaria-Turkey). Others have a broader scope, such as water management relations (Croatia-Bosnia and Herzegovina, Croatia-Slovenia, Croatia-Montenegro) and the use of waters in transboundary rivers (Bulgaria-Turkey, Bulgaria-Greece).

21. Setting up joint commissions to monitor and control the implementation of the legal documents is not rare. Examples include the joint commissions that have been set up between Croatia and Bosnia and Herzegovina (1996 agreement), Croatia and Slovenia (1996 agreement), Croatia and Hungary (1994 agreement), Croatia and Montenegro (2007 agreement), the Serbian-

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<sup>7</sup> The situation in each of the countries with regard to the water related institutional framework is briefly described in annex I.

<sup>8</sup> Information on the existing agreements for transboundary cooperation can be found in annex III. The content of the table is based mostly on information submitted by the countries. Where available, information on whether the legal arrangements are still in force is given.

Romanian Joint Commission under the 1955 Agreement, and the Serbian-Hungarian Joint Commission under the 1955 Agreement. In some recent agreements concerning specific shared river/lake basins, the role of joint bodies has been further strengthened, and while there are differences in their scope and structure, the coordination of actions for the management of the shared water body is among the main aims, while cooperative management will be an eventual aim.

22. Cooperation between Albania and the former Yugoslav Republic of Macedonia on Lake Ohrid was formalized through the signing of the Agreement for the Protection and Sustainable Development of Lake Ohrid and its Watershed by the Prime Ministers of the two countries on 17 June 2004. The Lake Ohrid Watershed Committee was established in November 2005 and is empowered with legal authority in both countries. The Committee has a permanent secretariat based in Ohrid (the former Yugoslav Republic of Macedonia); a second office exists in Pogradec (Albania).

23. The Agreement for the Protection and Sustainable Development of the Skadar/Shkoder Lake was signed in 2008 by Montenegro and Albania. This Agreement serves, inter alia, as the legal instrument for the implementation of the joint Strategic Action Plan regarding the lake, previously agreed by the two countries. The Skadar/Shkoder Lake Commission has been established and commenced work recently (2009). A joint secretariat is based in Shkodra, Albania.

24. The most successful example of transboundary cooperation in SEE is the Framework Agreement on the Sava River Basin (FASRB) between Croatia, Bosnia and Herzegovina, Serbia and Slovenia, signed in late 2002 and in force since 2004. It integrates most aspects of water resources management. Two protocols to the FASRB have been signed so far, while five additional ones are in different stages of preparation. The International Sava River Basin Commission (ISRBC) has been established, with a legal status of an international organization, for the purpose of implementation of the FASRB and the realization of the mutually agreed goals: (a) establishment of the international navigation regime on the Sava and its navigable tributaries; (b) establishment of sustainable water management; and (c) undertaking of measures to prevent or limit hazards and to reduce or eliminate their adverse consequences. FASRB gives to the ISRBC the international legal capacity for making decisions in the field of navigation and providing recommendations to the countries on all other issues. A permanent secretariat is based in Zagreb, Croatia.

25. Informal arrangements such as in the case of Prespa Lakes, shared by Albania, Greece and the former Yugoslav Republic of Macedonia, may also deliver results. The Prime Ministers of the three countries declared the Prespa Lakes and their catchment as “‘Prespa Park’...the first transboundary protected area in South-Eastern Europe...” on 2 February 2000. The Prespa Park Coordination Committee (PPCC) has been established as a non-legal entity. Work coordinated by PPCC has led among others to the joint preparation of a Strategic Action Plan, adopted by PPCC in 2004, providing a direction for sustainable development in the basin. It was the basis for the development a Global Environment Facility (GEF) supported project initiated in 2007, having among its deliverables a Strategic Action Programme for the management of the basin, the strengthening of intergovernmental cooperation and the enhancement of transboundary water management. An official agreement between the countries is a future aim.

26. In most of the shared basins and aquifers, however, steps as those described for the three shared lakes and the Sava River have yet to be taken. Among the reasons are the low political prioritization of the issue, financial constraints and in some cases insufficient institutional capacity. Conflicting interests among countries may also be a reason. These reasons as well as different interpretation of provisions, have also affected the implementation of legal arrangements that are in place.

27. Regarding transboundary aquifers, in addition to the reasons mentioned above, the currently low knowledge level adds to the difficulties of transboundary cooperation. In many cases, there is lack of consensus between the countries about the extent of aquifers or even their transboundary character. The first Assessment by the United Nations Economic Commission for Europe (UNECE) revealed many such examples – more than 20 out of a total of over 50 aquifers. Different positions between countries regarding the transboundary character of an aquifer, its real extent or its hydraulic connection to surface water systems also surfaced in the preparations of the second assessment.

28. At the regional level, the EU WFD and the UNECE Water Convention are the two main frameworks that support water management and cooperation. Their consistency and complementarity represent a great asset for the subregion in terms of promoting cooperation through harmonization of policies and legal frameworks on the one hand and providing a set of sound rules and conditions for cooperation on the other.

29. However, the different levels of advancement in the transposition and implementation of the EU WFD and in the ratification to the Convention create some imbalances in many of the shared basins and prevent their application, hence enjoyment of the benefits that may arise from these frameworks/their provisions. It is a positive development that Bosnia and Herzegovina has completed the national process of accession to the Convention and that the former Yugoslav Republic of Macedonia is preparing for accession.

#### **IV. MONITORING OF TRANSBOUNDARY RIVERS, LAKES AND GROUNDWATERS**

30. The difficult conditions of the recent past in the area have had an effect also in the monitoring capacity of most of the countries. Monitoring systems have deteriorated and systematic monitoring in most of the cases, and hence data series for many of the water bodies have been interrupted for a period of time. Technical difficulties and limited financial resources have reduced the availability of data and information. At present, most of the countries are in the process of improving their monitoring systems.

31. The non-integrated management of the water resources and the lack of coordination among institutions have affected both the monitoring capacity as well as at the availability of data produced. Often, responsibilities for monitoring are fragmented between different institutions depending on whether the water uses and functions fall within their mandates. It should be ensured that charging for data in some cases between government agencies and services does not discourage the use of all data relevant to support decision-making. The ongoing

reform in the water sector is an opportunity to improve coordination between institutions involved in monitoring and assessment, and also to involve the scientific community and academia.

32. The information received by SEE countries so far is not adequate to allow for drawing clear conclusions regarding the status of monitoring of shared water bodies at the national and transboundary levels. The limited extent of the time series of observations is a constraint. Spatial representativeness of the data provided is also difficult to assess. The following general remarks can be made though.

33. It is clear that all countries have established a certain level of monitoring of surface waters. This is supported by the fact that information regarding the characteristics that determine the state of the water body and may allow drawing conclusions on the future trends was provided: e.g. discharge, abstraction, shared water use by different economic sectors, pollution levels and, in many cases, data on water-quality determinants. Nevertheless, there were differences on a case-by-case (i.e. by water body) basis regarding the number of parameters for which information was provided, the level of data availability for each parameter as well as the corresponding reference period.

34. There was less information provided on aquifers compared to surface water bodies, in terms of quantity and especially in terms of quality. For many of these (particularly for the countries that are not EU Member States), it was reported that either quality or quantity monitoring has to be improved or still needs to be established. Some countries have jointly carried out a groundwater body characterization according to the requirements of EU WFD, e.g. Austria and Slovenia characterized the Karstwasser-Vorkommen Karawanken/Karavanke aquifer (see the Drava-Mura River basin assessment).

35. With regard to the SEE countries that are EU Member States, monitoring, assessment and reporting activities are mostly steered by the obligations of different water-related Directives. The key Directive concerning monitoring is the EU WFD<sup>9</sup>. Also, for some water bodies shared by EU countries, it was reported that monitoring needs to be improved at the national level and to be improved or established at the transboundary level.

36. The approximation to the EU *acquis communautaire* and the transposition of the EU WFD also has advantages for monitoring and assessment at the transboundary level, as they bring the national systems closer together and promote harmonization.

37. In most transboundary basins in the subregion, information exchange is still very weak and the information produced in riparian countries is not harmonized. Joint monitoring and assessment almost do not exist.

38. Nevertheless, the information submitted revealed examples that differ to a certain extent from the overall trend: e.g. Bosnia and Herzegovina and Croatia exchange information on Trebišnjica/Neretva left aquifer. There is room for improvement in this regard. There is

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<sup>9</sup> Article 8 of the EU WFD sets out the requirements for the monitoring of surface water status, groundwater status and protected areas to establish an overview within each River Basin District.

established cooperation between Hungary and Serbia regarding the exchange of harmonized information on the basis of relevant agreements. Such agreements also exist between some of the countries that are signatories to the FASRB. The existence of the ISRBC facilitates the flow of information between these countries to a certain extent; agreement of all countries on the provision of the most relevant data is an eventual goal. Serbia and Romania have established cooperation on monitoring the Danube and are producing harmonized information. Regarding Lake Ohrid, Albania and the former Yugoslav Republic of Macedonia have harmonized procedures for water monitoring and established joint protocols for sampling analysis and quality assurance. Efforts have started in Prespa, aiming to create a joint monitoring system to address biotic and abiotic parameters. A multi-stakeholder transboundary working group oversees the process. With the Skadar/Shkoder Lake, such activities are planned for the near future.

39. A number of countries cooperate on monitoring issues under the Danube River Protection Convention (DRPC). The Transnational Monitoring Network (TNMN) has been established to support the implementation of the DRPC in the field of monitoring and assessment. TNMN was revised in 2006 to ensure full compliance with the provisions of the EU WFD. The EU TNMN is based on national surface water monitoring networks and includes monitoring locations across the Danube (thus including the Iron Gates Reservoirs) and its main tributaries. Hence, it covers the Sava (as well as some of its main tributaries, notably the Una, the Vrbas and the Bosna), the Drava, the Tisza and the Velika Morava.

40. In the Maritsa/Evros/Meric basin, cooperation between the competent authorities of Bulgaria and Turkey has led to the establishment of four telemetry hydrometric stations in the Bulgarian part of the basin. The stations supply both countries with continuous real time data.

41. In many cases, countries reported that joint monitoring is needed and that they have made the relevant proposals. Bulgaria reported that joint monitoring should be introduced at the Orvilos-Agistros/Gotze Delchev karstic aquifer, shared by Bulgaria. Bosnia and Herzegovina and Greece, suggests that joint monitoring programmes need to be developed in Pleševica/Una aquifer, shared with Croatia. Serbia calls for collaboration with Bulgaria on the Timok River, with the aim of filling existing data gaps, with Montenegro for establishing a common monitoring system on the Lim aquifer as well as the Lim River (within the Sava River Basin) and with Bosnia and Herzegovina for establishing a monitoring system in Tara aquifer and in addition a database of existing and potential pollution risk factors.

## **V. MAIN PROBLEMS, IMPACTS AND STATUS**

42. Transboundary resources in the subregion commonly face numerous challenges: surface water and groundwater pollution from urban wastewater and agriculture, old yet still operational industrial facilities and mines, illegal wastewater discharge and waste deposits, water scarcity, destructive floods, declines in groundwater levels, and saline water intrusion in deltas and coastal aquifers as a result of unsustainable water use practices.

43. Regarding consumptive uses, agricultural irrigation and drinking water supply are the uses that rank first by the share of total volume of water used in the basins. Water use for crop production has an important share in the bodies in the Aegean Sea basin; this can reach more

than 50 per cent in the Bulgarian part of the Maritsa/Evros/Meric sub-basin and more than 80 per cent in the Turkish part of the Maritsa/Evros/Meric basin. Differences are observed with water uses in the upper parts of Mesta/Nestos and Struma/Strymonas basins in Bulgaria: water abstraction for domestic uses first and for industrial and domestic uses second are at higher levels. Water used for agriculture in the part of the Drin basin in the former Yugoslav Republic of Macedonia is about 45 per cent of the total water use (not taking into account the minimum accepted flow); the total amount is expected to double by 2020 (while the share is expected to drop to 34 per cent).

44. Domestic water supply is the main use for most of the water bodies that belong to the Black Sea basin, followed by industrial water supply, agricultural irrigation and livestock raising; the order may vary on a case-by-case basis. As an example, in the Sava River Basin and in the Iron Gates Lakes, drinking water supply is the main use, followed by agricultural irrigation (not taking into account the water used for hydropower production). In Somes/Szamos alluvial fan aquifer (Romanian part), drinking water supply and industry are the main groundwater uses.

45. Water-use efficiency in the agricultural sector is a key issue due to the unsustainable irrigation techniques used and the deficiencies in the irrigation systems. Water loss due to the degraded drinking water supply networks is an issue for some countries, such as Bosnia and Herzegovina, Montenegro and Albania; these losses are estimated in some cases to be more than 50 per cent.

46. Groundwater overabstraction is a major pressure factor in basins such as the Skadar/Shkoder Lake sub-basin. Abstractions have been reported by Serbia to cause groundwater level decline in parts of the North and South Banat, the North-East Backa/Danube-Tisza Interfluvium and the South-Western Backa/Dunav aquifers. The data submitted suggest that overabstraction may be a pressure factor for other aquifers as well.

47. Agricultural activities contribute to the chemical pollution of water resources, mainly by nitrogen and phosphorus due to use of fertilizers, and pesticides. Pressure varies among basins due to countries' specific hydrometeorological and socio-economic conditions (e.g. the need or financial capacity for agricultural irrigation), crop types and production patterns. Adverse effects on aquatic- and water-related ecosystems include the loss of biodiversity and the deterioration of ecosystems. Diffuse pollution from agriculture is reported to be an issue, inter alia, in the Sava, Mesta/Nestos and Maritsa/Evros/Meric basins and in the Somes/Szamos alluvial fan. Unsustainable agricultural practices exert pressure both on surface waters and the shared aquifers in the hydrogeological basin of Neretva and Trebišnjica, as well as in the Prespa sub-basin.

48. Nutrient-loading deriving from diffuse pollution and the insufficient treatment of urban wastewater has resulted in the slight eutrophication of the Skadar/Shkoder Lake. Pollution reaches the receiving seas, e.g. considerable nutrient loads get transported into the Adriatic Sea via the Drin River.

49. Inappropriate sanitation – insufficiently treated and/or untreated wastewater and/or improper use of septic tanks (mainly in rural areas) as well as illegal wastewater discharges – has been reported as the main or a major source of pollution for the river basins of the Sava,

Maritsa/Evros/Meric, Timok, Struma/Strymonas, Mesta/Nestos, Nisava and Neretva and in the Iron Gate reservoirs. Related impacts were reported for many groundwater bodies as well, e.g. in Neretva and Trebišnjica hydrogeological basin and as well as in the Stara Plannina/Salasha Montana, Tara, South-Western Backa/Dunav and the North-East Backa/Danube-Tisza Interfluve.

50. Insufficiently treated and/or untreated industrial wastewaters (including illegal discharges) were reported to lead to water resources pollution by organic compounds, heavy metals and other hazardous substances. Although industrial activity has significantly declined in the Skadar/Shkoder sub-basin, unsustainable industrial wastewater management affects the quality of the lake, including sediments. Untreated industrial wastewater is a pollution source in Ohrid and also in Neretva and Trebišnjica basins for both surface and groundwater bodies. Untreated industrial and urban wastewater discharges are one of the main pollution sources in the Maritsa/Evros/Meric basin. Industrial activities are a pressure factor in Somes/Szamos alluvial fan aquifer. In the Sava basin, hazardous substances pollution is reported.

51. Illegal waste disposal/uncontrolled dumpsites have been exerting pressures or being a potential pressure factor in a number of shared basins, impacting both surface waters and groundwaters. These include the Sava, Nisava, Neretva (where both municipal and industrial waste was reported), Struma/Strymonas and Mesta/Nestos basins and the Drin River and Skadar/Shkoder Lake sub-basins.

52. In the Drin River basin, impacts from mining activities are likely to still be an issue for the Drin River and Lake Ohrid. Available information suggests that there is some impact also downstream in Skadar/Shkoder sub-basin. In some basins, mining activities are reported to have impacts of low intensity and of local character.

53. Intensive tourism activities, in the coastal areas of basins such as the Neretva and around Lakes Ohrid, Skadar/Shkoder and Prespa, exert pressures since they periodically increase the liquid and solid waste generation as well as the water demands. Illegal construction linked with tourism is of concern, e.g. in the Drin basin, especially in the Albanian part.

54. When extensive, all of the above pressures may commonly result in transboundary impacts and pollution.

55. Natural background groundwater quality has been reported to be an important issue in the cases of some aquifers: the South-Western Backa/Dunav, the North-East Backa/Danube-Tisza Interfluve and the North and Mid Banat<sup>10</sup>. Naturally occurring arsenic at very high concentrations (in some cases up to 300 µg/l, e.g. the Mure/Maros alluvial fan) is of particular concern.

56. Climate change has already impacted some areas and may have significant further impacts in the future. Bulgaria has reported that climate change has been resulting in approximately 30 per cent decrease in precipitation and a subsequent decrease in water resources in the Mesta/Nestos basin and Maritsa/Evros/Meric sub-basin over the past 20 years<sup>11</sup>.

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<sup>10</sup> Romania refers to the aquifer as the North and South Banat

<sup>11</sup> No detailed information has been provided by Bulgaria on the spatial or temporal extent of the underlying observations.

According to the Intergovernmental Panel on Climate Change (IPCC)<sup>12</sup>, SEE, as part of the Mediterranean and Southern Europe, is among those subregions projected to be most severely hit by climate change. Decreasing summer rainfall, average run-off and low summer flows are projected by IPCC, 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, forest fires, increasing desertification, soil degradation, and loss of inhabitable and arable land and natural habitats. Economic activities depending on water will be adversely affected. This in turn will exacerbate the already demanding challenge of balancing competing demands among different uses – navigation, hydropower generation, agriculture, industry, tourism/recreation, etc. – at the national and transboundary levels, stemming from the multipurpose use of basins. Additional attention should be given in such a changing environment, so as to ensure the functioning of ecosystems and the preservation of the natural capital.

57. In the case of transboundary aquifers, the above-mentioned issues are exacerbated by low level of information as well as of the knowledge base. This is of particular importance for karst aquifer systems. The extent and limits of karst systems, their drainage patterns and most importantly flow paths are little known and the general lack of understanding of their vulnerability to anthropogenic as well as climatic stresses increases the level of difficulty of managing them as well as threatens their value and long-term sustainability. Their special characteristics are an additional factor of complexity when it comes to transboundary water resources management. The hydrogeological basin, encompassing the Neretva as well as Trebišnjica and Trebižat “sinking” rivers, is a characteristic example. This basin extends across the same area as the Neretva River delta, hosting a range of socio-economic activities (e.g. human settlements, industry, hydropower generation, agriculture, tourism, recreation) as well as ecosystems of European significance. The Prespa and Ohrid basins, which are linked through underground channels in the karst, provide an additional example, yet information about this complicated interconnection is largely missing.

58. Rivers and coasts are physical and ecological entities also linked through numerous hydrological and socio-economic processes. Changing patterns of land and resources use upstream result in changes in the downstream coastal zone, and consequently commonly have an effect to coastal ecosystems and economic activities. The necessary integrated approach in river basin and coastal management becomes even more challenging when it comes to transboundary basins. Maritsa/Evros/Meric and Neretva are characteristic cases where cooperation between the riparian countries on issues related to water and land resources use patterns is necessary to alleviate adverse effects such as flooding, the alteration of geomorphology of the delta areas and salt water intrusion as well as deterioration of soils, the quality of water and, to a certain extent, of ecosystems. Sustainability considerations have to be integrated in the development plans of the coastal areas in the downstream countries if the results of such cooperation are to last. Unsustainable development patterns linked with agriculture and/or tourism result in the unsustainable use of water resources in water-scarce coastal areas of the Mediterranean basin. This may exacerbate the consequences of the upstream pressures, where these exist. There are also cases in which such development patterns in coastal areas are felt outside the basin. For

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<sup>12</sup> For detailed information on prognoses and current knowledge, see for example B.C. Bates et al. (eds.), 2008. Technical Paper VI: Climate Change and Water. IPCC Secretariat, Geneva.

example, transfer of water outside Skadar/Shkoder Lake basin is planned in Montenegro, to cover drinking water needs in the coastal areas of the country. Likewise, there are plans for water from Mesta/Nestos basin to be used for agricultural irrigation in an adjacent river basin in Greece.

59. The reclamation of wetlands, uncontrolled urbanization and excessive illegal hunting and fishing have been pressure factors which, in addition to the alterations to the hydrological regimes in the basins, have caused impacts to the adjacent coastal ecosystems.

60. A great number of dams and associated reservoirs in the shared basins in SEE serve one or more of the following purposes: hydropower generation, irrigation, drinking and industrial water supply, flood protection and recreation. Some reservoirs, such as Iron Gates I and II in the transboundary area between Romania and Serbia, service navigational activities in addition to facilitating flood control.

61. Water for hydropower production represents a major non-consumptive use in many countries. For instance, hydropower contributes to over 90 per cent of the energy production in Albania, while in Bosnia and Herzegovina it is an export commodity. Certain river basins are of key importance in this regard. The hydropower plants built on the Drin River in Albania produce 70 per cent of the total hydro and thermal energy production capacity in the country. Two major dams have been constructed on the Black Drin in the former Yugoslav Republic of Macedonia. In Neretva and Trebišnjica hydrogeological basin, hydroelectric production infrastructure include dams and underground channels for the transfer of water, including one that transfers water across the border between Bosnia and Herzegovina and Croatia, to the Dubrovnik hydropower plant.

62. There are a number of dams in the Bulgarian part of the Maritsa/Evros/Meric River basin; the total number of reservoirs is as great as 722. As far as Sava River basin is concerned, there are 21 dams with a reservoir capacity of over 5 million m<sup>3</sup>. Five of them have a reservoir capacity between 161 and 340 million m<sup>3</sup> (the highest (131 m) dam in Serbia, in the Drina sub-basin, has a reservoir with a capacity of 170 million m<sup>3</sup>).

63. In addition to dams, the construction of water regulation structures such as flood protection systems – in combination with surface water and groundwater abstractions for agricultural, municipal and industrial use – have in many cases caused hydrological and morphological alterations with different impacts. Indicative are the destruction of parts of wetlands in lakes and deltas, the interruption of bio-corridors and coastal erosion (e.g. the Drin River basin), the interruption of river and habitat continuity and the loss of wetland areas (e.g. the Sava River basin), the erosion of riverbeds and land as well as the decline of groundwater levels (e.g. the Neretva / Trebišnjica hydrogeological basin). In addition to altering the character of the aquatic and riparian habitats, resulting from reduced sediment transport capacity – as was reported among the main effects of the construction of Iron Gates I and II reservoirs – related sediment deposition has induced the gradual increase of high water levels upstream, reducing the safety of the existing flood protection system.

64. The occurrence of floods is a common extreme phenomenon, but according to IPCC, 100-year floods are projected to occur less frequently in large parts of SEE. At the same time, the

frequency of flashfloods is likely to increase in the Mediterranean in the coming years because of the projected increased intensity of rainfall events as a consequence of climate change.

Detrimental socio-economic effects are felt in many basins such as the Sava, the Maritsa/Evros/Meric and the Nisava. Extensive flood protection systems can be found in the Sava River Basin. At the same time, the Sava is a very good example in SEE of a river where some of the natural floodplains are still intact, supporting mitigation of floods. The rehabilitation of flood retention areas, where possible, should be considered as an option by the SEE countries.

## VI. RESPONSES<sup>13</sup>

65. Response measures to limit pressures and reduce their impacts have been taken with varying intensity and results; related efforts are expected to continue.

66. All countries, at different paces, are making steps towards the development of basin management plans. With respect to the EU countries, the preparation of the RBMPs is mandatory and follows the relevant provisions and time frame of the EU WFD. Of the countries that are not yet EU Member States, in Croatia an RBMP has been developed for the Krka River basin as a pilot project for the country. In the former Yugoslav Republic of Macedonia, the process for the development of such plans will be initiated in the near future as part of the process of implementation of the newly adopted law that transposes the EU WFD.

67. The only known case of a joint management plan for a transboundary river basin in the SEE is the one prepared by the Sava Commission. As part of that the plan, the Sava River Basin Analysis Report was concluded and a Programme of Measures is to be developed by 2010. Climate change considerations are planned to be included in the latter using the outcomes of an ongoing project supported by the World Bank. Preparation of an RBMP (in accordance with the EU Flood Directive) is also planned.

68. With regard to climate change impacts, information generated through different models needs to be downscaled to be used for planning at the basin level. In the meantime, “no regret” investments (e.g. increasing of water use efficiency, empowering of hydrometeorological services.) should be considered.

69. In addition to the overall planning and managerial efforts at both the national and transboundary levels, specific measures are being taken or are planned for developing tools to support transboundary cooperation. One example, in the Sava basin, is the development of a geographical information system (GIS), river information services (for the improvement of navigation safety) and a flood forecasting and early warning system is planned to be developed (by 2012). A protocol on the FASRB regarding flood protection is also under development. The Accident Emergency Warning System is in place.

70. One of the measures to address issues linked with agriculture (e.g. the overuse of water, nutrient and pesticide pollution) is the implementation of good agricultural practices. Countries have either reported the need for such measures or that they have been implemented. Information

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<sup>13</sup> Response measures taken by the countries with regard to monitoring are given in chapter IV.

on the results is not available. Efforts need to be continued and enhanced, or initiated where absent. Command and control measures and/or incentives with regard to the use of dangerous pesticides and fertilizers have been adopted. Nevertheless, available information suggests that unauthorized use of pesticides has continued in several cases.

71. In EU Member States, the construction of wastewater collection and treatment systems for human settlements in accordance to the Urban Waste Water Treatment Directive<sup>14</sup> is in progress. Efforts are also being made in non-EU countries.

72. Measures to address waste disposal related issues include the construction of solid waste management systems and facilities. Examples of areas of water bodies where such measures have been taken include Stara Plannina/Salasha Montana, Skadar/Shkoder, Ohrid and Maritsa/Evros/Meric. The major challenge that the countries face in this regard is the significant level of financial resources needed.

73. As far as the aquifers are concerned, protection zones for drinking water have been established in many cases. Nevertheless, relevant measures are reported as needing improvement for the majority of the aquifers. The efficiency of these measures seems to vary on a case-by-case basis; available information does not allow for drawing definite conclusions.

## VII. THE WAY FORWARD

74. There is a great potential for sharing the benefits of transboundary waters in the SEE subregion. However, the current level of cooperation is not suited to support such development, to ensure long-term sustainability or to prevent possible negative transboundary impacts in most of the basins.

75. Action at the national level for the promotion of integrated water and natural resources management is crucial, since it creates the conditions for efficient management at the transboundary level. The ongoing reforms of the water sector – which will evidently continue – can benefit cooperation between the countries in this respect: At the same time, international cooperation could speed up national reforms.

76. The eventual adoption and/or implementation of legal instruments that fully transpose the EU WFD are of special importance in this regard, since they will support the harmonization of legal instruments for the management of water resources.

77. Until this becomes a reality, countries could use the momentum created through the reform process and go a step further. Taking into consideration the different level of the approximation process in each country, commonly agreed standards for the management of the shared basins on the basis of EU WFD and international conventions may be used to specifically design rules and regulations for managing basins in a coordinated and consistent manner, taking into consideration the specific needs and realities in each case. Lake Ohrid, where recently established joint working groups of experts having as their main duty assisting the harmonization

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<sup>14</sup> Council Directive 91/271/EEC concerning urban waste-water treatment.

of national legislations to support conservation and sustainable development of the Lake and its Basin, can serve as an example.

78. Bearing in mind the special conditions in SEE, the UNECE Water Convention has a special role to play, as it offers a basis for enhanced cooperation and a common platform for EU and non-EU countries. It is a useful tool for assisting the implementation of EU water legislation by non-EU countries. Countries that have not done yet should consider accession to the Water Convention.

79. Cooperation between riparian countries in monitoring and assessment may provide an initiating point for cooperation. The Water Convention's guidelines and strategies for monitoring and assessment of transboundary rivers, lakes and groundwaters may provide a valuable basis in this regard.<sup>15</sup> The establishment of harmonized monitoring approaches and data collection methods, and eventually monitoring and information systems would create the basis for establishing a common understanding of water quantity and quality issues and their root causes. This would facilitate more efficient collaboration and further building of trust as well as the design of solutions on the basis of commonly agreed objectives. The exchange of knowledge and experience may assist to overcome unbalanced monitoring and assessment capacities among the riparian countries.

80. Joint fact-finding exercises and analysis of the characteristics of the basins (natural values in place, uses, pressures etc.) can support such a process for establishing cooperation. It may assist in the prioritization of issues at the national and transboundary levels; an agreed timeline for further progress may follow. Overall, it may provide valuable background information and the basis for future managerial actions. For the EU Member States, this analysis has finished or is about to finish as part of the process for the preparation of RBMPs in accordance to the EU WFD. This work is planned to be initiated in the framework of implementation of the laws that transpose the EU WFD, e.g. in the cases of Croatia and the former Yugoslav Republic of Macedonia. As for the rest of the countries, such analysis has been carried out for some basins, e.g. in the framework of the Sava Commission and the ICPDR (in accordance to the EU WFD), the GEF supported projects in Prespa, Ohrid and Skadar/Shkoder (state-of-the-environment reports, transboundary diagnostic analysis, socio-economic studies, etc.) and in the framework of projects supported by the EU and the international donor community. It is of paramount importance that systematic analysis work be initiated for the basins where it is absent.

81. Besides exchange of information and joint analysis, other initiatives to increase trust need to be promoted to strengthen the basis for cooperation. Issues of common concern, such as transboundary flood management, also provide such opportunities.

82. Initiatives, supported by international actors, like the EU and United Nations agencies may play an important role in facilitating cooperation. The role of the donors in facilitating human and technical capacities as well as management plans preparation and infrastructure development is key. Regional initiatives such as those of the Petersberg Phase II/Athens Declaration Process (coordinated by Germany, Greece and the World Bank) acting in

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<sup>15</sup> For more information see <http://www.unece.org/env/water/publications/pub74.htm>

cooperation with GEF, UNECE and the United Nations Development Programme (UNDP), with the technical facilitation of GWP-Med, help facilitate regional dialogue and capacity-building on technical issues. These enhance the benefits stemming from cooperation as well as the initiation of multi-stakeholder dialogue processes between countries related to basin management, e.g. the one for the “extended” Drin River basin.

83. A reference should be made to GEF, whose financing has supported cooperation and the conclusion of official bilateral cooperation arrangements for the management of natural resources in the Ohrid and Skadar/Shkoder Lakes, with similar action is planned for the Prespa Lakes and Neretva River. Regarding the challenging management of transboundary aquifers, a GEF-supported process on the Dinaric Arc Aquifer System envisages the involvement of Albania, Bosnia and Herzegovina, Croatia and Montenegro (as well as Greece and Slovenia to some extent), among others, in a cooperation effort to identify appropriate management measures to be implemented at the national and transboundary levels.

84. The coordination of international actors, to create synergies and avoid duplication or unnecessary effort, should be a goal; this is an issue where there is room for improvement.

85. Actions to secure country ownership are of paramount importance. While international actors help initiate cooperation, empower institutions and establish coordination mechanisms, the responsibility fall to the riparian countries to secure the continuation of efforts and the sustainability of outcomes.

86. A precondition for success is stronger political will with respect to cooperation in general and transboundary waters in particular. Translating scientific data into information that can assist with decision-making, as well as in increasing public awareness, is important to this regard.

87. Stakeholder involvement is also important. The collaboration, compromise and consensus-building process necessary for coordinative/cooperative and eventually joint decision-making depends on open dialogue, good will and trust among the key stakeholders. Sustaining and enhancing, as appropriate, stakeholder involvement in the identification of issues and in decision-making in transboundary waters is likewise crucial. The establishment, at the national level, of clear rules and procedures for public participation in decision-making as well as systematic awareness-raising can greatly assist with the overall process.

88. Another critical issue is the empowerment and upgrading of the role of the joint bodies in SEE in terms of preparing and implementing plans and becoming financially sustainable.

89. Securing financial sustainability would be a decisive factor for the implementation of the activities towards sustainable management of the basins in the long term. In addition to the essential financing from the riparian countries, the establishment of funding mechanisms, introduction of financing tools and the generation of new income from ecotourism and alternative activities could provide more stable and continuous financing and allow management to gradually become independent from assistance from the international community.

90. Development plans at the national level should balance the need for development with the need for sustainable natural resources use and environmental protection. Minimization or elimination of upstream-downstream pressures should also be a factor taken into account.

91. Dams serve as an example of a means of coping with variability and adaptation to the expected effects of climate change. Their construction is becoming an increasingly attractive solution to mitigating the impacts of extreme events (floods and droughts) and for energy security as well as for the generation of revenue. Processes for the construction of dams are ongoing or planned in a number of transboundary river basins. The operation of the available and the planning of new infrastructure on the rivers 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.

92. Regarding floods, the use of better operation techniques and rules regarding the available dam infrastructure are needed to reduce their impacts. Flood prevention in transboundary basins can only be improved and flood effects mitigated through cooperation and the use of common information sources. Joint development and establishment of integrated information systems such as flood forecasting/early warning systems is essential.

93. Tourism is one of the sectors on which many countries rely for economic development. Lakes and parts of the shared basins (e.g. delta areas, particularly at the Adriatic Sea coast) are favourable places for such activities. The effects of related development plans that involve alternative uses for waters and water bodies on lakes-rivers-wetlands-groundwater systems need to be clearly understood before any decision is taken.

94. Establishing cooperative management on shared water bodies is imperative if sustainable development at the basin level is to be achieved and regional security is to be maintained. International experience suggests that, although demanding and time-consuming, cooperation yields real benefits. The Danube River basin is such example for other experiences to follow: more than half of the SEE countries are riparian countries participating in this effort, and can use the experience gained. The growing awareness of the importance of cooperation in the subregion creates a momentum that can be used to move forward, and to enhance joint action or initiate it in cases where it is absent.

## Annex I

### **BRIEF DESCRIPTION OF THE WATER RESOURCES MANAGEMENT FRAMEWORK IN COUNTRIES IN SOUTH-EAST EUROPEAN COUNTRIES**

1. The EU WFD provides the framework for the management of water resources in the SEE countries that are EU Member States: Bulgaria, Greece, Hungary, Romania and Slovenia. It sets specific timeframes for the implementation of its provisions.

2. In Albania, the National Water Council (NWC) is the main inter-institutional body in charge of determining the water policy and major water-related decisions. The Ministry of Environment, Forestry and Water Administration (MEFWA) has overall responsibility for water administration in the country. Within the MEFWA, the Directorate of Nature Protection Policies, Sector for Water Policy, the Directorate of Pollution Prevention Policies and the Directorate for Environmental Impact Assessment and Permitting deal with water administration and water use. Besides the MEFWA, a number of ministries and their subordinate agencies at the national and local levels have responsibility for specific aspects of water management. For administrative purposes, Albania was divided into six rivers basins in 1998; River Basin Councils have been established by the NWC in each of the basins. The Councils serve as local authorities responsible for managing water resources in the respective basins. A Water Agency (part of the MEFWA structure) in each basin is the executive unit of the respective Council. The Albanian Law on Water Resources of 1996 covers both surface water and groundwaters. Several inspectorates are in charge of law enforcement. According to the National Strategy for Environment Protection (2007) the legal and regulatory framework in Albania shall be elaborated in line with European legislation. Several legal acts are foreseen to transpose the EU WFD; the process is expected to be completed by 2014. The work has started with the elaboration of the plan for approximation and with the revision of the Law on Water Resources.

3. Bosnia and Herzegovina is politically decentralized and comprises two governing entities, the Federation of Bosnia and Herzegovina and the Republic of Srpska (RS), with Brčko District as a de facto third entity. The State of Bosnia and Herzegovina is the central authority, but has only limited and specific power with regard to the water sector and environmental protection. (The Ministry of Foreign Trade and Economic Relations and the Ministry of Environment Protection, Development and Use of Natural Resources are the institutions with water related competencies at the level of Bosnia and Herzegovina.) The two Entities and the Brčko District have relevant political, administrative and legal jurisdictions in their own territories. Furthermore, the Federation of Bosnia and Herzegovina is divided into 10 Cantons which have their own authorities (ministries) with competences in water sector including adoption of own relevant laws. The complex administrative structure results in a number of different institutions in charge of water management issues and exacerbates coordination at the national level. The ongoing reform of the water sector has led to the adoption of new water legislation. Water laws of the two Entities are to great extent harmonized and transpose the EU WFD. The Water Law in the Republic of Srpska transpose almost completely the EU WFD, while the Water Law in the Federation transposes the EU WFD at a lower level. Most of the needed by-laws are pending; full implementation of the Directive is expected by 2018. According to the new Water Laws, Entity Ministers (Federal Ministry of Agriculture, Water Management and Forestry in the Federation and Ministry of Agriculture, Forestry and Water

Management in the Republic of Srpska) are responsible for the preparation of Entity Strategies for water management until 2009. The four River Basin District Agencies are in charge of water management and monitoring as well as the preparation of water management plans for river basins (by 2012).

4. In Bulgaria, the main institutions responsible for the management of water resources at the national level are the Council of Ministers and the Ministry of Environment and Water (MoEW). The competent authority for adopting a National Strategy on Management and Development of the Water Sector is the National Assembly. The Council of Ministers adopts national programmes in the sphere of protection and sustainable use of waters. The MoEW implements State policy regarding water management. It is the responsible institution for the implementation of the EU WFD, coordinating activities at the national level. It also supports the Council of Ministers, elaborating national programmes and providing advice for its decisions on issues within the scope of the Water Law (which transposes the EU WFD). Four Basin Directorates have been established as regional bodies of the MoEW competent for the implementation of the EU WFD in each of the four Basin Districts. Basin Councils (consultative bodies having multi-stakeholder synthesis) have been set up in each Basin District.

5. In Croatia, the institutions responsible for the management of water resources include the Croatian Parliament, the National Water Council, the Ministry of Regional Development, Forestry and Water Management (the Directorate for Water Management and the Directorate for Water Policy and International Projects). Other bodies are the national administration, local and regional self-government units as well as “Croatian Waters” (Hrvatske Vode), a legal entity for water management at the national level. Water management legislation has been partly harmonized with EU standards and the requirements of the EU WFD. The Water Act and the Water Management Financing Act, both enacted in 1995 and amended in 2005, define the legal framework of water management in Croatia. A new Water Act and a Water Management Financing Act are currently under Parliament Procedure; these will cover all gaps related to the implementation of the valid Water Act. The long-term strategic document in the field of water management is the Water Management Strategy (Master Plan – 2008). This Strategy is harmonized with other sectoral strategies, and generally complies with the requirements set out in EU WFD.

6. In Greece, the Central Water Agency under the Ministry of Environment, Physical Planning and Public Works is responsible for defining the national water policy and coordinating the activities of the Regional Water Directorates (RWD). Each of the 13 RWDs is responsible for the implementation of the EU WFD and the protection and management of the river basins that are assigned to it. The Regional Water Councils, one in each region, are consultation bodies (having a multi-stakeholders synthesis), while the National Water Council is the equivalent body at the country level. The National Water Committee (consisting of six ministers and meeting once per year) is a political body.

7. In Montenegro, the main institutions in charge of water management at the central level are the Ministry of Agriculture, Forestry and Water Management (water use and protection at the national level) with its subordinate Directorate for Waters as executive agency, the Ministry of Spatial Planning and Environment (MSPE, which has competences related to the overall policy for environmental protection with authority, inter alia, in strategic integration and strategic

processes related to the environment; bilateral/international cooperation, including coordinating of implementation of projects financed by international organizations; and implementation of regional/international conventions) and the National Water Council (NWC, a consultative body). Two Water Basin Districts have been established: the Black Sea and the Adriatic Sea. Water Basin District authorities have not yet been established. The Public Enterprise National Parks of Montenegro, being under the competence of MSPE, is responsible for the management bodies of National Parks (Skadar Lake is among them). MSPE shares some of its competences with a number of other Ministries. Much authority regarding environmental policy is vested in the regional offices of the different ministries. Montenegro has partly harmonized the Law on Waters with the principles of the EU WFD. According to the law, a long-term national water management programme shall be elaborated in the Water Master Plan of Montenegro. The Law on Water Management Financing Act, adopted in 2008, marks a step forward towards full implementation of EU WFD provisions. According to the National Strategy for Sustainable Development, water management principles are implemented in line with the principles of the EU WFD.

8. In Romania, the Ministry of Environment (MoE) has overall responsibility for water resources management. The National Administration “Apele Romane”, being under the coordination of the MoE, is in charge of the implementation of the water management strategy<sup>16</sup>; a Department for River Management and Development Plans and Bureaus for Management Plans in each of its 11 river basin branches in the country has been created to this end. An Inter-ministerial Commission of Waters including representatives of ministries, central authorities and Apele Romane has been established to coordinate work under the EU WFD and implement water-related directives.

9. In Slovenia, water management is the responsibility of the Ministry of the Environment and Spatial Planning. Tasks are delegated to departments within the Ministry, to the Environmental Agency and to the Inspectorate for the Environment and Spatial Planning. The expert assignments are carried out by the Institute for Water (for surface waters) and the Geologic Survey (for groundwaters).

10. In Serbia, activities related to water management fall under the jurisdiction of the Ministry of Agriculture, Forestry and Water Management (Directorate for Water). In addition, the Ministry of Environmental Protection and Spatial Planning and some other institutions, ministries and institutes (such as the National Council for Sustainable Development, the Ministry of Science and Technological Development, the Ministry of Health, the Hydro-meteorological Institute) have certain roles in various aspects of water management. “Serbian Waters” (a public water management company or JVP, “Srbija vode”) implement the water management activities. The Provincial Secretariat of Agriculture, Water Management, and Forestry of Vojvodina Province and the JVP “Vode Vojvodine” have water management responsibilities in the territory of Vojvodina Province. The Law on Waters (1991, amended in 1993, 1994 and 1996) is the basic piece of legislation regarding water resources management regulating a number of key areas and

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<sup>16</sup> Activities include: elaborating Water Management Plans on river basins and the Romanian Water Management Plan; submitting to the Basin Committee the Water Management Plan for approval; implementing the other European Directives in the water management field; reporting to the Inter-ministerial Commission of Waters about the status of the EU WFD implementation; developing water monitoring activities according to the EU WFD regulations.

dealing with surface waters and ground water as well as with transboundary watercourses. The new Law on Waters has been harmonized with European Legislation; its adoption is expected soon.

11. In the former Yugoslav Republic of Macedonia, the Ministry of Environment and Physical Planning (MEPP) is in charge of formulating and implementing environmental policy and is the coordinating body for sustainable development issues. Water management is undertaken at the basin level, but responsibilities are still fragmented. The new Law on Waters (2008; transposes the EU WFD) provides for the transfer of competencies on water resources management from the Ministry of Agriculture, Forestry and Water Economy to the MEPP by 1 January 2010. After this date, the MEPP will assume full responsibility for water resources management in the country. In the meantime, the two Ministries are working jointly for the establishment of the required administrative capacities in water management at the river basin level. Basin management authorities are expected to be in place by 2009. The State Environment Inspectorate and other bodies under the MEPP are responsible for law enforcement. Other ministries and bodies have also direct or indirect competences on water resources as well as natural resources and environmental management.

12. In Turkey, water-related activities are centrally planned. The State Planning Organisation, under the Prime Minister, is the strategic organization established to guide economic and social development. Water resources management is described in the five-year development plans. The Ministry of Environment and Forestry (MoEF) has overall responsibilities for water resources management; some of the responsibilities are shared with various ministries. As a primary executive State water agency under the auspices of MoEF, the General Directorate of State Hydraulic Works (DSI) plays a leading role in water resources development in Turkey. It is organized around the 25 major river basins in the country, with Regional Directorates being responsible for preparing master plans that set priorities for the development of water resources in the respective basins. These plans generally integrate development strategies in all water-related sectors. There are no river basin organizations. Instead, the regional directorates of DSI are the main organizations for water resources development at the basin level. International relations on transboundary water resources are in the realm of the Prime Minister's Office and the Ministry of Foreign Affairs, Department on Regional and Transboundary Waters.

## Annex II

### INVENTORY OF TRANSBOUNDARY WATERS INCLUDED IN THE ASSESSMENT OF SOUTH-EASTERN EUROPE

#### I. BLACK SEA DRAINAGE BASIN (see document ECE/MP.WAT/2009/9)

Basin / sub-basin(s)	Recipient	Riparian countries	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
Lower Danube basin - Reservoirs Iron Gates I and II		Romania, Serbia	-	-	-	-	
- Drava and Mura	Danube	Austria, Croatia, Hungary, Italy, Slovenia	No. 9 <sup>17</sup> Ormoz-Sredisce ob Drava/Drava-Varazdin	Slovenia -----▶ Croatia			
			No. 11 Mura	Hungary, Croatia			
			No. 12 Drava/Drava West	Hungary -----▶ Croatia			
			No. 13 Baranja/Drava East	Hungary-----▶ Croatia			

<sup>17</sup> Numbering of aquifers correspond to numbering in the *First Assessment of Transboundary Rivers, Lakes and Groundwaters*.

Basin / sub-basin(s)	Recipient	Riparian countries	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
					Karstwasser-Vorkommen Karawanken/Karavanke (further divided in five transboundary aquifers: (i) the Kepa/Mittagskogel aquifer (furthest west); (ii) the Košuta aquifer; (iii) the Bela/Vellach valley aquifer; (iv) Mount Olševa/Uschowa; (v) the massif Peca/Petzen (furthest east))	Austria, Slovenia	Groundwater flow: According to Austria, from Slovenia to Austria. According to Slovenia: flow is variable; from one country to the other depending on the aquifer
					Mura – Zala basin / Radgona – Vaš	Slovenia, Austria, Hungary	
					Černeško-Libeliško <sup>18</sup> (Alluvial aquifer of Drava River)	Austria ----▶ Slovenia	
					Kučnica (Alluvial aquifer of Mura River)	Austria ----▶ Slovenia	
					Goričko <sup>19</sup>	Slovenia, Hungary	
					Kot <sup>20</sup>	Hungary, Slovenia --- --▶ Croatia	

<sup>18</sup> Černeško-Libeliško and Kučnica are part of the alluvial aquifers system of Drava and Mura rivers at Austrian-Slovenian borders

<sup>19</sup> Goričko and Mura-Zala basin / Radgona-Vaš are part of the Goričko aquifer system

<sup>20</sup> Kot is part of the alluvial aquifers system of Drava and Mura Rivers at Hungarian-Slovenian-Croatian borders

Basin / sub-basin(s)	Recipient	Riparian countries	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
- Sava	Danube	Albania, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia	No. 5 Cerknica/Kupa <sup>21</sup>	Slovenia, Croatia	No. 5.1 Kočevje Goteniška gora	Slovenia, Croatia	
			No. 6 Radovic-Metlika/Zumberak	Croatia -----▶ Slovenia			
			No. 7 Bregana-Obrezje/Sava-Samobor	Slovenia -----▶ Croatia	No. 7.1 Bregana	Slovenia -----▶ Croatia	
			No. 8 Bizeljsko/Sutla	Slovenia -----▶ Croatia	No. 8.1 Boč	Slovenia, Croatia	
					No. 8.2 Rogaška	Slovenia, Croatia	
					No. 8.3 Atomske toplice	Slovenia, Croatia	Groundwater flows in both directions
					No. 8.4 Bohor	Slovenia -----▶ Croatia	
			No. 8.5 Orlica	Slovenia -----▶ Croatia			
No. 10 Dolinsko-Ravensko/Mura	Slovenia, Croatia			Groundwater flow in both directions. Croatia reports that this aquifer belongs to the Drava river basin; it is not a transboundary aquifer			

<sup>21</sup> Groundwater flow: according to Croatia, groundwater flows in both directions; According to Slovenia: from Croatia to Slovenia

Basin / sub-basin(s)	Recipient	Riparian countries	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
			No. 15 Srem-West Srem / Sava,	Serbia -----► Croatia			Croatia reports that a transboundary aquifer probably exists, but no detailed research has been conducted and there is no data
			No. 16 Posavina I/Sava	Bosnia and Herzegovina -----► Croatia			
			No. 17 Kupa	Bosnia and Herzegovina -----► Croatia			
			No. 18 Pleševica/Una	Croatia -----► Bosnia and Herzegovina			
			No. 29 Lim	Montenegro, Serbia			Groundwater flow direction relatively equally shared in both countries; perpendicular to the Lim valley in the karstic aquifer, and parallel to the stream in the alluvium

Basin / sub-basin(s)	Recipient	Riparian countries	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
			No. 30 Tara massif	Serbia -----► Bosnia and Herzegovina			Both countries reported that there are negligible conditions for nomination as a transboundary groundwater
			No. 31 Macva-Semberija	Serbia, Bosnia and Herzegovina			
- Nisava	Danube	Bulgaria, Serbia	No. 34 Stara Planina/Salasha Montana	Bulgaria -----► Serbia	-	-	
- Timok	Danube	Bulgaria, Serbia	No. 34 Stara Planina/Salasha Montana	Bulgaria -----► Serbia	-	-	

## II. MEDITERRANEAN SEA DRAINAGE BASIN

(see documents ECE/MP.WAT/2009/10 and 11)

Basin/sub-basin(s) <sup>22</sup>	Recipient	Riparian countries <sup>23</sup>	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
Krka	Mediterranean Sea	Bosnia and Herzegovina, Croatia	No. 19 Krka	Bosnia and Herzegovina -----► Croatia			
Neretva	Mediterranean Sea	Bosnia and Herzegovina, Croatia	No. 21 Neretva Right coast	Bosnia and Herzegovina -----► Croatia			

<sup>22</sup> The name of the water body used in the upstream country is indicated first, followed by the name used in the downstream country(ies).

<sup>23</sup> Counties in alphabetical order

Basin/sub-basin(s) <sup>22</sup>	Recipient	Riparian countries <sup>23</sup>	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
			No. 22 Trebišnjica/Neretva Left coast	Bosnia and Herzegovina -----► Croatia			
			No. 23 Bileko lake	Montenegro -----► Bosnia and Herzegovina			
Drin	Mediterranean Sea	Albania, Greece, Kosovo (United Nations administered territory under Security Council resolution 1244), Montenegro, the former Yugoslav Republic of Macedonia	No. 26 Beli Drim/Drini Bardhe	Kosovo (United Nations administered territory under Security Council resolution 1244) - -----► Albania			
- Lake Ohrid		Albania, the former Yugoslav Republic of Macedonia	No. 39 Prespa and Ohrid Lakes	Albania, Greece -----► the former Yugoslav Republic of Macedonia			
- Prespa Lakes		Albania, Greece, the former Yugoslav Republic of Macedonia					
- Lake Skadar / Shkoder		Albania, Montenegro	No. 25 Skadar/Shkoder Lake, Dinaric east coast aquifer	Montenegro, Albania			Groundwater flow in both directions
Aoos/Vijosa	Mediterranean Sea	Albania, Greece	No. 38 Nemechka/Vjosa-Pogoni	Albania, Greece			
Vardar/Axios	Mediterranean Sea	Greece, the former Yugoslav Republic of Macedonia	No. 41 Gevgelija/ Vardar - Axios	the former Yugoslav Republic of Macedonia -----► Greece			

Basin/sub-basin(s) <sup>22</sup>	Recipient	Riparian countries <sup>23</sup>	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
- Lake Doirani/Dojran		Greece, the former Yugoslav Republic of Macedonia	No. 42 Dojran Lake	Greece, the former Yugoslav Republic of Macedonia			
Struma/Stymonas	Mediterranean Sea	Bulgaria, Greece, Serbia, the former Yugoslav Republic of Macedonia,	No. 43 Sandansky - Petrich	the former Yugoslav Republic of Macedonia -----▶ Bulgaria and Greece			According to Bulgaria the Sandansky – Petrich aquifer is divided in two distinguished aquifers thus, should be substituted by (i) the Sandansky valley aquifer (shared by Bulgaria and Greece) and (ii) the Petrich valley aquifer (shared by the former Yugoslav Republic of Macedonia and Bulgaria) <sup>24</sup> .

<sup>24</sup> The position of Greece and the former Yugoslav Republic of Macedonia is not available in this regard

Basin/sub-basin(s) <sup>22</sup>	Recipient	Riparian countries <sup>23</sup>	Aquifers hydraulically connected to surface water systems and included in the first assessment	Shared by	Aquifers hydraulically connected to surface water systems that had not been included in the first assessment	Shared by	Notes
			No. 44 Orvilos-Agistros/Gotze Delchev	Bulgaria, Greece			According to Greece <sup>25</sup> the Orvilos-Agistros/Gotze Delchev karstic aquifer is not hydraulically linked with either Struma/Strymonas or Mesta/Nestos basins. Bulgaria expresses uncertainty whether the aquifer should be considered as transboundary
Mesta/Nestos	Mediterranean Sea	Bulgaria, Greece					
Maritsa / Meric / Evros	Mediterranean Sea	Bulgaria, Greece, Turkey	No. 45 Orestiada /Svilengrad-Stambolo/Edirne	Bulgaria -----► Turkey and Greece			
					Evros / Meriç	Turkey -----► Greece	According to Turkey within Maritsa/Evros
- Arda/Ardas	Maritza/Meric/Evros	Bulgaria, Greece, Turkey					
- Tundzha/Tundja	Maritza/Meric/Evros	Bulgaria, Turkey	No. 46 Topolovgrad massif	Bulgaria -----► Turkey			

<sup>25</sup> Based on information provided by Greece.

## II. TRANSBOUNDARY GROUNDWATERS IN SOUTH-EASTERN EUROPE

(see documents ECE/MP.WAT/2009/9, 10 and 11)

No <sup>26</sup>	Aquifer Name	Shared by <sup>27</sup>	Aquifers that had not been included in the first assessment	Shared by <sup>28</sup>	Notes
1	Secovlje-Dragonja/Istra	Croatia, Slovenia			Aquifer system of Istra and Kvarner. Groundwater flow: according to Slovenia, from Slovenia to Croatia. According to Croatia, groundwater flows in both directions. Adriatic assessment.
2	Mirna/Istra	Slovenia -----► Croatia			Aquifer system of Istra and Kvarner. Adriatic Sea assessment
			No. 2.1 Mirna	Croatia, Slovenia	Aquifer system of Istra and Kvarner. Adriatic Sea assessment
			No. 2.2 Območje izvira Rižane	Croatia, Slovenia	Aquifer system of Istra and Kvarner. Adriatic Sea assessment
3	Opatija/Istra	Croatia, Slovenia			Aquifer system of Istra and Kvarner. Adriatic Sea assessment
4	Rijeka/Istra	Croatia, Slovenia			Aquifer system of Istra and Kvarner. Adriatic Sea assessment
			No. 4.1 Riječina – Zvir	Slovenia -----► Croatia	Aquifer system of Istra and Kvarner. Adriatic Sea assessment
			No. 4.2 Notranjska Reka (part of Bistrica-Snežnik in Slovenia)	Croatia, Slovenia	Aquifer system of Istra and Kvarner. Adriatic Sea assessment
			No. 4.3 Novokračine	Croatia, Slovenia	Aquifer system of Istra and Kvarner. Adriatic Sea assessment
5	Cerknica/Kupa	Croatia, Slovenia			According to Croatia, groundwater flows in both directions; according to Slovenia: from Croatia to Slovenia. Black Sea assessment
			No. 5.1 Kočevje Goteniška gora	Croatia, Slovenia	Black Sea assessment
6	Radovic-Metlika/Zumberak	Croatia -----► Slovenia			Black Sea assessment

<sup>26</sup> Numbering of aquifers correspond to numbering in the *First Assessment of Transboundary Rivers, Lakes and Groundwaters*.

<sup>27</sup> Dominant groundwater flow direction between countries indicated by arrow where known; when this is not known or information is not adequate, countries are listed in alphabetical order.

<sup>28</sup> Dominant groundwater flow direction between countries indicated by arrow where known; when this is not known or information is not adequate, countries are listed in alphabetical order.

No <sup>26</sup>	Aquifer Name	Shared by <sup>27</sup>	Aquifers that had not been included in the first assessment	Shared by <sup>28</sup>	Notes
7	Bregana-Obrezje/Sava-Samobor	Slovenia -----► Croatia			Black Sea assessment
			No. 7.1 Bregana	Slovenia-----► Croatia	Black Sea assessment
8	Bizeljsko/Sutla	Slovenia-----► Croatia			Black Sea assessment
			No. 8.1 Boč	Croatia, Slovenia	Black Sea assessment
			No. 8.2 Rogaška	Croatia, Slovenia	Black Sea assessment
			No. 8.3 Atomske toplice	Croatia, Slovenia	Groundwater flow in both directions. Black Sea assessment
			No. 8.4 Bohor	Slovenia -----► Croatia	Black Sea assessment
			No. 8.5 Orlica	Slovenia-----► Croatia	Black Sea assessment
9	Ormoz-Sredisce ob Drava/ Drava-Varazdin	Slovenia -----► Croatia			Black Sea assessment
10	Dolinsko-Ravensko/Mura	Croatia, Slovenia			Groundwater flow in both directions. Croatia reports that this is not a transboundary aquifer. Black Sea assessment
11	Mura	Croatia, Hungary			Black Sea assessment
12	Drava/Drava West	Hungary -----► Croatia			Black Sea assessment
13	Baranja/Drava East	Hungary-----► Croatia			Black Sea assessment
14	SW Backa/Dunav	Serbia -----► Croatia			Black Sea assessment
15	Srem -West Srem/Sava	Serbia -----► Croatia			Croatia reports that a transboundary aquifer probably exists, but no detailed research has been conducted and there is no data. Black Sea assessment
16	Posavina I/Sava	Bosnia and Herzegovina - ----► Croatia			Black Sea assessment
17	Kupa	Bosnia and Herzegovina - ----► Croatia			Black Sea assessment
18	Pleševica/Una	Croatia -----► Bosnia and Herzegovina			Black Sea assessment
19	Krka	Bosnia and Herzegovina - ----► Croatia			Adriatic Sea assessment
20	Cetina	Bosnia and Herzegovina - ----► Croatia			Adriatic Sea assessment

No <sup>26</sup>	Aquifer Name	Shared by <sup>27</sup>	Aquifers that had not been included in the first assessment	Shared by <sup>28</sup>	Notes
21	Neretva Right coast	Bosnia and Herzegovina -----► Croatia			Adriatic Sea assessment
22	Trebisnjica/ Neretva Left coast	Bosnia and Herzegovina - ----► Croatia			Adriatic Sea assessment
23	Bileko lake	Montenegro -----► Bosnia and Herzegovina			Adriatic Sea assessment
24	Dinaric littoral (west coast)	Croatia, Montenegro			Adriatic Sea Assessment
25	Skadar/Shkoder Lake, Dinaric east coast aquifer	Albania, Montenegro			Groundwater flow in both directions. Adriatic Sea assessment
26	Beli Drim/Drini Bardhe	Kosovo (United Nations administered territory under Security Council resolution 1244) -----► Albania			Adriatic Sea assessment
27	Metohija	Kosovo (United Nations administered territory under Security Council resolution 1244), Montenegro			Adriatic Sea assessment
28	Pester	Serbia -----► Montenegro			Adriatic Sea assessment
29	Lim	Montenegro, Serbia			Groundwater flow direction relatively equally shared in both countries; perpendicular to the Lim valley in the karstic aquifer, and parallel to the stream in the alluvium. Black Sea assessment
30	Tara massif	Serbia -----► Bosnia and Herzegovina			Both countries reported that there are negligible conditions for nomination as a transboundary groundwater. Black Sea assessment
31	Macva-Semberija	Bosnia and Herzegovina, Serbia			Black Sea assessment
32	NE Backa / Danube -Tisza	Hungary -----► Serbia			Black Sea Assessment

No <sup>26</sup>	Aquifer Name	Shared by <sup>27</sup>	Aquifers that had not been included in the first assessment	Shared by <sup>28</sup>	Notes
33	North and South Banat	Romania-----► Serbia			Black Sea Assessment
34	Stara Planina/Salasha Montana	Bulgaria -----► Serbia			Bulgaria reported that the aquifer is further divided in four groundwater bodies (identified in accordance with the EU WFD): karst waters in West Balkan Karst Basin; karst waters in Godech massif; fissured waters in volcanogenic-sedimentary formation; porous groundwater in alluvial quaternary of Bregovo-Novo selo lowland. Serbia reported that the aquifer is further divided in four groundwater bodies: karst waters in Nisava Basin (two groundwater bodies), fissured waters in Nisava Basin and fissured waters in Timok Basin. Black Sea Assessment
35	Korab/Bistra-Stogovo	the former Yugoslav Republic of Macedonia -----► Albania			Adriatic Sea assessment
36	Jablanica/Golobordo	Albania, the former Yugoslav Republic of Macedonia			Groundwater flow occurs in both directions. Adriatic Sea assessment
37	Mourgana Mountain/Mali Gjere	Albania, Greece			Adriatic Sea assessment
38	Nemechka/Vjosa-Pogoni	Albania, Greece			Adriatic Sea assessment
39	Prespa and Ohrid Lakes	Albania and Greece -----► the former Yugoslav Republic of Macedonia			Groundwater flow is interconnected between all three countries. Adriatic Sea assessment
40	Pelagonia-Florina/Bitolsko	Greece-----► the former Yugoslav Republic of Macedonia			Aegean Sea assessment
41	Gevgelija/ Vardar - Axios	the former Yugoslav Republic of Macedonia ---► Greece			Aegean Sea assessment

No <sup>26</sup>	Aquifer Name	Shared by <sup>27</sup>	Aquifers that had not been included in the first assessment	Shared by <sup>28</sup>	Notes
42	Dojran Lake	Greece, the former Yugoslav Republic of Macedonia			Groundwater flow, generally towards the lake. Aegean Sea assessment
43	Sandansky-Petrich	the former Yugoslav Republic of Macedonia -----► Bulgaria and Greece			According to Bulgaria, the Sandansky – Petrich aquifer is divided in two distinguished aquifers thus, should be substituted by them here <sup>29</sup> : (i) the Sandansky valley aquifer (shared by Bulgaria and Greece) and (ii) the Petrich valley aquifer (shared by the former Yugoslav Republic of Macedonia and Bulgaria). Aegean Sea assessment
44	Orvilos-Agistros/Gotze Delchev	Bulgaria, Greece			According to Greece <sup>30</sup> the Orvilos-Agistros/Gotze Delchev karstic aquifer is not hydraulically linked with either Struma/Strymonas or Mesta/Nestos basins. In addition, Bulgaria expresses uncertainty whether the aquifer should be considered as transboundary. Aegean Sea assessment
45	Orestiada /Svilengrad-Stambolo/Edirne	Bulgaria -----► Turkey and Greece			Aegean Sea assessment
46	Topolovgrad massif	Bulgaria -----► Turkey			Aegean Sea assessment
47	Pleistocene Mure /Maros alluvial fan	Romania-----► Hungary			Upper & Lower; Black Sea assessment
48	Samos/Somes alluvial fan	Romania -----► Hungary			Upper & Lower; Black Sea assessment
49	Middle Sarmatian - Pontian	Moldova -----► Romania			Will be assessed later with the neighbouring subregions.
50	Neogene-Sarmatian	Bulgaria -----► Romania			Black Sea assessment
51	U Jurassic - L Cretaceous	Bulgaria -----► Romania			Black Sea assessment

<sup>29</sup> The position of Greece and the former Yugoslav Republic of Macedonia is not available in this regard

<sup>30</sup> Based on information provided by Greece through email communication with UNECE (9/6/2009)

No <sup>26</sup>	Aquifer Name	Shared by <sup>27</sup>	Aquifers that had not been included in the first assessment	Shared by <sup>28</sup>	Notes
53			Karstwasser-Vorkommen Karawanken / Karavanke	Austria, Slovenia	Further divided in five cross-border aquifers: (i) the Kepa/Mittagskogel aquifer (furthest west); (ii) the Košuta aquifer; (iii) the Bela/Vellach valley aquifer; (iv) Mount Olševa/Uschowa; (v) the massif Peca/Petzen (furthest east). Groundwater flow: according to Austria, from Slovenia to Austria, according to Slovenia flow is variable; from one country to the other depending on the aquifer. Black Sea assessment
54			Črneško-Libeliško <sup>31</sup> (Alluvial aquifer of Drava River)	Austria -----► Slovenia	Black Sea assessment
55			Kučnica (Alluvial aquifer of Mura River)	Austria -----► Slovenia	Black Sea assessment
56			Goričko <sup>32</sup>	Hungary, Slovenia	Black Sea assessment
57			Mura – Zala basin / Radgona – Vaš	Austria, Hungary, Slovenia	Black Sea assessment
58			Kot <sup>33</sup>	Hungary, Slovenia -----► Croatia	Black Sea assessment
52			Evros / Meriç	Turkey -----► Greece	It is possible that Bulgaria is also a riparian country. Aegean Sea assessment
xx			Vrtojbenko polje	Italy, Slovenia	Alluvial gravel aquifer of Vipava and Soča rivers. Will be assessed later with the neighbouring subregions
xx			Osp – Boljunec	Slovenia -----► Italy	Aquifer system of Brestovica (highly karstified aquifers of Adriatic coast and Timavo river). Will be assessed later with the neighbouring subregions.
xx			Brestovica	Slovenia -----► Italy	
xx			Rabeljski rudnik	Italy -----► Slovenia	Aquifer system of Soča/Isonzo (fissured, dominantly dolomite and limestone aquifers of western catchment area of Soča river). Will be assessed later with the neighbouring subregions.
xx			Kobariški stol	Italy -----► Slovenia	
59			Vidlic/Nishava	Bulgaria, Serbia	Black Sea assessment

<sup>31</sup> Črneško-Libeliško and Kučnica are part of the alluvial aquifers system of Drava and Mura Rivers at Austrian-Slovenian borders

<sup>32</sup> Goričko and Mura-Zala basin / Radgona-Vaš are part of the Goričko aquifer system

<sup>33</sup> Kot is part of the alluvial aquifers system of Drava and Mura Rivers at Hungarian-Slovenian-Croatian borders

## Annex III

**FORMAL AGREEMENTS FOR THE MANAGEMENT OF TRANSBOUNDARY  
WATER BODIES IN SOUTH-EASTERN EUROPE**

Countries	Water body / basin concerned	Title / key provisions	Signed (S) Into force (E)
BA, HR, SI, SE	Sava River Basin	<p><i>Framework Agreement on the Sava River Basin (FASRB)</i></p> <p>The Agreement integrates all aspects of water resources management. According to it “<i>The Parties shall agree to adapt existing bilateral agreements, if necessary, to avoid contradictions with basic principles of this Agreement</i>”. Two Protocols to the FASRB have been signed so far (see below). The International Sava River Basin Commission (ISRBC) has been established, with legal status of an international organization, for the purpose of implementation of the FASRB, and realization of the mutually agreed goals: (i) establishment of the international navigation regime on the Sava River and its navigable tributaries; (ii) establishment of the sustainable water management; (iii) undertaking of measures to prevent or limit hazards and to reduce or eliminate their adverse consequences. The FASRB gives to the ISRBC the international legal capacity for making decisions in the field of navigation and providing recommendations to the countries on all other issues.</p>	2002 (S); 2004 (E)
BA, HR, SI, SE	Sava River Basin	<p><i>Protocol on the navigation regime to the Framework Agreement on the Sava River Basin</i></p>	2002 (S); 2004 (E)
BA, HR, SI, SE	Sava River Basin	<p><i>Protocol on the prevention of water pollution caused by navigation to the Framework Agreement on the Sava River Basin</i></p>	2009 (S)
HR, SI		<p><i>Agreement between the Government of the Republic of Croatia and the Republic of Slovenia on water management relations</i></p> <p>It concerns water management issues of mutual interest, including activities, which may influence water quality or quantity and require joint coordination. Provisions of the Agreement are related to all economic relations, measures and activities regarding transboundary water bodies. A joint commission for water management was established having: a Sub-commission for the Danube and Mura basin; a Sub-commission for the Sutla, Sava and Kupa basins; a Sub-commission for the water basin of the Littoral and Istrian catchment areas and coastal waters; a Sub-commission for water quality. Work of the Commission, Sub-commissions and working groups is still under way.</p>	1996 (S); 1998 (E)
HR, SI		<p><i>Agreement between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on cooperation on protection against natural and civic disasters</i></p>	1997 (S); 1999 (E)

Countries	Water body / basin concerned	Title / key provisions	Signed (S) Into force (E)
BA, HR		<p><i>Agreement between the Council of Ministers of Bosnia and Herzegovina and the Government of the Republic of Croatia on Water Management Relations</i></p> <p>It concerns activities and measures to address water management issues, particularly in the preparation of necessary documentation and carrying out works related to water use, water protection from pollution, protection from the harmful effects of water, maintenance of water management facilities, reconstruction of the war destroyed water management facilities and construction of new as well as ensuring necessary financial resources. Provisions of this Agreement shall apply to all activities on watercourses which constitute the mutual state border between the two countries or on the watercourses which are cut by state borders as well as to those areas that are of interest to improve water management.</p>	1996 (S); 1997 (E)
BA, HR		<p><i>Protocol on establishment of navigation on the Sava River waterway and its tributaries between Bosnia and Herzegovina and Republic of Croatia</i></p>	1998 (S); 1998 (E)
BA, HR		<p><i>Agreement between the Council of Ministers of Bosnia and Herzegovina and the Government of the Republic of Croatia on cooperation on protection against natural and civic disasters</i></p>	2001 (S)
BA, HR		<p><i>Agreement between the Council of Ministers of Bosnia and Herzegovina and the Government of the Republic of Croatia on navigation on the navigable waterways and its marking and maintenance</i></p>	2004 (S)
BA, HR	Neretva and Trebišnjica hydrogeological basin	<p><i>Agreement between the Croatian Government and the Council of Ministers of Bosnia and Herzegovina on common financing of maintenance and operation of regional sewerage system "Komarna- Neum Mljetski Kanal"</i></p> <p>The agreement relates to the mutual maintenance and operation of the regional sewerage system, which cover coastal settlements in the two countries. The sewerage system was constructed during a period when Croatia and Bosnia and Herzegovina were within the same State.</p>	2007 (S)
HR, ME		<p><i>Agreement between the Government of the Republic of Croatia and the Government of Republic of Montenegro on water management relations</i></p> <p>The agreement concerns issues related to all surface and groundwaters which constitute or intersect border between Montenegro and Croatia as well as the waters which, due to their downstream influence, are important for both countries, as well as sea waters. The provisions relate to interventions and activities which may influence waters, water infrastructure and water usage equipment. A permanent Croatian-Montenegro Commission for Water Management as well as Sub-commissions have been established but work is in an early stage.</p>	2007 (S)
HR, HU		<p><i>Agreement on Water Management Relations between the Government of the Republic of Croatia and the Government of the Republic of Hungary</i></p> <p>A permanent Croatian-Hungarian Commission for Water Management has been established under this agreement (adoption of common regulations for protection against the harmful effects of water, ice defense and protection of water quality and other regulations if needed). A number of sub-commissions for specific issues have been also set up.</p>	1994 (S)
GR, TR	Maritsa/ Evros/ Meriç River	<p><i>Agreement on the Installation of Hydraulic Systems on Both Sides of the Evros/Meriç River.</i></p> <p>It covered specifications for infrastructure that both parties were allowed to build for flood protection and erosion control. It also included provisions for the exchange of data, notification to the other party prior to construction, and for dispute settlement.</p>	1934 (S)

Countries	Water body / basin concerned	Title / key provisions	Signed (S) Into force (E)
GR, TR	Maritsa/ Evros/ Meriç River	Agreement related to the construction of flood control measures.	1955 (S)
GR, TR	Maritsa/ Evros/ Meriç River	<i>Protocol on the Rehabilitation of the Meriç River Basin Forming the Significant Part of Turkish-Greek Border in Thrace.</i> It encompassed articles on the modification of the border between the two parties, as exchange of land was necessary to construct infrastructure on the river. Any disputes would have been assigned to an external expert. Other articles included stipulations on specific technical issues of water infrastructure construction.	1963 (S)
GR, TR	Maritsa/ Evros/ Meriç and Arda/ Ardas Rivers	<i>Memorandum of Understanding Concerning Cooperation on Environmental Protection</i> It stipulates, that the two Parties “shall exchange scientific, technical and legal information among governmental bodies and shall encourage such exchange among academic institutions” (Article 2). “Coordination of cooperation in the different fields of activities shall be managed by a Joint Committee comprising five representatives from each of the two countries” (Article 8). The possible fields of cooperation named do not, however, include river management. Yet, some of the areas mentioned, such as “combating marine pollution”, “environmental impact assessment”, “land-based sources of pollution”, provide options for cooperation relating to the management of the river.	2001 (S)
BG, TR	Maritsa/ Evros/ Meriç, Arda/Arda s and Tundja Rivers	<i>Agreement between the Republic of Turkey and the People’s Republic of Bulgaria on the Cooperation of the Use of the Waters in the Rivers Flowing in the Soils of the Two Countries</i> It covers issues of flood protection, data exchange, joint studies, no harm principle, dispute settlement. It refers to the principles of international law and good neighbourly relations. The main objective was to regularize beneficial use of boundary and transboundary rivers and to provide for flood protection. A Joint Commission was authorised to settle any disputes which may have arisen.	1968 (S)
BG, TR	Maritsa/ Evros/ Meriç, Arda/Arda s and Tundja Rivers	<i>Agreement on Long Term Economic, Technical, Industrial and Scientific Cooperation between the Government of the Republic of Turkey and the Government of the People’s Republic of Bulgaria</i> It states that cooperation between the concerned Turkish and Bulgarian enterprises and organizations shall be simplified in all the fields of economy including “energy production and irrigation, including the joint use of the waters whose shores are on both countries, for energy production and irrigation purposes” (Article 5).	1975 (S)
BG, TR	Tundja River	<i>Agreement on Assistance and Cooperation in the Field of Water for Reducing the Negative Effects of the Drought of 1993</i> The agreement was signed to alleviate the severe consequences suffered by both parties due to drought. It states that Bulgaria, on a one-off basis and limited to 1993, should provide additional water to Turkey from the river Tundja. In turn, Turkey should allocate US\$ 0.12 per m <sup>3</sup> provided.	1993 (S)
BG, TR	Maritsa/ Evros/ Meriç River	Protocol signed between the DSI and the National Institute of Meteorology & Hydrology (NIMH) of Bulgaria in 2002 for the installation, operation, and maintenance of a flow observation telemetry station on the Maritsa River in Svilengrad, Bulgaria.	2002 (S)

Countries	Water body / basin concerned	Title / key provisions	Signed (S) Into force (E)
BG, GR	Struma/ Strymonas, Mesta/Nestos, Arda/Aradas, Maritsa/ Evros/ Meriç Rivers	<p><i>Agreement on Cooperation between the People's Republic of Bulgaria and the Kingdom of Greece concerning the utilization of the waters of the rivers crossing the two countries</i></p> <p>Both countries are bound, inter alia, not to cause significant damage to each other, arising from the construction and operation of projects and installations along the valleys of the rivers Struma/Strymonas, Mesta/Nestos, Arda/Aradas and Maritsa/Evros Rivers. Exchange of information and data for preventing floods as well as information concerning the installations subject to the agreement envisaged.</p>	1964 (S)
BG, GR	Struma/ Strymonas, Mesta/ Nestos, Arda/ Aradas, Maritsa/ Evros/ Meriç Rivers	<p><i>Agreement for the Establishment of the Greek Bulgarian Committee for cooperation in the fields of electric energy and the utilization of the waters of the rivers crossing the two countries</i></p> <p>This Committee has been assigned to follow up the proper application of the 1964 agreement.</p>	1971 (S)
BG, GR	Mesta / Nestos River	<p><i>Agreement between the Government of the Hellenic Republic and the Government of the Republic of Bulgaria for the Waters of River Nestos</i></p> <p>The Agreement regulates the use of water of the river. The Agreement deals, inter alia, with the exchange of information and data concerning the quantity and quality status of the River. Parties agree to set up a Commission with the task to monitor and control the implementation of the Agreement and to settle any eventual disagreements between parties.</p>	1995 (S)
BG, GR		<p><i>Agreement between the Ministry of Environment and Water of the Republic of Bulgaria and the Ministry for the Environment, Physical Planning and Public Works of the Hellenic Republic on Cooperation in the field of Environmental Protection</i></p>	2002 (S); 2005 (E)
BG, RO		<p><i>Agreement between the Ministry of Environment and Water of Bulgaria and the Ministry of Environment of Romania for collaboration in the field of water resources management</i></p> <p>Three working groups have been set up, regarding: (i) River Basin Management (ii) Danube drainage basin (iii) Black Sea drainage basin.</p>	2005 (E)
AL, MK		<p><i>Agreement between Yugoslavia and Albania on "Questions of Water Management"</i>.</p> <p>A Joint Water Management Committee was established under this agreement but became ineffective soon after its establishment.</p>	1956 (E)
AL, GR		<p><i>Agreement between Albania and Greece</i></p> <p>The Agreement provides for the establishment of a Permanent Greek-Albanian Commission on transboundary freshwater issues with such specific tasks as the setting of joint water-quality objectives and criteria, the drafting of proposals for relevant measures to achieve the water-quality objectives, and the organization and promotion of national networks for water-quality monitoring</p>	2005 (E)

Countries	Water body / basin concerned	Title / key provisions	Signed (S) Into force (E)
AL, MK	Ohrid Lake	<p><i>Agreement for the Protection and Sustainable Development of Lake Ohrid and its Watershed</i></p> <p>It was signed by the Prime Ministers of Albania and the former Yugoslav Republic of Macedonia. It proactively allows for bringing Greece into the management regime as a full partner in the future. The Lake Ohrid Watershed Committee (LOWC) was established in November 2005 empowered with legal authority in both countries.</p>	2004 (S); 2005 (E)
AL, ME	Drin River, Skadar / Shkoder Lake, Buna/ Bojana River	<p><i>Protocol on the "Cooperation on Water Management"</i></p> <p>It concerns regulation of the water regime of Skadar-Shkoder Lake and the Drin and Bojana-Buna Rivers. Scientific research is being conducted by the Academies of Sciences and Arts of both countries.</p>	2003 (S)
AL, ME	Skadar / Shkoder Lake	<p><i>Memorandum of Understanding for Cooperation in the Field of Environment Protection and Sustainable Development Principle Implementation</i></p> <p>Signed between the Ministry of Environment of the Republic of Albania and the Ministry of Environment and Physical Planning of the Republic of Montenegro. Provided for support and cooperation on Sustainable development of the shared natural resources, Lake Skadar/Shkoder in particular, as well as in the field on environment in general. Expired on May 2008.</p>	2003 (S)
AL, ME	Skadar / Shkoder Lake	<p><i>Agreement between the Ministry of Tourism and Environment of Montenegro and Ministry of Environment, Forestry and Water Administration of Republic of Albania for the Protection and Sustainable Development of the Skadar/Shkoder Lake</i></p> <p>The legal instrument for the implementation of the joint Strategic Action Plan regarding the lake. The Skadar/Shkoder Lake Commission has been established under the Agreement for the implementation of common activities for the protection of Shkodra lake and its surrounding ecosystem.</p>	2008 (S)
BA, BG, HR, ME, RO, RS, SI, EC <sup>26</sup>	Danube River	<p><i>Convention on Co-operation for the Protection and Sustainable Use of the River Danube</i> (Danube River Protection Convention).</p> <p>The overall legal instrument for cooperation and transboundary water management in the Danube River Basin. The main objective is to ensure that surface waters and groundwater within the Danube River Basin are managed and used sustainably and equitably.</p>	1994 (S); 1998 (E)
RS, HU		<p><i>Agreement between the Governments of the FPR of Yugoslavia and the PR of Hungary regarding water management issues</i></p> <p>The agreement is being implemented through the activities of a Commission that has been established for this reason; sub-commissions for water protection, water management, and protection of water quality have been established as support groups of the Commission.</p>	1955 (S)

<sup>26</sup> Austria, the Czech Republic, Germany, Hungary, the Republic of Moldova, Slovakia and Ukraine are also Parties to the Danube Convention

Countries	Water body / basin concerned	Title / key provisions	Signed (S) Into force (E)
RO, RS		<p><i>Agreement between the Popular Republic of Romania and the Popular Federative Republic of Yugoslavia concerning the hydro technical problems on hydro technical systems and water courses on the border or crossed by the state border.</i></p> <p>The provisions of the Agreement refer to: watercourses' flow and discharge; watercourses' regulation and maintenance of the river bed; flood and ice protection; water supply; water quality protection; land reclamation works; use of energy water; navigability of the Bega Canal; erosion protection; hydrological data exchange; realization of studies and projects and execution of works; exchange of the data regarding the above mentioned issues. The Agreement refers to the Danube River only if some of the above mentioned issues are not regulated by the Convention regarding the Regime of Navigation on the Danube (signed in Belgrade on 18 August 1948). A Joint Commission on transboundary waters was established in 1955. It is operational and convenes on an annual basis. It has a mandate among others to examine the hydrotechnical issues, measures and works on hydrotechnical systems and water courses on the border or crossed by the state border which could influence both the watercourses regime and quality and make proposals regarding their regulation.</p>	1955 (S)
RO, RS	Iron Gates I and Iron Gates II Lakes	<p><i>Agreement between the Government of the Socialist Republic of Romania and the Government of the Federative Socialist Republic of Yugoslavia regarding the operation and maintenance of the Hydropower National System and of Navigation Iron Gates I and Iron Gates II.</i></p>	1998 (S)
BG, RS	Timok River	<p>Agreement regarding the shared border. According to it, the border would stay unchanged irrespective of possible changes in the (Timok) riverbed's position.</p>	1954 (S)
BG, RS		<p>An agreement was signed between Yugoslavia and Bulgaria under which a Mixed Commission was established. Quality and allocation of transboundary waters were the main issues discussed. The last meeting of the Commission was held in 1982, after which activities stopped.</p>	1958 (S)
BG, RS	Timok River	<p>An agreement was signed between Yugoslavia and Bulgaria, regarding a partial change of the frontier between the two parties; the natural course of Timok should have been shortened from about 17.5 to 10 km. The agreement has not been implemented.</p>	1961 (S)

Notes: AL: Albania, BA: Bosnia and Herzegovina, BG: Bulgaria, HR: Croatia, GR: Greece, MK: the former Yugoslav Republic of Macedonia, HU: Hungary, ME: Montenegro, RO: Romania, RS: Serbia, SI: Slovenia, TR: Turkey, EC: European Community.

## Annex IV

**STATUS OF RATIFICATION OF SELECTED INTERNATIONAL AGREEMENTS  
RELEVANT TO TRANSBOUNDARY WATER MANAGEMENT BY SOUTH-EASTERN  
EUROPEAN COUNTRIES**

Treaty	Countries										
	AL	BA	BG	HR	GR	MK	ME	RO	RS	SI	TR
<b>Convention on the Protection and Use of Transboundary Watercourses and International Lakes</b> (UNECE Water Convention - Helsinki, 1992)	•	<sup>34</sup>	•	•	•			•		•	
<b>Protocol on Water and Health</b> (London, 1999 – in the framework of the UNECE Water Convention)	•			•				•			
<b>Protocol on Civil Liability</b> (Kiev, 2003, in the framework of the UNECE Water Convention and Industrial Accidents Convention)											
<b>Convention on Environmental Impact Assessment in a Transboundary Context</b> (Espoo Convention, 1991)	•		•	•	•	•	•	•	•	•	
<b>Protocol on Strategic Environmental Assessment</b> (SEA Protocol - Kiev, 2003 - to the Espoo Convention)	•		•								
<b>Convention on the Transboundary Effects of Industrial Accidents</b> (Industrial Accidents Convention, Helsinki, 1992)	•		•	•	•		•	•		•	
<b>Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters</b> (Aarhus Convention, 1998)	•	•	•	•	•	•		•		•	
<b>Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean</b> (Barcelona Convention 1976, amended in 1995)	•	•	n/a	•	•	n/a	<sup>35</sup>	n/a	n/a	•	•
<b>Convention on Wetlands of International Importance Especially as Waterflow Habitat</b> (Ramsar Convention, 1971)	•	•	•	•	•	•	•	•	•	•	•
<b>Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities</b> (Athens 1980, amended in Syracuse 1996)	•	•	n/a	•	•	n/a		n/a	n/a	•	•

*Notes:* AL: Albania, BA: Bosnia and Herzegovina, BG: Bulgaria, HR: Croatia, GR: Greece, MK: the former Yugoslav Republic of Macedonia, ME: Montenegro, RO: Romania, RS: Serbia, SI: Slovenia, TR: Turkey.

<sup>34</sup> In the process of ratification

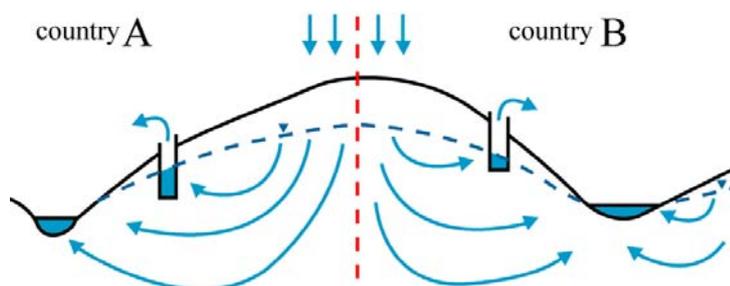
<sup>35</sup> Accepted the amendments

**Annex V**

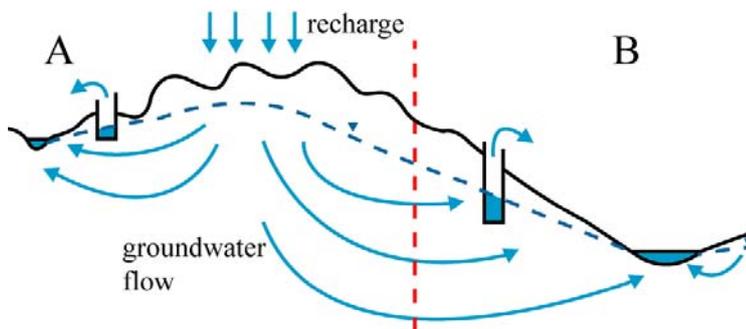
**TRANSBOUNDARY AQUIFER TYPES**

General conceptual models (types, numbered 1 to 4) according to which transboundary aquifers have been classified in the *First Assessment of Transboundary Rivers, Lakes and Groundwaters* and which is also the basis of classification in the second Assessment and used in the aquifer tables in documents ECE/MP.WAT/2009/9, 10 and 11.

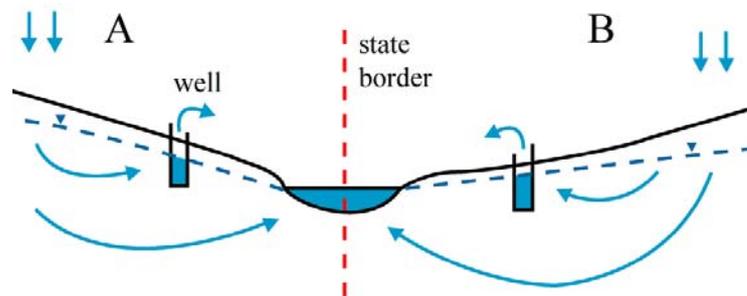
(1) State border follows surface water catchment and groundwater divide, little transboundary groundwater flow.



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



(3) State border follows major river or lake, alluvial aquifer connected to river, little transboundary flow



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

