18th meeting of the Working Group on Monitoring and Assessment, 17-18 October 2023
- item 8(a). Projects on the ground and regional events

Pretashkent transboundary aquifer in Central Asia

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In 1991, the total length of the state borders of the five new independent states in Central Asia increased 4.4 times and amounted to 31.5 thousand km. 37 aquifers have become transboundary.

And one cross-border problem requiring interstate efforts for solving it has become obvious. This is the problem of the Pretashkent aquifer.

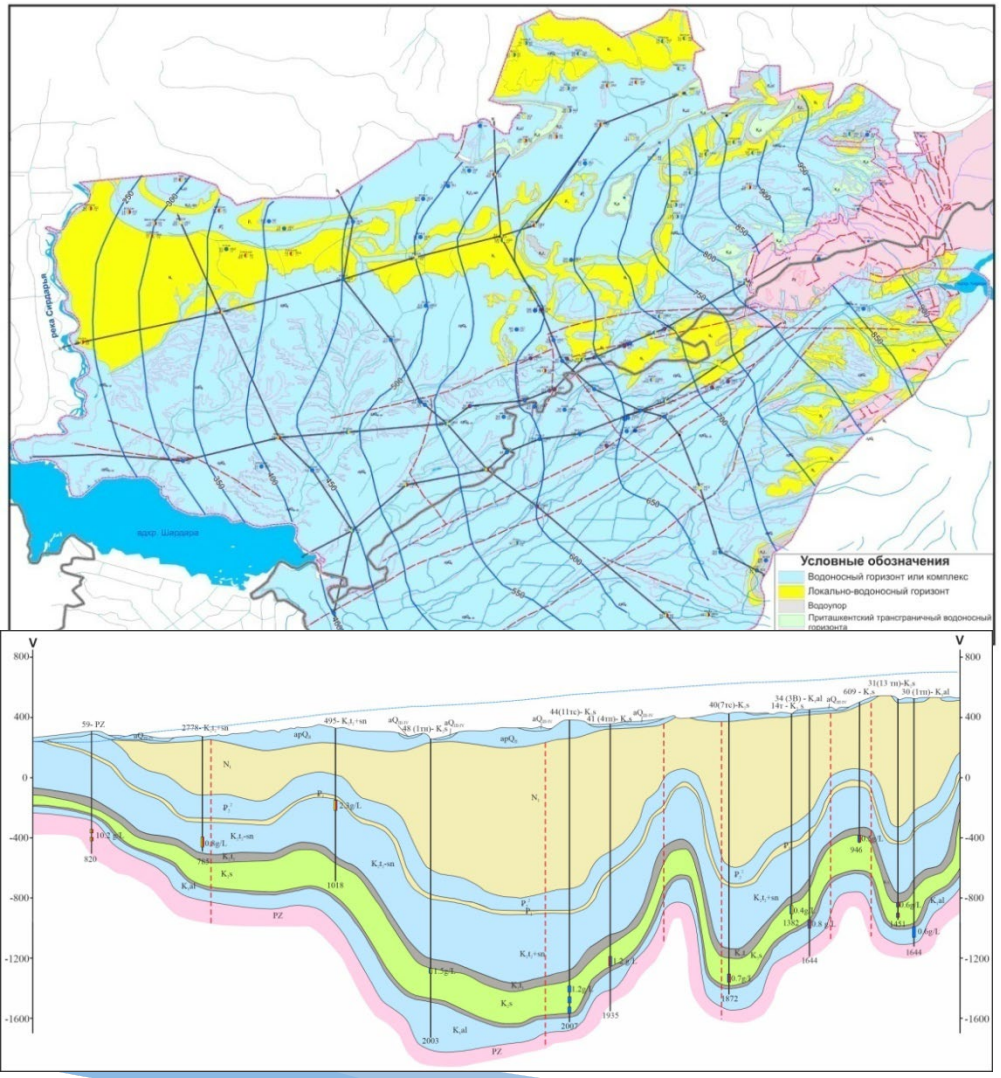
The Pretashkent transboundary aquifer is an example of porous, deeply buried artesian aquifer with non-renewable fresh mineral groundwater resources. It is shared by Kazakhstan and Uzbekistan. In the former Soviet Union, its exploitable recourses were divided between countries in approximately equal quantities. Since 1991, mutual control of this water allocation has not been carried out. Currently, there are two main problems associated with it: 1) depletion of groundwater reserves and 2) potential deterioration of groundwater quality.

GGRETA project: case study of the Pretashkent TBA

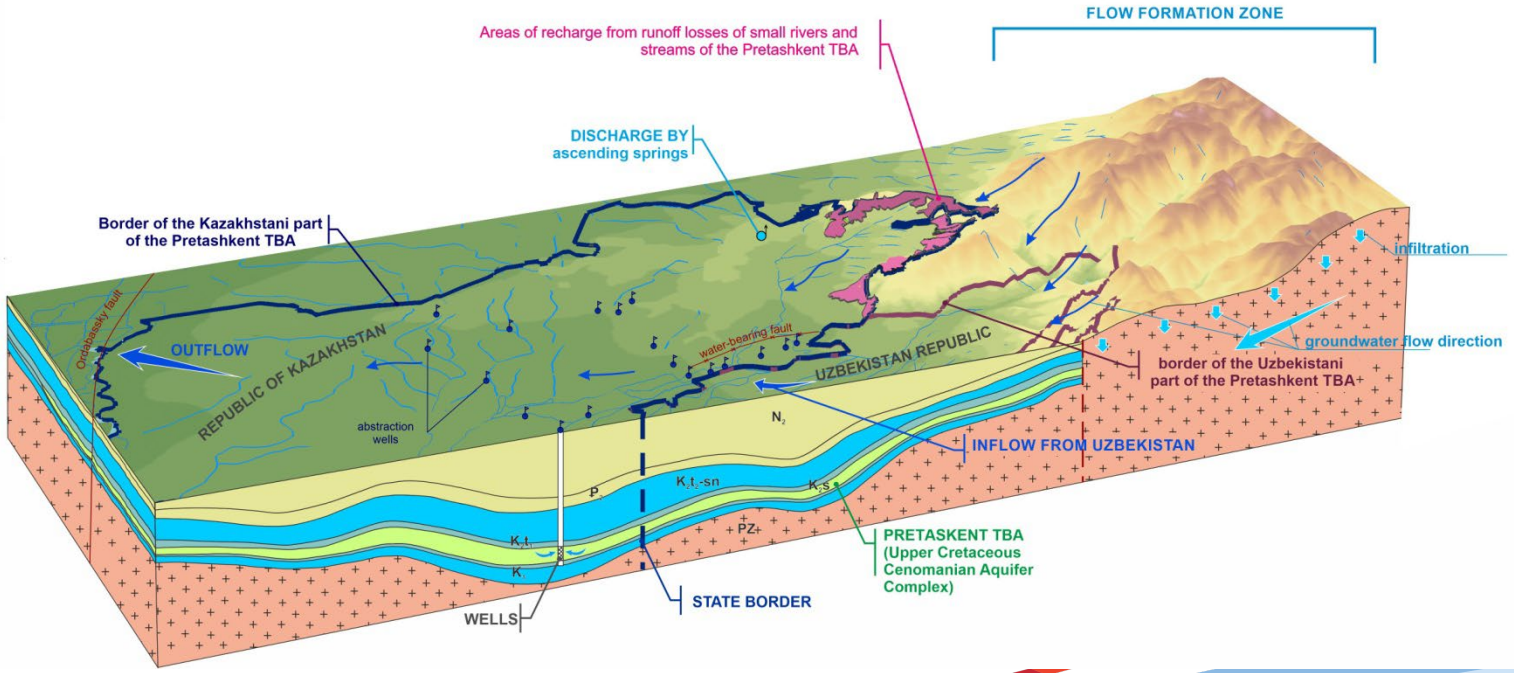
The project "Groundwater Resources Management in Transboundary Aquifers" (GGRETA), that was implemented by UNESCO-IHP in close partnership with IGRAC and national partners and with the support of the Swiss Agency for Development and Cooperation (SDC), was aimed to a strengthen of the regional stability and cooperation through the establishment of a framework for transboundary groundwater management. The Pretashkent aquifer was selected as one of three pilot aquifers in three different continents.

The first phase of the GGRETA project (2013-2015) was developed only on the Kazakhstan part of the TBA area, but it provided scientific and interdisciplinary understanding of groundwater dynamics, legal and institutional frameworks, and socio-economic conditions. It was determined that the tool for joint interstate management of groundwater abstraction of the Pretashkent transboundary aquifer should be its simulation numerical hydrogeological model.

GGRETA project: Mapping compilation, correction and harmonization results



Conceptual model schema



The second phase of the project (2016-2018) focused on building institutional capacity on transboundary water cooperation and strengthening dialogues between Kazakhstan and Uzbekistan. The aim was for the countries to agree on a pathway towards cooperation on the joint management of the Pretashkent Aquifer, while ensuring that the exchange of data would align with national requirements of security.

The recommendation was to establish teams of national experts to create and operate a mathematical simulation model, to be used by national government institutions as a basis for groundwater management and for developing a consolidated strategy for Kazakhstan and Uzbekistan to manage the risk of degradation of the aquifer.

Groups and individual experts participated in various events: Central Asian Water Forum, Almaty, 2017; Water conflict resolution and transformation, Tashkent, Uzbekistan, 2018; International Expert Meeting, Tashkent,2018; Advanced Training on Groundwater Modeling and GIS, Delft, The Netherlands, 2019 and others

The third phase of the project (2019-2022) focused on subsequently developing a mathematical simulation model of the aquifer for future management of groundwater resources of the aquifer.

Sharing of information helps to find common ground. Political support is needed to develop and maintain monitoring systems as well as sharing the resulting data and information. Joint meetings, workshops, and other activities where representatives of countries had met, helped to a better mutual understanding and thus to improved trust. Thus, joint modeling of the Pretashkent TBA shows the importance of cooperation between the two states and should be expanded.

In 2022, the International Water Assessment Center (IWAC) under the Water Convention joined the work in terms of developing measures for further cooperation in the form of a joint road map.

Building upon this technical cooperation, a strategy to support sustainable use and management of the Pretashkent aquifer and continued cooperation was developed by Kazakhstan and Uzbekistan.

The roadmap was endorsed on 30. November 2022 by the Geology Committee of the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan and the State Committee of the Republic of Uzbekistan for Geology and Mineral Resources.

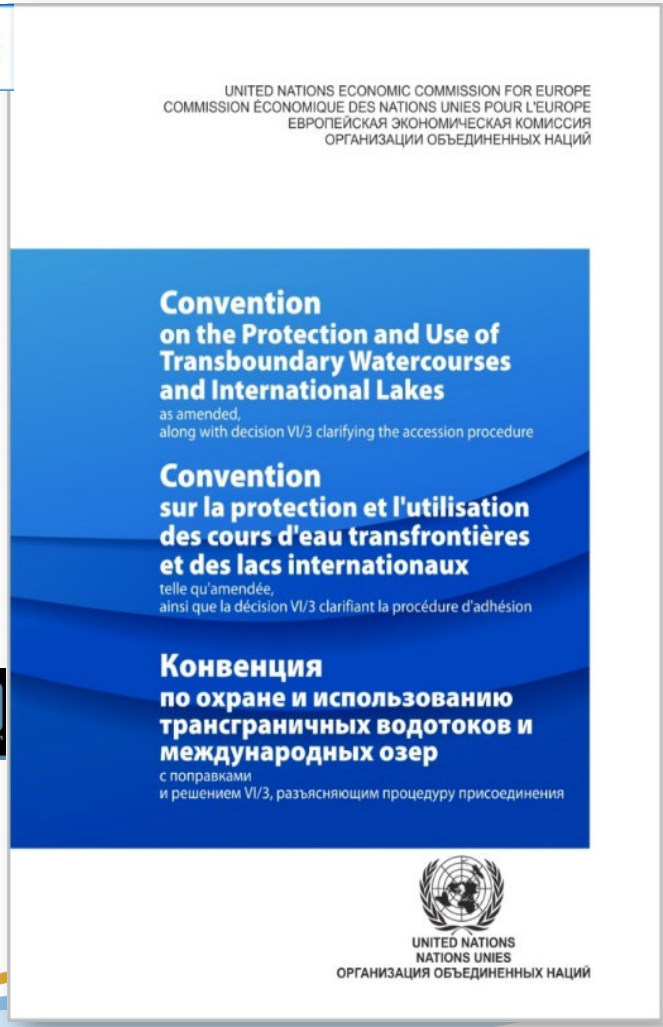
Next steps include:

1. Make the model a permanent operational tool for aquifer management across the two states.
2. Build capacity for international cooperation on the optimal joint management of groundwater resources based on agreed scenarios, the permanent operational model, and exchange hydrogeological monitoring data.
3. Ensure on-going monitoring of the groundwater resources in all operating wells, regardless of their affiliation and purpose. Assess and monitor the technical and environmental condition of water intake wells.
4. Improve national legislation to ensure mandatory groundwater monitoring of the aquifer.
5. Limit the extraction rate in intake wells in strict accordance with the values of exploitable resources agreed and approved by the countries.
6. Ensure the development of an accounting system for the volume of groundwater abstraction and use at the national and interstate levels, and a regional water cadaster (a database) to register groundwater abstraction across the aquifer. The database would be used as a main input to the aquifer management model.
7. Upgrade the state of groundwater monitoring system by installing modern equipment for recording the discharge rates and pressure in wells. Implement data quality control measures in accordance with international standards. Develop groundwater quality monitoring programs covering the entire aquifer.
8. Develop international cooperation between Kazakhstan and Uzbekistanon the groundwater quality of the aquifer, agree on water quality assessment standards and develop an arrangement for the exchange of this type of data between the states.

Partners

- UNESCO Almaty cluster office

- Swiss Agency for Development and Cooperation (SDC)
- Geology Committee of the Ministry of Industry and Construction of the Republic of Kazakhstan
- Ministry of Mining Industry and Geology of the Republic of Uzbekistan
- International Water Assessment Center (IWAC) under the Water Convention
- State Institution "Institute of Hydrogeology and Engineering Geology" (Institute of HYDROENGEO)
- Hydrogeoecological Research & Design Co. “KazHYDEC” Ltd



Thank you!

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RESOURCES
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