

The background features a repeating pattern of overlapping circles. On the left side, a vertical strip contains solid blue circles. The rest of the page is filled with white circles, some of which contain intricate, concentric, teardrop-shaped geometric patterns.

Section 9

Water Education

9.1. Higher Education Institutions (HEIs) and Professional Development Centers

9.1.1. Kazakhstan

Al-Farabi Kazakh National University

The Al-Farabi Kazakh National University (Al-Farabi KazNU) is the leading multidisciplinary institution of higher education in the country. The multilevel system of education includes higher basic education, master's and doctoral studies program. The University has 16 faculties. Experts for the water sector are trained at the [Geography and Nature Management Faculty](#), Meteorology and Hydrology Department. The faculty also has the [UNESCO Chair for Sustainable Development](#).

Major Events and Activities in 2021

Research at the Meteorology and Hydrology Department. The Department's staff carries out research in the following areas: (1) "Water resources of the transboundary Syr Darya River Basin"; (2) [Geoecological monitoring of deposit environment of Ile River Delta and Ile-Balkash State Natural Reserve](#); (3) "Development of Kazakhstan small lakes profiles" by the Institute of Geography and Water Security".

Capacity building. The training course for journalists on "[Ecological Journalism within the Goals of Sustainable Development](#)" was conducted on [March 15-19](#).

Students of the **Meteorology and Hydrology Department** participated in the International Olympiad on "Hydrology" for the students from Kazakhstan, Russia, Belarus, and Uzbekistan. The teaching staff and graduate students made presentations at (1) the workshop "Towards a regionally-consistent exposure database for Central Asia: characterizing buildings, crops and infrastructure in Kazakhstan" ([May 11-14](#)); (2) the roundtable "30 years of independence: current issues in education, land science and the environment"; (3) training course "Building capacities for protection and restoration of freshwater ecosystems in Kazakhstan" (November 15-26).

UNESCO Chair for Sustainable Development took part in the roundtable "UNESCO Water Family: Cooperation in the field of education and science in Central Asia" ([December 10](#), KazNU, UNESCO Almaty Office).

Events. The following events were held: (1) the roundtable "Tasks of the Nevada-Semey movement associated with the cardinal need to restore the ecology of the Republic of Kazakhstan" ([February 28](#)); (2) international scientific conference of students and young scientists "Farabi әlemi" ([April 6-8](#)); roundtables "Assessment of changes in runoff characteristics and transformation of the hydrographic network in Almaty using GIS technology" ([April 7](#)) and "The ocean, our climate and weather" ([April 7](#)); (3) XII Republican Student Olympiad ([April 26-29](#)); (4) international conference "National Initiatives to Achieve Sustainable Development Goals" as part of the "UN – New Silk

Road Model" ([May 27](#)); (5) international roundtable "EU Strategy in Central Asia: Opportunities and Prospects" ([9 June](#)); (6) roundtable dedicated to the World Environment Day ([June 10](#)); (7) presentation "Following the Effective Ways to Achieve the UN Global SDGs" under the project "3.2.1. Start" ([October 14](#)); (8) international scientific and practical conference "Global Challenges of the 21st Century and the Environment" dedicated to the 10th anniversary of the UNESCO Chair on Sustainable Development ([December 2-3](#)).

Cooperation. Al-Farabi KazNU as the Global Hub of the UN Program "Academic Impact on Sustainability" actively participates in UN activities. The following events were held: (1) the international roundtable "The role of youth in the implementation of the SDGs within the framework of the UN Agenda "Decade of Action" ([March 3](#)); (2) III Summit of Future Leaders "The Role of Youth in the Implementation of the Sustainable Development Goals within the Decade of Action" ([March 26](#)).

The results of joint work and new ways of strengthening cooperation were considered during the meeting with the Head of UNICEF in Kazakhstan, Arthur van Diesen ([April 20](#)). Sustainable development projects were discussed during the meeting with UN Resident Coordinator in Kazakhstan, Michaela Friberg-Storey ([June 1](#)).

The Al-Farabi Kazakh National University signed Memorandums of Cooperation with (1) the State Institution "Kazselezashchita" of the Ministry of Emergency Situations of the Republic of Kazakhstan ([June 23](#)); (2) the Kyrgyz National University named after J. Balasagun ([July 1](#)).

Achievements and awards. The KazNU entered the world's top university rankings: (1) [took](#) the 16th place in the British QS EECA 2022; (2) [took](#) 201-250 positions in QS – Graduate Employability Rankings and became the first to [receive](#) "5 Stars" of Excellence in Central Asia by QS Stars Rating System; (3) [recognized](#) as the first by the independent agency for accreditation and rating "IAAR Eurasian University Ranking" (IAAR EUR) 2021; (4) [entered](#) the top 200 in the QS WUR institutional ranking and took the 175th place; (5) as a leader, in the category of multidisciplinary universities of the country by [IQAA Ranking](#); (6) [recognized](#) as the best in SDGs by Times Higher Education University Impact Rankings-2021. The University was [recognized](#) as the winner of the International Competition "University of the Year 2021" held by the Canadian Committee for the International Achievement Research and the Regional Center for Eastern Europe and Asia. Al-Farabi KazNU participates annually in the UI Green Metric World University Rankings in terms of "ecological" development. A separate section of the rating questionnaire is devoted to water conserva-

tion. According to these indicators the University takes a good position because it uses the water-saving technologies (modern sensor faucets, etc.).

Rector Zh.K. Tuymebayev received the award "Rector of the Year". 13 research scientists were elected as the winners of the state science award and scholarship. Students were recognized as winners of a series of webinars of the International Center for Green Technologies and Investment Projects four times. The contest results (1) "Best in Profession 2021" is available on <https://www.kaznu.kz/en/3/news/one/27310/>; (2) Students Research Papers in Meteorology and Hydrology for 2020-2021 is available on <https://www.kaznu.kz/en/16977/adverts/9168>.

The list of awards for teachers of the Meteorology and Hydrology Department is available on <https://www.kaznu.kz/ru/16977/adverts/10344> and that for students of the UNESCO Chair on <https://www.kaznu.kz/ru/20210/news/>, <https://www.kaznu.kz/ru/20210/news/one/22238/>.

Publications. The scientific journal "International Journal of Mathematics and Physics" of the University was included in the Scopus database; series of the Bulletin was included in the Russian Science Citation Index on the Web of Science platform. A monograph was published in the *Rivers of Almaty megapolis / A. Chygyrnets, K. Duskaev, L. Mazur – Almaty, Kazakh University, 2021. – 310 p. (ISBN 978-601-04-5247-3).*

Other publications included: (1) M. Musahanova, B. Tupsova, L. Kurbanova. Implementation of a storm water management system in Almaty based on U.S. experience // QazBSQA Хабаршысы. Инженерлік жүйелер және экология, 2021. – No. 2 (80). pp. 293-300; (2) K. Khamitova, D. Ismailov, K. Kasymjanova. Алматы облысының жер үсті су ресурстары сапасының мониторингі // Vestnik of KazGASA, 2020. – No. 4. – pp. 303-311; (3) A. Erdvaliyeva, T. Tajibayeva. Ecosystem approaches in integrated water resources management of the RK// Vestnik of KazGASA. – 2021. – No. 2. – pp. 275-285; (4) A. Erdvaliyeva, T. Tajibayeva. The role of integrated water resources management in sustainable water supply of natural and economic systems in Kazakhstan// Proceedings of the international scientific-practical conference "Water Resources Management in the Context of Globalization", March 11-12, 2021 (KazNARU). p.123-129.

The list of publications for 2021 is available on <https://www.kaznu.kz/ru/22947/page/>, <http://journal.kaznu.kz/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/101/2/0/0/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/101/3/0/2021/>, <https://www.kaznu.kz/ru/22319/page/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/131/1/0/2021/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/131/3/0/2021/>, <https://www.kaznu.kz/ru/22947/page/>, <http://journal.kaznu.kz/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/101/2/0/0/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/101/3/0/2021/>,

<https://www.kaznu.kz/ru/22319/page/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/131/1/0/2021/>, <https://pps.kaznu.kz/ru/Main/ChairPublications/131/3/0/2021/>.

Source: Meteorology and Hydrology Department and the UNESCO Chair for Sustainable Development, www.kaznu.kz/ru/, www.facebook.com/KazakhNationalUniversity

Kazakh National Agrarian Research University

Kazakh National Agrarian Research University (KazNARU) was founded in 1929. The University includes in its structure the Research Institutes of Water Problems and Land Reclamation and of Agricultural Innovation and Ecology, the Forestry Research Institute, the Institute for Professional Development, the Water, Land and Forest Resources and Agrobiological faculties, the International Research Center (IRC) "Water Hub", the Agrotechnological Hub, and the "Farmers High School". The Dissertation Council on 8D086 – "Water resources and water use" (specialization 6D080500 – "Water resources and water use"; Educational program 8D08603 – "IT-technology based water management") functions at the University as well.

Major Events and Activities in 2021

Research. The following projects are implemented: (1) "Selection of non-traditional crops for intensive use of irrigated land and creation of a green conveyor depending on bioclimatic potential of cultivation zones" (2021-2023); (2) "Development of technology for rehabilitation of anthropogenically degraded mobile sands of desert pastures in the Southern Balkhash region" (2021-2023); (3) "Evaluating the effectiveness of various land cover/use systems to mitigate climate change by reducing greenhouse gas emissions and increasing albedo" (2021-2023); (4) "The Effects of Excessive Water Use and Agricultural Intensification on Aral Sea Shrinkage: SES Dynamics within the Syr Darya River Basin"⁹⁴ (2021-2023, PEER, USAID); (5) "Interdependent Dynamics of Food, Energy and Water in Kazakhstan and Mongolia (FEWKazMG): Connecting LULCC to the Transitional SocioEcological Systems"⁹⁵.

The University jointly with the Valmont Industries is creating a Kazakh-American Center "Smart Water", which will house a demonstration site for innovative Valley-type sprinkler machines and other types of irrigation equipment. The Farmers High School provides consulting and training services for managers and employees of farms according to the "Extension" international model.

Capacity building. The following events and activities were organized: (1) XI International Winter School "Problems of assessment and management of natural resources in Kazakhstan". Classes were conducted by 133 foreign scientists for students from 33 countries in 16 areas. The contest of start-up projects was held

⁹⁴ Jointly with the University of Michigan and the University of South Dakota

⁹⁵ Jointly with the University of Michigan, the Humanities University of Mongolia, and the Mongolian Academy of Sciences

together with the International Scientific and Practical Conference of Young Scientists (February 15-27, online); (2) workshops "Key training programs on ecology and environmental sciences in academic institutions of Kazakhstan and Central Asia" (May 24-June 11, online); (3) meeting of KazNARU scientists and doctoral students with the leadership of the Executive Directorate of IFAS to discuss cooperation in educational and research areas (September 9, IRC "Water Hub"); (4) the final workshop "Key training programs on ecology and environmental sciences in academic institutions of Kazakhstan and Central Asia" (September 28).

Events. The following events were held: (1) International scientific and practical conference "Water resources management in the context of globalization" dedicated to the 105th anniversary of Prof. L. Tazhibayev (March 11-12); (2) International Conference "Experience and Technologies of Water Hub for OIC Countries from Africa and the CIS" organized jointly with the Islamic Organization for Food Security (IOFS) (August 31-September 1).

Achievements and awards. KazNARU in the world and national ratings



Source: https://www.kaznaru.edu.kz/page/about/?link=universitettin_missiasy_179&lang=ru

Rector of KazNARU T.I. Yespolov was awarded with the honorary order "BARYS" of the first degree. For the awarding of the University staff, please, see the following link www.kaznaru.edu.kz/page/news/?link=kazuazuda_uzdik_kyzmetkerler_marapattaldy_2783&lang=ru.

Publications. Scientific journal "Research and Results", Almaty 2021. Proceedings of international scientific and practical conferences (1) "Water resources management in the context of globalization". Almaty: KazNARU, 2021; (2) young scientists within the XI "International winter school 2021". – Almaty: KazNARU, 2021.

Source: www.kaznaru.edu.kz/?lang=ru

Nazarbayev University

Nazarbayev University (NU) was established in 2010. The University is comprised of 7 Schools, including the Graduate School of Public Policy (GSPP) and the School of Mining and Geosciences (SMG), the long-term mission of which is to create a full range of engi-

neering and applied science programs in land, water, energy, and ecology. NU's 2018-2030 strategy is available on https://nu.edu.kz/wp-content/uploads/2016/07/1_NU-Strategy_RUS_2030-1.pdf

Major Events and Activities in 2021

Research. The implementation of the Sustainability Living Lab Program has been continued in cooperation with the "National Conservation Initiative" Corporate Fund, with the support of "Chevron" company. The Program is aimed at supporting green research and innovation projects. The green projects implemented in higher educational institutions of Kazakhstan were presented at a conference on sustainable development in NU (October 16).

The 2021 international expedition to Korgalzhyn Lakes was organized in cooperation with the scientists of the Korgalzhyn National Park.

The University became a member of the UN Sustainable Development Solutions Network (UN SDSN) in 2020 to promote research and educational activities aimed at achieving the SDGs in Kazakhstan and Central Asia. The Network Strategy Council of the SDSN has approved the appointment of the Nazarbayev University as a host of the SDSN National Network for Kazakhstan (www.unsdsn.org/kazakhstan).

Events. GSSP Conference "Policy Change and Sectoral Reforms in Eurasia", with 10 panel sessions and roundtables, including session 2 "Policy processes and structural policy changes in Eurasia" and roundtable 1 "Environmental policy of corporate social responsibility in the context of sustainable development in Kazakhstan"; session 3 "Policy change and challenges for the energy sector: regional perspectives and visions to 2050"; session 7 "Environmental challenges in Central Asia"; and roundtable 3 "Sustainable land use and food systems in Kazakhstan"; session 9 "Water desiccation and water resources decline in Eurasia"; roundtable 4 "Youth and students initiatives on sustainable development in Kazakhstan" (October 15-16).

Publications

S. Xenarios "What is wrong with water. Discussion on water security in Kazakhstan and Central Asia".

D. Malashenkov, V. Dashkova, K. Zhakupova, I. Vorobjev, N. Barteneva. Comparative analysis of freshwater phytoplankton communities in two lakes of Burabay National Park using morphological and molecular approaches. Scientific Reports (Nature Publishing, IF=4,379) 11, 16130. <https://doi.org/10.1038/s41598-021-95223-z>.

Y. Mirasbekov, A. Abdimanova, K. Sarkytbayev, K. Samarkhanov, A. Abilkas, D. Potashnikova, G. Arbuz, Z. Issayev, I. Vorobjev, D. Malashenkov, N. Barteneva. Combining imaging flow cytometry and molecular biological methods to reveal presence of potentially toxic algae in the Ural River, Kazakhstan. Frontiers in Marine Biology (IF=4,435) 8 (680482):1-16 DOI: 10.3389/fmars.2021.680482.

S. Xenarios, M. Laldjebaev, D. Schmidt-Vogt, J. Buurman, E. Araral (2021) Powering the uplands: controversies of developing hydropower in upstream Central and Mainland South East Asia. In: Tsani, S. and Overland, I (eds) Handbook on the Sustainable Politics and Economics of Natural Resources, Edward Elgar Publ. pp. 152-185, DOI: <https://doi.org/10.4337/9781789908770.00020>.

M. Lim, S. Xenarios (2021) Economic assessment of urban space and blue-green infrastructure in Singapore, *Journal of Urban Ecology*, Volume 7, Issue 1, juab020, <https://doi.org/10.1093/jue/juab020>.

S. Xenarios, A. Assubayeva, X. Lei et al (2020) A bibliometric review of water security concept in Central Asia, *Environmental Research Letters*, <https://doi.org/10.1088/1748-9326/abc717079>.

Source: Nazarbayev University, <https://nu.edu.kz/ru/>

Taraz Regional University named after M. Kh. Dulati

Taraz Regional University named after M. Kh. Dulati (TarRU) was established by the Order of the Kazakh President No. 752 of October 11, 2019 and on the basis of the order of the Ministry of Finance of the Republic of Kazakhstan No. 346 of June 3, 2020. Specialists for the water sector are prepared at the Institute of Water Management and Environmental Engineering⁹⁶. The Institute has 8 departments, including for Land Reclamation and Agronomy; Water Resources; Ecology; Life Safety. There is a Dissertation Council for the award of the Degree of Doctor of Philosophy (PhD) in the following specialization: (1) 8D074 – Water Management (specialization 6D074400 – “Hydrotechnical construction and structure”); (2) 8D086 – Water resources and water use (specialization 6D081000 – “Land reclamation, recultivation and protection”).

Major Events and Activities in 2021

Capacity Building. TarRU signed the Memorandum of cooperation with SOE “Nurinsk group water pipeline” (North-Kazakhstan branch “Esil su”) to organize training for the staff of the North zone of IPK “Toza-su” in Petropavlosk city (July-November).

Students of the third course took part in the XIII Republican Olympiad on 5B080500 – “Water resources and water use” (April 22-23, online). The first round of the XXIV student scientific and practical conference was held. The issues of water use of the Nura River Basin, the water management model for water conservation in Taraz, the problems of transboundary rivers, etc. were addressed at the Conference (October 25-30).

Professor of the Michigan University, Zhanai Sagin held classes for teaching staff, undergraduates, doc-

toral students and students and seminars “International scientific projects under the program of the American Council UniCEN and USDTA” for teaching staff (November 2-30).

Events. The following events and activities were held: (1) job fair “Young professional 2021” (March 3); (2) the international scientific and practical conference “Water resources management in the context of globalization” jointly with KazNARU (March 11-12); (3) webinar within the framework of the UniCEN International Grant Theme “Groundwater sustainability in Central Asia: building institutional capacity in Karakalpakstan, a former Aral Sea Region in Uzbekistan” (November 3-4); (4) roundtable “Problems and prospects of interstate cooperation among the Central Asian states and Kazakhstan in transboundary water use” (November 24).

Publications. A.T. Aimen, D.O. Atasheva, D.M. Khazgalieva, G.A. Sarbasova, M.A. Kaldygozova. Greening water and land use in agriculture. *Vestnik of Dulati Universitet*, 2021, No 3, pp. 17-34.

Source: <https://dulaty.edu.kz/ru/>

German-Kazakh University

The *German-Kazakh University* (GKU) was founded in 1999 with the aim of training students in line with the German standards. GKU has been the only German university in Kazakhstan and Central Asia up to present time. The *World Politics* Faculty of GKU has developed and carries out the training program “Integrated Water Resources Management”; the Economics and Business Faculty holds the “Strategic Management of Renewable Energy and Energy Efficiency” Program. Within GKU, the Natural Resources Institute was the first one in Central Asia that received the status of the *UNESCO Chair* for Water Resources Management in Central Asia; GKU offers the Central Asia Youth for Water Network (CAY4W) and the Central Asian Journal of Water Research (CAJWR). CAJWR is indexed in DOAJ, EBSCO, IndexCopernicus, RSCI⁹⁷, Cite Factor and Google Scholar and included in the list of recommended publications by the Ministry of Education and Science of RK (Order No. 623 of July 29, 2021).

Major Events and Activities in 2021

Research. The following projects are implemented: (1) The *International project* “Global Disruptive Tech Challenge 2021 – Restoring Landscapes in the Aral Sea Region” (Kazakhstan, Uzbekistan, August 2020-June 2021): a webinar (January 8) was organized; live broadcasting “How can we restore the Aral Sea?” was organized on March 2; the results of the contest were summarized and the winning projects were identified (April 9); (2) *ESERA* / “Ecosystems, Society and Economics of the Aral Sea Region: the current year research has been aimed at studying the water-

⁹⁶ The Institute of Water Management and Environmental Engineering was created as a result of combining both Institute of Water Management, Ecology and Construction and the Oil and Gas Engineering faculty

⁹⁷ Russian Science Citation Index

courses of the Kokaral dam to the Western part of the sea. The Aral Sea Summer School "Young Leader for a Change" was organized (August 10-21); (3) "Interdependent dynamics of food, energy and water (FEW) related to land use and land cover change with transitional socio-ecologic systems on the example of Almaty region"; (4) "Involvement of youth in solving environmental problems in Almaty": a discussion platform was provided for youth to engage in environmental activities (February 2022- February 2023).

The contest' results for the best research on climate change in Central Asia will be published in CAJWR.

Capacity Building. A course on Applied Modeling of Hydrological Systems in Central Asia was delivered for IWRM Master's students, with the support of Blue Peace CA. Student Olympiad on SDGs was held at the national level in Turkmenistan (March 30-31), Uzbekistan (April 13), Tajikistan (April 19), Kyrgyzstan (April 23) and Kazakhstan (April 27) on the following sections: IWRM (SDG 6); Climate change and clean energy (SDG 7 and 13); Industrialization, innovation and infrastructure (SDG 9).

The following events were held: online webinars on the impact of climate change on governance and security in the Kyrgyz Republic (January 6) and the Republic of Tajikistan (January 15); (2) virtual internship program on climate change in Central Asia for young professionals and PhD students (January-March); (3) online course *EU-CA Academic School on Environmental Economics for University Teachers of Central Asia: cooperation on water, environment and climate change (WECOOP)* (April 12-30); (4) virtual roundtables "Capacity building programs on clean energy" for students and young professionals of Tajikistan (May 26), Kazakhstan (June 11), Turkmenistan (June 14), Afghanistan (June 16), Kyrgyzstan (June 25), and Uzbekistan (June 17) as a part of the Master's program "Strategic Management of Renewable Energy and Energy Efficiency" (SMREEE); (5) the 7th Summer School "Water in the Aral Sea Basin under climate change – management and policy challenges from data and knowledge perspectives" (June 14-25, online); (6) training workshops on RS-based assessment of precipitation and related applications (September 27-30); (7) roundtable and study tour "Renewable Energy Trip 2021" to study best practices in the use of renewable energy sources. The students visited 10 RES facilities (October 4-10); (8) online-webinar "The role of innovative technologies in the sustainable development of agricultural sector in Kazakhstan" together with the International Center for Green Technologies and Investment Projects (ICCTIIP) on the educational platform GREEN WEBINAR (December 22-23).

Representatives of the University took part in a training series of the 12th Central Asian Leadership Program on Environment for Sustainable Development (since September 20).

The results of the annual *International School of Green Business* "Eco-Talk 2021" were summed up (December 13-14).

Events. The following events were held: (1) roundtable "Energy saving, energy efficiency, renewable energy sources: status, problems and prospects" (May 5); (2) seminar "Water management and climate security in Central Asia", jointly with OSCE and UNESCO (September 27-29); (3) pre-conference events – youth session "Youth of Central Asia and the Puzzle of Climate Action" and poster session on innovation for development (December 9) within the framework of the international online conference "The Silk Road of Knowledge: Science Meets Green Policy" (February 23-25, 2022).

Representatives of the University took part in (1) international scientific and practical conference "Water Resources Management in the Context of Globalization" (March 11-12); (2) interactive online session "River Basin Organizations and Implementation of Treaty Commitments" (March 16); (3) international scientific conference on "Civil Engineering, Hydraulics and Water Resources Engineering"/CONMECHYDRO 2021 (April 1-3); (4) interactive online session "International Water Law and Climate Change" (April 20); (5) online discussion "Water Assessment for Faster Recovery from the Pandemic", which was organized by the UNESCO office in Jakarta (April 20); (6) *UNFSS Regional Dialogue* on approaches to promoting the water-energy-food nexus in Central Asia (June 14).

Publications

Collective monograph. Tomorrow was late. Environmental risks of Kazakhstan. Almaty, 2021. – 300 p.

V. Salnikov, T. Bobushev, Z. Makhmudov, D. Dzhumaguliev, S. Yanchuk. *The impact of climate change on governance and security in Central Asia* Book (first version), Almaty, Kazakhstan, 225 pp.

For CAJWR publications see the link <https://water-ca.org/issues>.

Source: <https://dku.kz/>, www.academic-waters.org/ru/, www.academic-waters.org/ru/proekty/poleznye-ssylki/

South Kazakhstan State University named after M. Auezov

The South Kazakhstan State University named after M. Auezov (SKSU) is a state multidisciplinary higher education institution. The University is comprised of 7 faculties, Distance Learning Institute, six higher schools and a college. The Agrarian faculty has 9 departments, including "Water resources and water use" and "Water Supply, Sewage and Water Protection". The University ratings is as follows: (1) 482 position, taking the 3rd place among 14 participating universities in Kazakhstan by Quacquarelli Symonds; (2) the 3rd place by Independent Quality Assurance Agency in Education (IQAA); (3) for the first time entered the top 401-500 universities by Worldwide Professional University Rankings / Rank Pro – 2021.

Source: <https://auezov.edu.kz/kaz/>

9.1.2. Kyrgyz Republic

Kyrgyz-Russian Slavic University named after B.N. Yeltsin

The Kyrgyz-Russian Slavic University named after B.N. Yeltsin (KRSU) was established in 1993. Education at the University is delivered in 24 fields and specializations. Water specialists are trained at the Architecture, Design and Construction Faculty on Water Resources and Engineering Disciplines Department (WREDD) and the Natural Engineering Faculty including the Meteorology, ecology and environmental protection; Ecology and meteorology; Non-traditional and renewable energy sources departments. KRSU has the Dissertation Councils of the Higher Attestation Commission of KR, including on specialization 06.01.02 – “Land reclamation, recultivation and protection”. The Inter-branch Scientific Research Center for High-Altitude Dam Monitoring at the University studies the effects of earthquakes, microseisms on hydraulic structures and forecasts their conditions to prevent disaster situations.

Major Events and Activities in 2021

Events. The following events were held: (1) Interuniversity scientific and practical conference of young researchers “Problems of sustainable economic development in the context of contemporary challenges” (May 20); (2) VI International scientific-practical online conference “Improving the system of forecasting, reducing and mitigating damage from hazards” (December 15).

Cooperation. KRSU, the Soviet Peace Foundation, the Public Chamber on Environmental issues of the Deputy of the State Duma of RF, and the Peace Foundation of the Kyrgyz Republic signed a Memorandum of Cooperation within the framework of the “Ecology and Sustainable Development” project. A number of activities are planned. Those include a youth camp, a conference on greening Bishkek and other environmental initiatives to be implemented by teachers and students of the University.

The University administration and teaching staff participated in (1) II Eurasian Analytical Forum (9 November); (2) scientific and methodological symposium on partnership of educational institutions “30 years of the CIS: educational partnership as an indispensable factor in the development of the humanitarian space of the Commonwealth of Independent States” (November 9-10, Moscow); (3) III Forum of Scientists of the CIS Member States – 2021 (November 24-27, Minsk).

Source: www.krsu.edu.kg/

Kyrgyz National Agrarian University named after K. I. Skryabin

The Kyrgyz National Agrarian University named after K.I. Skryabin (KNAU) was established on the 30th of January 1933. The University consists of 6 faculties, inclu-

ding Hydromelioration, Ecology and Land Management Faculty which trains bachelors in the following fields: “Land reclamation, recultivation and protection”, “Engineering systems of agricultural water supply, irrigation and drainage”, “Hydraulic Engineering Construction”, “Land Management and Cadastre”, “Geodesy and Remote Sensing”, “Ecology and Nature Management”.

Major Events and Activities in 2021

Capacity Building. The following events were organized by KNAU: (1) “OPEN DAY” on the occasion of opening business incubators for the purpose of youth entrepreneurship development (April 13); (2) seminar “Green Innovations 2021” (April 30); (3) International scientific and practical conference “Development of cooperation – the basis of sustainable economic development” (May 26-27); (4) Central Asia Sustainable Development Forum – 2021 (November 11-12); (5) career guidance event for 9-11 grade students of school named after A. Zhaparov (December 10); (6) practical training for Hydromelioration, Ecology and Land Management Faculty students at the water intake of the Sokuluk River (December 11).

University students took part in the Inclusive Youth Conference “Three Whales”, which is intended to involve young people in the process of development of the country and to unite efforts in the fight against environmental problems that negatively affect the sustainable development of the state (October 29).

Cooperation. The academic staff of the University participated in: (1) opening ceremony of the SCO Agriculture Universities Alliance, as a result, the MoU was signed (17 HEIs from 9 countries); (2) meeting of Advisory Committee for Agro-Industrial Complex under Department of EEC Agro-industrial Policy “Scientific and technical cooperation” (June 15); (3) Meeting of the Council of Rectors of Leading Agricultural Universities of the CIS Member States “Prospects of agricultural education development and science in the post-epidemiological period” (June 15) (4) International scientific and practical conference “Development of international technologies and interaction mechanisms of Russian and foreign educational, scientific and public organizations under current conditions of education export” (October 25); (5) 1st International Forum of University Rectors of Kyrgyzstan and Kazakhstan “Transformation of modern higher education: key trends and directions of integration” (November 22).

Publications. The University publishes a bulletin “Vestnik KNAU”. Four issues were published in 2021.

Source: <https://knau.kg/>

American University of Central Asia

The American University of Central Asia (AUCA) founded in 1993 is an international, multi-disciplinary community. Its curriculum includes the Preparatory Prog-

ram (New Generation Academy), 15 undergraduate majors and 10 graduate degree programs. AUCA consists of [Technical School of Innovation](#), which offers seven specialization areas, including Ecology and Energy Efficiency, the [Tian Shan Analytical Center \(TSPC\)](#) and the [Center for Environment and Development \(CED\)](#).

Major Events and Activities in 2021

Research. TSPC AUCA (1) took part in the preparation of the analytical note "Restoring the country's natural capital to achieve the SDGs: pilot land accounts and sustainable pasture management in Kyrgyzstan" based on the project carried out jointly by the National Statistical Committee, the State Agency for Land Resources and the Society of Soil Scientists of Kyrgyzstan; (2) conducted research on the current state of

environmental education and legislation of the KR, with FAO support; (3) has developed a National Action Plan for Countering hurricanes and dust and sand storms in the Kyrgyz Republic for 2021-2023 through CAREC assistance under the project [Regional approaches for combating sand and dust storms and drought](#).⁹⁸

Events. The Conference "Air quality in Bishkek and ways for solution" was held within the framework of the Green Economy Days in KR – 2021 in partnership with two AUCA research centers – the Tian Shan Analytical Center (TSPC) and the Center for Environment and Development (CED), with the support of the Kyrgyz-German-Swiss program "Green Economy and Sustainable Development of the Private Sector in the Kyrgyz Republic" (October 20).

Source: <https://auca.kg/>

9.1.3. Tajikistan

Tajik Agrarian University named after Shirinsho Shotemur

The Tajik Agrarian University named after Shirinsho Shotemur (TAU) was established in 1931. The University has 9 faculties, including the Hydromelioration faculty, which prepares students in the field of land reclamation and water management, hydraulic engineering, rational use and protection of water resources.

Major Events and Activities in 2021

Events. The following events were organized: (1) International scientific and practical conferences "Adaptation of agricultural sector to climate change: problems and solutions" (October 23) and "Water Resources of Tajikistan, the current state during the International Decade of Action "Water for Sustainable Development, 2018-2028" on occasion of the President Day (November 16); (2) National scientific and practical conference "GIS as an important factor of data

management in the national agricultural sector (November 18); (3) training workshops (September 17, November 17).

Cooperation. A Cooperation Agreement was signed with the Tajik Research Institute of Hydraulic Engineering and Land Reclamation.

Publications. TAU is the founder of the theoretical and applied science journal "Kishovarz". Four issues were published in 2021.

Other publications included: Proceedings of the Republican scientific and practical conference "Current achievements and problems in the agroindustry" for young scientists, master's students and doctoral students. TAU, Dushanbe 2021, p.598; Proceedings of the International scientific and practical conference "Industry and agricultural production: state and prospects of development". TAU, Dushanbe 2021, p.512.

Source: www.tajagroun.tj/

9.1.4. Turkmenistan

Turkmen Agricultural University named after S.A. Niyazov

The Turkmen Agricultural University of S.A. Niyazov (TAU) was founded in 1930. The University consists of 8 faculties, including the Hydromelioration faculty, which trains specialists in "hydromelioration" and "land construction and cadastre".

Major Events and Activities in 2021

Cooperation. A meeting was held between the Rector of the University and the Rector of the Russian Sta-

te Agrarian University of the Moscow Agricultural Academy named after K.A. Timiryazev, the Director General of "Shchelkovo Agrokhim", and the President of "Seeds" Association. They discussed prospects for cooperation in the field of agricultural science and education, prospects for implementation of joint projects, and the aspects of scientific and technical cooperation on environmental protection, effective use of agricultural land, land inventory, etc. The Memorandum on scientific cooperation and training of agricultural specialists between the Turkmen Agricultural University and the "Seeds" Association (Moscow) was signed (April, Moscow).

⁹⁸ Implemented by CAREC with the financial support of the Secretariat of the UN Convention to Combat Desertification

As a result of the meeting between Rectors of the Turkmen Agricultural University of S.A. Niyazov and the Kazan State Agrarian University, a Memorandum of Cooperation is in process of development (October 27, online).

A group of teachers and students of the University and researchers at the Institute of Chemistry of the Academy of Sciences of Turkmenistan have got a patent for a new method of producing environmentally friendly fertilizers.

Source: <https://tohu.edu.tm/>

Turkmen Agricultural Institute

The Turkmen Agricultural Institute (TAI) was established in 2010 at the Ministry of Agriculture and Environmental Protection of Turkmenistan. The Institute prepares water specialists at the Hydromelioration and Agricultural Mechanization Faculty in the following fields: operation of irrigation and drainage systems, hydromelioration. The Institute has the Research and Production Center and Training and Production Facility.

9.1.5. Uzbekistan

Samarkand State University

The Samarkand State University (SamSU) was founded in 1927. The University consists of 18 faculties. The Geography and Ecology Faculty trains personnel in ecology, hydrometeorology (Bachelor's degree) and ecology, soil science, hydrology (Master's degree).

Major Events and Activities in 2021

Research. The following projects are implemented: (1) Erasmus + International Credit Mobility (EU) for the exchange of knowledge and skills of teachers, masters and students with European universities; (2) Guidance on the development and familiarization with the 561742-EPP-2015-1-PT-EPPKA2-CBHE-SP Program.

Publications. The Institute publishes Research and methodological journal "Scientific Bulletin of Samarkand State University". Three issues of the journal were published in 2021.

Source: www.samdu.uz/ru/

National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers"

The National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers"

Major Events and Activities in 2021

Research. As a part of the Erasmus+ program, the project "New and Innovative Courses in Precision Agriculture" (NICOPA) is implemented to update the training programs. The teaching staff of the Institute participated in master classes (January 11-16, January 13-21, April).

Events. Teachers and students of the Institute took part in (1) conference "Integrated management of natural resources and sustainable land management" (February 10); (2) seminar "RS-based monitoring of agriculture" (February 10-12); (3) seminar on the EU's ERASMUS+ (January); International and interregional video conference "Improving higher education: tools and their application in the education system" (September 16-18).

Achievements and awards. TAU students won 50 prizes, including 11 gold, 11 silver, and 14 bronze medals, as well as diplomas at international online olympiads.

Source: <https://tohi.edu.tm/ru/index.php>

(NRU TIAME⁹⁹) began its work in 1923. Nowadays, the University is comprised of seven faculties, where students are trained in 18 directions (Bachelor's Decree) and 15 specializations (Master's Decree). The Research Center for Geoinformatics was opened on October 15.

Major Events and Activities in 2021

Capacity building. On-job practical training in Akaltyn district of Syrdarya province (June); (2) field training "Salar sewage treatment plants" (October 23); (3) workshop on the results of "Governance of groundwater resources in transboundary aquifers" (GGRETA) project, jointly with UNESCO and GIDROINGEO (November 18); (4) training on "Legal foundations of land reforms, their role and tasks in improving land relations" (December 13); (5) training at UzHydromet (December 16); (6) training workshop on renewable energy sources by teaching staff from foreign universities (November 30) and practical training on technical and hydraulic liquids in machineries (December 4).

Students took part in (1) Student Olympiad on SDGs at the national level conducted by KNU (April 13); (2) marathon of technological development "TECHNOWAYS" (November 15-24); (3) Republican contest "100 ideas for Uzbekistan"; (4) "Demo day" of the 5th cycle of the Youth innovative idea and start-up project support program.

⁹⁹ TIAME was renamed into the National Research University "TIAME" according to the Resolution of the President 42 of December 10, 2021 "On measures to radically improve the system of training of engineering personnel for industries based on innovation and digitalization". The proposal to establish the Bukhara Institute of Natural Resource Management and the Karshi Institute of Irrigation and Agricultural Technologies, respectively, on the basis of the branches in Bukhara and Karshi and organize the Institute for Basic and Applied Research under NRU was approved. The NRU will be transferred to the self-financing system from January 1, 2022.

Events. The following conferences were held: (1) International scientific conference "Construction Mechanics, Hydraulics and Water Resources Engineering" (CONMECHYDRO-2021) (April 1-3) and CONMECHYDRO-2021 AUTUMN SEASON (September 7-9); (2) XX – Scientific and practical conference for young scientists, Masters and talented students (May 25-26).

Cooperation. MoUs were signed (1) with the Chinese company "China Gezhouba Group International Engineering" Co. Ltd (June 10); (2) with Hungarian universities – [Obuda University](#), [Sopron University](#) and [Budapest University of Technology and Economics](#) on the sidelines of the Forum of Rectors of Uzbekistan and Hungary, on exchange of academic staff, joint preparation of scientific publications (June 24). Meetings were held with Mr. Alexandros Makarigakis, UNESCO Representative a.i. in Uzbekistan (November 27) and the delegation of the Belarusian National Technical University (December 15).

TIIAME and Huawei have concluded a Memorandum of Understanding as a part of "smart" agriculture project. The project is developed and implemented by TIIAME specialists with the expert and technical support of Huawei, UZTELECOM and MWM (May). The presentation of the pilot project took place at the opening of the showroom in TIIAME (September 28).

As part of the partnership with LCC "ECO DRIP LUX", a manufacturer of drip irrigation systems in Uzbekistan, the company opened a training room at the department of hydromeliorative system operation at Hydromelioration Faculty (November 24).



Awards. Employees of the University received the badge "Mekhnat fahrisi" of the 1st degree and the order "Dostlik".

Source: <https://tiame.uz/ru>

National University of Uzbekistan named after Mirzo Ulugbek

The National University of Uzbekistan named after Mirzo Ulugbek (NUUz) was officially established on the 12th of May 1918. The University has in its structure 15 faculties, including Geography and Natural Resources Faculty, Ecology, Geology and Geoinformation system, Hydrometeorology¹⁰⁰. Specialists for the water sector are trained at the Land Hydrology Department of the Hydrometeorology Faculty. There are also PhD and DSc programs on "Land Hydrology. Water Resources. Hydrochemistry".

Major events and activities of the Hydrometeorology Faculty in 2021

Research. The teaching staff of the University carries out research on the following topics: "Current state of hydrological regime and water availability in the lower reaches of the Amu Darya River" (B. Adenbayev); "Hydrological regime of rivers in urbanized areas" (F. Artikova); "Physiographic conditions of water formation and hydrological regime of low-mountain small rivers in Uzbekistan" (N. Sagdeyev); "Modeling hydrological regime of river waters and stable isotope-based studies" (G. Umirzakov).

The following projects are implemented: (1) "Assessment of dam and climate change impacts on water scarcity and drought in arid and semi-arid river basins in India and Uzbekistan" within the framework of Uzbek-Indian cooperation; (2) "Development of monitoring system of mountain glaciers mass balance change and scenarios characterizing their future state in the context of global climate change", jointly with the Scientific Research Hydrometeorological Institute of Uzhydromet and the Institute of Geology and Geophysics named after Kh. Abdullayev, Academy of Sciences of the Ruz.

The academic staff of the Department is also engaged in the following international projects: (1) Climate Change Adaptation and Mitigation Program for the Aral Sea Basin (CAMP4ASB); (2) Central Asia Research and Adaptation Water Network – CARAWAN; (3) Reducing Vulnerabilities of Populations in the Central Asia Region from Glacier Lake Outburst Floods in a Changing Climate (GLOFCA).

Capacity Building. Doctoral dissertations were defended by: (1) P. Ziyayev (PhD) Shifts of water regime phases in the Zerafshan River Basin in the context of climate change on 11.00.03 "Land Hydrology. Water Resources. Hydrochemistry"; (2) Y. Ergasheva and T. Sabitov on 11.00.05 "Environmental protection and rational use of natural resources". The Faculty students participated in the II International Student Olympiad in "Hydrology" dedicated to the 25th anniversary of the Eurasian National University named after L.N. Gumilev, and won prizes (April 26-27, online).

¹⁰⁰ The Hydrometeorology Department was established at NUUz in 2021/2022 academic year according to the Decree of the President of the Republic of Uzbekistan "On measures to further improve the hydrometeorological service of the Republic of Uzbekistan" (No. 4896 of November 17, 2020).

The Distance Learning in "Meteorology and climatology" on 3+2 program with the Russian State Hydrometeorological University was established since 2021-2022. Dr. Thomas Sachs from [University of Fribourg](#) delivered lectures for bachelors and masters on "Glaciology and Cryosphere" (November 18 and December 2).

Cooperation. Hydrometeorology Faculty cooperates with the Lomonosov Moscow State University, the University of Fribourg, [Potsdam Institute for Climate Impact Research](#), [Indian Institute of Technology Kharagpur](#), [University of Reading](#), Institute of Geographic Sciences and Natural Resources Research of Chinese Academy of Sciences, CAREC, SIC ICWC, etc.

Publications. (1) textbook – F. Hikmatov, S Haydarov, G. Khalimova, R. Ziyayev, B. Rapikov. Ko'lishunoslik;

(2) teaching guide – B. Adenbayev, Z. Khakimova, M. Mirkholikova. Gidrokimyo; (3) methodological manual – S. Haydarov, F. Khikmatov, G. Valiyeva. Gidrologik prognozlar fanidan amaliy mashg'ulotlar – Samarkand, 2021. – 74 p. (4) Monographs – K. Rakhmonov, F. Khikmatov. Assessment of soil leaching rates in Uzbekistan mountain rivers and their basins. – Tashkent: "Publishing and printing house of innovation development", 2021. – 148 p.; B. Adenbayev, F. Khikmatov. Assessment of the current state of hydrological regime and water availability in the lower reaches of the Amu Darya River – Tashkent: INFO CAPITAL BOOKS, 2021. – 172 p. Also, 78 scientific articles were published, including 10 articles in international journals and 18 articles in national journals.

Source: Hydrometeorology Faculty, <https://nuu.uz/rus-tili-rossiya-ozbekiston-muloqotning-rivojlanish-omili-sifatida/>

9.2. Regional HEIs and Professional Development Centers

9.2.1. Regional Training Center at SIC ICWC

Water sector professional development courses in Central Asia were established at SIC by the ICWC decision (ICWC Protocol No.24 of 23.10.1999). The courses were founded by the ministries of agriculture and water resources of five CA states, SIC ICWC, BWO Amu Darya and BWO Syr Darya. Later, these vocational training courses were transformed into the Regional Training Center (RTC) at SIC ICWC.

Major events and activities in 2021

SIC ICWC experts delivered: (1) lectures and practical classes at **NRU TIAME for the 1st and 2nd year master's students** on the topic "Hydraulics and hydrology engineering" and "GIS in hydraulics and hydrology engineering research" at the Hydraulics and Hydroinformatics Department and for **students** on "Integrated water resources management", "Rural water supply" and "Water quality management" at the Ecology and Water Management Department; (2) lecture "Transboundary water systems and water security" **for master's students of the Nazarbayev University** (September 28); (3) trainings¹⁰¹ on the topic "Operation of irrigation systems: Measures preventing from water losses in irrigation canals"; "Collector-drainage networks: specifics of operation of different trenches" **for farmers and WUA staff** in Surkhandarya province and for managers of irrigation systems (March 29-May 1, June, Professional Development Center at TIAME); (4) training "Application of geoinformation technologies (GIS) and global posi-

tioning system (GPS) in practice" **for specialists and researchers of the Republic of Karakalpakstan** under the Memorandum of Cooperation between IICAS and SIC ICWC (online, September 8-10); **trainings for hydraulic engineers /irrigation water managers** on "Development and adoption of a water use plan" and "Organization of water accounting to control the actual distribution of water" under the contract with the TST Cluster of Kuyi-Chirchik district.

D.R. Ziganshina delivered lectures at the (1) interactive online session on "Transboundary Water Agreements" organized by GWP and the International Water Law Academy of Wuhan University ([January 19](#)); (2) meeting dedicated to the World Water Day organized by the Universities Partnership for Water Cooperation and Diplomacy/UPWCD (March 22) and the "5th General Assembly of the World Youth Parliament for Water" at the session "Youth Committee for Water and Peace ([March 23](#)); (3) course on water diplomacy organized jointly with UNECE for specialists from Iraq on "Water Diplomacy Mechanisms: role of the Implementation Committee of the Water Convention" (June 17); (4) Dialogue on Innovative Water Diplomacy and Effective Water Resources Management as part of the presentation of the collection "The Drama of Water in a Time of Global Transformation"¹⁰² (June 22). The podcast "Water Diplomacy in Central Asia – Institutions, Culture, and the Role of the EU" was recorded by the request of the [Konrad-Adenauer-Stiftung Fund](#) ([February 18](#)).

¹⁰¹ Under the project "Improvement of water resources management in Surkhandarya province / Reconstruction of Khazarbagh – Akkapchigai canal system"

¹⁰² Prepared with the participation of 36 Russian and foreign experts in cooperation with the International Association of the Lake Regions

9.2.2. University of Central Asia (Kazakhstan, Kyrgyzstan and Tajikistan)

The University of Central Asia (UCA) was founded in 2000 to promote the social and economic development of Central Asia, particularly its mountain communities, by offering an internationally recognized standard of higher education. UCA is comprised of: (1) School of Arts and Sciences, offering a five-year undergraduate program in six majors, including Earth and Environmental Sciences; (2) Graduate School of Development (GSD) has several divisions including Mountain Societies Research Institute (MSRI); (3) School of Professional and Continuing Education (SPCE). UCA has established the Green Community/UCA Green Community Club – a student initiative aimed at raising awareness of environmental issues and fostering environmentally sustainable practices.

Major events in 2021

Events. The Mountain Societies Research Institute (MSRI) of UCA (1) in collaboration with UNEP, arranged study tour to Panj-Amu Darya Basin for experts from Afghanistan and Tajikistan. The tour was concluded with a workshop at the UCA's Khorog campus, where participants developed a joint Action Plan for Climate Change Adaptation and Biodiversity Conservation; (2) organized a three-day course on "Climate Change and Adaptation to Climate Change: Challenges in Rural Areas of Kyrgyzstan" for 10 participants of the Mountain Societies Development Program in Bishkek; (3) participated at Dubai Expo (October), COP26 (November, online).



As a part of preparations for the climate change COP26 summit, a film series "Voices from the Roof of the World" – a joint initiative of the Aga Khan University, Aga Khan Agency for Habitat, Aga Khan Foundation and University of Central Asia, was produced. The Student Club specialized in "The Earth and Environmental Sciences" organized the Global Climate Change Week.

Cooperation. Memorandums of Understanding were signed with (1) the Tien Shan Highland Research Center at the Institute of Water Problems and Hydro-power, National Academy of Sciences of the KR; (2) Agency on Hydrometeorology of the State Committee on Ecology and Climate (KyrgyzHydromet); (3) Ministry of Emergencies of KR to develop cooperation on major scientific issues in the field of global warming and climate change, water security, energy, glacier degradation, etc. (November 12).

Source: <https://ucentralasia.org/>

9.3. Professional Development Courses and Trainings

9.3.1. Professional Development Courses and Trainings in 2021

January 6 – Webinar "Impact of climate change on governance and security in the Kyrgyz Republic"

January 15 – Webinar "Impact of climate change on governance and security in the Republic of Tajikistan"

January 28 – Webinar on remote sensing for irrigation water management "Water management for enhanced productivity (WMfEP) activity"

February 25, 4, 11, 18 and **March 25** – MASHAV International Webinars "Implementing pressure irrigation systems for intensive agriculture"

April 12-30 – Online course "EC-CA Academic School on environmental economics for University teachers of Central Asia"

March 11-30 – Online training on "Climate Diplomacy for Kyrgyzstan, Tajikistan and Uzbekistan".

March 18 – Webinar "Ensuring Water Security in India".

April 8, 12, 14 – workshop series "Water and Peace; "Data and perspectives of their use for development"; "Infrastructure, information, and tools of trust building"; "Knowledge, power, and tools of trust building".

April 29 – Webinar "Women's leadership in water sector".

May 25 – Webinar "Best practices for repeatability in field practices".

June 9, 10, 17 – Series of roundtables "Capacity building programs on clean energy" for Tajikistan, Kazakhstan and Uzbekistan.

July 1, 8, 15, 22, 29; September 2, 9, 23, 30; October 7 – IWRA 2021 Master Classes on "Water Cooperation and Diplomacy".

September 20-24 – [online learning series](#) as part of the 12th Central Asian Leadership Program on Environment for Sustainable Development: “Promoting sustainable consumption and production for Green Economy development and transition to low carbon and resource-efficient circular economy in Central Asia and Afghanistan”.

September 27-29, Almaty – [Workshop](#) “Water governance and climate security in Central Asia”.

October 4-10, Kazakhstan – [Roundtable discussion and study tour](#) “Renewable Energy Trip 2021”.

October 11-December 12 – [Distance Learning Course](#) on International Water Law and the Law of Transboundary Aquifers (Geneva Water Hub).

October 14-15 – [Online training](#) “Applying a new MODIS data processing software to monitor snow cover”.

December 7-8 – [Webinar](#) “The role of innovative technologies in the sustainable development of the agricultural sector in Kazakhstan”.

NASA Applied Remote Sensing Program Trainings (ARSET): [trainings on](#) “Mapping and monitoring lakes and reservoirs with satellite observations” (**February, 16, 23**); [webinars](#) on “Using Google earth engine for land monitoring” (**June 16, 23, 30**); [training courses](#) on “Monitoring coastal and estuarine water quality: transitioning from MODIS to VIIRS” (**September 14, 16, 21**).

9.3.2. Professional Development Courses and trainings in 2022

February 21-22, Bishkek and **March 3-4**, Dushanbe – training series on application of the water-energy-food nexus approach within the framework of the EU project “Nexus Dialogue in Central Asia”

February 21, 22, 24; March 1-3 – Online training courses on “Water evaluation and planning system (WEAP) and low emissions analysis platform (LEAP) as part of the USAID Regional Water and Environment Project

February 21-March 4 – [Central Asia Training Course](#) on “Weather and climate services for the Energy Sector”

March 9-10, Hague – [workshop](#) from “Water and Peace” series – The affective dimensions of water conflict and cooperation

March 21-25, Bishkek – workshop “Science for Diplomacy” for young professionals in water policy research.

April 12-May 3 – ARSET [Online training](#) “Mapping crops and their biophysical characteristics with polarimetric SAR and optical remote sensing”

June 6-17 – [Online course](#) “Water security for policy makers and practitioners” (Geneva Water Hub)

August – Central Asia Summer School “Knowledge transfer and data sharing”.
<http://iwp.kg/?cat=56&paged=3>

Programs at the University of Geneva: [Course](#) Water Resources Management and Policy (**since March 14**); [Course](#) Water Governance: Frameworks and Negotiations (**July 4-15**).

