



IRSTI 37.27.15

## The regional and national practices in creation of the Kyrgyz Republic water sector informational databases

**Latifa Bulekbayeva**

National expert, Regional Intersectoral Working Group, Kyrgyzstan ([latbul@mail.ru](mailto:latbul@mail.ru))

***Abstract:** The main purpose of the article is to provide overview of “National Water Information System” implemented in Kyrgyzstan, the review and familiarization with available national databases of water sector in Kyrgyzstan, which were created jointly with the Scientific Information Center of Interstate Commission for Water Coordination (SIC ICWC). Presented information systems were established in accordance with the Agreement between Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, using modern information technologies.*

*The main objective of information systems is to improve the information support of the water and environmental sectors in Central Asian countries. The information system “CAREWIB” and the database “Chu-Talas” were constructed using the elements of integrated water resources management (IWRM).*

**Keywords:** Central Asia (CA), Database, CAREWIB, Chu-Talas, SIC ICWC, CAWater-Info, water sector.

### Introduction

Among the activities implemented under Aarhus Convention from 1998, provision of public access to information (to data) via communication networks, in other words ensuring availability of information in electronic form, as well as structured and publicly accessible databases, plays important role.

Water resources management on transboundary rivers requires multilateral interaction between various stakeholders at all levels of the water management hierarchy and a joint vision of sustainable water resources management and development in Central Asia. For effective water sector management, it is necessary to have timely information about the state of water resources, water bodies and facilities, water consumption and a lot of other information. Moreover, this huge array of information should be kept in such a way that will make it easy to extract analytical, predictive and managerial pieces of information from it, which allow taking optimal decisions in water sector management. In these conditions, the development of a regional information exchange system has become one of the most important components for improving the management of water resources and ecosystems at the regional, national and oblast levels.

The Aral Sea basin in world history belongs to the oldest centers of civilization. There are five independent states – the Republic of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, as well as part of the territory of Afghanistan, on the territory of the basin.

After collapse of USSR, in order to avoid conflicts and serious complications in water resources management, and also with the aim to establish the rules in water allocation, limit and water accounting, the ministers of five independent CA countries gathered for a meeting in October 1991. During this meeting the Statement, recognizing that effective solution of water management problems of the region can be facilitated only by joint actions in issues of coordination and management of water resources, was adopted. This solution was based on a historical commonality of Central Asian peoples, their equal rights and responsibility for ensuring the rational use of water resources.

Five ministers of water sector of Central Asia signed an “Agreement on cooperation in a field of joint management of use and protection of interstate water resources” on 18th of February, 1992 in Almaty. This Agreement created a single body in Central Asia – the Interstate Commission for Water Coordination (ICWC).

### **The data base of CAREWIB Regional Information System**

The regional information system on water and land resources “CAREWIB” (IS) was developed by the Scientific Information Center of Interstate Commission for Water Coordination (SIC ICWC) and was primarily designed to support decision-making in water sector of Central Asia; database is a common tool for all states of Aral Sea basin.

The IS “CAREWIB” is the only information system in CA on water and land resources management, hydropower and social and economic sectors in countries of Aral Sea basin.

The main objective of IS is to create unified system for recording land and water resources in Aral Sea basin, with availability of assessing the effectiveness of use and forecast of resources, which contributes to sustainable management and control of the use of all types of water resources. The system makes it possible to continuously evaluate efficiency of use of all types of water resources and to determine unproductive losses. The IS is a multi-level interstate, interindustry system, built in accordance with the hierarchy of water and land resources management. The main emphasis is done on usefulness, reliability and openness of information provided.

The main component of IS is Database (DB), designed for centralized storage and management of a set of interrelated data that adequately reflect the state of objects in a given subject area (areas) and relationship between them. When completing the IS database, data on 90 parameters was collected. In general, the information system includes more than 150 parameters. The IS database “CAREWIB” contains annual data from 1980 to 2013 divided on “Water”, “Earth”, “Water supply”, “Economy” blocks and monthly data on water management facilities: reservoirs, rivers, canals, water intakes, gauging stations.

The local National IS DB “CAREWIB” was transferred to the Department of Water Management and Melioration of MoAFPM of the Kyrgyz Republic (hereinafter referred to as DWMM of the KR).

One of the priorities of CAREWIB project is creation of CAWater-Info Regional Web Portal with regularly updated information on water management and environmental issues in Central Asia. Here you can find not only a huge amount of legal, organizational and thematic materials on management and use water resources in Central Asia, but also information that is updated every 10 days, how much water the region receives, how this water is distributed, whether the factual data lags behind or outstrips forecasts and plans. The CAWater-Info Knowledge Portal on Water Resources and Ecology in Central Asia can be accessed at: <http://www.cawater-info.net/>

### **The data basis for trans boundary rivers Chu and Talas (DB Chu-Talas)**

The development of database (DB) for Chu and Talas river basins “was carried out within the framework of “Transboundary Water Resources Management in Central Asia (GIZ / TWM)” program in close cooperation with national (DWMM of the KR) and regional partners (SIC ICWC).

The main object of the Chu-Talas IS database is to strengthen regional cooperation between Kyrgyzstan and Kazakhstan in distribution and management of water resources in basins of Chu and Talas transboundary rivers.

The Chu-Talas database it is a tool that allows rapid analysis of the existing water management situation with its subsequent use for basin planning, water use regulation, effective water resources management, optimization of water resources use mechanisms between Kyrgyzstan and Kazakhstan, timely compilation of regular analytical reports for higher Water management organizations and Chu-Talas Commission. IS DB “Chu-Talas” was transferred to DWMM of the KR for further operation.

The Chu-Talas database contains daily data on water management facilities (reservoirs, rivers, water intakes, canals, gauging stations), data for individual sectors such as “Economy”, “Earth”, and “Water Resources”. The analytical block of database will allow specialists of regional water management departments to significantly simplify process of actual water allocation between Kyrgyzstan and Kazakhstan and accelerate process of analyzing water resources, delivering this information to decision-makers. Persons who have access to the database can regularly receive information via Internet and use it in managing and planning water resources at: <http://cawater-info.net/chu-talas>

### **The National “Information system on water” in Kyrgyzstan**

The first phase of the project “Management of National Water Resources” is being implemented by DWMM of the Kyrgyz Republic is “Water Information System (WIS)” is one of the project component. All the data of IS DB “CAREWIB” and IS DB Chu-Talas was transferred to the project for creation of a unified National WIS database in Kyrgyzstan.

The main objective of the project is to improve the efficiency of water resources management and provide irrigation services to water users. The WIS will be created as a distributed database with text data and thematic map layers linked to the terrain, data will be stored on different servers. Through the network system, all structural divisions of the DWMM of the KR, basin water management departments, district water management departments and

Reservoir Administration will be linked. The data base will be placed on the DWMM of the KR website and will be used to provide data / information / maps to all user groups. The WIS will consist of a number, relational databases, including the State Water Cadaster, Irrigation System Passports, information on Water User Associations, data on water supplies and a geospatial data base for thematic map layers. The State Agency for Geology, the Ministry of Emergency Situations of the Kyrgyz Republic, the Agency for Hydrometeorology, the State Agency for Environmental Protection and Forestry will be added to the system.

The WIS will contain information about river flows and forecasts of water discharge, weather conditions, availability of groundwater and groundwater level rise, maps and action plans for regulating drain from watersheds. Temporarily hosting of the site: [www.nwrmp-1.kg](http://www.nwrmp-1.kg)

### **Conclusion**

The information presented in article might be useful for a wide range of stakeholders working in water sector. All above described information systems are designed to improve the management of existing water resources, which will lead to improved distribution of water resources, increased transparency and accountability of water use, improve efficiency and productivity of water use, and reduction of water-related conflicts.

### **List of references**

- [1] Water Code of the Kyrgyz Republic.
- [2] Agreement on Joint Actions For Overcoming the Consequences of the Aral Sea Crisis from February 18, 1992.
- [3] The agreement on creation of common economic space between the Kyrgyz Republic, the Republic of Kazakhstan and the Republic of Uzbekistan from 30.04.1994.
- [4] The Memorandum of Understanding between DWMM under MoAFIM of the KR and SIC ICWC from 2.07.2007.
- [5] The agreement between Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan about creation and operation of national, basin and regional databases on joint use and conservation of water resources in Aral Sea basin.
- [6] The deliberations from the 14th meeting of Coordinating Council of National Dialogue on Water Policy in the Kyrgyz Republic in field of integrated water resources management, from April, 2016.