



*Convention on Protection and Use of Transboundary Watercourses and International Lakes
Working Group on Monitoring and Assessment
Core Group Groundwater*

WGMA 2002/5b

**Progress report on the implementation of the guidelines on
monitoring and assessment of
transboundary groundwaters**

(period November 2001 – October 2002)

(see WGMA-3 agenda items 4b and 7b)

1. Introduction

This report gives an overview of the activities of the Core Group Groundwater (CGG) and the progress made with the implementation of the UNECE groundwater guidelines for the period November 2001 – October 2002. The groundwater programme has been described in the document “Overall working programme on the implementation of the guidelines on monitoring and assessment of transboundary groundwaters” (WGMA/2001/7). The activities are related to the implementation of the guidelines into groundwater pilots but also in relation to the implementation of the EU Water Framework Directive and the activities for ISARM. The working programme has been updated for the 3rd Meeting of the Working Group on Monitoring and Assessment (WGMA) in Helsinki, October 2002 (WGMA 2002/5a).

2. Meeting of the Core Group Groundwater

The CGG organised its 12th meeting in combination with the meeting for the start of the pilot Aggtelek - Slovak Karst in Hungary (Jósvafő) on March 6th, 2002.

Items on the agenda were:

- programme of the pilot (Aggtelek-Slovak Karst) meeting
- task of the core group groundwater
- ISARM activities
- EU Working group on Monitoring and Assessment (WG 2.7)
- Invitation of EWA
- International pilots

For the results of this meeting see Annex 1: minutes of meeting (CGG 12.04)

Future activities:

The next meeting of the CGG will be organised in combination with the 3rd Meeting of the WGMA in Helsinki (3-5 October 2002).

3. Pilot programme

a. General

The overall pilot programme exists of two phases, a **preparatory phase** and an **implementation phase**. Both phases can be divided in two parts. The **preparatory phase** consists of an ‘*inception study*’ and a part ‘*monitoring and assessment needs analysis*’, the **implementation phase** consists of an ‘*implementation*’ part and the ‘*evaluation*’. As for the river pilot programme it was decided that the present pilot programme concerns only the first phase: *the preparatory phase*. For the description of the pilot programme see “Overall working programme on the implementation of the guidelines on monitoring and assessment of transboundary waters” (WGMA 2002/5a).

b. Aggtelek – Slovak Karst

After a first discussion in Budapest on the 11th of February 2002 in the Ministry of Transport and Water Management a first (kick-off) meeting has been organised in Jósvafő (March 7-8, 2002) for the start of the first groundwater pilot between Hungary and Slovakia on the Aggtelek – Slovak Karst.

Both countries were represented by the parties directly involved in the pilot.

From the Slovak Republic: Ms Fatulova (Min. of Environment), Ms Mozesikova and Mr Kullman (SHMU), Mr Malik and Mr Svasta (Geological Survey), Ms Molnar (Water Works) and Mr Rozloznic (National Park). From Hungary: Ms Havas and Ms Buzás (Min. of Transport and Water Management), Ms Horváth (Min. of Environment), Ms Székely (Inst. of Speleology), Mr Perger (Nat. Water Authority), Mr Pónya (District

Env. Inspectorate), Ms Tóth (North Hungarian Distr. Water Auth.), Mr Boldogh (National Park), Mr Sárváry and Mr Agotai (VITUKI), Mr Kuti (MAFI).

Mr Chilton and Mr Arnold from UNECE CGG).

After the presentations of the different representatives an overall working programme had been elaborated. For more information see programme (CGG12.02) and the minutes of meeting.

Project leaders are Ms Eszter Havás (Min. of Transport Water Management, Hungary) and Ms Katarina Moziesikova (SHMU, Slovakia).

The objectives of the pilot project can be defined as follows:

- implementation and testing of the “Guidelines on M&A of transboundary groundwaters;
- initial characterisation of the Aggtelek Karst – Slovakian Kras Aquifer as a transboundary groundwater body according to the 2000/60/EC Water Framework Directive;
- vulnerability mapping on the Aggtelek Karst – Slovakian Kras applying the “European method” of Cost Action no. 620.

The first step (the inception study) will be finalised Before the end of 2002.

c. Bug (groundwater pilot)

During the UNECE Conference meeting in Poland appointments have been for a first meeting on the Bug pilot. This first (kick-off) meeting was organised in Lublin (Poland) by Teresa Zan on the 11th of June. Participants on this meeting were two representatives of Ukrain (Peter Blinov from the Ministry of Ecology, Department of Geology and Ganna Kylymysta from the Ministry of Ecology, Kiev) two representatives of Belarus (Kazimir Kurilo from the Ministry of Natural Resources and Environmental Protection, Research Geological Institute, Minsk and Alexander Samusenko, Expert of monitoring, TACIS Project -Development of Transboundary Cooperation Water Quality Monitoring and Assessment Bug River between Belarus and Poland) and from Poland (Andrzej Badowski from the Water Management Office, Warsaw; Maria Ulman-Bortnowska from the Ministry of Environment, Geology Department, Warsaw; Pawel Blaszczyk from the Institute of Environmental Protection, Warsaw; Boguslaw Kazimierski from the Polish Geological Institute, Warsaw; Malgorzata Landsberg-Uczciwek from the Voivodeship Inspectorate of Environmental Protection in Szczecin; Teresa Zan from the Regional Water Management Board in Warsaw, Inspectorate in Lublin and Franciszek Zabek from the Regional Water Management Board in Warsaw, Inspectorate in Lublin). From the CGG Geo Arnold participated this meeting as representative from the UNECE Core group on Groundwater.

After a presentation of the UNECE groundwater guidelines and the overall working programme the representatives informed the participants about the current state of the groundwater monitoring in the Ukraine, Belarus and Poland and presented proposals concerning a common groundwater monitoring project for the Bug river basin.

The parties agreed to start the following actions:

- to sign a tripartite agreement between Ukrainian Ministry of Ecology, Ministry of Natural Resources and Environmental Protection of Belarus and Polish Ministry of Environment;
- it has been accepted that Poland will be the initiating and leading country in the preparatory works to sign the Agreement;
- Mr Blinov and Mr Kurilo committed themselves to guide the matters regarding preparations to start the project in their countries;
- the project will include groundwaters in the area of the whole Bug river basin;
- works on the Inception Report will be done simultaneously to preparations leading to sign the agreement.

For the workout of the Project information about the Bug river basin will be used from the Pilot Project on Monitoring of the Bug basin rivers. Mrs Malgorzata Landsberg-Uczciwek committed herself to working out a working version of the Inception Report till the end of September 2002. Mr Blinov from Ukraine, Mr Kurilo from Belarus and Mr Kazimierski committed themselves to bring all necessary information regarding the issues of ground waters and their monitoring and quality assessment. For more information reference has been made to the minutes of meeting.

d. Vecht pilot (combination of groundwater and river pilot)

Since April 2001 meetings take place with Germany to set up the pilot Vecht. From the Dutch side (2 provinces and 4 regional water boards) there is interest, from the German side (2 Länder: Niedersachsen en Nordrhein-Westfalen) there is a problem with personnel and the costs involved. Recently a report has been prepared describing the interest in such a pilot and also the relevance for the implementation of the WFD. The negotiations are still going on.

Future activities:

Meetings on the progress of the pilots (end of 2002 and in 2003):

Discussion on the draft *'inception study'*

Preparation of the study *'monitoring and assessment needs analysis'*

4. WGWM

From 8-10 November 2001 the Ministry of Transport and Water Management organised an "International Workshop on the Protection of Groundwater used as a source of drinking-water supply" in Budapest. This workshop was one of the activities under the Working Group of Water Management and supported by the UNECE secretariat and IWAC. 38 participants, 19 presentations of different countries. Presentations and conclusions and recommendations have been published in a document (limited edition!) and are available on the UNECE and IWAC website. The conclusions and recommendations are given in annex 1.

5. EU TACIS and PHARE

On the 29th of April 2002 a briefing has been organised on the ISARM programme with a team from UNESCO, UNECE, RIZA and IAH. The briefing was held for EU TACIS and PHARE in Brussels. Presentations were given from both the UNESCO (ISARM) and UNECE programme. The objective of this meeting was to present the activities from ISARM and UNECE in order to ask the support from EU TACIS and PHARE through their individual water sector capacity / strengthening programmes.

6. Meetings ISARM/UNECE

From October 2001 till October 2002 several meetings on the management of transboundary groundwaters were organised. In all the conferences/workshops presentations were given on the UNECE groundwater programme (UNECE groundwater guidelines and the European case studies).

a. International Conference (Koblenz , 25-27 September 2001)

"Hydrological Challenges in Transboundary Water Resources Management". (for conclusions of the conference see annex 2).

b. Meeting with Mrs. Alice Aureli (UNESCO) (Paris, 17 December 2002)

Discussion about co-operation between UNESCO and UNECE in ISARM programme (see annex 3). UNECE has been asked to assist and co-operate in the execution of the ISARM programme. UNESCO can offer financial support for participation in workshops (Iullemeden Workshop, Tripoli meeting, Meeting in Mar del Plata, etc.) and other ISARM activities.

c. Regional Workshop on Iullemeden Aquifer System (Paris, 7-9 February 2002)

The meeting was focussed on the implementation of strategies and actions needed for the launching of the ISARM in Africa. A concrete implementation policy proposal on the lullemeden aquifer system has been elaborated and is send to GEF as possible donor.

d. 2nd International Conference (Poland, Miedzyzdroje, 21-24 April 2002)

Major objectives of the Conference:

Examine progress made in European water policies, both nationally and in a transboundary context, since the adoption of the Convention in Helsinki in 1992;

Broaden the scope of co-operation on water and human health-related issues over the next decade;

Contribute to the periodical review of the implementation of chapter 18 of Agenda 21 on freshwater resources, including the Rio+10 assessment;

And finally, as with the first Conference held in 1997 in Mrzezyno, provide a forum for Europeans to share their experience with other regions in the world.

The results of this Conference are presented on the website:

www.unece.org/env/water/meetings/conf2.htm

e. International workshop on “Managing Shared Aquifer Resources in Africa” (Tripoli, 2-4 of June 2002)

In June 2002 the General Water Authority of the Libyan Arab Jamahiriya organised the workshop “Managing Shared Aquifer Resources in Africa”. The main objectives of this workshop are to evaluate how to:

Set up an appropriate framework for studying and assessing groundwater resources in African countries with particular focus on Regional Aquifer Systems.

Present and discuss case studies on African Regional Aquifer Systems

Provide support to the African countries for improving co-operation to study and assess groundwater resources

Prepare an inventory of the existing African Transboundary Aquifers

Launch an ISARM Africa Programme.

(for Tripoli workshop recommendations see annex 4)

Future activities:

a. Meeting in Mar del Plata (Mar del Plata, Argentina, 21-25 October 2002)

XXXII IAH & VI ALHSUD Congress “Groundwater and Human Development”

Zsuzsa Buzás and Eszter Havas will participate this meeting and present a paper on “Inventory of transboundary groundwaters” and “Guidelines on monitoring and assessment of transboundary groundwaters, implementation in a pilot area”.

b. Meeting in Mexico (Monterrey, 18-22 November 2002)

First International Symposium on Transboundary Waters Management.

The objective is to review the main issues involved in the management of transboundary basins and aquifers with an integrated scope. Water quantity and water quality management, as well as aspects related to agricultural and industrial development, forests and fisheries, will be considered. Social, economic, political and education issues will also be included, in view of their relevance in the international and interstate water resources arena.

Possibly a contribution will be given about the UNECE activities.

7. IWAC/UNECE/WFD

a. International Workshop on the EU WFD Bratislava, Slovakia (June 27-28, 2002)

The international workshop “East meets West on Integrated River Basin Management” was organised by SHMU and IWAC. The workshop was focussed mainly on the support of the activities in line with the Water Convention and EU Water Framework Directive.

This means:

- sustainable development in river basins;
- exchange of ideas and experiences on the implementation of the WFD from both EU and non-EU-countries;
- scientific and technical support in the implementing of the WFD.

Target groups were national policy makers and implementers from the ECE region responsible for the WFD implementation, from relevant accession countries or EU bordering countries.

Participation was on invitation.

b. EU Working group (WG 2.7) - Chapter 8: Guidance on Monitoring of groundwater

Participation in 2 working sessions of CIS Working Group 2.7 on Monitoring in Brussels (23 May 2002) and Copenhagen (18-19 September 2002) for tuning EU activities with UNECE groundwater guidelines.

8. Others

Workshop “Sustainable Utilisation, Management and Protection of Internationally Shared Groundwater Resources in SEE (South Eastern Europe) Countries”. (Zagreb, Croatia, June 27-29, 2002).

(UNESCO Initiative “Rebuilding of Scientific Cooperation in South-East Europe).

Branco Bosnjakovic presented a paper submitted by Geo Arnold.

A report of this meeting is given in annex 5.

Conclusions and recommendations of the “International Workshop on the Protection of Groundwater used as a source of drinking-water supply” in Budapest .:

1. In many regions, population growth and water scarcity will have a greater effect on the quantity and quality of the available groundwater resources as expected. The development and implementation of groundwater protection policies and legislation should therefore be seen as dynamic processes with social, economic and environmental interests. The Convention and its 1999 Protocol on Water and Health, and the EC Water Framework Directive drive new developments in the ECE region.
2. Groundwater is an important source of drinking water in many ECE countries. Not all groundwater is of drinking-water quality; therefore health aspects of contaminated waters have also to be considered.
3. The integration of economics into groundwater water policy and planning via the economic analysis of groundwater water uses and the use of pricing for providing incentive to better use and recover costs will become more significant, as good-quality groundwaters are becoming a scarce resource.
4. It is of utmost importance to raise the understanding of politicians and policy makers of the basic principles of water management, water supply and sanitation, and encourage the updating and improvement of their knowledge and skills: Often technical aspects that were not or not sufficiently taken into consideration when preparing legislation and regulations will come up in the implementation phase. Examples include: (i) the delineation of protection zones and their application in practice; (ii) compensation for use restrictions in protection zones; and (iii) a possible conflict between land-use planning and environmental planning.
5. New principles and approaches include:
 - (a) Groundwater protection through land-use planning as a means of preventing contamination;
 - (b) Risk assessment and risk management as a framework for groundwater protection schemes;
 - (c) The concept of “balanced” protection stipulating that the shorter the travel time the stricter the use-restriction should be. This concept also stipulates that a differentiation should be made planned and existing activities, respectively;
 - (d) Monitoring should be carried out over the whole aquifer or at least over its protection zone, and not only on the production wells.
6. Two central tenets are being followed in many cases:
 - (a) Resource protection based on assessment (and mapping) of groundwater vulnerability defined on the soil and groundwater system (unsaturated and saturated) properties;
 - (b) Source protection through the delineation of source protection zones and the characterization of the extent of permitted human activities.
7. The delineation of protection zones is based, in many cases, on the travel time of “unpolluted” water. The travel time of individual pollutants in the saturated zone and travel time of these substances in the unsaturated zone have to be additionally considered when permitting planned activities and/or

imposing restrictions on existing activities (e.g. agriculture) in groundwater basins. Isotope (hydrology) methods can play an important role in the delineation of groundwater protection zones.

8. Pilot projects can demonstrate the effectiveness or efficiency of established protection zones.

9. Water protection in karstified aquifers is a challenging task. Two major problems may arise: the determination of the flow regime and the establishment of effective protection schemes. In the case of transboundary karstified aquifers, the drawing up of effective protection schemes is often hampered by the fact that bilateral or multilateral agreements are still not in place for most UNECE countries that share such water bodies. However, the scope of the problem both within the ECE region and the other regions in the world has still to be determined.

10. Efficient protection of groundwaters and decision-making on sustainable groundwater management requires reliable information. To increase public involvement on groundwater issues, awareness campaigns are needed; and policies have to be transparent and understandable.

11. It is well accepted that a region-wide partnership is needed to foster dialogue between representatives of Governments, public and private sector organizations; joint bodies established for the protection of inland waters and the marine environment, NGOs, and the scientific community.

12. To establish priorities for future activities, the following should be taken into account:

(a) There is a need for tiered approaches that filter out the less problematic issues of groundwater protection and use and allow more detailed analysis of the difficult ones;

(b) Environmental protection and land-use planning should move closer together;

(c) There will be much more detailed and complete environmental protection legislation, and there will be a more litigious society;

(d) Science will give more certainty – but there will never be enough knowledge. Consequently, there is a need for a development and the use of risk-based approaches to decision-making for potentially polluting activities, and more precautions should be taken unless the complex science of the sub-surface is understood;

(e) More integration is needed: groundwater and surface waters should be considered as a whole in catchment scale planning as it is introduced by the Convention, the Protocol on Water and Health, and the EC Water Framework Directive.

Conclusions of the Koblenz conference:

- The transboundary waters (international watercourse) is a river or lake basin or groundwater aquifer with multiple political entities;
- The freedom of those political entities to manage and use water resources *sustainable* is often constrained not only by physical limits but by economic constraints and legal limits as well;
- In this context it is important to remember that the rules of international law apply to sovereign States, and it is primarily for States themselves to ensure compliance with international commitments;
- *Sustainable Transboundary Water Management* (TWN) require from each political entity some form of a joint action or co-operation with other political entities;
- What are the issues that induce co-operation among those entities?
- Sometimes it's a lack of *sustainability* in TWN;
- Examples include: (i) groundwater is depleted and recharge needs to be increased or better managed, (ii) increased sediment loads are decreasing the life or effectiveness of infrastructure, (iii) pollution is increasing the cost of water use or eliminating sources of supply;
- But each international watercourse is unique and no blueprint for common sustainable development strategy can be proposed;
- Experience worldwide has consistently shown that transboundary water issues should always be seen as a part of a "larger package";
- There is a need of seeking cross-sectoral alliances with energy sector, urban sector, infrastructure, rural development, and others;
- Economic incentives in combination with self-monitoring and self-control approaches to TWM should be given priority over the command and control rules;
- Any TWM strategy must recognize that *sustainability* does not necessarily imply preservation of a natural state, but rather maintenance of the reliability, resilience and capacity of water resource systems to adapt to economic and social change.

Logical Framework of the ISARM Programme

Wider objectives

- To contribute to the multifaceted efforts in global co-operation through providing for the planets needs in sustainable environments, economy, social and political security, based on integrated water resource management, including inter-nationally shared aquifers.

Specific project objectives

- To establish a network of experts from different disciplines for identification and definition of internationally shared aquifers.
- To promote scientific, legal, socio-economic, institutional and environmental assessment of internationally shared aquifer resources.
- To identify several Case Studies of internationally shared aquifers and support multidisciplinary experts teams to conduct detailed investigations.
- To learn, from Case Studies, the issues relevant to good management of inter-nationally shared aquifers resources.
- To raise the awareness of policy and decision makers of the significant and importance of transboundary aquifer resources, forming a critical component of the world freshwater resources.
- To disseminate the lessons learnt from Case Studies and encourage policy and decision makers to incorporate appropriate internationally shared aquifer management.
- To promote co-operation among experts from the different countries that share transboundary aquifers, through making available scientific tools, water resource management options and methodologies that apply to such aquifers.

Tasks and activities

Preparatory Phase (March 2000–September 2001)

- Preparatory meetings and experts consultations.
- Set up of the ISARM initiative and endorsement by the 14th Session of the UNESCO IHP Intergovernmental Council in June 2000.

Short term (One year: September 2001–September 2002)

- Preparation and wide distribution of an illustrated framework document promoting the concept of co-operation for optimal and sustainable management of internationally shared aquifers.
- Dissemination of existing information on internationally shared aquifers, including the scientific, legal and other arrangements in FAO and other databases.
- IHP/OHP Conference entitled 'Hydrological Challenges in Internationally shared Water Resources Management' Sept 2001, Koblenz.
- Circulate and process a questionnaire to identify the significant internationally shared aquifers of the world with the contribution of the UNESCO IHP National Committees.
- FAO, IAH and UNESCO co-operation with United Nations Economic Commissions, in particular with UNECE, for the implementation of the UNECE guidelines on monitoring and assessment of transboundary groundwaters and the setting up of training and exchange of information with the other regions.
- Tripoli Seminar on 'Managing Shared Aquifers Resources in Africa' in 2002.

Medium term (Two years: September 2002–September 2004)

- Compilation of existing literature and preparation of detailed Case Studies of

- selected internationally shared aquifers.
- Report progress at the IAHALHSUD Congress on 'Groundwater and human development', 21–25 October 2002, Mar del Plata, Argentina.
- Preparation of a bibliography and database of internationally shared aquifers.
- Contributions for the improvement of standard monitoring procedures.
- Contributions for the preparation of maps that consider potential risk and ground-water vulnerability.
- Publication of national and regional studies.
- Organisation of several regional consultations, to ensure consensus and participation at regional level and to disseminate and debate the results of the Case Studies.

Long term (six years: September 2006)

- Preparation of a 'ISARM toolkit'.
- Capacity building and training based on the implementation of the toolkit, facilitated by regional workshops.
- International Conference on transboundary aquifer systems to evaluate the results obtained and the experience achieved in different regions.
- Publication of the inventory of internationally shared aquifers.

Programme outputs

- Illustrated framework document on the issues involved in the sustainable management of internationally shared aquifer resources.
- Case study reports in Europe, Africa, Asia and Latin America.
- Bibliography and data of internationally shared aquifers.
- Development of an 'ISARM toolkit' comprising technical guidelines, examples of legal and institutional frameworks and a database of findings of the Case Studies.
- Inventory of internationally shared aquifers.

Tripoli Workshop Recommendations (draft)

More than 2000 participants from 30 countries, regions and international organisations and associations attended the

International Workshop on Managing Shared Aquifers Resources in Africa 2nd to 4th June 2002

Considering the Statement of the Tripoli International Conference 1999, related to the management of shared aquifers, we the participants of this Workshop recognise that:

- Water scarcity in most African countries implies a serious threat to sustainable and balanced socio economic growth. However, the region is endowed with share, large, and for many parts under-utilised groundwater resources, often the only source for fresh water.
- There is growing demand for water resources but there is limitation of current management, rising from limited financial resources, lack of awareness and inadequate appreciation of the role of groundwater in national and regional development.
- This workshop marks a clear milestone, demonstrating the extent to, which shared aquifers resources are able to contribute to human development, alleviation of poverty and improved food security.
- The Internationally Shared Aquifer Resources Management initiative with the objective of co-ordinating efforts on shared groundwater resources will be beneficial.

We the participants consider that:

- To benefit from the value of these resources, sharing countries should be encouraged to implement joint, through the strengthening of their respective institutions, building capacities, raising awareness, encouraging investments and supportive legal frameworks.
- Any regional integrated water resources policy should include groundwaters and give attention to shared aquifers.

We recommend that:

- A. inventories of African shared aquifers, following the guidance of the ISARM Framework Document be conducted.
- B. Policy guidelines for sound and sustainable development of shared aquifers be prepared
- C. Following the launching of an African ISARM Programme, activities drawing on support from existing partners and seeking support from others should be initiated.
- D. The above recommendations should be brought to the attention of the African ministers through the NEPAD and AMCOW process.

We further recommend that:

- A clear message of the value of shared aquifers should be presented to all participants at the World Summit on Sustainable Development, Johannesburg, September 2002 and at the 3rd World Water Forum, Kyoto, March 2003.
- The assessment of the shared aquifer resources in Africa including demand, uses and mitigation of risk should be incorporated in the UN World Water Assessment Programme.

UNESCO Initiative "Rebuilding of Scientific Cooperation in South-East Europe"

WORKSHOP

Sustainable Utilisation, Management and Protection of Internationally Shared Ground Water Resources in SEE Countries

Place/Time: Zagreb, Croatia, June 27-29, 2002

1. Background and the organisation of the workshop

With growing water scarcity increasing quality deterioration in many countries of South Eastern Europe, the contribution and role of shared ground waters in meeting the growing water demands is likely to increase in significance, thereby increasing competition over these fragile resources. Technical cooperation and cooperative arrangements to jointly develop, manage and protect shared aquifers will become a necessity to optimise their utilization, and defuse any potential user conflict.

The Ministerial Declaration of The Hague (World Water Forum, March 2000) on Water Security in the 21st century identified management of international shared water resources, to promote peaceful co-operation and develop synergies between different users through co-operation between adjacent states, as a main challenge to achieve water security. In this context internationally shared aquifers represent a substantial and secure supply for many socio-economic uses that are critical for national and regional water security.

While sustainable utilization, management and protection of internationally shared groundwater resources is a topic which attracts wide attention, this is not sufficiently reflected in the available instruments at global and regional levels. This gap represents a major constraint to sustainable utilization, management and protection of internationally shared groundwater resources.

A substantial experience with the management tools for monitoring, assessment and management of internationally shared ground waters is available at regional level, especially within ECE. These include frameworks and implementing mechanisms for the ECE Helsinki Convention on the Protection and Use of Transboundary Waters and International Lakes, the Convention on EIA in the Transboundary Context, and a number of non-binding guidelines, e.g. on monitoring and assessment of transboundary ground waters.

The development of appropriate improved scientific methods, management tools and corresponding capacity building packages for shared groundwater management in South Eastern Europe is expected to complement on-going activities.

The Ministerial Round Table held in UNESCO headquarters on 24 October 2001 adopted an initiative on Rebuilding Scientific Cooperation in South Eastern Europe (SEE). The initiative recognizes the need for launching collaborative projects in some strategic fields, among which "water and sustainable development" has been selected. It is now expected that for each of these fields, an *ad hoc* Workshop be convened with the aim of elaborating major regional cooperative projects to be submitted to potential donors. Following the discussions during the European Meeting of IHP National Committees held in Berlin, 19 February 2002, it was agreed with Mr. P. Lasserre, Director of the Venice Office, that one of these projects could be dedicated to ***Sustainable Utilisation, Management and Protection of Internationally Shared Ground Water Resources in SEE Countries.***

The Croatian IHP/OHP Committee and Croatian Water have organised the Workshop on 27-29 June in Zagreb, Croatia dedicated to the discussion and elaboration of a cooperative research project proposal on this subject, according to the general guidelines. All the activity was directed towards the preparation of the project to be submitted to the donors' conference which will be organised in Venice in autumn 2002.

The workshop was attended by 30 participants, including 21 from the countries of the region and 9 international experts (Annex 1.) The plenary sessions of the first day were more over attended by representatives of the authorities and expert observers from Croatia.

2. Plenary session and reports of the invited countries representatives

The workshop started on 27 of June with plenary sessions according to the proposed and approved agenda (Annex 2).

An introduction was given by Mr. Pypaert, the UNESCO representative, who pointed out the significance of the protection and sustainable management of transboundary aquifers and the possibilities of establishing an integrated project which can be presented to the donors' conference in Venice.

Mr. Bošnjakovic as the main coordinator for the preparation of the project explained to the participants complete organization of the meeting, and proposed the main topics which should be discussed by the working groups activity. Also the moderators of the working groups were designated.

The presentations by the invited speakers formed a good background for the preparation of the project. These included:

- **Inventory of internationally shared groundwater and corresponding issues in the Mediterranean region (Dr. Shamy Pury, Chairman ISARM)**
- **Transboundary groundwater issues in SE Europe exemplified by Karstic groundwater (Prof. dr. Bozidar Biondić, Croatia)**
- **Hydrological water balance aspects of groundwater (Prof. dr. Ognjen Bonacci, Croatia)**
- **International legal instruments and guidelines on transboundary groundwater (UNECE) (Dr. Branko Bošnjakovic)**
- **Shared groundwater management: socio-economic aspects and relevant requirements of the EU Water Framework Directive (Eduard Interwies, M.A., Ecologic, Germany)**

After the invited speakers, the plenary session was continued by the participants from the region of SE Europe, who reviewed and pointed to the problems and issues with regard to transboundary aquifers and other groundwaters in their countries which could be interesting as the cases studied through the proposed project (Annex 3).

3. Work in groups

Group work was organised under 5 headings:

1. Mechanisms for cooperation between interested concerned institutions and economic sectors: take stock of existing networking of research institutions and economic sectors within the SEE region and develop tangible proposals for the modalities of future cooperation, including with counterparts in the EU member states.
2. Management and protection mechanisms based on national and international experience: take stock of relevant scientific, technical, administrative and participatory experiences at the national level and in the international context, and develop proposals for future transboundary cooperation projects.
3. Scientific methodologies and technical guidelines for monitoring and assessment of groundwater: examine and develop cooperative project proposals, on how existing methodologies, guidelines, legal instruments and economic incentives can be adapted to and focused on the characteristics of specific categories of groundwater (e.g. karst groundwater, deep confined, shallow, renewable and non-renewable aquifers).
4. National and local capacity for management and protection of internationally shared groundwater resources: identify training and exchange programme needs for technical, legal and economic specialists, as well needs for the building of new infrastructures with a regional dimension (computing and information technologies, instrumentation, specialised databases, service laboratories).

5. Communication and dissemination: shooting a documentary on shared groundwater and karst systems, disseminating the progress and results of the project, animating a SEE network through the web, involving the participation of stakeholders..

In view of the expressed interests of participants, the themes 1 and 4 were combined in a single group. The composition of groups is given in Annex 4. whereby the names of moderators are indicated by italics. The conclusions of the group work are given in Annex 5.

4. Summary of the plenary discussion and the identification of the main elements for a project proposal

The conclusions of the working groups were presented to and discussed by the plenary. The results of the discussion may be summarised as follows:

- A project proposal shall be elaborated and submitted to the UNESCO Donors' Conference on rebuilding of scientific cooperation in South-East Europe.
- The project proposal will be based on the recommendations and priorities elaborated during the Zagreb workshop, taking into account the overall guidelines set out by the ministerial round table, which took place on October 24 at UNESCO headquarters.
- The overall project will start by a scoping study/inventory of all shared groundwaters in the SEE region, making use of the ISARM questionnaire (Annex 6.) and of the so-called DPSIR methodology (Drivers-Pressures-State-Impacts-Responses). The inventory will include the hydrogeological characteristics, driving economic activities, pressures, transboundary issues, and existing arrangements for cooperation, management and protection.
- Another major goal of the project will be to establish a decision-support system for integral management of shared groundwaters.
- The project will be organised along two main lines of work. The first line will consist of thematic working groups to address major research and policy areas like hydrogeological modelling, socio-economic and environmental aspects, institutional and legal frameworks, networks of institutions, capacity development and training, awareness raising/participation, and others.
- Another line of work will be oriented towards the development and implementation of case studies with regard to the research, protection and management of selected internationally shared groundwaters. In view of the need to obtain the endorsement of relevant national authorities for such case studies, a special working group will be established to prioritise, phase in and prepare such case studies.
- In view of the strongly multidisciplinary and multisectoral goals of the project, the working groups will need to be composed of high-quality specialists with varied backgrounds, such as engineers, environmental and social scientists, economists, lawyers. Prospective participants will be requested to submit their CVs.
- The overall project will be steered by a committee of distinguished international experts, and each working group will be coordinated by a coordinator. In exceptional cases, international experts/consultants may be engaged to contribute.
- A small drafting committee will be responsible to elaborate a draft project proposal. The participant elected Dr. B. Bosnjakovic, an international consultant, to be the chief drafter. The draft proposal will be circulated for feedback and comments to the participants, and should be finalised for submission by the end of September 2002.