



Regional Workshop on Shared Aquifer Management Kazakhstan-Uzbekistan Cooperation

REPORT

**United Nations Educational, Scientific and Cultural Organization (UNESCO) HQ
Paris, France
10-11 April 2013**

**Organized by
the UNESCO International Hydrological Programme (IHP)**

**with the support of
The Swiss Agency for Development and Cooperation (SDC)**

Background

The main target of the workshop was to present experiences from UNESCO programmes and Central Asia countries on "Groundwater resources and Transboundary Aquifer Resources Management".

The UNESCO Intergovernmental Council of the UNESCO's International Hydrological Programme (IHP), at its 20th Session held in June 2012, adopted the Resolution IC-XX-3 on the International Initiative on Transboundary Aquifer Resources Management (UNESCO IHP-ISARM Project) (attached). As follow up of this Resolution UNESCO-IHP is initiating the study of several case studies on transboundary aquifers. Case studies are aiming to assess and improve the knowledge about transboundary aquifers and define best practices and compile lessons learnt. Case studies have been identified in Central America, South Africa and Central Asia. UNESCO will provide support to national experts to enable them to carry out more in-depth studies into the selected aquifers. UNESCO-IHP will also be charged with establishing cooperation between experts in the region. Identified by UNESCO-IHP as the most interesting from both a technical and scientific point of view, the Pretashkent Aquifer is one of the case studies to be initiated.

UNESCO-IHP in cooperation with its IHP national Committees has already inventoried almost 500 transboundary aquifers around the world.

UNESCO-IHP has therefore organised a two-day regional workshop to bring together both international experts on groundwater resources management and national water experts from Kazakhstan and Uzbekistan. The workshop was organized with the participation of the United Nations Economic Commission of Europe (UNECE) and the EU Groundwater Working Group C.

The UNESCO programme on case studies has received the support of the Swiss Agency for Development and Cooperation (SDC) that has provided the financial support necessary for the organization of this workshop. The follow up of the decisions and workplan of activities set up by the workshop are foreseen to take place in the framework of a UNESCO-IHP cooperative project funded by the Swiss Agency for Development and Cooperation (SDC) and in particular dealing with the assessment and management of the Pretashkent Aquifer, shared between Kazakhstan and Uzbekistan.

10 April, First day

Session 1 – Setting the Scene

***Chairperson: Dr. Alice Aureli, Chief of Groundwater System Section,
Division of Water Sciences, UNESCO-IHP***

Opening Remarks

- ***Ms Blanca Elena Jimenez-Cisneros***, Director, Division of Water Sciences, Secretary of UNESCO-IHP pronounced the opening speech (Annex 1).

UNESCO Programme and the worldwide ISARM initiative

- **Dr. Alice Aureli** , UNESCO International Hydrological Programme (IHP) – (Presentation: Annex 2)

“Groundwater Resources Activities-improving knowledge and capacity for the management of a vital resource”

Ms Aureli presented an overview of the UNESCO-IHP programme and in particular of the projects and studies on groundwater resources.

Overview of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes

- **Ms Annukka Lipponen**, Environmental Affairs Officer, UNECE – (Presentation: Annex 3)

She updated on the most recent activities of the UNECE under the “UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes” also known as the “Helsinki 1992 Convention”. She stated that the Meeting of the Parties (MoP) to the UNECE Water Convention held in Rome, 26-27 November 2012, adopted several decisions and a new programme of work that mark a crucial turning point in the globalization of the Convention. This decision reconfirms the conviction of the Parties that the Convention is an effective instrument beyond the UNECE region, as well as the unanimous desire to enable accession by non-UNECE countries as soon as possible, without distinction from the procedure for UNECE countries. With this decision, it is expected that non-UNECE countries will be able to accede to the Water Convention as of the end of 2013. Countries outside the UNECE region were encouraged to join the Convention by United Nations Secretary-General Ban Ki-moon, so that simplifying the procedure for the accession of non-UNECE countries to the Convention.

Any future request for accession by any member of the United Nations will be considered as approved by the MoP, once the amendments to articles 25 and 26 to the Convention enter into force, which probably end 2013.

Recent activities include: inventory and assessment of Transboundary Rivers, Lakes and Groundwaters in UNECE Region (2007 and 201) and preliminary study of the application of the principles of the Convention (2009).

The Meeting of the Parties (Rome, 28-30 November 2012) adopted the following decision on cooperation with UNESCO:

“Recognizes benefits of closer cooperation with UNESCO and invites UNESCO IHP, within the framework of ISARM Programme, to consider the Convention, once it open for accession by all UN Member States and to promote the Convention and its guidance documents.”

The EU Water Framework Directive

- **Mr Andreas Scheidleder**, Working Group C on Groundwater, European Commission, gave an overview on the EU Framework Directive activities on groundwater resources – (Presentation: Annex 4).

Comments of Dr. Alisher Ikramov

Mr Ikramow suggested that the future project should also include issues on interlinkages between groundwater resources and related aquifers terrestrial ecosystems which is in line with current VII Phase of the IHP on “Water Dependencies” In addition, management plan on groundwater resources should include the identification, when possible, of existing depending ecosystems, which are under the protection of international conventions such as the RAMSAR convention. Such interdisciplinary approach will contribute to the holistic approach to groundwater resources management in the sub-region and will demonstrate good practice of focused collaboration within UNESCO as well as with other involved UN agencies.

The International Groundwater Resources Assessment Centre (IGRAC)

- **Mr Neno Kukuric**, Director, UNESCO-WMO IGRAC Centre – (Presentation: Annex 5)

The presentation was devoted to illustrate the activities of the UNESCO-WMO category 2 International Centre on Groundwater Resources.

The IGRAC centre has committed its support to the experts of both Uzbekistan and Kazakhstan in the execution of the case study with UNESCO-IHP. IGRAC will support the creation of an enabled environment for the experts to coordinate amongst themselves.

Mr Kukuric also presented the most updated version of the Map of Transboundary Aquifers prepared by IGRAC.

Session 2 – Opportunities for the Pretashkent aquifer and knowledge sharing

Chairperson: Dr. A. Aureli

The Genevise aquifer – a shared aquifer resource management collaboration between Switzerland and France

- **Dr. Gabriel de los Cobos**, GESDEC - Geological Survey of the Canton of Geneva, Switzerland – (Presentation: Annex 6)

The artificial recharge of the transboundary Genevise Aquifer has been operating successfully since 1980, providing about 20% of the total drinking water supply for over 30 years. Successful negotiations were being conducted with various local and national authorities in France in order to establish a joint water management system (1978 and revised in 2007).

Opportunities for collaboration on the Pretashkent aquifer

- **Ms Alice Aureli, Mr Ivica Trumbic and Mr Holger Treidel – (Joint Presentation: Annex 7)**

The UNESCO in accordance with the regional priorities of UNESCO foresees the implementation of three case studies on transboundary aquifers in three different regions.

The proposal is to conduct a detailed assessment in three selected case study locations:

- the Esquípuilas-Ocotepeque-Citalá (Trifinio) Aquifer (El Salvador, Guatemala, Honduras);
- the Kalahari-Karoo (Stampriet) Aquifer (Botswana, Namibia, South Africa);
- the Pretashkent Aquifer (Kazakhstan, Uzbekistan).

The pilot Transboundary Aquifers were first identified through the UNESCO ISARM program with the participation of national and regional experts. They have been proposed on the basis of the following criteria:

- Representativeness of different geological conditions, climatic regions, socio-economic conditions, and political and institutional contexts;
- Location in areas affected by water scarcity, and vulnerable to climate change and variability.

The workshop served to prepare the programme for the new project focus that should focus on the development of a case study on the Pretashkent aquifer.

Dr Aureli presented the main goal of this two-day expert workshop highlighting that the main objective of UNESCO IHP is to implement and give an operational follow up to the recommendations of Member States at the 20th Session Intergovernmental Council of the International Hydrological Programme (IHP) UNESCO Headquarters Paris, 4 - 7 June 2012.

The workshop aimed to:

- Inform hydrologists, geologists and water resources experts from Kazakhstan and Uzbekistan about the UNESCO IHP programme on groundwater resources ;
- Facilitate coordination amongst experts from the two countries;
- Facilitate the preparation of a case study programme in Central Asia.

Objectives of the UNESCO IHP project:

- improve the knowledge on national groundwater resources;
- recognition of the importance and vulnerability of groundwater resources, including one case study on a transboundary aquifer;
- establish cross-border dialogue and cooperation;
- improve capacity on the assessment and management of groundwater resources and transboundary aquifers applying the most recent instruments available;
- support countries in the preparation of a number of case studies on groundwater resources in various regions, including Central Asia.

11 April, Second day

Section 3 – Situation of groundwater resources in Kazakhstan and Uzbekistan

Chairperson: Alice Aureli

Experts from Kazakhstan

- **Mr Oleg Podolny**, Department of Geoecology and Mathematical Modeling, Organization of Hydrogeoecological Research and Design Company “KazHYDEC” – (Presentation: Annex 8)

Mr Podolny presented results from monitoring and assessment of the Pretashkent transboundary aquifer and resumed its main transboundary hydrogeological and institutional problems and challenges.

He considered that it is interesting to start a Pretashkent aquifer joint work with experts from both states to better evaluate the present situation and assess possible future scenarios.

In Kazakhstan several ministries deal with groundwater, like the Ministry of Environment and the Ministry of Agriculture, which is responsible for issuing licenses for moderate groundwater abstraction. For more important issues and also for transboundary coordination problems the responsible institution is the: Committee of Geology and Subsoil Use, Ministry of Industry and New Technologies.

- **Mr Igor Seversky**, Chairman of IHP National Committee

Mr Seversky started by thanking UNESCO for this initiative and the opportunity for developing coordination and cooperation in addressing transboundary waters studies and management issues. He referred to the Syr Darya-Aral Sea project in Kazakhstan, where 60 monitoring sites were implemented. He added that also issues of climate change related to glaciers melting are very important in the region. He mentioned the Almaty Conference on Climate Change and the good cooperation between Kirgizstan and Kazakhstan: an Inter-ministerial Committee was established between the two countries for surface water resources management.

Discussion

Alice Aureli provided additional information on the UNESCO Transboundary Water Assessment Program (TWAP), which includes not only transboundary aquifers, but also transboundary rivers, lakes, large marine ecosystems and open ocean waters. A methodology for assessing transboundary waters based on indicators at different levels has been developed and for transboundary aquifers; a preliminary Methodology is described in Volume 2 published by UNESCO. This has been further developed and the details will be presented to the experts of the Pretashkent case study during the execution of the activity of the project. She also stated that the new programme UNESCO-IHP VIII that will start in 2014 will cooperate with IHP National Committees in many challenging programs, including Water Security. It was stated that water Security is a topic in which Kazakhstan is particularly interested

Mr Vefa Mustafaev asked if the agreement between IHP National Committees of Kazakhstan and Uzbekistan was signed and Mr Seversky promised to send it.

Experts from Uzbekistan

- **Mr Sergey Myagkov**, Executive secretary, IHP National Committee of Uzbekistan –(Annex 9)

Mr Myagkov presented different scenarios on water resources availability in Uzbekistan under climate change. All the IPCC projections show for Uzbekistan an increase of both the temperature and the precipitations.

However the main problem is not the mean increase of variables like the temperature and the precipitation but the instabilities of the extreme values inducing floods and droughts. The frequency of such events is increasing and creates problems in agriculture because of droughts. For example one may observe 200 mm of rain in one month, followed by 30 days of drought.

In Uzbekistan a good monitoring system exists for groundwater and surface waters (e.g. the Chirchik River) and a mathematical model was developed in order to study the effects of climate change on the available river flow.

- **Mr Jamoljon Djumanov**, Head of the Laboratory "GIS-technology", HYDROINGEO Institute

Mr Djumanov presented the national hydrogeological monitoring system. The system is implemented in many aquifers including to aquifers of transboundary nature in the Fergana Valley, Tashkent and Syrdarya regions, in the Syrdarya River basin, and in the Amudarya River basin. The Pretashkent aquifer is shared between the Southern Kazakhstan and the Tashkent region of Uzbekistan. It is also a source of mineral water used also for medical purposes by the two states.

Since mid 1990s a drawdown of the water table was monitored at the majority of the observation wells. The reason of this water table decrease has to be properly investigated.

To improve the monitoring quality the Institute of Hydrogeology is gradually adopting data loggers and automatic devices for measuring water depths, conductivity and temperature. Actually, the monitoring of 54 observation wells uses automatic data loggers.

- **Mr Gulom Bekmirzaev**, Scientific researcher, Tashkent Institute of Irrigation and Melioration, and **Mr Abdul hakim Salokhiddinov**, Professor, Tashkent Institute of Irrigation (Joint presentation)

Prof. Salokhiddinov presented a geological and hydrogeological study of the PreAral Basin, Uzbekistan. A conceptual model of the aquifer was proposed. At regional scale, the interactions between groundwater and the Aral Sea were investigated.

The aquifer resources are used for irrigation in the Amudarya basin. These resources are important for the region because of the water scarcity due to arid climate and low precipitation. Groundwater mineralization increases with the depth and on time. Also groundwater levels decrease during the last 15 years. It is recommended for the future to adopt an integrated approach by using conjunctively surface and groundwater resources.

Session 4 – Definition of a workplan and creation of working groups

Definition of a workplan

- **Ms Alice Aureli**, UNESCO-IHP ((Presentation: Annex 10)

Ms Aureli as responsible for the implementation of the IHP Council resolution XX3 reminded that this project is a regional application of the GEF global program TWAP (Transboundary Water Assessment Program). At the global level a methodology was already been developed based on indicators and at the regional level specific case studies aim to achieve a better understanding of the importance and the vulnerability of shared groundwater resources, through a dialogue and transboundary cooperation.

For Central Asia, the objective of the case study is to formulate a sustainable coordinated management strategy for the Pretashkent aquifer. The team of experts of the two countries will agree on the issues to be studied and more precisely:

- Organization of the work amongst them;
- What are the gaps and challenges?
- Data to be collected;
- Analysis to be conducted;
- Equipment to be purchased.

Project time scale

First phase	April 2013 to end 2015
Possible Second phase	2016-2017

Participants agreed to undertake the following actions during 2013:

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|--|-------------------------------|
| - Set up teams of national experts | by mid May 2013 |
| - Organisation of 2 national seminars in the two countries to define detailed actions programme at national level (gaps and challenges) and elaboration of case study specific methodology | end of May / June 2013 |
| - Case study specific methodology presented and agreed and coordination between the experts for joint investigations | September 2013 |
| - First data collection and analysis up to the | End of 2013 |
| - Second regional seminar on capacity development | December 2013 |

She also recalled that the workshop was organized thank to the financial support of the Swiss Agency for Development and Cooperation (SDC)that has allowed UNESCO IHP to start preparatory activities with selected countries.

Overall coordination of the Project	UNESCO IHP Secretariat in Paris	UNESCO
National Level	National Technical TEAM Group (NTTG)	National Focal Points (one per country) IHP national Committee National Experts
Regional Level	Regional Team composed by the two National Team Members	IHP National Committees and appointed national representatives
International and Regional Partners		UNECE, IWMI, EU Group C, and also RAMSAR, IPCC, GEF, UNDP, UNEP etc..

Conclusions and recommendations

1. Considered the need to comply with the Resolution IC-XX-3 on the International Initiative on Transboundary Aquifer Resources Management (UNESCO IHP-ISARM Project) adopted by the UNESCO Intergovernmental Council of the UNESCO's International Hydrological Programme (IHP), at its 20th Session held in June 2012 (attached) it was agreed initiating the study of several case study on transboundary aquifers.

As main conclusion of the workshop and due to the successful presentations and the discussions among all participants it was set up a workplan for the initiation of a pilot project on the groundwater resources of Kazakhstan and Uzbekistan, It was agreed that there is a good spirit and willingness for working together on scientific problems concerning groundwater resources management in the region of Central Asia. It was then agreed to select as first case study the Pretashkent Aquifer.

2. The case study is part of a larger endeavour under the responsibility of UNESCO. UNESCO IHP together with UNESCO IOC have initiated a new programme the: *Transboundary Waters Assessment Programme: Aquifers, Lake/Reservoir Basins, River Basins, Large Marine Ecosystems, and Open Ocean (TWAP)*. The aim of the programme is to catalyze sound environmental management that. The TWAP Project is aimed at conducting the first 'baseline' assessment and strengthening partnership arrangements for future periodic assessments and monitoring.

3. Participants recognised the importance of groundwater aquifer resources as an important source of water supply and also for agricultural use, tourism and medical purposes.

4. Groundwater resources are expected to become more important in the near future due to arid climate, water scarcity, frequent droughts and groundwater overuse, especially in agriculture. Climate variability and strong population growth in the region will aggravate the current situation.

5. Both countries have so far developed adequate national groundwater monitoring systems and have elaborated several hydrogeological and geological studies. From the presentations become clear that there is good knowledge concerning the hydrogeological characteristics and the functioning of the Pretashkent aquifer.

6. However the debate at the workshop identified that there is the need for facilitating increased cooperation between the countries and UNESCO IHP is considered by the national experts of the two countries as the most adequate agency to foster coordination and support joint scientific studies on groundwater resources. It was evaluate that there is still a gap in analysing data, harmonizing monitoring data, and applying common methodologies for groundwater assessment and management. There is a need for coordinating the activities and the planning process for the management of the Pretashkent aquifer. In this aspect it would be very useful for the two countries to learn about the methodology for groundwater assessment elaborated by UNESCO, based on indicators at different levels.

7. All participants expressed their willingness to continue working together in the framework of this UNESCO Project funded by the Swiss Agency for Development and Cooperation (SDC) and coordinated by UNESCO-IHP.

8. A workplan for action to be taken in 2013 was then adopted. It was agreed that as a first step of the project two national seminars should be organized, one in Uzbekistan (end of May/beginning of June 2013), and one in Kazakhstan (mid June 2013). The goal of these meetings is to organise the respective team of national experts to take responsibility in the implementation of the project, identify key national institutions that will participate in the project to define a detailed action plan, to identify national gaps, challenges, priorities and the elaboration of a common specific methodology for groundwater assessment and management. Therefore a seminar with the participation of the experts of both countries will be organized in September 2013. The UNESCO indicators specific methodology for Transboundary aquifers assessment will be presented and discussion about the application to the case study and agree coordination between the experts for joint investigations. The first data collection and analysis should be also initiated before December 2013.

Participants of the meeting:

1. Delegation of Kazakhstan

Mr Barbazai Nurabayev (Chairperson) and Mr Serik Ashimov (Head of the de[partment of Hydrogeology) of the Committee of Geology and subsoil use, Ministry of industry and new technologies, were invited to participate but due to unforeseen urgent commitments they were not able to come.

Mr S. Burshakov, Deputy Permanent Delegate of Kazakhstan at UNESCO;

Ms A. Darminbaeva, 1st Secretary of the Delegation;

Prof. I. Seversky, Chairman of Kazakhstan IHP National Committee;

Prof. I. Podolny, Chief of Department, KazHYDEC Company, President of National Committee of International Association of Hydrogeologists;

2. Delegation of Uzbekistan

Dr. A. Ikramov, Secretary-General of National Commission of Uzbekistan for UNESCO, Member of UNESCO

Executive Board

Mr A. Abdullaev, 1st Secretary of Permanent Delegation of Uzbekistan at UNESCO;

Mr S. Myagkov, Executive Secretary of Uzbekistan IHP National Committee;

Mr J. Djumalov of Department, Hydroengeo Institute, State Committee on Geology and Mineral Resources of Uzbekistan;

Prof. A. Salokhiddinov, Chief of Department, Tashkent Institute of Irrigation and Melioration;

Mr G. Bekmirzaev, Senior researcher, Tashkent Institute of Irrigation and Melioration.

3. Invited International Experts and Representatives of International Agencies

Ms A. Lipponen, UNECE

Mr A. Scheidleder, Working Group C, EC

Mr N. Kukuric, UNESCO-WMO IGRAC Centre

Mr Gabriel de Los Cobos, Head of Geology-Hydrogeology Branch, Canton of Switzerland.

4. UNESCO staff members and consultants

Ms A. Aureli

Mr Anil Mishra

Mr Holger Treidel

Mr Matthew Lagod

Mr Jacques Ganoulis

Mr Ivica Trumbic

Mr Vefa Moustafaev

Rapporteurs: Vefa Moustafa and Jacques Ganoulis

Annex 11 : Agenda of the Workshop