



INTERSTATE  
COMMISSION  
FOR WATER COORDINATION  
IN CENTRAL ASIA



**ICWC**  
CENTRAL ASIA  
**25**  
YEARS 1992 • 2017



Tashkent 2017



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# ICWC IN CENTRAL ASIA:

25 YEARS FOR PEACEFUL MANAGEMENT OF INTERSTATE  
WATER SOURCES IN CENTRAL ASIA

1992 • 2017

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# STORY BEHIND

## Background

The Aral Sea Basin, which covers the whole area of Tajikistan and Uzbekistan, most of Turkmenistan, a part of the Kyrgyz Republic, the south of Kazakhstan, and the north of Afghanistan, is one of the centers where civilizations originated. The two major rivers in the basin – Amu Darya and Syr Darya – have been the sources of life and livelihoods in the region at all times. Today, sustainable development of states in Central Asia (CA) and living conditions of more than 60 millions (as of 01.01.2017) rely on sound and coordinated use of regional water resources.



Before independence, a single water management system with centralized governance and complex hydraulic infrastructure was formed to meet growing demands of population and economic sectors. More than 80 reservoirs, with the total capacity of more than 60 km<sup>3</sup> and the currently operational 44 km<sup>3</sup>, including 17 km<sup>3</sup> in the Amu Darya Basin and 27 km<sup>3</sup> in the Syr Darya Basin, were constructed in the region. Besides unique reservoirs and large dams, this water-management system includes the world's largest gravity Karakum canal (currently Garagumdarya), 1 400 km long and with the capacity of 500 m<sup>3</sup>/s, the unique cascades of pumping canals, including the Karshi cascade, with the capacity of 350 m<sup>3</sup>/s

\* the total population in the five CA countries has amounted to approx. 70 millions by 01.07.2017r.

and the lift of 180 m, and large hydropower stations, such as Toktogul (dam height 215 m and reservoir volume 19.5 km<sup>3</sup>) and Nurek (dam height 300 m and reservoir volume 10.5 m<sup>3</sup>).

This powerful system was designed to intensify irrigated agriculture that boosted socio-economic development in the region, on the one hand, and led to disastrous degradation of ecosystems, including disappearance of the Aral Sea, on the other hand.

For efficient inter-republican allocation and use of water in Syr Darya and Amu Darya basins, the USSR Ministry of Land Reclamation and Water Resources (Minvodkhoz) by its orders #300 and #301 of 27.08.1987 established Syr Darya and Amu Darya basin authorities for inter-republican allocation of water and operation of water intakes and hydroschemes (named Uprvodkhoz "Syr Darya" and Uprvodkhoz "Amu Darya").

Same time, Master Plans for comprehensive use and conservation of water resources in Amu Darya and Syr Darya River Basins were drafted and later on revised. Many research and design institutes from concerned countries were involved in this work that resulted in networking among water professionals in the region.

Thus, by 1991, the region's countries had both favorable heritage in form of cooperation network, available basin organizations, and complex water infrastructure and negative one as inefficient water use and ecosystem degradation.





1  
Turkmen Lake  
(Altyn Asyr).  
Artificial water body.  
Length - 103 km, width -  
18.6 km, avg. depth - 69 m,  
capacity - 132 bln.m<sup>3</sup>,  
area - about  
2,000 km<sup>2</sup>.

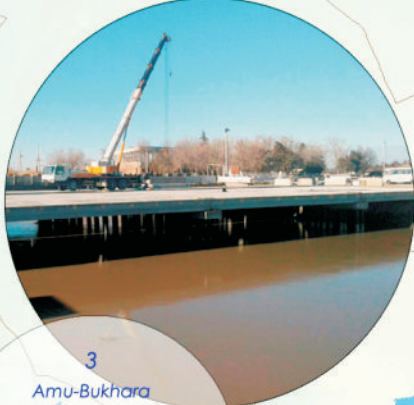
11  
Kokaral Dam  
crosses Berg Strait  
between Northern and  
Southern Aral Sea  
Length - 13,034 m,  
width - 150 m,  
height - 6 m.



Kyzylorda  
SOUTH KAZAKHSTAN



Nukus  
Urgench



10  
Tuyamuyun  
Hydroscheme. Consists of  
HEPS, in-stream and three  
off-stream reservoirs, total  
capacity - 7.8 km<sup>3</sup>, total area -  
790 km<sup>2</sup>. HEPS capacity -  
150 MW with 6  
aggregates.

3  
Amu-Bukhara  
Main Canal.  
Length - 400 km, max flow  
capacity - 270 m<sup>3</sup>/s;  
65 hydraulic structures  
along the canal.

TURKMENISTAN

UZBEKISTAN

Ashgabat



2  
Karakum Canal  
(Karakum River,  
Garagumdarya) - the longest  
canal in Central Asia.  
Length - 1,445 km,  
flow capacity - up to  
600 m<sup>3</sup>/s.



Bukhara

Zeravshan

Kar...  
Leng...  
flow ca...  
water lift...  
sta...

Terme...



# Large Water Infrastructure in the Aral Sea Basin



## Formation and Establishment

With the collapse of USSR in 1991 and formation of five independent states in CA, the formerly internal water resources became transboundary ones.

In order to maintain stability in water management, heads of national water agencies from Kazakhstan (N.Kipshakbaev), Kyrgyz Republic (V.Mel'nitchenko), Tajikistan (A.Nurov), Turkmenistan (A.Illamanov), and Uzbekistan (R.Giniyatullin) met and made a Statement in Tashkent on the 12<sup>th</sup> of October 1991. The Statement underlined a need for “creation of joint institutions for coordination” since “only consolidation and joint coordination of our actions may contribute to effective solution of regional water problems in light of growing environmental pressures”. It is noteworthy that the Statement starts with the following:

*We, the Heads of national water agencies from the Republics of Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, and Turkmenistan, while recognizing inevitable complexities in light of growing water scarcity and environmental stress in the Aral Sea basin and building on historical community of people in Central Asia and Kazakhstan, their equal rights and responsibilities for efficient regional water use, consider it necessary: [...]*

Thus, thanks to professionalism and foresight, the heads of water agencies put forward and then implemented an important initiative on establishment of a coordinating body to ensure peaceful water management in the context of broken economic and other ties.

**The ICWC of Central Asia was established thanks to the initiative of national water agencies and the wisdom and foresightedness of the Heads of State.**

As early as in four months, i.e. on the 18<sup>th</sup> of February 1992, an Agreement was signed between the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan on Co-operation in Joint Management of the Use and Conservation of Water Resources in Interstate Sources that resulted in establishment of the Interstate Commission for Water Coordination (ICWC) - comprised of the heads of national water authorities - for regulation, sound use, and protection of transboundary water resources. The world history has not seen other examples of such a rapid formation of cooperative institutions for shared water.

Initially, only two basin authorities – BWO Amu Darya and BWO Syr Darya – were in the structure of ICWC. Later on, according to ICWC decision of 5 December 1992, the Scientific-Information Center (SIC) for water-related issues was established as part of the SANIIRI Institute and then, in 1996, evolved into an independent executive body. Among other ICWC bodies, the Secretariat was formed in 1993, the Central Asian water sector professional development courses were established at SIC ICWC in 1998, and the Coordination Metrology Center (CMC) was organized in 1999.

The heads of CA states by their decision of 26 March 1993 made in Kzyl-Orda confirmed the establishment of ICWC and its mandate and included it under umbrella of



newly created Interstate Council for Aral Sea basin problems (MezhGossoviet). After merging of the MezhGossoviet and the International Fund for saving the Aral Sea (IFAS) in 1997, the ICWC has become a part of IFAS. During the Ashkhabad meeting in April 1999 the Heads of State signed the Agreement on the status of IFAS and its organizations that gave the ICWC and its executive bodies the status of international organizations.

Support from the side of the Heads of CA State reflects their deep understanding of the key role of joint water management for national development, population welfare and peace and stability in the region.

## Chronology of ICWC

### 1980s

- Established basin water authorities for Syr Darya and Amu Darya, 1987.
- Joint work on drafting and followed revision of Master Plans for comprehensive use and conservation of water resources in Amu Darya and Syr Darya River Basins.
- Basin water authorities re-organized into Basin Water Organizations (BWOs).



### 12 October 1991



The Tashkent Statement of the heads of national water agencies from Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan on a need for establishment of "joint institutions for coordination of work".

### 18 February 1992

Signed Almaty Agreement on Co-operation in Joint Management of the Use and Conservation of Water Resources in Interstate Sources that:

- laid the basis for joint water management in the region, while recognizing "the existing order of water allocation";
- established the ICWC of Central Asia, with BWO Amu Darya and BWO Syr Darya in its structure.



5 December 1992



Established Scientific-Information Center for water-related issues, Tashkent.

26 March 1993

Signed Kyzylorda Agreement on Joint Actions to address the problem of the Aral Sea and Preardalie, environmental rehabilitation and socio-economic development in the Aral Sea region by which:

- Heads of CA State confirmed the decision on the establishment of ICWC and its mandate;
- the ICWC became a part of MezHGossovet.



10 October 1993



Created the ICWC Secretariat in the city of Khujand, Tajikistan.

27 February 1997

MezHGossovet merged with IFAS.



## 23 October 1998

Established "Central Asian water sector professional development courses" at SIC ICWC with the purpose of strengthening water professionals in CA and enhancing cooperation in the region.



## 9 April 1999



Adopted the Ashkhabad Agreement on the status of IFAS and its organizations that gave the ICWC and its executive bodies the status of international organizations as part of IFAS.

## 23 October 1999

Established Coordination Metrology Center in Bishkek, Kyrgyz Republic.



## 28 April 2009



Almaty Statement of the Heads of CA State on a need to improve the organizational structure of IFAS.

# MANDATE AND OBJECTIVES

The ICWC is **the only interstate body** established and authorized by the Heads of CA State to make **binding decisions** on current and emerging issues related to interstate water allocation and use.

## The ICWC is charged with the responsibilities of:

- determining regional water policy and elaborating its key directions to meet the needs of all economic sectors and ensure sound and multipurpose use of water resources;
- planning and approving annually the water use limits for each republic and the region as a whole, schedules for reservoir operation regimes, correcting the former according to updated forecasts, depending on actual water availability and current water-related conditions.

**The main goal** of the establishment of ICWC is the adoption of principles of collective decision making on common water-related issues and on measures for implementation of joint programs, while respecting the interests of the parties.

## Main objectives

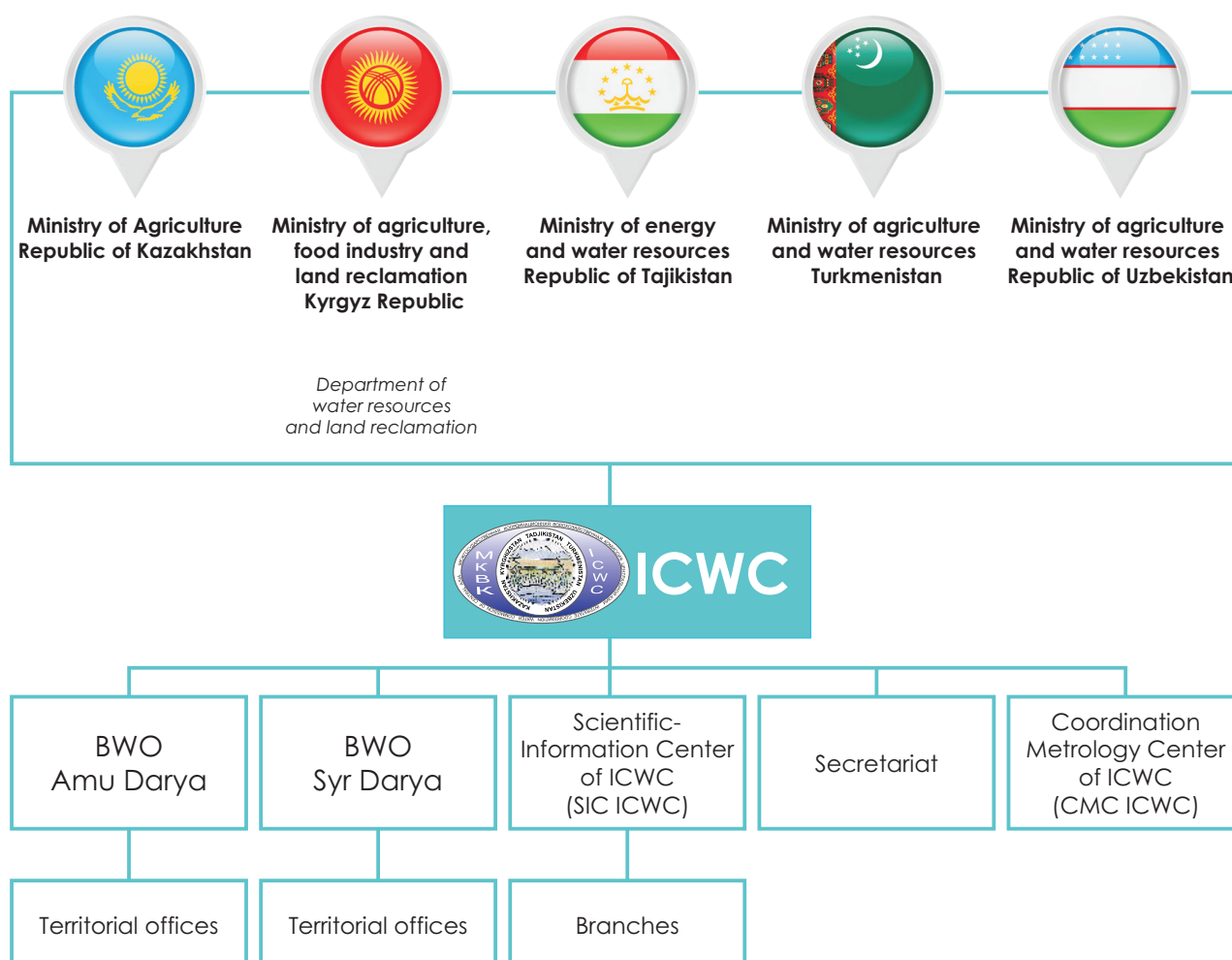
- determining a common water policy and elaborating its key directions;
- planning and approving the water use limits, operation regimes of large reservoirs and controlling water allocation;
- developing and implementing environmental programs;
- preparing recommendations on the development of a single pricing policy and potential losses compensation mechanisms, as well as on legal framework of shared water use;
- coordinating implementation of large water infrastructural work and sharing existing capacities in national water sectors;
- creating a common information base on water resources, establishing joint monitoring of irrigated land and adjacent areas and general hydro-meteorological support;
- coordinating joint research efforts for scientific and technical support to address regional water issues and implement the designed schemes;
- facilitating corporate affairs in promoting water-conservation technologies and other advanced measures contributing to better water use;
- developing joint programs for emergency and disaster prevention and relief.

## STRUCTURE

The ICWC is represented by five Heads of national water agencies. By 2017, the national water agencies authorized by their respective countries have included:

- Ministry of Agriculture, Republic of Kazakhstan;
- Department of water resources and land reclamation, Ministry of agriculture, food industry and land reclamation, Kyrgyz Republic;
- Ministry of energy and water resources, Republic of Tajikistan;
- Ministry of agriculture and water resources, Turkmenistan;
- Ministry of agriculture and water resources, Republic of Uzbekistan.

The ICWC has five executive bodies for fulfillment of its tasks and implementation of planned programs: BWO Amu Darya; BWO Syr Darya; SIC; Secretariat; and, CMC.



## ICWC Members

### ICWC Founders



N. Kipshakbaev  
(Kazakhstan)



M. Zulpuev  
(Kyrgyzstan)



A. Nurov  
(Tajikistan)



A. Ilamanov  
(Turkmenistan)



R. Giniyatullin  
(Uzbekistan)

### Active Members of ICWC (2017)



Ye. Nysanbaev  
(Kazakhstan)



K. Tashtanaliev  
(Kyrgyzstan)



S. Rakhimzoda  
(Tajikistan)



N. Sapardurdyev  
(Turkmenistan)



Sh. Khamraev  
(Uzbekistan)

### Members of ICWC Over the Past 25 Years



T. Sarsenbekov  
A. Ramazanov  
A. Ryabtsev  
A. Orman  
I. Abishev  
B. Bekniyaz



A. Polotov  
V. Mel'nitchenko  
J. Bekbolotov  
A. Kostyuk  
B. Koshmatov  
Z. Jamaldinov



V. Shafoev  
I. Eshmirzoev  
I. Ashurov  
D. Makhsudov  
K. Rasulzoda  
S. Yokubzod  
R. Bobokalonov



P. Odeyev  
A. Dadonov  
S. Kurbanov  
T. Altiev  
K. Volmuradov  
M. Akmammedov  
A. Yazmyradov  
S. Taganov



T. Kamalov  
A. Djalalov

## Honorary Members of ICWC

By the decision of ICWC of 22.04.1997 (Dushanbe), the founders of ICWC were elected "Honorary members of ICWC" for their services in establishment of ICWC that contributed to strengthening of economies and friendly relations among the CA nations.

The following ex-members were elected as honorary members of ICWC as well:



Tekebay Altiyev – ex-member from Turkmenistan (decision of 20.02.2002)



Abdurakhim Djalalov – ex-member from Uzbekistan (decision of 18.03.2005)



Anatoly Ryabtsev – ex-member from Kazakhstan



## Persons Awarded Commemorative Badges "Honorary Member of ICWC"



Viktor Dukhovniy – Director, SIC ICWC – for significant contribution to activity of ICWC



[Gairat Negmatov](#) – Head, ICWC Secretariat - for significant contribution to activity of ICWC

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[Aly M. Shady](#) – Senior policy advisor to Canadian International Development Agency – for his contribution to training development and water cause in CA, establishment of ICWC Training Center (20.02.2002)

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Chandra Madramootoo – Director of Brace Center for water management at McGill University (Canada) – for his contribution to training development and water cause in CA, establishment of ICWC Training Center (20.02.2002)

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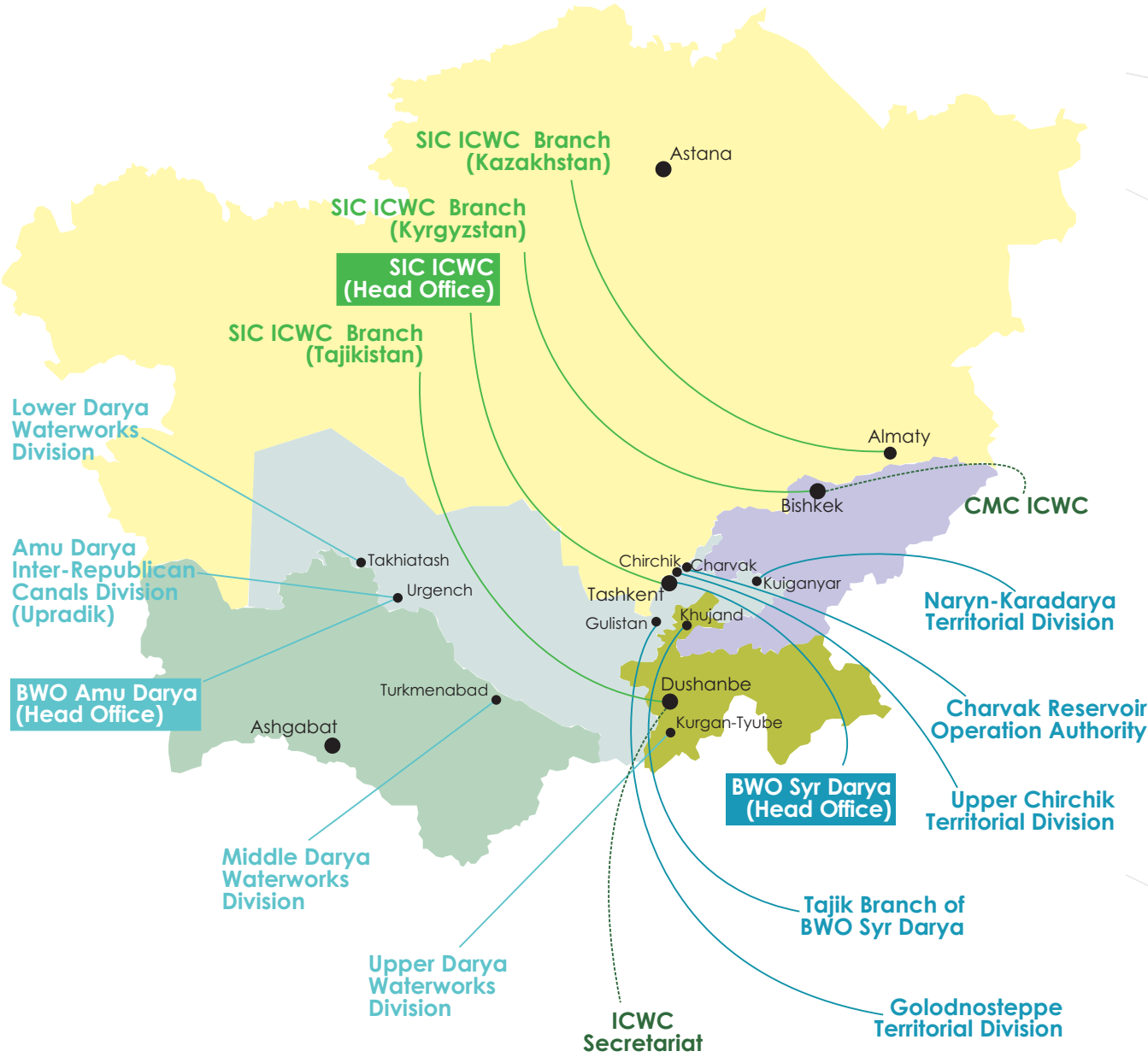


Walter Fust – Director, Swiss Agency for Development and Cooperation – for his contribution to national water sectors development and water resources management in the CA countries and initiation of important projects implemented by ICWC (20.02.2002)

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# Executive Bodies and Their Branches





## ORGANIZATION OF ACTIVITY

ICWC organizes its activity by gathering at regular and extraordinary meetings, as well as through actions of its executive bodies.

### Meetings

According to the Statutes, ICWC meetings are held on a quarterly basis, by turn in each of State-Founders under the chairmanship of ICWC member from the host country.

Extraordinary ICWC meetings can be gathered, if appropriate, including by particular basin. Each ICWC member has the right of veto over a decision under consideration.

By 01.09.2017, 71 meetings of ICWC were held.

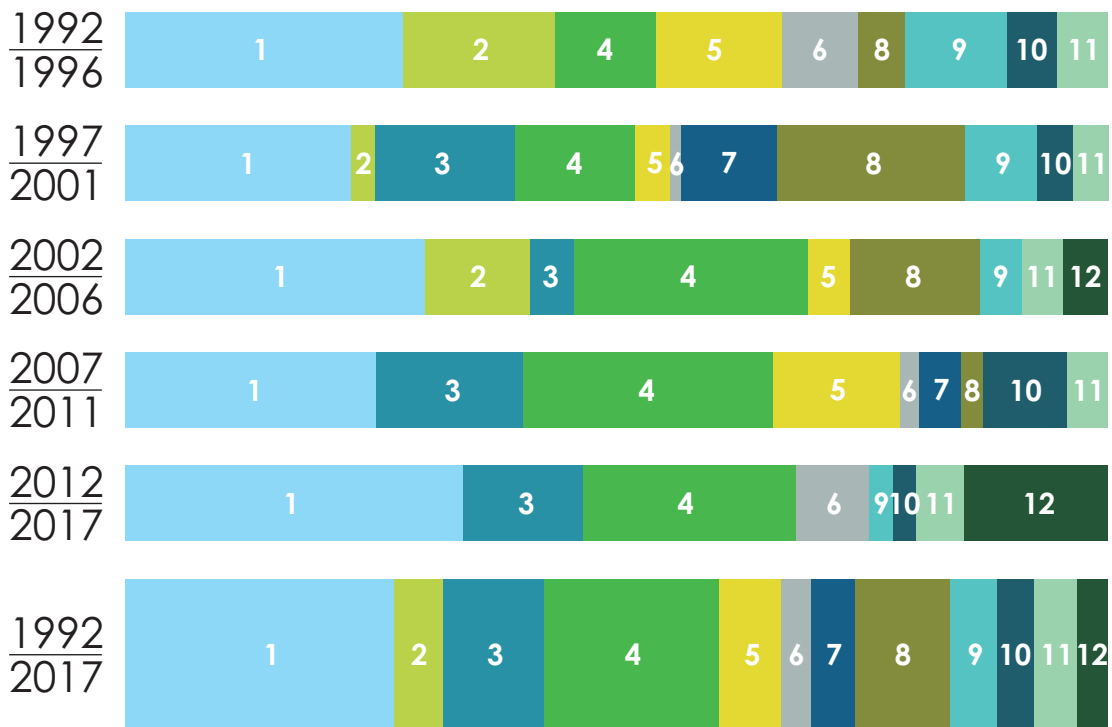
Of which: 22 — in Kazakhstan, 12 – in Kyrgyz Republic, 10 in Tajikistan, 14 – in Turkmenistan, and 13 – in Uzbekistan.

The meetings are attended by: ICWC members – heads of national water agencies, their deputies, directors of water administrations and waterworks operation, and heads of executive bodies.

Representatives of Government office of the host country, Ministry for foreign affairs, heads of provincial and district administrations, members of academies of sciences, directors of research and design institutions, and representatives of executive bodies may be invited to the meetings.



## Main Issues Addressed at ICWC Meetings Over 25 Years



- 1** Practical aspects of transboundary water management
- 2** Policy documents at the regional scale
- 3** Draft interstate agreements
- 4** Regional project matters
- 5** Constitutional documents
- 6** Personnel matters
- 7** Professional development and training
- 8** Financing
- 9** Research programs and plans
- 10** Institutional and organizational matters
- 11** Publication and information activity, data and knowledge bases
- 12** Improvement of ICWC activity

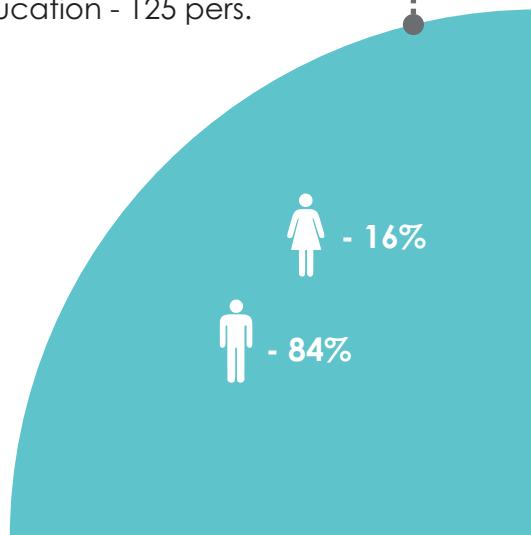
## Practical Activity via Executive Bodies

Executive bodies are responsible for drafting and fulfillment of ICWC decisions in practice. More than 1,500 staff members of the executive bodies work to ensure conflict-free distribution of water resources from interstate sources, keep all interstate canals and structures operational, and provide scientific and information support to decision-making process.

## Human Resources of ICWC Executive Bodies

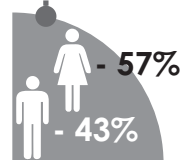
### BWO Amu Darya

Staff size - 720 pers.,  
of which with:  
- higher education - 125 pers.



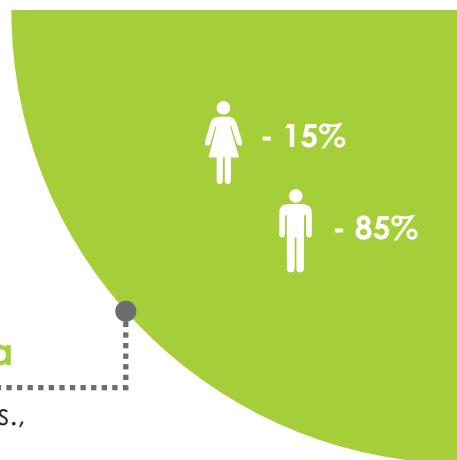
### ICWC Secretariat

Staff size - 7 pers.,  
of which with:  
- higher education - 7 pers.



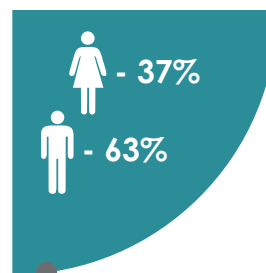
### BWO Syr Darya

Staff size - 701 pers.,  
of which with:  
- higher education - 158 pers.



### SIC ICWC

Staff size - 54 pers.,  
of which with:  
- post-graduate degree - 14 pers.,  
- higher education - 42 pers.



ICWC and its executive bodies have achieved substantive results in the development of **non-abstract water cooperation tools** for CA, among which:

1. The system of water planning and real-time management.
2. Task forces and think tanks for drafting of policy and normative legal documents.
3. Joint regional projects and research.
4. Information, analytics, and publication.
5. Professional development and training.
6. International cooperation.

The above-listed tools are described below.

## COOPERATION TOOLS

### 1. The System of Water Planning and Real-time Management

ICWC through its executive bodies – BWO Amu Darya and BWO Syr Darya – implements measures and procedures to ensure **equitable and reasonable water distribution** along interstate sources, with due account of environmental demand and future development needs. This is done in cooperation with the Coordination Dispatch Center “Energy” (CDC “Energy”) and national energy ministries and departments.

Close attention is paid to **automation of water-management infrastructure**. With the financial support of international partners, the automated control and monitoring systems were put into operation at head structures of Dustlik Canal (CIDA), Upper Chirchik waterworks facility (USAID), Uchkurgan waterworks facility and the whole set of head structures operated by BWO Syr Darya in the Fergana Valley (SDC). Similar systems were completed along three pilot canals in Uzbekistan, Kyrgyz Republic and Tajikistan (SDC).

### 2. Task Forces and Think Tanks for Drafting of Policy and Normative Legal Documents

In the course of ICWC activity, task forces and think tanks were formed among representatives of the member states to solve various issues.

The task forces prepared and submitted to ICWC or member countries for consideration a number of important **policy papers** that laid the basis for deepening of water cooperation in CA. Such documents include, in particular, the Concept on addressing the Aral Sea and Prearalie problem, with account of regional socio-economic development; Basic provisions of the Regional Water Strategy; Key approaches to strategic planning of transboundary water use.

ICWC devotes great care to **drafting of new agreements and revision of existing ones** on transboundary water management and flow regulation by reservoirs and hydroschemes. For example, in 2005-2008, with the ADB support, five national intersectoral

work groups and regional task force undertook great efforts for elaboration of new draft “Agreement on the use of water and energy resources in the Syr Darya River Basin” and “The rules for fulfillment of procedural obligations and recommendations for improvement of water and energy regulation and management in the Syr Darya River Basin”. Those documents were discussed repeatedly at ICWC meetings and approved in general. However, the approval and signature process have not been finished at country levels.

A draft “Agreement on information and analytical support to comprehensive water management, use, and protection in the Aral Sea Basin and organization of interstate information exchange” is currently under review by the countries. The work on the draft Agreement was started as part of the Second Aral Sea Basin Program (ASBP-2) and continued in 2013-2014 by ICWC.

The 63<sup>rd</sup> ICWC meeting (Tashkent, April 2014) approved and recommended for implementation the **Implementation Plan on strengthening ICWC activities in key directions**, which included four items:

- I. Water saving.
- II. Implementation of IWRM as a “green growth” tool for development and climate change adaptation.
- III. Improvement of quality and accuracy of water accounting.
- IV. Building of capacities of regional and national organizations through training development.

For implementation of the Plan, respective work groups were formed and gathered at their first meetings in 2017.

### 3. Joint Regional Projects and Research

ICWC coordinates and controls implementation of joint research efforts for scientific and technical support to address regional water issues and of regional projects, with the use of available scientific capacities of the State-Founders, and promotes the results achieved.

In 1994, the Research plan of SIC ICWC was elaborated and implemented in cooperation with national research institutes in CA and with the financial support of national water agencies.

The ICWC executive bodies also implement regional projects through grants. Such projects allowed forming specific manner of joint work among water experts and water users at middle and lower level of water hierarchy that evolved in generally accepted tradition of exchange and interaction and mutual learning for uptake of new ideas in the regional water sector.

## Main Projects Implemented with Involvement of Executive Bodies as a Contribution to ICWC's Mission





01	«Towards a strategy for sustainable irrigated agriculture with feasible investment in drainage» (FAO IPTRID)	2003 2004
04 07	«Strategic Planning and Management of Water Resources Development in Central Asia» (UN ESCAP)	2003 2004
06	«Regional Water Information Base» (SDC)	2003 2010
02 04	«Improvement of Shared Water Resources Management in Central Asia» (ADB RETA 6163)	2005 2008
08	«Water Productivity Improvement at Plot Level» (SDC)	2008 2011
05 02 06	«Cooperative Program for Capacity Building in Integrated Water Resources Planning and Management in Central Asia» (UNESCO-IHE)	2009 2012
07 03 08	Regional Research Network "Water in Central Asia" (CAWA) (MFA Republic of Germany)	2010 2017
06	«Early Warning Bulletins» (UN RCPDCA)	2014 2017
07	Eastern Europe, Caucasus, and Central Asia Network of Water-Management Organizations (UNECE)	2008 2017
03 04	«Assessing Land Value Changes and Developing a Discussion-Support-Tool for Improved Land Use Planning in the Irrigated Lowlands of Central Asia» (Fund «Volkswagen Stiftung»)	2015 2017
02 03	«Transboundary Water Management Adaptation in the Amudarya Basin to Climate Change Uncertainties» (USAID)	2016 2017

01	Determining a common water policy and elaborating its key directions	02	Planning and approving the water use limits, operation regimes of large reservoirs and controlling water allocation	03	Developing and implementing environmental programs
04	Preparing recommendations on the development of a single pricing policy and potential losses compensation mechanisms, as well as on legal framework of shared water use	05	Coordinating implementation of large water infrastructural work and sharing existing capacities in national water sectors	06	Creating a common information base on water resources and general hydro-meteorological support
07	Coordinating joint research efforts for scientific and technical support to address regional water issues and implement the designed schemes	08	Facilitating corporate affairs in promoting water-conservation technologies and other advanced measures	09	Developing joint programs for emergency and disaster prevention and relief

## 4. Information, Analytics, and Publication

ICWC informs decision makers, experts and general public about its activities via its official web-site ([icwc-aral.uz](http://icwc-aral.uz)) and the Portal of water and environmental knowledge - CAWater-Info ([cawater-info.net](http://cawater-info.net)).

### CAWater-Info Portal

CAWater-Info is a system supporting decisions in the area of water management in the Aral Sea Basin. It allows making informed decisions on real-time management at all levels of water hierarchy and build scenarios and trends of regional development for mid- and long-term.

CAWater-Info contains a huge information massif – more than 45 GB – on 44 web-sites. The portal has traffic of about 8000–9000 visits per day.

The information is grouped into 4 main blocks, such as the database, knowledge base, analytics, and modeling tools.

#### 01 DATABASE

- Databases on Amu Darya, Syr Darya, Zerafshan, Karadarya, and Chirchik River Basins;
- Database on the Aral Sea;
- Database on Afghanistan's rivers.

#### 02 KNOWLEDGE BASE "WATER IN CENTRAL ASIA"

- Hierarchical classification system of the Knowledge Base;
- E-library;
- Bibliographic database «Land and Water Resources Use in the Aral Sea Basin»;
- A number of thematic knowledge bases (IWRM, water and land law, waterworks safety, land reclamation and irrigated agriculture, gender).

#### 03 ANALYTICAL TOOLS

- Analytical tool for assessment of water-management situation in Amu Darya and Syr Darya River Basins;
- Regional Information System on water and land resources in the Aral Sea Basin (CAWater-IS).

#### 04 MODELING TOOLS

- Aral Sea Basin Management Model - ASBmm;
- A number of models to solve sample problems:
  - ~ Calculation of water hydrochemistry in Amu Darya River;
  - ~ Operational forecasting of lateral inflow to balancing sites of major rivers in the Aral Sea basin;
  - ~ Assessment of potential water-ecological conflicts in the region;
  - ~ Estimation of non-productive losses in river channel;
  - ~ Assessment of operation of hydropower dams;
  - ~ River section water balance for the Amu Darya and Syr Darya Rivers.

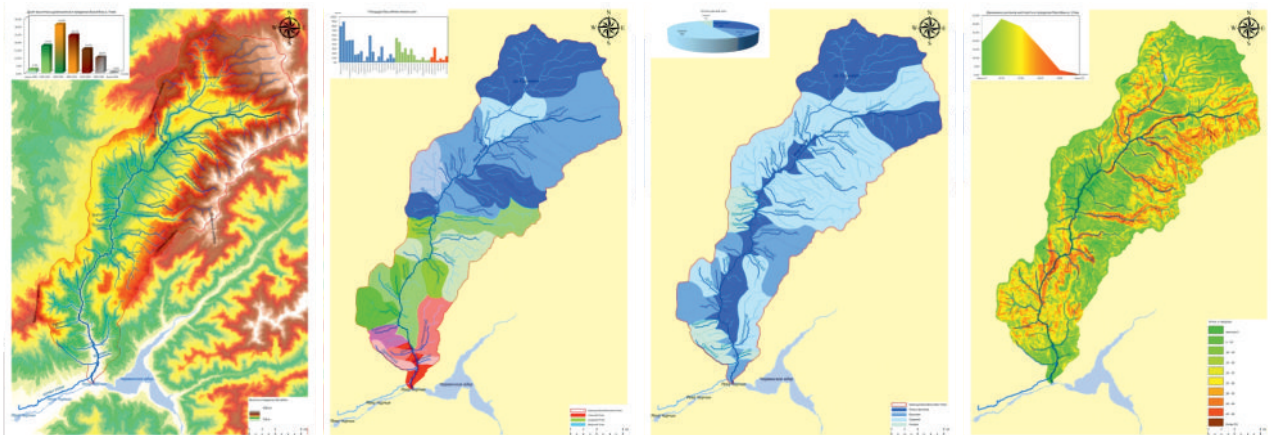
Key information on the portal is collected and processed by SIC ICWC in cooperation with BWO Amu Darya and BWO Syr Darya. Information partners of the portal also include other IFAS bodies, national departments, international and non-governmental organizations.

The ICWC executive bodies take active part in activities of a coordination group for development of the common water and environment information space in CA. The coordination group was formed in 2014 with the support of the UN Economic Commission for Europe to develop the regional platform for more effective information management and decision making by founding states and bodies of IFAS.

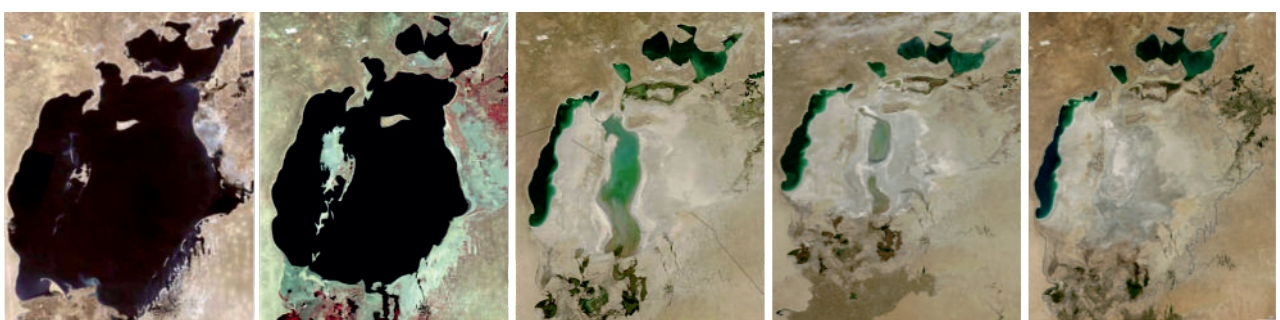
## Information technologies in the water sector

Recently, ICWC has started using in its activities the products of geoinformation systems (GIS). GIS-technologies substantially ease monitoring of water resources, agricultural land and hydraulic structures. Several examples of GIS application in the work of ICWC bodies are given below:

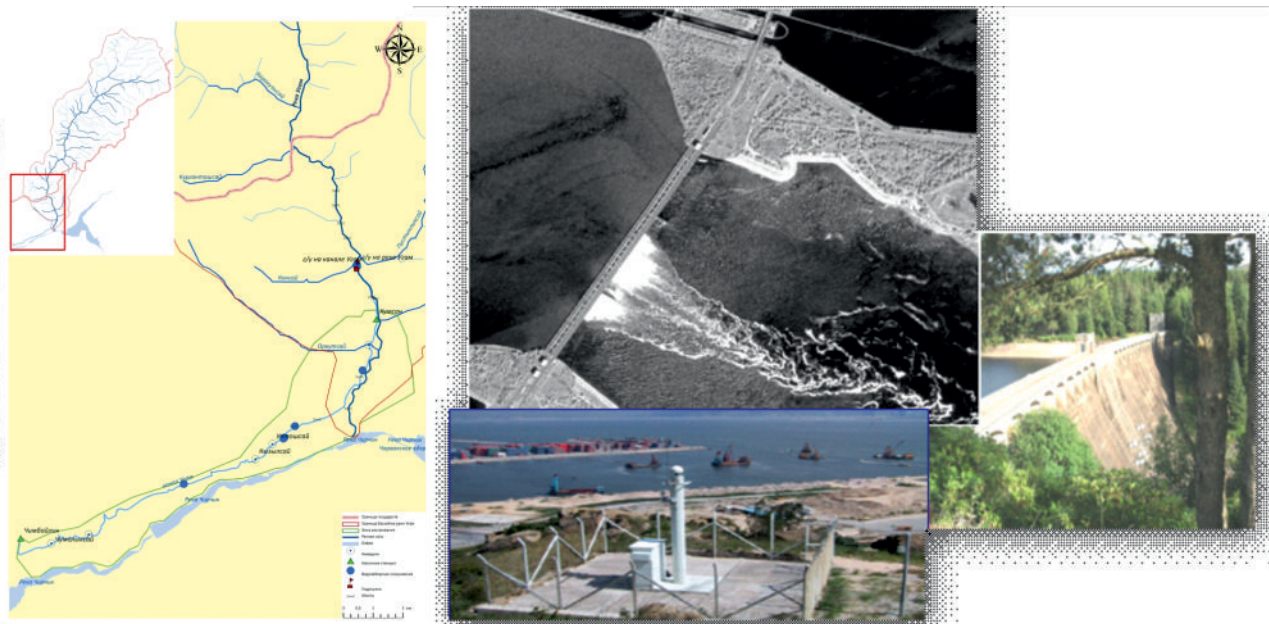
- **Monitoring of water resources in the Aral Sea basin.** GIS is used for: building of hydrological digital elevation models; identification of river and lake basins and catchments; monitoring of water and ice regimes of water bodies and snow melt for flow forecasting; identification of human-induced and natural changes in water mass.



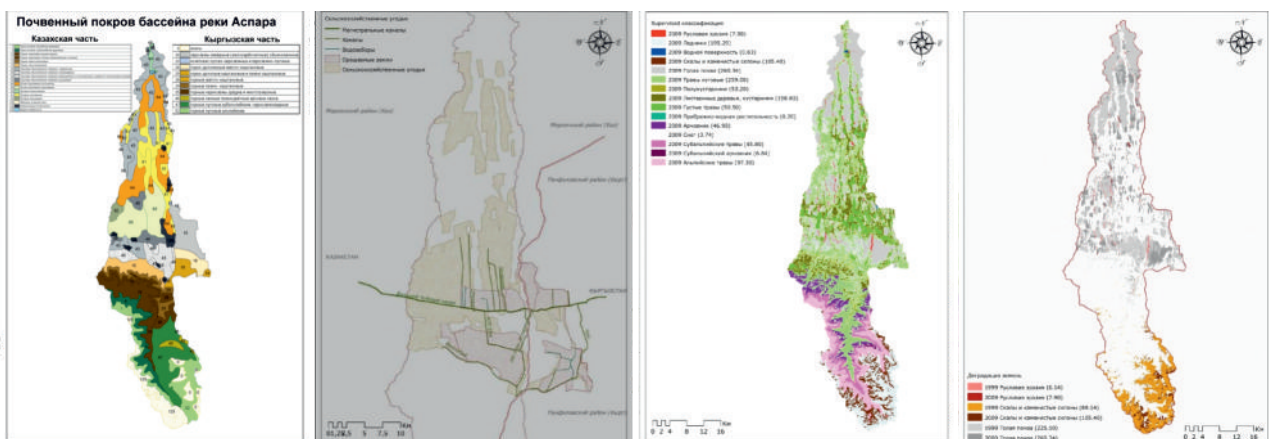
- **Monitoring of the Aral Sea water surface and coastal water space.** Here, MODIS TERRA “13A1 NDVI” and Landsat TM imagery was downloaded for 1987, 2010, 2012 and 2014 and processed. As a result, it was found that the total water area of the Aral Sea (Large Aral Sea + Small Aral Sea) shrank ten times and the total volume decreased 17 times.



- Improvement of monitoring of hydraulic structures through navigation and control of engineering projects and modeling of flooding area by using GIS-technologies.



- Monitoring of agricultural land in region's river basins. RS-based methods help to make inventory of agricultural land, monitor crops, identify erosion, waterlogging, salinization, and desertification spots, study soil cover, control quality and timeliness of agronomic operations.



Publication activity is an important part in the work of ICWC executive bodies. The information gathered from various sources is processed by SIC ICWC and disseminated among the CA countries in form of: ICWC bulletins; information and legal collections; abstracts review; collections of scientific papers; press releases; workshop and conference proceedings; manuals; guidelines; monographs; and other publications.



## 5. Professional Development and Training

Professional development and training system, which takes into account local specifics and covers all levels of water hierarchy, was established within ICWC. This system is to transfer knowledge and skills and shape new thinking and attitudes towards water.

The foundation was laid in October 1998, when ICWC made a decision on the establishment of Central Asian water professional development courses at SIC ICWC that were to:

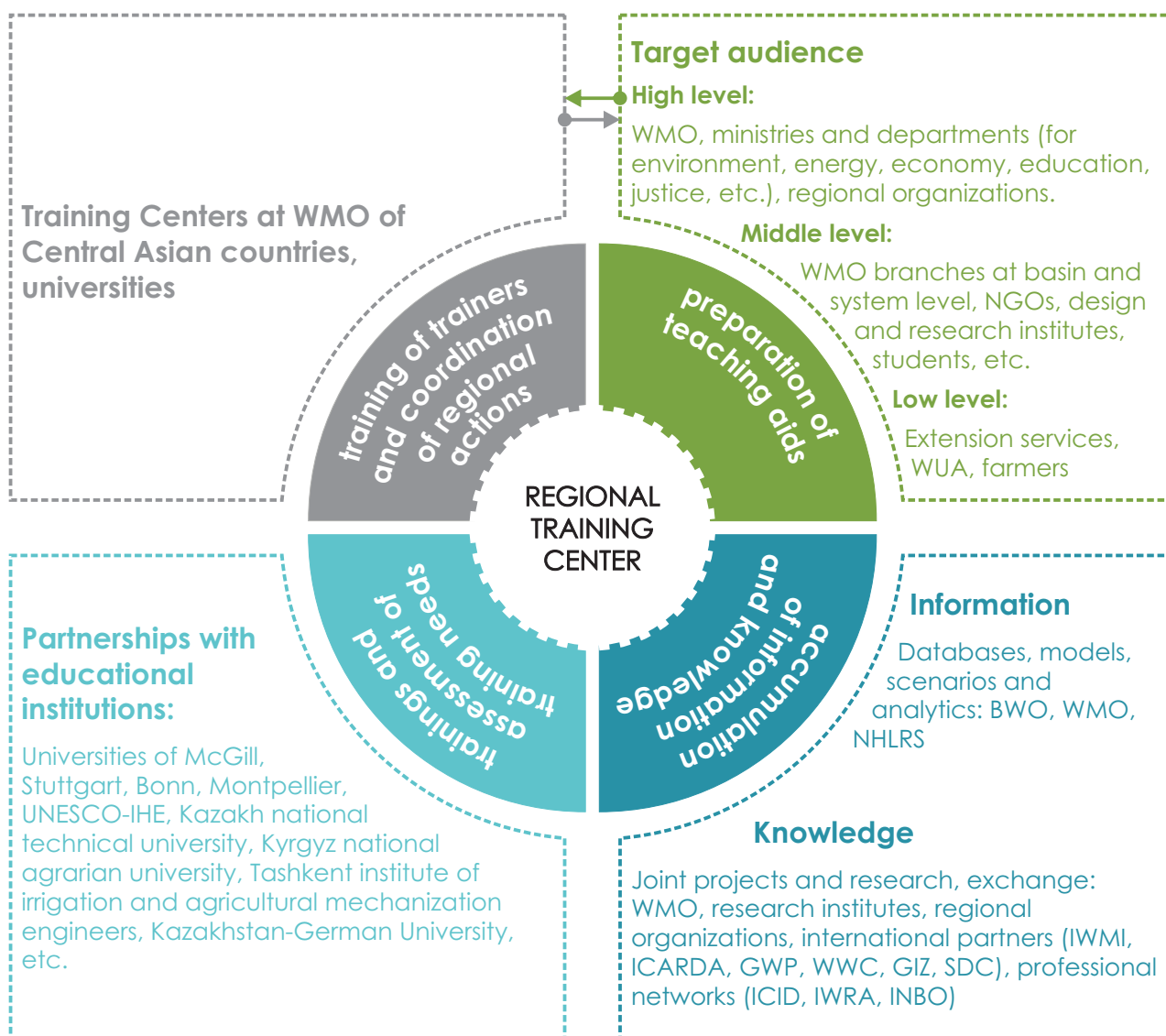
- *upgrade skills of staff [...], familiarize them with latest developments in water and land management, irrigation and drainage, and environmental conservation;*
- *deepen cooperation among the riparian countries [...], elaborate common approaches at the level of experts and decision makers that would promote further strengthening of ties and understanding of a need to live with neighbors according to agreed rules and based on mutual respect, consensus, and mutual benefit.*

Then, the courses were re-organized into the Regional Training Center (RTC) at SIC ICWC with the support of the Canadian International Development Agency (CIDA) and the Brace Center at McGill University.

Since then, more than 6,000 specialists benefitted from the ICWC training programs. For wider coverage, national training branches were established in Kazakhstan (Almaty), Kyrgyzstan (Bishkek and Osh), Tajikistan (Khudjand), and Uzbekistan (Urgench, Andijan, Fergana, and Akbarabad).

### Key training modules of RTC:

1. Integrated water resources management
2. Improvement of irrigated agriculture
3. International water law and policy
4. Regional cooperation in transboundary rivers



## 6. International Cooperation

ICWC and its executive bodies take an active role in extending exchange on water issues with leading countries and are engaged in the work of recognized international organizations and forums.

ICWC maintains active cooperation with **international partners**, such as the World Bank, Asian Development Bank, United Nations Development Program, UN Economic Commission for Europe, UNESCO, FAO, UN Regional Center for Preventive Diplomacy in Central Asia, USAID, GIZ, SDC, KOICA and many others.

To get acquainted with **best practices in water management and irrigation**, ICWC members and experts of executive bodies took part in **study tours** to France in 1994 (supported by the World Bank); to Italy and Belgium in 1995 (European Union); to USA and Canada in 1996, 1997, and 1998 (CIDA) and in 2000 (CIDA and USAID); to Spain in 1998 (European Union); to Israel in 1995, 1997 (Israeli Government and World Bank); to India in 1999 (Indian Government); and to Pakistan in 1999 (Swiss Agency for Development and Cooperation). The study tours for water sector employees were organized also to Australia (2006), Turkey (2008), and Spain (2010).

Thanks to cooperation of SIC with MASHAV (Israel), study-tours were organized for ICWC members and national institutions' staff to Israel, where more than 80 persons were trained in various courses.

Cooperation is extended and enhanced with such recognized organizations as the World Water Council (WWC), International Network of Basin Organizations (INBO), Global Water Partnership (GWP), International Water Resources Association (IWRA), International Commission on Irrigation and Drainage (ICID). ICWC delegation took active part in the work of all World Water Forums as well.

Close relationships with ICID contributed much to acquaintance with the advanced international practices in irrigation and drainage and to information exchange. A special team was established at ICID for the Aral Sea problems. ICWC delegations have participated in the work of all ICID congresses since 1993.

## KEY ACCOMPLISHMENTS AND PROSPECTS FOR COOPERATION

As the above-mentioned shows, ICWC is a visual example of **good will** of the CA countries to cooperate. By contrast with many similar commissions all over the world, ICWC was established upon the initiative and free will of the countries themselves, without external interference, and managed to function properly during 25 years, while solving the pressing water use issues in the region.

ICWC as a **forum of authorized representatives of the Heads of State** provides the space, where the heads of national water agencies meet regularly and discuss the current and future issues related to transboundary water management in the region. In addition, through its executive bodies, ICWC provides **a regional platform for communication and interactive dialogue** among water professionals, scholars, students, and the general public in the region in order to deepen water cooperation and achieve consensus on water issues.

In fact, a **unique mechanism** was created and formed with specific governance structure and system of regular meetings and consultations for effective cooperation on sound water use and protection. And this is essential, taking into account the community and interdependence of water-management systems in CA and the continuously changing water situation.

One of key accomplishments of ICWC is that thanks to its activity, the **use of water resources** in interstate sources was **kept stable** and, thus, **peace and order** were **maintained** in relations among the CA countries. Despite four dry years and three very wet years, water supply breaks, emergencies and conflicts were avoided.

In the course of its activity, ICWC has fine-tuned the **procedures for annual and seasonal planning** of water infrastructure operation in Amu Darya and Syr Darya Basins, water distribution and control. The established governance system allows for sustainable information collection, annual planning, analysis, research and monitoring.

Another measure of well-coordinated work is that the average **water delivery** to irrigated land has decreased from 14,000 m<sup>3</sup> /ha to 9,900 m<sup>3</sup>/ha since 1990 to 2013, respectively.

However, facing **future** challenges, the role and status of ICWC can and must be enhanced. Given the population and economic growth in riparian countries and climate change, pressures on water resources in the Aral Sea basin have increased. It is expected

that water availability in the region would decrease to 1,500-1,700 m<sup>3</sup>/year/capita by 2040 against the current one of 2,100 m<sup>3</sup>/year. The Amu Darya River Basin may face increased demand for water, also given the potential growth in water use by Afghanistan (up to 3-4 km<sup>3</sup>/year).

Given such conditions, ICWC should give **priority** to more active joint actions for improvement of its activity - both in terms of institutional and legal framework and technical, human, and information resources - in order to advance the development of all water supply reserves against the background of destabilizing factors. In this context, particular attention should be given to implementation of automation system, enhanced control over flow, more effective means to secure fulfillment of water allocation plans and water release schedules, and improvement of flow forecasts. Moreover, active involvement of the general public, water using sectors (energy, environment, water-supply) and local governments in ICWC activity will facilitate consensus-building in water management and increase the likelihood of sustainable water future.









