

Workshop on Transboundary Aquifers  
29-30 May 2007

**Meeting report**

Prepared by Ms Raya Marina Stephan, and Mr Neno Kukuric

*Background: UNESCO's International Hydrological Program, with its long time partners BRGM and Académie de l'eau organized a workshop at UNESCO HQ, Paris, France on Transboundary aquifers, with a particular scope on Europe. The aim of the workshop was to underline the importance of transboundary aquifers across the world and to affirm the interdisciplinary nature of water management as well as the necessity to create a common language between the different disciplines dealing with water. The meeting was attended by water experts, hydrologists and hydrogeologists and lawyers, as well as by diplomats.*

**Day 1**

The meeting was opened by *Mr A. Szöllosi-Nagy*, Deputy Assistant Director-General for Natural Sciences, Secretary, International Hydrological Programme (IHP). In his address, *Mr Szöllosi-Nagy*, underlined the importance of the on-going support of UNESCO-IHP to the UN-International Law's Commission in its work on the draft articles on the law of transboundary aquifers. UNESCO has adopted water as a first priority and the groundwater activities, including the ISARM (International Shared Aquifer Resource Management) initiative represent a large and growing section under the IHP's projects. He emphasized the importance of good water governance, especially in conflict resolution; the UNESCO PCCP (Potential Conflict to Cooperation Potential) project was then taken as an example of a comprehensive approach to the enhancement of management capacity enhancement of internationally shared water resources. *Mr Szöllosi-Nagy*, also mentioned the role of IHP in education and capacity building in the water sector, and the important place of UNESCO-IHP in bringing the various disciplines together.

*Mr Szöllosi-Nagy*, was followed by *Mr Didier Pennequin*, Head of the Water Division at the BRGM (Bureau de la Recherche Géologique et Minière, or the French Geological Survey). *Mr Pennequin* underlined the role of his division in the protection and management of water resources, particularly the engagement in the implementation of the EU Water Framework Directive which requires a "good status" for all waters by 2015. This will be more difficult to achieve for groundwater than surface water, and even more difficult in the case of transboundary aquifers where more than one sovereign State is concerned. The UN ILC (International Law Commission) draft articles represent a first step towards the management of transboundary groundwater resources.

*Mr Jean Louis Oliver*, Secretary General of the Académie de l'eau, briefly introduced the organisation he represents. The Académie de l'eau is a Think Tank involved in various aspects of water resources: legal, social, cultural, etc. Recently the Académie de l'eau organized two major events on transboundary aquifers. Firstly, during its General Assembly

various case studies were presented, followed by a briefing on the global importance of transboundary aquifers and a presentation on the draft articles of the UN ILC. The second event was organized in Tournai, Belgium and focused on the carboniferous limestone aquifer system between France, Flandres and Wallonia.

Finally, Mr Jean-Marie Wauthier from the Wallonia Region, as a co-organizer of the Meeting in Tournai with the Académie de l'eau, presented the event as a big step in the management of transboundary groundwater management.

The morning session was chaired by Mr Didier Pennequin. The workshop opened with a presentation by Mr Neno Kukuric on the "Hydrogeological characteristics of transboundary aquifers". Firstly, he briefly introduced the UNESCO-WMO Centre IGRAC (International Groundwater Resources Assessment Centre) and its activities on transboundary aquifers. Subsequently,

Mr Kukuric summarised the main hydrogeological issues arising in the case of a transboundary aquifer (TBA) :

- TBA characterisation (delineation and description)
- TBA diagnostics (classification and prioritisation of aquifers)
- International TBA consultation and management mechanisms
- Harmonisation of TBA data and information
- Improving accessibility of TBA data and information

Mr Kukuric was followed by Ms Raya Marina Stephan who presented the "UNESCO-IHP's cooperation with the UN ILC" in the process of preparation of the draft articles. Ms Stephan gave an overview of the ISARM project and explained the scientific and technical contribution organized and coordinated by UNESCO-IHP in its cooperation with the UN ILC.

Some time was spared for questions. Mr Ganoulis raised the question of the definitions, and the confusion that can exist between lawyers and scientists. On the definition of an aquifer he explained that what is shared is the water flowing across the borders and not the solid matrix.

Mr Kukuric reminded that in the draft articles the definition of an aquifer included the water and the solid matrix.

Mr Pennequin said that to his view the definition of the draft articles is the best possible compromise.

Mr Klingbeil explained that from the point of view of a groundwater specialist, there is a need for more specific, internationally and legally binding instruments for transboundary aquifers, such as the UN ILC draft articles on TBA that also need to build on the 1997 UN Watercourse Convention.

Ms Stephan took the floor to give a brief presentation on the contents of the draft articles. She was followed by Ambassador Chusei Yamada, Special Rapporteur of the topic at the UN ILC. In his statement, Ambassador Yamada presented the history of the topic of transboundary groundwaters at the UN ILC and explained the process that led to the adoption by the Commission of the draft articles at first reading. He also explained that in his 4<sup>th</sup> report presented this year at the ILC, he concluded that, there exists close similarity between the physical feature of non-recharging aquifers and that of reservoir rocks of oil and natural gas. But the similarity between groundwaters on one hand and oil and natural gas on the other ends there. In all other aspects, they are different. The Special Rapporteur stated that his recommendation is that the Commission should proceed with the second-reading of the draft

articles on the law of transboundary aquifers next year independently from the possible future work on oil and natural gas.

On behalf of UNESCO, Ms Alice Aureli expressed the gratitude to FAO, IAH, IAHS, UNECE, IAEA and to all other international organisations provided cooperation to this UN ICL activity. She also replied to the comment of Mr Klingbeil and stated that many aquifers are not connected to transboundary rivers (being the prime subject of 1997 UN Water Convention).

After the coffee break, Ambassador Yamada explained again in a few words the importance of the comments to be submitted by the governments in the preparation of the text of the articles for the second reading.

The floor was opened for questions and debate.

Mr Kowalski wondered why the draft articles did not include a provision on the settlement of disputes contrary to the 1997 UN Watercourse Convention.

Ambassador Yamada explained that such provisions depend on the final form of the draft articles. If this final form will be a Convention, then such a provision will be included. If the draft articles are adopted as guidelines, then there will be no provisions on the settlement of disputes. The ILC has asked the governments to submit their views on the final form in their comments.

Mr Klingbeil stated that only 15 States ratified the 1997 Convention and he wondered whether the international community failed with the follow-up to the acceptance of that Convention. At the same time he mentioned some direct or indirect application of the Convention and of the EU WFD in Africa (SADC region). Finally, he argued that it is important to ratify the 1997 Convention in order to encourage also the support and acceptance on the present draft articles on TBA.

Ambassador Yamada explained that provisions of the 1997 Convention are part of customary international law. For this reason, governments do not feel the necessity to ratify it as they do in the case of a legislative Convention. On the other hand, the adoption of the Convention has produced some effects and influence.

Mr Altokhais stated that the draft articles are dealing with hidden resources, with great uncertainties. He is concerned about the final form: Convention or guidelines?

Mr Pennequin noted that the text of the draft articles goes in the right direction, and that it takes time for the mentalities to change.

Mr Oliver presented in few words the conclusions of the meeting in Tournai. The first step of cooperation consists of preliminary ‘technical’ contacts among content specialists. This creates the basement and the first layer for building further steps of cooperation. The second phase will be the dialogue between decision makers. In that matter, each partner has a number of action to undertake. Establishment and implementation of regulatory instruments is the responsibility of each country. In the case of groundwater, this is related to water use, but also to land use. The participatory approach is important. Some lessons, guidelines and best practices can be drawn from the case of the carboniferous limestone aquifer system.

Mr Oliver chaired the afternoon session. Mr Quevauviller spoke about the new Groundwater Directive (GWD) and its links to transboundary aquifer management. The EU WFD has created a cooperation process to integrate knowledge. Its key element is to achieve “good status” of all waters by 2015. The water bodies established under this directive are administrative units. The Groundwater Daughter Directive is a very technical directive. On transboundary water bodies, the EU WFD requires Member States coordinate activities with non-Member States regarding basins extending beyond the territory of the Community. Member States sharing groundwater bodies are obliged to coordinate their activities in respect

to monitoring, definition of threshold values (environmental quality standards), and identification of relevant hazardous substances. Coordination for establishing groundwater threshold values is made even more specific for both transboundary GW bodies within the Community and bodies shared with non-Member States. Mr Quevauviller emphasized the need for integrating all waters, quality and quantity issues and all users, sectoral policies and the scientific community. He expressed his personal feeling that the Groundwater Directive should be implemented through multi-disciplinary Working Groups.

Mr John Chilton presented the UNECE experience on transboundary aquifers, including development of groundwater guidelines and a comprehensive inventory of transboundary aquifers in Europe. He argued that an agreed conceptual model is critical to future specification of transboundary groundwaters. The concept is not fixed; it develops with the efforts invested to implement it. Mr Chilton announced a document on transboundary waters in preparation for the ministerial conference “Environment for Europe” to be held in Belgrade in October 2007.

Ms Aureli reminded that the ISARM project organises and coordinates with existing organisations and initiatives, such as the UN ECE. The project plays a role of facilitator between different regions, mainly in the exchange of information. She suggested to Mr Quevauviller to jointly evaluate with UNESCO-IHP the contribution from the EU WFD and GWD that can be of benefit to the work of the UN ILC.

Mr Quevauviller suggested that UNESCO IHP might join a research group on groundwater in 2008 in case a new project would start under the 7<sup>th</sup> RTD Framework Programme (FP7).

Mr Lefebure inquired about the possibility to share transboundary water bodies.

Mr Quevauviller expressed willingness for cooperation and announced a FP7 call in 2008 which will provide more space for groundwater research. Regarding water bodies, he stated that it is the choice of the countries to share the whole water body or to split it into domestic water bodies. However, he said, ‘we are still at the beginning of a process, and not in the spirit of managing together, even if there is a move in this direction. To start with, we will certainly see groundwater bodies artificially split.’

Mr Burchi reminded the different scope between the UN ECE Water Convention which applied only to transboundary situations, while the EU WFD had broader scope. He wondered whether the EU WFD could be an inspiration in the case of transboundary situations.

Mr Varela expressed his concern about the scope of the draft articles and the definitions in article 2. He underlined that the document is useful, and he praised the work done by the ILC for the draft articles and the commentaries.

Mr Chilton noted that in the case where recharge takes place in one country and the discharge occurs in another one, cooperation already exists, often informally, because both areas are protected in the respective country.

Mr Kowalski raised the question of cooperation between an EU Member State, and a non-EU Member State. Cooperation between EU Member States can be easily achieved, but is that the same in the case of cooperation with a non-EU Member State ?

Mr Quevauviller answered that in transboundary situations the EU WFD requires cooperation with a non-EU member State.

Ms Havasné illustrated the cooperation with a non-EU country taking the Danube basin and Ukraine as an example. Through the common projects in the Danube basin Ukraine got an opportunity to apply the EU norms.

Mr Klingbeil noted that the definition of a groundwater body in the EU WFD is not clear enough, each country can have its own definition.

Mr Lefebure presented the Groundwater in the mandate of the International Commission of the Scheldt (ISC). He explained that this Commission has widened its mandate to implement the European water framework directive and therefore cover notably transboundary aquifers. The first step concerning local transboundary aquifers was to organise informal meetings between experts to establish trust in exchanging the data. Yet, once this first step is well committed, the second step consists on having bilateral protocols to manage the monitoring and reparation of water quantities. The Scheldt River is one of the pilot study of the WFD implementation programme. The work of the ISC is based upon There is an intergovernmental treaty reached among six governments: three States (France, Netherlands and Belgium (in charge only for coastal zones and economic issues), and three regions (Wallonia, Flanders and Brussels). All six governments have ratified the treaty.

Mr Kowalski came back to the draft articles. He raised the question of the relation between the two core principles, namely ‘the equitable and reasonable use’ and ‘the obligation not to cause significant harm’. He also asked about precise definition of a ‘significant harm’.

Ambassador Yamada replied that these principles are already part of the 1997 Convention. In the case of surface water, the equitable and reasonable utilisation includes the concept of sustainability. In the case of groundwater, there are two types of aquifers: recharging and non-recharging. In the case of the latter, the concept of sustainability cannot be applied as such. In the draft articles, there is no expression of sustainability. ILC has prepared draft articles on the topic of “international liability”. ILC dealt with the responsibility of State in the case of a damage caused by a wrongful act. Regarding the definition of “significant”, the ILC has been struggling with the threshold since more than twenty years. The “significant harm” is a relative concept and can be specified only bilaterally by involved countries for each particular case.

Mr Burchi recalled a suggestion to introduce more stringent thresholds for groundwater than for surface water because of its higher vulnerability.

Ambassador Yamada stated that this question was raised at the ILC and the 6<sup>th</sup> Committee. However, it is very difficult to introduce any threshold value.

Mr Grima questioned Mr Lefebure about the threshold in the case of the ISC. In his view it is important to highlight the importance of hydrogeological conceptual models, as many conflicts can not be solved without a good understanding of local processes. In addition, he expressed his concern about substances already present within non-saturated zone, as its effects can take long time to be observed. In this situation a State can not be penalized for activities carried out prior to the entry into force of any piece of regulation or legislation.

Mr Lefebure answered that they put together threshold values from various parts of the pilot area, compare them and selected the most agreeable; some international standards are used as well.

Ms mentioned the case of the bilateral negotiations between Hungary and Rumania in the frame of the EU Liability Directive. To promote the agreement between the two countries they asked the EU Commission for assistance on the methodology to define what is significant. The advice of the EU Commission was to create a working group.

Mr Altokhais expressed his concern about the broad understanding of “equitable” in the “equitable and reasonable use” principle. He suggested the introduction of priorities in groundwater use. He also suggested an annex to be added including models of agreements which could be used as guidelines.

On the concept of groundwater bodies, he expressed his difficulties as a hydrogeologist to understand it.

Ambassador Yamada replied that the “equitable and reasonable use” principle is a relative concept. Article 5 of the draft articles includes factors relevant to the application of the principle. The common understanding of the principle has to be reached between the neighbouring countries. If the treaty is selected as a final form for this document, third party fact finding could be engaged..

Mr Lefébure: in the terminology of WFD, groundwater body is an administrative unit, covering several aquifers, a whole aquifer or just a part of it.

Mr Varela mentioned that in the draft articles the definition of an aquifer included the container and the water. He had a concern about the structure, and he wondered why the article 4 on the equitable and reasonable utilisation and article 13 on management are not next to each other. To his view, both articles are directly related. He also raised procedural questions on the comments that are expected on the draft articles and the eventual consideration by the ILC of experts’ comments.

Ambassador Yamada reminded that he has been working since five years with experts group organised and coordinated by UNESCO IHP.

The definition of an aquifer includes the container and the water, to follow the example of the 1997 Convention.

On the structure: the draft articles follow a step by step approach. The first step is the regular exchange of data, then monitoring, and then management.

The UN General Assembly adopted by consensus a Resolution requiring from governments to send their comments on the draft articles by 1<sup>st</sup> January 2008. All governments received the text. In most cases the reply is transmitted to the UN Secretary General by the Foreign Office. His advice is to consult with relevant ministries.

Mr Altokhais mentioned that in the case of Saudi Arabia, the text was received and distributed to the various organisations, institutions and universities involved in water issues.

Mr Klingbeil noted that the draft articles do not address climate change. Perhaps this could be added to the article 9.

Ambassador Yamada said that the ILC is waiting for comments. He also mentioned that the Asian-African Legal Consultation will meet at the beginning of July.

## Day 2

The session was chaired by Ms Aureli, and was opened by Ms Havasné with her presentation on Transboundary aquifers in Hungary. Sixty transboundary groundwater bodies are identified in Hungary. Hungary has several bilateral agreements on transboundary waters with its neighbours, and there is a need now to fill these agreements with concrete tasks concerning groundwaters. According to Ms Havasné, the EU WFD has played an important role in bringing dynamic for the cooperation between neighbouring states. Ms Havasné presented various on-going projects on transboundary aquifers between Hungary and its neighbours, carried out under the Danube Convention, the UN ECE Water Convention or being a part of the WFD implementation. She concluded with the affirmation that the best way forward is through common projects.

Mr Burchi inquired if the EU WFD is a good source of inspiration.

Ms Havasné replied that the WFD is obligatory for EU members, and has established the obligation of reporting. Before the WFD, experts of neighbouring countries were used to cooperate, but with the new directive they are receiving support.

Mr Klingbeil inquired what the reasons are that lead sovereign States to cooperate on a transboundary groundwater body.

Ms Havasné replied that in her opinion the reporting obligation under the WFD is the main reason.

Another case study was presented by Mr Meus on the carboniferous limestone aquifer between Flanders, France and Wallonia. Mr Meus presented the situation of the aquifer, its overexploitation and the measures that were taken, and the current situation under the WFD. The WFD has encouraged cooperation and trilateral dialogue via the ISC. He also mentioned all the uncertainties and the need of improving the knowledge on the aquifer.

Mr Pennequin commented that the cooperation between the three regions (Northern France, Wallonia and Flanders) has developed under the WFD.

Mr Hubert raised the issue of the difficulties in choosing the most appropriate scale for management of catchments and aquifers.

Mr Klingbeil compared the definition of an aquifer in the draft articles and the groundwater bodies in the EU WFD, which are considered as a “management unit”.

For Mr Kukuric, the definition of an aquifer in the draft articles is quite clear. It is meant as a hydrogeological definition and not as a management unit. It could be suggested to Ambassador Yamada to introduce the groundwater bodies in his commentaries.

Mr Meus confirmed that the most important object is the aquifer. A clear distinction has to be made between the management unit and the natural unit. He also raised the need to focus on groundwater divides, even inside a same aquifer

Mr Altokhais explained that in the case of Saudi Arabia the aquifers are very large ones. In some cases the aquifer is not used in the border area because of the high water salinity. Not

the whole (large) aquifer needs to be discussed while tackling the transboundary problems He also said that it is very useful to organize workshops with experts.

Mr Pennequin presented one more case of Transboundary cooperation: groundwater management, taking place at the Estonian –Russian border, in the Lake Peipsi/Chuskoye catchment area. Estonia is member of the EU while Russia is not. Several EU/UN-funded projects (TACIS, LIFE/FFEM, UNDP/GEF,) were conducted to enhance the water resources management and protection, some of them taking into consideration the transboundary aspects. The main LIFE/FFEM GW project aims at reinforcing the application of the WFD in Europe and its neighbours. It focuses on dialogue between the concerned parties, common objectives and activities for improved groundwater management in line with the WFD. The main project activities are:

- To improve monitoring and to construct national and international databases and geographic information system.
- Geological and hydrogeological modelling at the basin scale (a common GWR management tool).
- Identifying environmental hotspots

After this last presentation, Ms Aureli suggested a summary of the debate along the following issues:

1. How to improve the interdisciplinarity and the dialogue between lawyers and hydrogeologists?
2. The cooperation in accordance with binding international legal instruments (such the EU WFD and the UN ECE Water Convention)
3. Common conceptual hydrogeological models
4. The impact of the EU WFD
5. The status of the draft articles
6. Application of the draft articles in bilateral/regional agreements
7. The role of UN agencies

Mr Lefeber concluded that in his case the workshop was very informative regarding groundwater. He is concerned about the lack of involvement of scientists in the draft articles. He encourages additional workshops of this kind.

Ms Aureli said that this could be achieved by engaging the IHP National Committees.

Mr Kowalski said that in the case of the topic of shared natural resources in general, and groundwaters in particular it is important to create a dialogue the ILC members and the scientists. He intends to open such a dialogue in his country. To his view the dialogue has to be both ways.

Ms Aureli suggested that one recommendation of the workshop could be for UNESCO IHP to call the IHP national committees to create such a dialogue.

To encourage governments to submit their comments by January 1<sup>st</sup>, 2008, Mr Klingbeil suggested that UNESCO-IHP together with UN ILC may use also other international fora such as the Stockholm Water Week (August 2007) and the IAH Congress in Lisbon (September 2007). Additionally, it is important to involve the Ministries of Foreign Affairs in the discussion.

Ms Aureli mentioned that a dialogue is needed not only in the case of the UN ILC but also in a broader way.

Mr Ganoulis agreed that UNESCO has a pivotal role to play in this direction, primarily through education.

Mr Chambel added that the problem of consultation with the scientists exists also at the national level (i.e. within the states).

Mr Altokhais raised the importance of the participatory approach and of the dialogue with the neighbouring countries. He added that it is necessary to have an implementable convention, and to learn from the 1997 Convention. The water managers have to play a strong role.

Mr Hubert agreed that the dialogue between scientists and lawyers should be at all levels.

Mr Kukuric made some suggestions to organise the promotion of the draft articles :

- to instruct the IHP National Committees to assist the governments
- to use all international fora
- to give some guidelines to the countries
- the importance of case studies: to gather lessons learnt from projects in a systematic way

Mr Kowalski said that there might be no need for the draft articles in Europe because of the EU WFD and the UN ECE Water Convention. However it is the responsibility of the European States to put their knowledge at the service of the international communities.

The workshop concludes with the final words of the co-organisers.

Mr Pennequin thanked UNESCO for hosting such a successful workshop.

Mr Oliver said the legal and technical approach should converge. The legal instruments must be compatible at all levels (i.e. the local, provincial, national and the federal level). They regulate the very same water.



## Agenda

### Workshop on Transboundary aquifers

*UNESCO Headquarters, 1 rue Miollis 75015 Paris, 29-30 May 2007*

***Background:** the aim of this workshop is to underline the importance of transboundary aquifers across the world and to affirm the interdisciplinary nature of water management as well as the necessity to create a common language between the different disciplines.*

***Tuesday 29 May 2007***

#### **Room XVI**

10h00 Opening of the meeting,

- ❖ Welcome address from the organizers

10h30

- ❖ Hydrogeological characteristics of transboundary aquifers, ***Mr Neno Kukuric***

10h40

- ❖ Hydrogeology and international law, UNESCO-IHP's cooperation with the UN ILC  
***Ms Raya Marina Stephan***

11h00

- ❖ The draft articles on the law of transboundary aquifers, ***Ambassador Chusei Yamada***

11h30

- ❖ Coffee break

11h45

- ❖ What next steps for the draft articles at the UN ILC, ***Ambassador Chusei Yamada***

12h00

- ❖ Conclusions of the Tournai colloquium on the management of transboundary aquifers, *Académie de l'eau*

12h15

- ❖ Debate

12h30 Lunch break

14h15

- ❖ The EU Water Framework Directive, and the Groundwater Directive : focus on Transboundary aquifers, *Mr Philippe Quevauviller*

14h45

- ❖ The UNECE experience on transboundary aquifers, *Mr John Chilton*

15h15

- ❖ Debate

15h45

- ❖ Coffee break

16h00

- ❖ Groundwater in the mandate of the International Commission of the Escaut, *Mr Arnould Lefebure*

16h30

- ❖ Debate

**18h00 Closing of the day**

**18h30 Cocktail convened by UNESCO-IHP**

***Wednesday 30 May 2007***

**Room XV**

09h30

- ❖ Transboundary aquifers in Hungary, ***Ms Eszter Havasné Szilágyi***

09h50

- ❖ The carboniferous limestone aquifer system between France, Flandres and Wallonia, ***Mr Philippe Meus***

10h10

- ❖ Lake Pepsei transboundary aquifer system, ***Mr Didier Pennequin***

11h15

- ❖ Coffee break

11h30

- ❖ Debate

11h45

- ❖ General conclusions and wrap-up,

**12h30 Closing of the meeting**



## Workshop on Transboundary aquifers List of participants

**UNESCO Headquarters,  
1 rue Miollis 75015 Paris, Room XVI,  
29-30 May 2007**

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