Added Value of Groundwater Management Systems

Workshop on use of the GGRETA Information Management System

- Grand Hotel Tien-Shan, "Astana" conference-hall -
- 23 June 2015, Almaty, Kazakhstan -

Workshop organized by UNESCO International Hydrological Programme (UNESCO-IHP), UNESCO Almaty Cluster Office and International Groundwater Resources Assessment Centre (IGRAC)

Background

The workshop "Added Value of Groundwater Management Systems" was organized in the framework of the project "Groundwater Resources Governance in Transboundary Aquifers" (GGRETA), funded by the Swiss Agency for Development and Cooperation and executed by UNESCO and its partners.

The GGRETA project includes an in-depth assessment of three transboundary aquifers located in Southern Africa, Central Asia, and Central America. The GGRETA Information Management System (GGRETA IMS) is developed to provide detailed information on these transboundary aquifers and support transboundary groundwater governance. The system allows uploading of various types of information and provides a possibility to create overlays of data. Development of the GGRETA IMS is led by UNESCO's International Groundwater Resources Assessment Centre (IGRAC).

Objective

The purpose of the workshop is to introduce state-of-the-art web-based information management system(s), to train the participants to use it and to thoroughly discuss its current and potential added values. The latter is very important, since the improvements and further development of the system will be prioritised by needs of end-user. The Information Management System (IMS) developed in the framework of the GGRETA project was in the focus of the workshop. Additionally, the Global Groundwater Monitoring Network (GGMN) programme was presented, addressing the changing nature of groundwater resources.

Opening welcome addresses

- **Mr. Serguei Lazarev**, Director, UNESCO Almaty Cluster Office.

The workshop started with the opening remarks by Mr. Lazarev, who welcomed the participants of the training on behalf of UNESCO. Mr. Lazarev emphasized the importance of water governance issues, especially of groundwater management, in UNESCO activities. In this field the Organization works through its International Hydrological Programme (IHP) and a number of its projects. Mr. Lazarev also noted successful implementation of the GGRETA project in the Republic of Kazakhstan, expressing his appreciation to the Committee of Geology and Subsoil Use of Kazakhstan, in particular to its Chairman, Mr. Bazarbay Nurabayev, for its support of the project. He also expressed his gratitude to the colleagues from IGRAC and UNESCO Headquarters for organization of the workshop and wished the participants of the meeting a successful and fruitful work.

- **Mr. Bazarbay Nurabayev**, Chairman, Committee of Geology and Subsoil Use, Ministry of Investment and Development of the Republic of Kazakhstan.

Mr. Nurabayev started his speech by thanking UNESCO-IHP and UNESCO Almaty Office for organization of the meeting. On behalf of the Committee, he commended the UNESCO contribution to the development of the Republic of Kazakhstan and confirmed the willingness of the Committee to continue its cooperation with UNESCO in the field of sustainable governance of transboundary groundwater resources. Mr. Nurabayev reaffirmed the essential role of the Pretashkent aquifer resources in the livelihood of the Saryagash district in the South Kazakhstan region as the only underground source of drinking water for its population. In conclusion, Mr. Nurabayev confirmed the support and interest of the Committee in further UNESCO projects on groundwater resources.

Presentations

After the opening remarks Mr. Neno Kukuric, Director of the International Groundwater Resources Assessment Centre (IGRAC), provided some presentations on global transboundary groundwaters, international cooperation mechanisms and the role of information management systems. The National Coordinator of the GGRETA Project in Kazakhstan, Mr. Oleg Podolny, gave an overview of transboundary groundwaters in Kazakhstan.

Transboundary groundwaters and international cooperation

- Mr. Neno Kukurić, Director, UNESCO IGRAC.

Mr. Kukuric started with the fact that global changes, such as the population growth and climate change, put more pressure on water resources and groundwater. Therefore, there is need to share information and knowledge on state of water resources, as well as conduct their

assessment. Mr. Kukuric said few words about the IGRAC, which he represented. As it was emphasized, the role of the Centre is to facilitate and promote the process of knowledge sharing on groundwater. The Centre activities focus primarily on information and knowledge management, transboundary assessment, and groundwater monitoring. The results of its work are published on the Centre's web-portal.

The presentation of Mr. Kukuric was devoted to general information on transboundary aquifers and related activities. It was noted that many aquifers crossing political borders may become a source of potential transboundary problems in relation to groundwater quality and quantity. Therefore, there is need for a proper assessment, monitoring and management of groundwater resources, in order to eliminate potential sources of conflicts and improve the overall benefits from groundwater. 13 years ago UNESCO started the ISARM (Internationally Shared Aquifer Resources Management) Programme, an "umbrella programme", which supports all kind of internationally shared groundwater activities all over the world. As it was noted, another important component in improving transboundary water management is the laws and agreements regulating internationally shared groundwaters. Mr. Kukuric mentioned the UN Convention on Watercourses (1997), as well as some regional legislative instruments, including UNECE Convention and the UN General Assembly resolution on transboundary groundwaters, which are still to be brought in practice. The Global Environment Facility (GEF) projects on internationally shared waters were also mentioned. In last ten years GEF has spent 38 billion dollars on such kind of projects. The purpose of all these projects is to facilitate sustainable use of groundwater and its protection. There are projects implemented on the aquifer level, one of which is the GGRETA project (Groundwater Resources Governance in Transboundary Aquifers), financed by the Swiss Agency for Development and Cooperation and executed by UNESCO and its partners. The objective of this project is to improve knowledge on the aquifer, to establish cooperation mechanisms and to agree on common actions, in order to improve state of the aquifer. As Mr. Kukuric emphasized, international cooperation in groundwater field is a very complicated and sensitive issue. The implementation of the project requires a combination of science and diplomacy. Cooperation is a very essential part of the whole project.

Transboundary groundwaters of Kazakhstan

- Mr. Oleg Podolny, National coordinator of the GGRETA project in Kazakhstan.

Mr. Podolny started his presentation with the fact that the assessment of transboundary waters on global level has begun in 2002, while in Kazakhstan it started in 2006-2007. Since that time, people have achieved some results, one of which is the GGRETA project. When the process of groundwater assessment has been started in Kazakhstan, the first task was to select

transboundary aquifers, which are more relevant and important for the country. For this issue, Kazakhstan experts elaborated a typology of aquifers, in order to choose the most relevant for the assessment. The experts made an analysis of hydrogeology of all transboundary aquifers in Kazakhstan. As a result, 15 aquifers were selected. According to results of the analysis, there are two aquifers with a high risk of transboundary problems, one of which is Pretashkent aquifer, shared with Uzbekistan. As it was noted, Pretashkent aquifer reserves were estimated in 1980s and equally distributed between Uzbekistan (Tashkent mineral water) and Kazakhstan (Saryagash mineral water); the conditions of groundwater use were also agreed. Now there are some problems with the groundwater of Pretashkent aquifer, which require transboundary cooperation of both parties.

GGRETA Information Management System presentation

- Mr. Neno Kukurić, Director, UNESCO IGRAC.

Information Management System (IMS) developed within the GGRETA project is a part of a larger system called Global Groundwater Information System (GGIS). Mr. Kukuric emphasized the importance of information for a sustainable management of groundwater resources. As it was noted, there is a global lack of groundwater knowledge and data, as well as its accessibility and availability. Mr. Kukuric expressed his belief that technologies can promote and support the cooperation between states. The purpose of the IMS is to collect, store, visualize, and share information, in order to support transboundary groundwater governance and assessment. Regarding the principles of work with the system, it was explained that the system has a protected workspace for each country and a public view mode. This allows the countries to retain a complete control on the data they publish in the system, using a special login and password. In case of shared aquifer, each country is responsible for the part of the aquifer located within its national territory. Then regional experts combine the information from all parts. Combining and comparing these data, users can get new information. Mr. Kukuric emphasized the interactivity of the system.

More information on the principles of IMS work was presented during practical training after lunch.

Discussion

Q: **Ms. Skorintseva** asked, since the maps and data, used by the experts, are dynamic; it changes, if it is possible to upgrade the data in the system. The second question was about the accessibility of the system: there's an access to the system for a certain experts and country

representatives. Is there any risk that some of its users may harm the system and how this issue of security is controlled?

A: Mr. Kukuric said that it is possible to upgrade the data, since the user has a complete control of the data uploaded in the system and he/she can upload new files to the system. Regarding the question on access to the IMS, Mr. Kukuric noted that national coordinator and experts are in charge to decide who will have an access to the system and level of its accessibility. All other users who will see the information in public mode will not be able to modify it or delete.

Q: **Ms. Assel Dautova**, Master student of German-Kazakh University in Almaty, asked if there are any plans to introduce the system to universities or to develop a study course on IMS for students.

A: Mr. Kukuric answered that if there's interest in this system, it is possible to implement the proposed idea. But the objective of the organized meeting was to train its participants, while they, in turn, can train their colleagues in their respective institutions.

Q: **Mr. Evgeniy Sotnikov**, PhD student of Kazakh National Technical University, asked two questions. The first was about groundwater monitoring, whether the system monitors groundwater level or its quality as well. The second question related to the interference of groundwater and surface waters. It was asked if the GGRETA system provides any complex monitoring of both groundwater and surface water resources.

A: Mr. Kukuric explained that despite the inevitable importance of connections between groundwater and surface waters, as well as need to monitor its quality, none of these elements is considered in the system. The GGRETA IMS monitors only groundwater quantity. It was mentioned that there is a database of water quality (GEMStat). There are separate databases for surface waters, their quality and runoff and for groundwater and their quality.

Q: The participants asked a question about the problem when a country doesn't share information on groundwater or particular groundwater wells, which are considered as national strategic objects. It was asked if it is solved on international level.

A: Mr. Kukuric mentioned briefly about the UN Watercourses Convention as an international legal instrument regulating this issue. It was noted that the United Nations and international community continue to work with governments, explaining the advantages of international cooperation. It's improving but still remains a complicated issue. Regarding surface waters, it was clarified that there's always issue of upstream and downstream countries. Usually downstream countries express their willingness to cooperate, while upstream countries are not

always interested in cooperation. This also makes obstacles for promotion of international cooperation.

Q: It was asked if both participating countries, Kazakhstan and Uzbekistan, provide the required information for the GGRETA IMS.

A: Mr. Kukuric explained that for the moment within the Pretashkent Aquifer case study only Kazakhstan has provided the required information. The IGRAC continues to negotiate with Uzbekistan about this issue, explaining the importance of this project and data from Uzbek part of the Aquifer, needed to compare these data.

Mr. Gevinyan added that Uzbekistan hadn't provided hydrogeology data. But information on socio-economic, legal and institutional aspects was well received from Uzbekistan.

Q: The participants noted that groundwater data is a time variable data. It was asked who will coordinate the monitoring within the GGRETA IMS, who will select experts for this monitoring and who will be responsible for maintaining of the GGRETA IMS in the future.

A: Mr. Kukuric noted that usually when a project is over, the data collected during its implementation can be abandoned and lost. But the advantage of the GGRETA IMS is that it doesn't require anything for its maintenance. IGRAC maintains the System online. Regarding update of this system, progress of this issue depends on the Committee of Geology and Subsoil Use of Kazakhstan, since the Committee owns the data and it will decide what information to be updated in the System.

Q: **Mr. Podolny** asked how many monitoring points there are in the global scale, or, for example, in China or USA.

A: Mr. Kukuric explained that the amount of monitoring points depends on a country. For example, for China it's nothing, while for the USA you can get information from all monitoring points of the country.

The organizers of the training expected to get some comments and opinions from the participants about the GGRETA IMS as a whole, about the concept of the system.

Mr. Podolny remarked that the primary goal of national experts, hydrogeologists and scientific institutions is to identify, with the support of the Committee of Geology and Subsoil use, which wells, which monitoring points should be included in the System.

In conclusion, Mr. Kukuric browsed briefly the IMS, presenting its basic functions. The GGRETA IMS was well received by the participants of the training. They expressed a great interest in the presentations and willingness to work and test the GGRETA system. After a lunch break the participants had an opportunity to get to closely know the GGRETA IMS and use it in practice.


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