





Section 9

Water Education

9.1. Higher Education Institutions and Professional Development Centers

9.1.1. Kazakhstan

Al-Farabi Kazakh National University

The Al-Farabi Kazakh National University (Kazakh National University named after S.M.Kirov till 1992), [KazNU](#), is the oldest classical HEI of Kazakhstan established in 1934. Today the University is comprised of 15 faculties, 62 departments, 7 research institutes, one scientific technological park, 5 institutes, 30 socio-humanitarian scientific centers, and 7 divisions. More than 2,000 professors, doctors, candidates of sciences, and doctors of philosophy work at the University. According to the [QS World University Rankings](#), KazNU was the highest-ranked education entity in Kazakhstan in 2016-2017.

The *Meteorology and Hydrology Department* (at Geography and Nature Management Faculty) offers a solid base for preparation of highly qualified hydrologists in Kazakhstan.

The department conducts research in the following areas:

- Assessment and forecast of surface water in Kazakhstan;
- Framework for water security of the Republic of Kazakhstan in the context of climate and anthropogenic changes of river waters;
- Multi-year variations of climate and runoff, maximum water level and discharge, and challenges in transboundary basins;
- Assessment of anthropogenic impact on river runoff in Kazakhstan;
- Feasibility studies for arrangement and restoration of water conservation areas of small rivers;
- Landslides;
- Hydroecological and hydrochemical regimes of reservoirs in Kazakhstan;
- Alternative energy sources.

Joint research efforts are undertaken with the Moscow State University (MSU), Kyrgyz-Russian Slavic University, and other hydrometeorological HEIs in the CIS countries. The department is a member of the Interuniversity council for erosion and fluvial processes at MSU.

Currently, teaching staff of the Geography and Nature Management Faculty implements 4 fundamental projects of the Ministry of Education and Science of the Republic of Kazakhstan costing more than 100 million tenge.

Source: KazNU

German-Kazakh University

The German-Kazakh University (GKU) was founded in 1999. At GKU, there is a Master Program on *Integrated Water Resource Management*. It covers interdisciplinary issues in the field of supply, distribution and rational use of water resources in Central Asia. One of the priority areas is a comparative analysis of transboundary water resource management in Central Asia based on the analysis of resolving similar problems in Europe.

In 2017, 8 students graduated the Master Program, including 2 from Kyrgyzstan, 3 from Tajikistan, 2 from Kazakhstan, and 1 from Uzbekistan. Courses are conducted by professors from Freie Universität Berlin (Free University of Berlin) and experts from German and Central Asian organizations. Scholarships are currently provided by the German Ministry of Foreign Affairs, CAREC (USAID Smart Waters project) and German Academic Exchange Service (DAAD). As part of activities aimed at building capacity in 2017, a workshop on International Water Law for young civil servants from Central Asia (UNESCO, German Ministry of Foreign Affairs, and CAREC), trainings for teachers and civil servants (UNECE), CAWa (Water in Central Asia project) Summer School to train in handling the geographic information system and working with data (German Ministry of Foreign Affairs), and the Scientific - Practical Conference on water in Central Asia (in cooperation with the International Science and Technology Center) were organized. GKU continued publishing the Central Asian Journal

for Water Research with the support of OSCE and CAREC. The International Student Water Contest & Scientific Colloquium was also organized.

Source: GKU

International Training Center for the Safety of Hydrotechnical Constructions

The International Training Center (ITC) for the Safety of Hydrotechnical Constructions was established on 2 March 2012 by the Executive Committee of IFAS in cooperation with the Kazakh Water Research Institute and with the financial support of UNECE as part of ASBP-3. ITC's mission is to build capacity through training, re-training and advanced training in management and control of the safety of hydraulic facilities.

In 2013-2017, 9 workshops were organized for 264 water professionals in Central Asia (12 people from Kyrgyzstan, 4 people from Tajikistan, and 248 people from Kazakhstan).

In 2017, 68 specialists from Kazakhstan and neighboring countries completed the courses at ITC and received certificates under the UNECE project "Dam Safety in Central Asia: capacity building and regional cooperation" and EU project "Supporting Kazakhstan's Transition to a Green Economy Model for the period 2016-2018".

The training focus areas include:

- Analysis of factors impacting the safety of hydraulic facilities;
- Inspection, research, and diagnostics of hydraulic facilities;
- Assessment of reliability and safety of hydraulic facilities;
- Measures to prevent emergency situations on hydraulic facilities;
- Control system over condition of hydraulic facilities;
- Modern technologies ensuring safety of hydraulic facilities;
- Basic requirements to safety of hydraulic facilities;
- Hydraulic facilities operation rules;
- Declaring safety of hydraulic facilities; and

- Scientific and design work on safety of hydraulic facilities.

ITC cooperates with the Taraz State University named after M.Kh.Dulati, Kazakh Water Research Institute, Executive board of IFAS in Kazakhstan, UNECE, KazNAU, Kazgiprovodkhoz Institute, Uzvodkhoz nadzor, RosVodkhoz nadzor, and TIIAME.

Source: ITC

Kazakh National Agrarian University

The Kazakh National Agrarian University ([KazNAU](#)) has 85-year-old history as one of the oldest higher education entities of the country preparing specialists for the water sector and agro-industry.

The University train specialists in "Water resources and water management" and "Land reclamation, recultivation, and protection" at the department "Water resources and land reclamation" (faculty "Hydraulic engineering, land reclamation, and business"). At present, 430 bachelors, 26 master's students, and 9 doctor's students are trained in hydraulic engineering. Annually, tens of master's students get training through the summer and winter master's program "Water resource management".

The qualified teaching staff is represented by 2 academicians of the Kazakh National Academy of Sciences, 6 doctors and 12 candidates of sciences, 5 philosophy doctors and 8 masters of agriculture.

A Water Hub has been established and successfully operates at KazNAU; it is comprised of the "Water resources and land reclamation" department, as well as the Research Institute of Water Problems and Land Reclamation, with annual financing for research in the amount of 70 million tenghe. Divisions of the University actively promote academic exchanges through Tempus and Erasmus Mundus "Towards sustainable water resource management in Central Asia" programs and projects.

Today, the basic direction is the preparation of highly qualified specialists for the water sector, who master modern methods of integrated water resource management, innovative water-saving technologies and understand alternative energy sources that can be used in agricultural water supply and pasture watering.

Source: KazNAU

9.1.2. Kyrgyz Republic

Kyrgyz-Russian Slavic University

The Kyrgyz-Russian Slavic University (KRSU) was established in 1993. Future specialists for the water sector are trained at four faculties: *Hydraulic engineering and water resources, Protection in emergency situations, General utilities and equipment of the buildings, and Meteorology, ecology, and environmental protection*. There are full-time and part-time doctoral and postdoctoral programs.

In 2017, 91 bachelors graduated from the University on integrated water resource management, hydraulic construction, water and sanitation, hydrometeorology, and protection in emergency situations.

Major events in 2017:

- The water quality laboratory and a model of the back-pressure turbine were installed.
- Bachelor degree students of the University participated in the 4th contest on "Integrated Water Resource Management in Central Asian Universities" organized by GKU in KRSU premises (28 March).
- Annual Scientific and Practical Conference dedicated to the 15th anniversary of the "Architecture, design, and construction" faculty of KRSU was held and presented research and development work in the field of water by the bachelor degree students and teaching staff (April 19-22).
- Students and staff of the departments participated in research projects of the Ministry of Education and Science, such as the Development of Slavic HEIs and the Integrated Study of Threats and Challenges to some Spheres of National Security in the Kyrgyz Republic. Research results were reported and recommended for publishing at the International Scientific and Practical Conference "Technical means for monitoring of hydraulic facilities and ecological safety of the Central Asian states" (30 October, KRSU).
- Teaching staff of the Hydraulic engineering and water resources

department implemented a contract-based design of pumping station on the Kozho-Kair canal in Kra-Dobe village.

Source: Hydraulic engineering and water resources Department, Kyrgyz-Russian Slavic University

Kyrgyz National Agrarian University named after K.I.Skryabin

The Kyrgyz National Agrarian University ([KNAU](#)) was established on 30 January 1933. KNAU trains high- and semi-skilled specialists for the agrarian sector. The University is comprised of 7 faculties, 39 departments, 4 colleges, lyceum school, educational-experimental platforms, and four research institutes, including in the field of irrigation.

The Natural resource management faculty prepares specialists (bachelors and masters) on *hydraulic engineering, natural management and water use, and ecology and natural resource management*. The faculty also conducts applied research and provides other educational services.

In 2017, 45 masters successfully graduated from KNAU.

The Center of distance learning and training functions at the Institute of international and distance learning in KNAU premises and provides training for students, rural producers, and specialists in other specializations fields.

KNAU maintains ties with many other universities, educational entities, and research institutes and centers in Western and Eastern Europe, North America, and the Pacific region.

Source: <http://knau.kg/en/>

American University of Central Asia

The American University of Central Asia ([AUCA](#)) was founded in 1993 and is located in Bishkek. AUCA is an international, multi-disciplinary learning community in the American liberal arts tradition. Its curriculum includes the Preparatory Program (New Generation Academy), fourteen undergraduate majors and four graduate programs. AUCA is the first university in Central Asia to offer US accredited degrees in liberal arts programs through a partnership with Bard College in the United States.

At the University, there is the Tian Shan Policy Center ([TSPC](#)) – an innovative nonprofit, public interest organization focused on research, analysis, and implementation of appropriate and effective public policy in the nations and communities of Central Asia.

In 2013, the Environmental Management and Sustainable Development (EM&SD) program was launched at AUCA. In 2017, three students successfully graduated the program. The “Integrated water resources management and strategic environmental assessment of Kabul and Amu Darya rivers” project was initiated. Equipment was purchased and installed and first measurements were made in research plots.

9.1.3. Tajikistan

Tajik Agrarian University named after Shirinshokh Shotemur

The Tajik Agrarian University named after Shirinshokh Shotemur ([TAU](#)) was established in 1931. It is one of the leading and main HEIs in Tajikistan preparing specialists on land reclamation and water sector. At present, it is comprised of 9 faculties, including Hydro-melioration one founded in 1951.

In 2016-2017 academic year, 247 bachelors and 17 masters graduated from the faculty on “Land reclamation and water sector” (37 people), “Land reclamation, economy, and water management” (3 people), “Integrated use and protection of water resources” (38 people), “Construction of hydraulic facilities” (50 people), “Land management” (40 people), and “Geodesy and geoinformatics” (79 people).

In 2017, a range of activities was organized under the International Decade for Action “Water for Sustainable Development”, 2018-2028, including:

- Republican [Scientific and Practical Conference](#) on “Water is the basis for achieving food security”, 18 February;
- Workshop on “Adoption of the UN General Assembly Resolution on announcing 2018-2028 as the International Decade for Action “Water for Sustainable Development”;

The following activities were carried in 2017 under the EM&SD program:

- three regional workshops with participation of university partners, such as the American University of Central Asia (Kyrgyzstan), Kabul University (Afghanistan), and Mining-Metallurgical Institute of Tajikistan and representatives of NGOs, public water agencies, and local international organizations;
- training in rational water use for students of specialized university programs in three partnering countries.

Source: Environmental Sustainability Office, AUCA

- Round table on “Improving methods of integrated management and use of water resources”, etc.

In 2017, under the “TCP/TAJ/3503: management with a focus on irrigation service” Project implemented by TAU and FAO following results have been achieved: teaching aids were prepared on various spheres of the water sector, programs and modules were developed on modernization of irrigation systems, the staff of the Agency for Land Reclamation and Irrigation and the WUA and dehqan farm support division got trained, the demonstration site of water accounting on on-farm irrigation network was organized, and courses were organized for teachers in management, operation, and maintenance of irrigation systems based on the MASSCOTE and MASSMUS methodology.

Source: TAU Administration

9.1.4. Uzbekistan

Tashkent Institute of Irrigation and Agricultural Mechanization Engineers

The Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME) is comprised of 7 faculties, including 25 bachelor degree programs and 21 master degree programs. Since May 2017, active work has been carried out to fulfill the Order of the President of the Republic of Uzbekistan #3003 "On measures to radically improve the training system for engineers of the water and agrarian sectors".

In 2016-2017 academic year, 1,182 bachelors and 76 masters graduated from the Institute, including 366 and 27 students through the state scholarships, respectively. To integrate the learning and work processes, field practices for students were organized.

In 2017-2018 academic year, the students of the first and second grades won the State President Scholarship (2 students), Scholarship of Beruniy (2 students) and Scholarship of Islam Karimov (1 student). The students won medal places at the Republican competition on "Hydraulics", "Economy of agroindustrial complex", "Economy and management", "Land use and cadaster". In 2017, 14 enthusiastic, talented, active, and highly-motivated students and masters were awarded the scholarship of the Academic Council.

The teaching staff comprises 40 doctors of sciences and professors, 171 candidates of sciences and associate professors, 1 honored scientists of Uzbekistan, 2 honored workers of public education of Uzbekistan, 2 honored irrigators of Uzbekistan, and 3 honored scientists of Karakalpakstan. Eight teachers of the Institute ranked first at the Republican contests "Best teacher on specialization", "Best teacher-researcher", and "Best teacher of innovation and information technologies".

The Institute collaborates with more than 50 Universities in developed countries and implements educational and scientific grants through international funds. 43 professors and 10 students undertook internships at foreign universities.

In 2017, 7 doctoral theses were defended, including 4 DSc and 3 PhDs. Based on research activity of the Institute, 21 monographs, 39

textbooks, and 17 patents were issued. As of January 2018, ten issues of the Irrigation and Land Reclamation Journal were published.

Additionally, professional development courses are organized at TIAME for teachers of general and specific disciplines, water managers and professionals, as well as training for trainers.

Source: TIAME

National University of Uzbekistan named after Mirzo Ulugbek

The National University of Uzbekistan (NUUZ) was established on 12 May 1918.

Bachelors (of hydrometeorology and hydrology) and masters (of hydrometeorology and hydrogeology) are prepared at the department "Hydrology and hydrogeology" of the faculty "Geology and geography". There are also PhD and DSc programs on "Hydrology of land. Water resources. Hydrochemistry" (11.00.03) at the department.

In 2017, 24 hydrology engineers, 27 bachelors and 4 masters of hydrometeorology, and 2 masters of hydrogeology graduated from the department. In 2017, one of the graduates of the department obtained a DSc degree and one a PhD degree. In general, more than 1,200 hydrology engineers, bachelors of hydrometeorology, as well as 80 masters of hydrology and hydrometeorology got training at the department in 1945-2017. Nowadays, more than 40 of them have DSc degree, and 300 are candidates of sciences (or hold PhD degree).

Source: Hydrology and Hydrogeology Department, Geology and Geography Faculty, National University of Uzbekistan named after Mirzo Ulugbek

9.2. Regional HEIs and Professional Development Centers

Training Center of SIC ICWC

In 2017, the Training Center (TC) of SIC ICWC conducted the following activities:

Further systematization and approbation of training materials for the water sector. Particularly, development of training materials was initiated for the distance learning course (DLC) "Climate change and water resources in Central Asia" and the short-term training courses for the staff in WUAs. For DLC on International water law, a video lecture was recorded upon invitation of the University of Geneva on "Adaptation of transboundary water management in the Amu Darya Basin to climate change".

SIC ICWC staff lectured at different training events. In particular, lectures and practical exercises were delivered for young public servants from Central Asia and Afghanistan under the workshop on "Water resource management in the context of climate change in Central Asia and Afghanistan" organized by the UNESCO Chair on Water Resources Management in Central Asia at the German-Kazakh University. Additionally, a number of training workshops was organized.

An online information system that includes e-database and interactive map on water sector professional development in the Central Asian countries was developed (see [Interactive Map on Water Sector Professional Development in the Central Asian Countries](#)).

University of Central Asia (Kazakhstan, Kyrgyzstan and Tajikistan)

The University of Central Asia (UCA) was founded in 2000 as a not-for-profit and secular university through an international treaty signed by the Presidents of the Kyrgyz Republic, Tajikistan, and Kazakhstan, and His Highness the Aga Khan; ratified by their respective parliaments, and registered with the United Nations.

UCA's mission is to promote the social and economic development of Central Asia, particularly its mountain communities, by offering an internationally recognized standard of higher education, and enabling the peoples of

the region to preserve their rich cultural heritage as assets for the future. UCA brings with it the commitment and partnership of the broader Aga Khan Development Network.

The UCA Graduate School of Development has several research units, including the Mountain Societies Research Institute (MSRI) with a focus on natural resource management including water and food systems, mountain livelihoods, and climate change and adaptation. MSRI conducts research that aims to improve the livelihoods and wellbeing of mountain societies and that informs policy and practice, especially in context of the global Sustainable Mountain Development agenda.

In 2017, MSRI has promoted the dialogue of water cooperation in Central Asia through Guest Lecture on "Water Security in Central Asia and Policy Implications" at Graduate School of Public Policy, Nazarbayev University (November 22, 2017, Astana, Kazakhstan); through Chairing a session on Water and Agriculture at the "International Scientific and Practical Conference on Water Resources in Central Asia" (November 2-3, 2017, Almaty, Kazakhstan); and through participation in Panel Discussion "Empowering the New Water and Climate Generation" at the Blue Peace Central Asia: Dialogue for 2030 - Water Security and Inclusive Growth (June 18-19, 2017, Astana, Kazakhstan).

MSRI researchers are also Editors for the Central Asian Journal of Water Research (CAJWR; <http://www.water-ca.org/>) where major achievements in the domain of water resources management in Central Asia are presented. In 2017, MSRI has led a series of publications in the area of water resources planning, including an analytical report, Climate Vulnerability and Adaptive Capacity of Mountain Societies in Central Asia, Research Report No.1 and Editorial for the Special Issue on Water Use Management Challenges in Central Asia and Afghanistan.

Source: Public Affairs Department of UCA, www.ucentralasia.org

9.3. Professional Development Courses and Trainings

In 2017, the following professional development courses and trainings were organized:

17-21 July, Seoul, Korea – KAPEX training program at the Korean Rural Economic Institute;

17-18 July, Almaty, Kazakhstan – workshop on the “Institutional mechanisms for transboundary water cooperation” under the series of seminars of UNRCCA and CAREC, with the support of USAID;

27 August - 15 September, Shefayim kibbutz, Israel – international courses “Efficient management and use of water resources” organized on the base of the International Agricultural Training Center of the Israel's Agency for International Development Cooperation (MASHAV);

27 November - 1 December, Vienna, Austria – training courses “Administrative reforms in the context of globalization” organized by the International Monetary Fund at the University of Vienna;

10-11 April, Almaty, Kazakhstan – PEER financial training (USAID);

14-17 November, Almaty, Kazakhstan – workshop on sharing experience between

regional organizations involved in sustainable development and water resources management in Central Asia on the themes “Project management” and “Financial policy”;

September-December – the 2nd edition of distance learning course “International water law and the law of transboundary aquifers.” The course coordinator Dr. Mara Tignino facilitated interaction with 30 participants from different sectors, including law, political science, economy, and technology from different regions of the world.

Professional development courses and trainings in 2018

On 24 September, the distance learning course on International Water Law and the Law of Transboundary Aquifers starts at the Geneva Water Hub's Platform for International Water Law. The deadline for application is September 13, 2018.

On 26 March, the Geneva Water Hub via the Platform for International Water Law launches massive open online courses (MOOC) on International water law. The courses are held in French with English subtitles. MOOC consists of 5 modules on the [Coursera Platform](#). Its announcement is available [here](#).

9.4. Interactive Map on Water Sector Professional Development in the Central Asian Countries

In 2017, an interactive map on water sector professional development in the Central Asian countries was generated. This online resource accumulates the key information on organizations and specialized training centers involved in the water sector professional development process in the Central Asian countries at various levels of water management hierarchy.

Organizations included into the database are grouped into 6 categories: higher education institutions, research and design institutes, water agencies, non-governmental organizations, institutes for competence development of public employees, and others. It also enables searching information by theme, including integrated water resource management, hydrotechnical constructions, land

reclamation and irrigated agriculture, water conservation and water accounting, international and national water law, transboundary water resources, information and communication technologies in the water sector, environment issues in the water sector, state regulation, and other themes. There is an option to modify and update data, as well as to input new information.

The interactive map was developed by SIC ICWC under the contract with CAREC as part of the Project “Promoting dialogue for conflict prevention related to water nexus in Central Asia (CAWECOOP).”

Access to the map:
<http://riverbp.net/education/map-learning-centers>

