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Kyrgyzstan Tajikistan Turkmenistan Uzbekistan Kazakhstan

9TH WORLD WATER FORUM: CENTRAL ASIA FOR PEACE AND DEVELOPMENT

PRIORITIES, ACTIONS AND CHALLENGES FOR THE FUTURE

International Fund for saving the Aral Sea
Executive Committee

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Dushanbe - 2022

The Position paper "9th World Water forum: Central Asia for peace and development. Priorities, actions and challenges for the future" is developed within the framework of the preparation of the Central Asian region for the 9th World Water forum "Water Security for Peace and Development" which will be held on 21-26 of March 2022 in Dakar, Republic of Senegal.

The document is prepared under the guidance of the Chairman of the Executive Committee of the International Fund for saving the Aral Sea – Sulton Rahimzoda.

Author: Ziganshina D.R.- Acting Director of SIC ICWC

Co-author: representatives of IFAS state-founders in the Executive Committee:
Bekmaganbetov S.A., Bekniyazov M.K. - representatives of the Republic of Kazakhstan,
Boyzoda S.Sh, Kazakov M.Kh.- representatives of the Republic of Tajikistan,
Ovezmuhammedov I.A.- representative of Turkmenistan,
Juraev I.U – representative of the Republic of Uzbekistan.

A significant contribution to the preparation of the document was also made by the representatives of the Organizing Committee on preparation and holding the Central Asian sub-regional preparatory Conference for the 9th World Water Forum, held on 19-20 of October 2021 in Dushanbe, Republic of Tajikistan.

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TABLE OF CONTENTS

INTRODUCTION

The World Water Forum is the largest event dedicated to water, which is held every 3 years to raise the profile of water in the political arena, share experience and knowledge, and coordinate actions to achieve water security. The Forum provides a unique platform where the international water community and key decision-makers can cooperate in addressing global water challenges.

The 9th World Water Forum under the theme «Water Security for Peace and Development» will be held on March 21-26, 2022 in Dakar, Republic of Senegal. The 9th Forum brought together previously separate thematic, political, regional and public processes into one and reduced the number of priority issues for discussion. The thematic priorities of the 9th Forum include:

1. Water security and sanitation
2. Cooperation
3. Water for rural development
4. Means and tools

Since the 2nd World Water Forum, which was held in The Hague in 2000, **Central Asia** has actively participated in the Forum and its preparatory process.[1] To agree on the regional agenda for the 9th World Water Forum according to its priority themes and the most important issues for Central Asia the Central Asian sub-regional preparatory conference was organized in Dushanbe, Republic of Tajikistan on October 19-20, 2021 (See the program and the final document of the conference in Annex 1).

This Position Paper presents **the vision of the Central Asian countries** on the priority themes of the 9th World Water Forum and highlights the pressing for the region issues related to water security for peace and development. The first part of the document summarizes the key issues, needs and actions of the countries in the context of four thematic priorities of the 9th Forum. The second part of the document presents the challenges for the future, based on the outcome of the discussions of the 6 thematic sessions of the Central Asian sub-regional preparatory conference held on October 19-20, 2021 in Dushanbe.

As a basis for joint actions, the document focuses on **international documents** such as the 2030 Agenda for Sustainable Development, the Paris Agreement, the Sendai Framework for Disaster Risk Reduction 2015-2030, as well as **regional programs:** the Aral Sea Basin Program (ASBP-4), the Regional Environmental Program for Sustainable Development in Central Asia (REPSD CA), the European Union Strategy for Central Asia, Green Central Asia (FRG), etc.

ASBP-4 is a regional program aimed at achieving integrated use and protection of water resources, environmental rehabilitation and socio-economic development of the Aral Sea basin, as well as improving the institutional and legal frameworks of the International Fund for saving the Aral Sea (IFAS). By the decision of the IFAS Board of January 30, 2018 (Ashgabat, Turkmenistan), the IFAS Executive Committee together with the Interstate Commission for Water Coordination (ICWC) and the Interstate Commission for Sustainable Development (ICSD) with the involvement of national experts and international partners was mandated to ensure development of the ASBP-4 in the following areas: integrated water resource management; environmental, social and economic improvement of institutional and legal frameworks. ASBP-4 was approved by the IFAS Board Decision

[1] See «World Water Forums» for more details on preparatory processes and participation of Central Asian states http://cawater-info.net/library/forum.htm

on June 29, 2021 (Dushanbe, Republic of Tajikistan) for the period of 2021-2030 and includes 34 investment projects. See the list of ASBP-4 projects in Annex 2. The IFAS Executive Committee together with ICWC and ICSD was mandated to ensure the ASBP-4 implementation.

REPSD CA is a regional program aimed at improving the ecological situation in the region and promoting sustainable environmental management through strengthening regional cooperation of the CA countries in this area. The Program developed on the ICSD initiative was agreed by the countries in 2020-2021.

Note: *The documents adopted in the framework of IFAS since 2016 were agreed and approved by the governments of the Republic of Kazakhstan, the Republic of Tajikistan, Turkmenistan, the Republic of Uzbekistan.*

WATER SECURITY IN CENTRAL ASIA: PRIORITIES, NEEDS, ACTIONS

Central Asia, stretching from China in the east to the Caspian Sea in the west, includes Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, with a population of more than 72 million. The sub-region has a harsh continental climate, with hot summers and cold winters. Steppes and semi-deserts occupy a large part of its territory, and the Pamir and Tien Shan mountains rise from west to east.

The water resources of Central Asia, which are predominantly interstate in nature, form the basis for achieving water, food, energy, and environmental security and ensuring socio-economic stability in the countries. Among the largest transboundary river basins shared by the CA countries are Amudarya (Afghanistan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), Syrdarya (Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan), Chu/Shu and Talas (Kazakhstan, Kyrgyzstan), Zeravshan (Tajikistan, Uzbekistan), Tedzhen/Gerirud (Afghanistan, Iran, and Turkmenistan), Murgab (Afghanistan, Turkmenistan). This document reflects the development of cooperation in the field of water resources, as well as the challenges of global climate change, which will have ecological, social and economic implications for the entire region, including the Aral Sea basin.

The needs and actions of CA countries in four thematic priorities of the 9th Forum are presented below, namely water security and sanitation, rural development, cooperation, means and tools.

WATER SECURITY AND SANITATION

WATER AVAILABILITY AND STRESS ON WATER RESOURCES

A key indicator of water security[2] is water availability, which is the result of various factors affecting water availability for consumers and ecosystems. The natural water availability in Kyrgyzstan and Tajikistan is high, but tends to decrease due to increasing water demand and partly due to climate change impact[3]. According to the Master Plan of the Integrated Water Resource Management and Protection in the Republic of Kazakhstan, the Aral-Syrdarya River Basin is water deficient.[4] Turkmenistan and Uzbekistan are mainly supplied with water from interstate sources.

Stress on water resources indicators (water stress) in CA according to SDG indicator 6.4.2 reveal an alarming picture, which is a threat for sustainable development. A high level of water stress, i.e. withdrawal of more freshwater from natural sources than is available, can have devastating effects on the environment and delay socio-economic development in the region. The global water stress indicator is still at a fairly safe level of 18.4%, but in Central Asia the water stress level is high and exceeds 71%. It increased sharply from 2015 to 2018. Therefore, urgent measures to ensure water conservation and improve water use efficiency are especially relevant for the sub-region.

HOUSEHOLD AND DRINKING WATER SUPPLY AND SANITATION

The proportion of the population using improved drinking water supply, sanitation and hygiene services in CA countries is relatively high[5] but **the aging water supply and sanitation infrastructure requires countries to act proactively to achieve the goal of safe and sustainable access to these basic services.** To meet this challenge, the governments of CA countries are undertaking reforms. The National Development Plan of Kazakhstan up to 2025 provides for the allocation of budget funds for construction of new water supply and sewerage facilities and reconstruction of existing facilities to supply population with drinking water of proper quality and in its entirety, as well as to provide the required level of wastewater treatment. As a result, by 2025 all cities and rural settlements will be provided with centralized water supply.

Water stress level, in %, 2018
(SDG indicator 6.4.2.)

KZ	KG	TJ	TM	UZ	Central Asia	Global
33	50	62	89.9	120	71	18.4
low	low	moderate	high	critical	high	no stress

Source: FAO, 2021 r. www.fao.org/sustainable-development-goals/indicators/642/ru/
Data for Turkmenistan and Uzbekistan is provided from official sources of these countries.

[2] Water security is the ability of population to ensure sustainable access to adequate quantities of water of acceptable quality to sustain livelihoods, human well-being and socioeconomic development, to provide protection against water-related pollution and water-related disasters, and to maintain ecosystems in conditions of peace and political stability (UN-Water Task Force on Water Security, 2013).

[3] SIC ICWC and national experts of CA countries (2021), «Water, food and energy security in Central Asia: introductory analysis - benefits of cross-sectoral solutions». www.oecd.org/env/outreach/Water%20Food%20Security%20in%20Central%20Asia%20RUS.pdf

[4] Master Plan of the integrated water resource management and protection of the Republic of Kazakhstan (2016), www.cawater-info.net/library/rus/kz_gskiovr_may_2016.pdf

[5] Progress on household drinking water, sanitation and hygiene 2000-2020: five years into the SDGs. Geneva: WHO and UNICEF, 2021 https://washdata.org/report/jmp-2021-wash-households-LAUNCH-VERSION

The Government of Kyrgyzstan adopted a program to develop drinking water supply and sanitation systems in localities, which provides for the construction and rehabilitation of water supply systems in 1,184 villages by 2026.

Within the framework of the National Development Strategy of Tajikistan until 2030, modernization of drinking water supply, sanitation and hygiene, energy supply, and food systems, especially in rural areas and small towns, is being carried out to halve the number of people without permanent access to safe water supply, sewerage and improved sanitation.

Turkmenistan has adapted the SDG indicators in its national development programs. For example, in the «Program of the President of Turkmenistan for social and economic development of the country for 2019-2025» step-by-step measures for specific SDG medium-term goals and objectives are planned and implemented, and practical work is underway to improve social infrastructure in rural areas, including construction of hospitals, schools, preschool institutions, water and sewage treatment facilities.

The Action Strategy on the five priority areas of Uzbekistan's development provides for an increase in the level of supply of public utilities, primarily a radical improvement in the supply of clean drinking water in rural areas through the construction of new water supply lines, consistent introduction of modern cost-effective and efficient technologies. It is planned to build 415 km of water supply pipelines. Within the framework of measures to further improve drinking water supply and sanitation systems, starting from October 1, 2020, a competition is announced annually in the mass media for social services on the drinking water supply to rural settlements with a total population of at least 15 thousand people that do not have access to centralized drinking water supply. The Fund for development of water supply and sanitation systems under the Ministry of Finance was established to create guaranteed sources of funding for works on radical improvement of water supply systems, modernization and further expansion of the network of water intake facilities, water pipelines.

At the regional level, ASBP-4 includes Project 3.1. «Providing access to drinking water and sanitation for the population of the Aral Sea basin», with an estimated annual funding of $50 million until 2030.

WATER-RELATED ECOSYSTEMS

SDG indicator 6.6.1, which tracks changes in the area of water-related ecosystems based on satellite observations, demonstrates negative trends in the state of water-related ecosystems in CA.

The environmental disaster of drying up of the Aral Sea is of particular concern. As a result, the Aralkum desert was formed on the territory of Kazakhstan (2.1 million ha) and Uzbekistan (3.4 million ha), which has a negative impact on human health and the state of ecosystems throughout the region. In Kazakhstan, as a result of the implementation of the project «Regulation of the Syrdarya River Flow and Preservation of the Northern Aral Sea» (RSRFPNAS) the water level in the Small (North) Sea was set at 42 m, salinity was reduced from 32 g/l to 17 g/l or less, 14 of 38 species of previously extinct fish have appeared again, the traditional fishing industry has been restored to 8 thousand tons per year, pasture lands (about 50 thousand ha)[7] have recovered. Forest reclamation works are carried out on the dry bed of the former sea. In Uzbekistan in 2019-2020 1,167 thousand hectares of protective forest was planted on the dry bed of the Aral Sea, the Multi-Partner Trust Fund for Human Security for the Aral Sea region under the auspices of the UN was established at the plenary session of the 75th session of the UN General Assembly (May 18, 2021). A special resolution on declaring the Aral Sea region a zone of environmental innovation and technology was unanimously adopted. Currently activities to transform the Aral Sea region into a zone of environmental innovation are being implemented.

At the regional level, the ASBP-4 includes Project 2.4. «Preservation and restoration of ecosystems of the Amudarya and Syrdarya river basins», aimed at improving the state and reducing stress on natural aquatic ecosystems.

Relevant issues of cooperation are climate change and the effects of rising global temperatures, which lead to the degradation of mountain systems and the reduction of water resources. In this regard, there is a need for comprehensive measures to protect river formation zones, conserve and increase the areas of forests, develop a monitoring network for the qualitative and quantitative composition of river water, the state of glaciers and hydrometeorological parameters in general.

Change in the extent of water-related ecosystems over time[6]
(SDG indicator 6.6.1.)

	KZ	KG	TJ	TM	UZ
Baseline level (2001-2005), km^2	171,729	7,304	1,558	86,899	16,774
Last level (2011-2015), km^2	158,806	7,250	1,540	86,383	9,345
Extent of change, %	-7.5	-0.7	-1.2	-0.6	-44

Source: UN-Water, 2021, https://sdg6data.org

[6] Indicator 6.6.1 monitors the extent to which water-related ecosystems change over time. Data on the spatial extent of water-related ecosystems includes all open water bodies such as lakes, rivers, estuaries and artificial reservoirs. For monitoring purposes, the period 2001-2005 is defined as the baseline from which changes are monitored.

[7] http://kazaral.org/2020/10/30/

LAND DEGRADATION AND OTHER ENVIRONMENTAL ISSUES

One of the most serious issues is the **problem of desertification and land degradation.** Poor planning of fields, salinization and waterlogging of irrigated land and intensive grazing lead to reduced fertility and soil degradation, reduced crop and pasture productivity. As a result of deterioration and failure of irrigation and drainage systems, accompanied by worsening of the condition of reclaimed lands in Kazakhstan in 2019 660.2 thousand ha out of the total area of irrigated land of 2,147.1 thousand ha or 30.7% were not used (CLA, 2020). Over the past 15 years, the area of irrigated land in Kyrgyzstan has decreased by 54.6 thousand hectares, moreover, a significant part of it moved into the category of non-irrigated. In Tajikistan, salinization and waterlogging of irrigated land are increasing due to the lack of proper reclamation works. In Uzbekistan, 1.9 million ha (45%) of irrigated land is prone to salinization, of which 600 thousand ha is high and moderately saline.

The Central Asian countries are parties to the UN Convention to Combat Desertification and take measures to improve land condition and combat desertification. Measures for land reclamation and increasing the proportion of irrigated land are included in the Program for Development of the Agroindustrial Complex of Kazakhstan for 2017-2021 and the Irrigated Land Development Plan until 2028, which set a goal of providing an area of 3 million hectares of irrigated land with irrigation water. This goal is expected to be achieved by reclaiming 600 thousand hectares of irrigated land that was out of turnover and commissioning new ones - 1.5 million hectares. The State Irrigation Development Program of the Kyrgyz Republic for 2017-2026 adopted in 2017 provides for construction of irrigation infrastructure to provide new irrigated lands to rural residents. It is planned that the implementation of the State Program will make possible to add 66.5 thousand hectares of new irrigated land, increase water availability in 51.08 thousand hectares of land, move 9.5 thousand hectares from pumping to gravity irrigation, improve the reclamation condition of 50 thousand hectares of land. Within the framework of implementation of the State Program on improvement of reclamation lands in the Republic of Tajikistan for 2019-2023 it is planned to improve reclamation state of 48 thousand ha of irrigated agricultural land. In Turkmenistan, the National Action Program to Combat Desertification of 1997 is being updated, with a focus on the restoration of degraded pasture and irrigated land, reforestation, combating dust and sandstorms and determining the neutral balance of land degradation. The Strategy of water resource management and irrigation sector development in the Republic of Uzbekistan for 2021-2023 provides for the reduction of saline land area from 1,926 thousand ha to 1,888 thousand ha, including moderately and high saline land - from 581 thousand ha to 532 thousand ha.

At regional level measures in ASBP-4 were agreed on improvement of reclamation state of irrigated land in Amudarya and Syrdarya river basins (project 1.5 for 10 mln. US Dollars per year for 10 years) and on increase of irrigated lands and pastures productivity (project 3.3 for 10 mln. US Dollars).

The CA countries face a number of other environmental problems associated with unsustainable use of natural resources. Upper catchment ecosystems and biodiversity are prone to the risks of avalanches and mudflows, mountain pastures are negatively affected by overgrazing, glaciers and snowfields are degraded by climate change, and uranium tailings ponds pose a threat. Water quality in key watercourses of the sub-region is deteriorating due to untreated agricultural effluents flowing into the rivers. Lower reaches and deltas of rivers often do not receive even the minimum necessary flow, which is a

problem for ecosystems and public health. In addition to national programs, the CA countries have agreed on 12 regional environmental projects in ASBP-4, which cover climate, glacier melting, protection of biological resources, ecosystem restoration, forestation, solid waste, sustainable land use, environmental innovation, monitoring of the Aral Sea region and the dry Aral Sea bed, water quality, natural disasters and development of transboundary corridors.

CLIMATE CHANGE ADAPTATION AND NATURAL DISASTERS

The average air temperature in CA as a region has increased from 1°C to 2°C over the century (International Panel on Climate Change, 2007), variability and intensity of precipitation has increased in many areas, there is a tendency for decrease in flow of small rivers, for large river basins the flow change is not so significant, there is a sharp increase in frequency and amplitude of fluctuations of extreme floods and periods of water scarcity. Thus, the **problem of climate change** and related melting of glaciers and snowfields, reduction of runoff and fluctuation of water content of the rivers, increased frequency and extremity of natural disasters, including droughts, floods, mudflows and landslides, threats to biodiversity of mountain ecosystems and intensification of desertification processes **are of particular concern in CA countries.** These factors individually and cumulatively have negative economic and social effects for the countries, threaten water, energy and food security, and can also contribute to aggravation of environmental problems and tension in the region as a whole.

CA countries put forward a number of initiatives for adaptation to climate change at various levels. As a global action, Kazakhstan proposes to develop a global energy-environmental strategy and unite around the UN plan for six positive steps to improve climate; Kyrgyzstan - to establish a UN Special Fund for implementation of targeted programs on adaptation to climate change with emphasis on conservation of glaciers, forests and biodiversity, improving preparedness to natural disasters, socio-economic support of mountain communities, especially women and children; Tajikistan - to establish the International Fund for Protection of Glaciers, to declare 2025 the International Year for the Preservation of Glaciers and to move everywhere to the development and use of renewable energy sources, primarily hydropower. Turkmenistan put forward an initiative on the need to develop a UN Strategy aimed at implementing measures on low-carbon energy development and proposed to create, under the auspices of the UN, an international Roadmap for the development of hydrogen as one of the priority areas in the energy sector.

In the regional context, Turkmenistan proposed to establish a UN Regional Center on Climate Change Technologies in Central Asia and the Caspian Basin, Tajikistan - to develop a comprehensive regional plan for adaptation to climate change in Central Asia, to strengthen cooperation between countries in disaster control as well as to strengthen work on monitoring glaciers, snow and other water sources. Uzbekistan proposed to develop a regional program «Green Agenda for Central Asia», which would facilitate adaptation of the countries to climate change, as well as a wider introduction of resource-saving technologies. Kyrgyzstan initiated the adoption of resolutions of the UN General Assembly «International Year of Sustainable Mountain Development, 2022» and «Nature knows no borders: transboundary cooperation - a key factor for biodiversity conservation, restoration and sustainable use», aimed at developing broad multilateral cooperation to preserve mountain ecosystems and transboundary natural areas. A UNESCO resolution on «Strengthening Mountain Glacier Monitoring and Research» at the 41st session of the UNESCO General Conference was also adopted.

As Parties to the UN Framework Convention on Climate Change and the Paris Agreement, the CA countries implement relevant national programs. Kazakhstan is implementing an Action Plan to implement the Concept for the transition of the Republic of Kazakhstan to a «green economy» for 2021-2030, including by expanding the use of renewable energy sources. It is planned to develop a strategic document for low-carbon development until 2050 and the National Plan for Adaptation to Climate Change. The Kyrgyz Republic has developed and presented the Updated nationally determined contribution, which is the country's Climate Change Plan and its contributions to the global efforts to reduce greenhouse gas emissions, and outlines directions for low-carbon transformation until 2030, taking into account the interests of national priorities and the Sustainable Development Goals. Three national communications on the UN Framework Convention on Climate Change have been developed. The third national communication covers such issues as vulnerability and adaptation, climate change mitigation analysis and other issues. The National Strategy for Adaptation to Climate Change of Tajikistan until 2030 emphasizes the extreme vulnerability of the energy sector of the country to climate change due to high dependence on hydropower (more than 98% of electricity in Tajikistan is generated by hydropower plants). Measures to reduce vulnerability and strengthen resilience to weather and climate risks are also identified in Tajikistan's National Disaster Management Strategy. Turkmenistan's updated National Strategy on Climate Change, adopted in 2019, provides for «prioritizing the development of high-tech industries, creating conditions for the development of a «green economy» as a basic element of the functioning of the country's essential infrastructure». The priority sectors for adaptation to climate change in Turkmenistan are public health, agriculture and water management, the coastal zone of the Caspian Sea, natural ecosystems. Uzbekistan approved a Strategy for the transition to a «green economy» for 2019-2030, one of the main objectives of which is to improve the energy efficiency of the economy and the rational use of natural resources. A special emphasis in climate change adaptation measures is placed on particularly vulnerable sectors of the country's economy, especially agriculture, and mitigation of the disaster of the Aral Sea, which served as a climate-regulating body of water and mitigated drastic weather fluctuations throughout the whole region, by increasing the area of forest plantations on the Uzbek part of the dry bed of the Aral Sea and creating a «green belt» around the nearby major cities.

In general, the countries of the sub-region are doing important work in this direction, but it is advisable to develop a unified regional strategy or plan for adaptation to climate change. In 2016, the World Bank launched the Climate Adaptation and Mitigation Program for the Aral Sea Basin (CAMP4ASB), the regional component of which is implemented by the Executive Committee of IFAS (EC IFAS).[8] To implement further joint actions on adaptation to climate change, including thr measures for adaptation of the most vulnerable sectors: water management and agriculture, drinking water supply, energy, biodiversity, forest, pasture and mountain ecosystems the ASBP-4 includes two areas: development of a regional action plan on adaptation to climate change (2.1.1.) and dissemination of the best agricultural practices adapted to climate change (2.1.2.). A common understanding and aspiration of the countries to address climate issues is embedded in the REP4SD CA. In the Roadmap to it the development of the Regional Climate Change Adaptation Strategy as an umbrella program, which overlaps with all other priorities, is identified as a priority task.

[8] https://ecifas-tj.org/camp4asb/

Common priority sectors and areas of adaptation include agriculture (diversification and innovation), energy (mainstreaming of renewable energy sources, including development of hydropower, wind and solar energy), water management (improvement of water resource management and significantly improved water use efficiency in all sectors of economy, mainstreaming of water-saving technologies), ecosystems (expansion of forest plantations) and health care (measures to improve overall sanitary and epidemiological situation in human settlements and to prevent the spread of water-borne infectious diseases as a result of increased extreme weather events).

Central Asian countries are historically prone to natural disasters, so they are stepping up efforts to monitor, forecast and early warning of natural disasters, including through the implementation of the Sendai Framework for Disaster Risk Reduction and ASBP-4, which includes regional activities to reduce disaster risks associated with floods, mudflows and droughts in the Aral Sea Basin (Project 2.11).

RURAL DEVELOPMENT

Despite urbanization trends, the share of rural population in the CA remains high (56.2%). High rate of employment of economically active population in agriculture is especially noted within the Aral Sea Basin (60% - Tajikistan, 26% - Kyrgyzstan, 26% - Uzbekistan, 14.3% - Kazakhstan).[9] Therefore, development of rural areas and creation of favorable living conditions in rural areas are among the priorities of all countries of the sub-region.

ACCESS TO WATER SUPPLY IN RURAL AREAS

Within the framework of the SDGs, the CA countries have made commitments aimed at improving the living conditions and well-being of citizens in the rural areas. In comparison to 2010, access of rural population to improved drinking water supply services increased in all countries of the sub-region: from 90% to 94% - in Kazakhstan, from 81% to 90% - in Kyrgyzstan, from 65% to 80% - in Tajikistan, from 92% to 100% - in Turkmenistan, from 93% to 96% - in Uzbekistan.[10] But, as noted above, to ensure 100% access of rural population to safe and sustainable sources of drinking water, all countries should implement programs to improve water supply services in the rural areas.

In the Dushanbe Declaration of the 20th anniversary of the SCO, adopted on September 17, 2021, the member states, including most of the Central Asian countries (the president of Turkmenistan participated in the event as a honorary guest), noted the importance of addressing the gap in access to economic, social and other benefits between the population in urban centers and remote and rural areas of the countries. To achieve these goals, they will encourage the development of regions, remote and hard-to-reach areas, and countryside, using achievements and best practices, including in the field of digital technologies and innovative developments. In this regard, the importance of practical implementation of agreements on the development of remote and rural areas in the digital age was emphasized.

EFFICIENCY OF WATER USE IN IRRIGATED AGRICULTURE

Increasing water use efficiency is one of the key measures to address water scarcity. According to the FAO for SDG indicator 6.4.1, from 2015 to 2018, water use efficiency worldwide increased by 10%, from \$17.30/m^3 to \$19/m^3. As of 2018, CA had one of the lowest water use efficiency rates (\$2.5/m^3).[11] The figures for the countries of the sub-region range from \$0.86/m^3 in Kyrgyzstan to \$7.2/m^3 in Kazakhstan.

Water use efficiency, in USD/m^3, 2018.
(SDG indicator 6.4.1.)

KZ	KG	TM	TJ	UZ	Region	World
7.20	0.86	1.53	0.91	1.42	2.5	19.01

Source: FAO, 2021 r. www.fao.org/sustainable-development-goals/indicators/641/en/

[9] OECD/SIC ICWC (2020) Diagnostic report on the state of water resources.

[10] Data from the UNICEF and WMO joint monitoring program for 2020. https://washdata.org/

[11] FAO and UN Water. 2021. Progress on change in water-use efficiency. Global status and acceleration needs for SDG indicator 6.4.1, 2021. Rome. https://doi.org/10.4060/cb6413en
www.fao.org/sustainable-development-goals/indicators/641/en/
https://unstats.un.org/sdgs/files/report/2021/secretary-general-sdg-report-2021--Statistical-Annex.pdf

Low indicators of water use efficiency in CA countries are related to the fact that a significant part of water in the sub-region is used in agriculture, which has much lower water use efficiency in comparison with other production sectors. Therefore, improving water use efficiency in agriculture is a key factor for the countries of the sub-region.

The process of crop diversification and increasing the share of less water-intensive crops is underway in the sub-region. The Government of Kazakhstan, aiming to diversify crop production, is supporting and encouraging the cultivation of oilseeds by providing subsidies to farmers for their cultivation, resulting in less interest in the cultivation of wheat and other grain crops.[12] Uzbekistan is also reducing cotton cultivation in favor of grain and horticultural crops.

The surface irrigation with low water use ratio (0.40-0.55) dominates in CA countries, but in recent years drip, sprinkler and other water-saving irrigation technologies are developing. According to the Concept of Kazakhstan's transition to «green economy», by 2030 20%-30% of areas under rice and cotton should be gradually transferred to cultivation of less water-intensive crops. In addition, drip irrigation and other modern water-saving technologies will be introduced on 15% of irrigated land. Digitalization of the water sector is planned, through automated distribution and transportation water overspending will be reduced by 1.2 km^3 annually, roadmaps will be developed for introduction of water-saving technologies in irrigated areas until 2025, the issue of gradual reduction of areas sown to moisture loving crops - cotton, rice is worked out. The State Irrigation Development Program of the Kyrgyz Republic for 2017-2026 provides for the construction of irrigation infrastructure for reliable supply of irrigated lands with water. This will improve the socio-economic situation and ensure sustainable development, as well as contribute to addressing food security and poverty alleviation issues. In recent years, Turkmenistan has paid great attention to the development of water-saving technologies and is actively modernizing the existing irrigation systems for crop cultivation. Experimental fields are also being arranged, where conditions are created to organize and conduct research on the effectiveness of different water-saving irrigation systems of drip irrigation, artificial sprinkling and advanced surface irrigation in the cultivation of crops. According to the Strategy for water resources management and development of irrigation sector in Uzbekistan for 2021-2023, it is planned to bring water-saving irrigation technologies from 308 thousand hectares to 1.1 million hectares, including drip irrigation technologies from 121 thousand to 822 thousand hectares. In 2021 water-saving technologies were introduced on 511 thousand hectares, including 194 thousand hectares - drip irrigation, 10.8 thousand hectares - sprinkler irrigation, 200 thousand hectares - laser leveling. As a result, 15% of irrigated land of the country is covered by water-saving technologies. The future belongs to economically accessible water-saving, energy-saving and soil-protective innovative irrigation technologies.

[12] APK-Inform (2019) Agrodosye:Kazakhstan www.apk-inform.com/ru/exclusive/file/1089362


ҲАВАСӢ СТРАТЕГИИ МО БА ДАСТ ОВАРДАНИ
ИСТИҚЛОЛИЯТИ ЭНЕРГЕТИКИИ КИШВАР
ЭМОМАЛӢ РАҲМОН

COOPERATION

INTERNATIONAL WATER COOPERATION

The Central Asian countries intensively use the leverages of multilateral diplomacy, including cooperation within the UN. All countries of the region have raised water issues in their speeches and presentations at the UN General Assembly.[13] In 2007, at the suggestion of the five Central Asian countries, the UN Security Council established the UN Regional Center for Preventive Diplomacy for Central Asia in Ashgabat to respond to existing and potential threats, including environmental degradation. Kazakhstan, Turkmenistan and Uzbekistan are Parties to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes and actively cooperate within the framework of this global instrument. For the first time in the post-Soviet space, the 8th session of the Meeting of the Parties to the Water Convention was held in Nur-Sultan in 2018 and Kazakhstan assumed the 3-year chairmanship. Tajikistan initiated a number of global water initiatives, including the announcement of the «International Decade of Action «Water for Sustainable Development» in 2018-2028. Turkmenistan initiated the establishment of the UN Special Programme for the Aral Sea Basin. In Uzbekistan, the Multi-Partner Trust Fund on Human Security for the Aral Sea Region was established under the auspices of the UN to create a single platform for international cooperation and fundraising of the donor community to improve the environmental and socio-economic situation in the Aral Sea region in Uzbekistan, as well as to promote joint efforts to achieve the SDGs.

Resolutions of the UN General Assembly on the problems of the Aral Sea Basin were adopted, including A/RES/63/133 of December 11, 2008. «Granting the International Fund for saving the Aral Sea the observer status in the General Assembly»; on cooperation between the UN and IFAS (A/RES/72/273 of April 12, 2018, A/RES/73/297 of May 28, 2019, A/RES/75/266 of March 3, 2021); A/RES/75/278 of May 18, 2021 - «Declaration of the Aral Sea region as a zone of environmental innovations and technologies».

Water issues are on the agenda of consultative meetings of the heads of the CA states, which have been held regularly since 2018, and are also discussed at the SCO meetings.

There are more than 260 river basins shared by two or more countries, and 158 (60%) of them lack cooperation mechanisms. According to 2017 and 2020 data, 24 of 153 countries and territories with shared rivers, lakes, and aquifers have 100% of their shared water body areas covered by operational arrangements and 22 countries and territories have more than 70%.[14] The global figure for the proportion of transboundary basin area for which there is a functioning cooperation mechanism (SDG 6.5.2) is 58. Meanwhile, **100% of the area of transboundary rivers in Kazakhstan and Uzbekistan, 66% in Turkmenistan and 30% in Kyrgyzstan** is covered by an effective cooperation mechanism, i.e., a joint body, a joint mechanism or a commission on bilateral and multilateral cooperation, including water quality issues; there is regular (at least annual) formal communication between the riparian countries in the form of meetings (on political or technical level); and working

[13] Ziganshina D.R., Galustyan A.G., Abasova D.K. Water issues in the speeches of the countries of Central Asia at the UN General Assembly 1992 to 2020. ICWC Bulletin #86 p/ 44-63. http://cawater-info.net/library/rus/icwc/86-ru.pdf

[14] UN Secretary-General Report on «Pogress towards the Sustainable Development Goals». E/2021/58. 2021. https://unstats.un.org/sdgs/files/report/2021/secretary-general-sdg-report-2021--RU.pdf

groups on water management issues have been established between the countries at the governmental level; common goals, a common strategy, a joint or coordinated management plan and an action plan were agreed; and there is a regular (at least once a year) exchange of data and information.

Interstate water cooperation: 30 years of Interstate Commission for Water Coordination (ICWC). Central Asian countries in the first months of independence signed the agreement «On cooperation in joint management of use and protection of interstate water resources» (Almaty, 1992) and established ICWC of Central Asia, which ensures conflict-free management of water resources from interstate sources. Thanks to its activities, it was possible to create a system of interaction and decision-making support, which includes annual planning, monitoring and operational management of river flow; information and data exchange; joint regional projects and research; joint training; operational cooperation in low-water and flood conditions and a system of analytical reports.

All this work is aimed at creating common understanding of existing problematic issues and, most importantly, a common vision of their solution. Difficulties in ICWC activity are related to the need to meet water requirements for irrigated agriculture, hydropower and ecosystems in the absence of decisions agreed by all countries, unreliable flow forecasts, lack of proper water stock-taking and information exchange, as well as effective mechanisms for control over decision implementation.

Bilateral diplomacy has evolved from cooperation under extreme conditions to systematic work on a set of issues. The birth of bilateral diplomacy and contacts took place under extreme water years in the lower reaches between Turkmenistan and Uzbekistan (1996). An effective mechanism of interaction between Kyrgyzstan and Kazakhstan on the Chu and Talas Rivers was developed (2000). Bilateral cooperation on water issues has intensified in recent years. In 2017, Kyrgyzstan and Uzbekistan agreed on the interstate use of the Orto-Tokoi (Kasansai) reservoir in Ala-Buka district of Jalal-Abad region of the Kyrgyz Republic, in 2018 Tajikistan and Uzbekistan came to an agreement on cooperation to ensure the operation of the Farkhad dam, negotiations on signing an agreement between Kazakhstan and Uzbekistan on water issues are ongoing. Bilateral working groups and joint commissions on water issues have also been established and operated between Kazakhstan and Uzbekistan, Tajikistan and Uzbekistan, Kyrgyzstan and Uzbekistan, Turkmenistan and Uzbekistan.

Priorities for cooperation on water, energy, and environmental issues have been repeatedly voiced by the heads of states at high-level meetings. The President of Kazakhstan emphasized issues related to drying up of the Aral Sea, the need for more accurate water measurement, digitalization and automation, and the creation of a water and energy consortium. The President of Kyrgyzstan urged to consider interests of hydropower in the context of regional cooperation, to compensate costs of water accumulation upstream, to revise water allocation limits and to reform IFAS. The President of Turkmenistan called for developing water diplomacy and adopting a special UN program for the Aral Sea basin countries and singling out the Aral Sea problem as a separate area of the Organization's activity. The President of Tajikistan emphasized a need for better adaptation to climate change and addressing retreat of glaciers, and proposed to work actively on the rehabilitation of water bodies, economic mechanisms for water use, new technologies for water conservation and accounting, as well as providing opportunities for regional economic integration. He also proposed to jointly use water from the Sarez Lake for drinking water supply. The President of Uzbekistan made initiatives related to

transferring the Aral Sea (Priaralie) region zone to ecological innovation zone, intensification of afforestation on the dry seabed, creation of protected areas there, as well as work on the regional water conservation program and investing in interdisciplinary research and scientific cooperation.

During the Almaty IFAS Summit the Heads of Central Asian states in the Joint Statement expressed readiness to improve the organizational structure and legal framework of IFAS. Recognizing the significant contribution of IFAS to cooperation between the countries, the Heads of States repeatedly emphasized the importance of improving the organizational structure and legal framework of the Fund, taking into account the interests and participation of all Central Asian states.[15]

In this regard, the IFAS is working to improve its organizational structure and legal framework. In 2018, during the Turkmenistan chairmanship in IFAS (2017-2019) the regional Working Group on improving the organizational structure and legal framework of IFAS was formed, which continued its activities under the chairmanship of the Republic of Tajikistan in IFAS (2020-2022). As of February 2022, 6 meetings have been held.

IMPLEMENTATION OF INTEGRATED WATER RESOURCE MANAGEMENT

All CA countries have laid the **foundation for implementation of integrated water resource management (IWRM) principles** in their national legislations. The relevant water codes have been adopted in Kazakhstan (2003), Turkmenistan (2004, 2016), Kyrgyzstan (2005), Tajikistan (2000, 2020), the Law on Water and Water Use was amended and the draft of a new Water Code is under active work in Uzbekistan.

However, the **extent of actual implementation of IWRM in Central Asian countries is not at a sufficiently high level.** The countries of the sub-region provided data on the SDG indicator 6.5.1, which assesses the extent of IWRM implementation on the basis of four components: enabling environment, institutions and participation, management tools and funding.[16] From the maximum value of 100 points: Kazakhstan (46), Tajikistan (46) and Uzbekistan (48) showed a moderately low extent of implementation, indicators of Kyrgyzstan are close to a low extent (31), Turkmenistan (64) is classified as a country with a moderately high degree of IWRM implementation.

Extent of IWRM implementation in the CA countries
(SDG indicator 6.5.1)

	KZ	KG	TJ	TM	UZ
Enabling environment	37	27	49	63	41
Institutions and participation	51	30	43	48	53
Management tools	51	43	48	63	60
Funding	43	23	42	80	37
Total	46	31	46	64	48

Source: Country reports, 2020[17]

[15] Joint Communiqué of IFAS Heads of State (Turkmenbashi, August 24, 2018), Second Consultative Meeting of Central Asian Heads of State (Tashkent, November 29, 2019), Joint Statement of Heads of State (Turkmenbashi, August 6, 2021).

[16] http://iwrmdataportal.unepdhi.org/
https://sdg6data.org/country-or-area/

WATER-ENERGY-FOOD-ENVIRONMENT NEXUS

Ensuring water, food, energy, and environmental security is among the key priorities of all CA countries. Achieving each aspect of security requires coordinated and intersectoral approaches in the use of water, energy, and land resources both within and between the countries.

The main water problems in the sub-region are related to flow regulation to meet the competing needs of irrigation, energy, and ecosystems, which requires reconciling different sectoral interests (the nexus between water, energy, food, and the environment) and finding economic mechanisms for sharing costs and benefits. The agricultural sector, including irrigated agriculture, continues to play a key role in the economies of the countries of the region, with the highest share of GDP in Tajikistan (21.1%), Uzbekistan (17.3%) and Kyrgyzstan (12.9% and up to 22.3% in the Aral Sea Basin areas). Water resources are also important for power generation: Tajikistan and Kyrgyzstan cover about 90% of their domestic energy needs through hydropower and export it to other countries. Agricultural and energy systems in CA, heavily dependent on water resources, are at increased risk as a result of vulnerability to climate change. All these factors are of transboundary importance, so cross-sectoral cooperation and collaboration among the basin countries is critical both to increase economic and social benefits and to mitigate the negative effects of resource, infrastructure, and climate dependence.

MEANS AND TOOLS

LAW AND POLICY

The CA countries are constantly working to improve national water policies and legislation. In Kazakhstan, the Water Resource Management Program for 2020-2030 is being developed, which includes introduction of IWRM in all river basins; improvement of water accounting system; increase in equitable water distribution and stability of water supply; significant increase in usage of return and discharge water; automation of the river basin management, restoration of sprinkling irrigation in the northern and central zones of the country; strengthening of cooperation and interaction with neighboring countries for mutual benefits from more efficient water industry management. In Kyrgyzstan, work is underway to develop a National Water Strategy. In Tajikistan, the draft National Water Strategy until 2030 and the draft basin plans for water resource management in major river basins are under discussion. The Water Sector Development Concept for 2020-2030 and the Water Resource Management and Irrigation Sector Development Strategy for Uzbekistan for 2021-2023 provide for infrastructural, political, institutional measures to ensure sustainable water resource management and irrigation sector modernization.

At the interstate level, there is also an extensive legal and regulatory framework for cooperation on water use and protection among the CA countries. Existing agreements have played a positive role by laying the foundation for conflict-free regulation of water use issues in the sub-region, but could not solve all problems. The legal framework for interstate cooperation should be strengthened by reaching agreements among the countries on mutually beneficial use of water resources in the Amudarya and Syrdarya river basins, taking into account national interests of the CA countries and norms of international law to meet needs of aquatic ecosystems, regulate water quality, establish efficient data and information exchange, monitoring and assessment, as well as coordinate mechanisms for dispute prevention and resolution.

EFFECTIVE INSTITUTIONS AND INVOLVEMENT OF ALL STAKEHOLDERS

Effective water management institutions in Central Asian countries are in the formation phase. The water resources management system in Kazakhstan (currently the Ministry of Ecology, Geology and Natural Resources) was repeatedly reorganized and transferred under the jurisdiction of different ministries. In Kyrgyzstan, as a result of structural reforms in public administration, the Water Resources Service was established under the Ministry of Agriculture in 2021. In the course of reforms in Tajikistan the political and management functions were assigned to the Ministry of Energy and Water Resources, while the Agency of Land Reclamation and Irrigation under the Government is responsible for production and economic functions. In 2019 the State Committee for Water Management of Turkmenistan was established. The Ministry of Water Management of the Republic of Uzbekistan was established in 2018.

Establishment of **national councils or other mechanism for coordination** and involvement of all stakeholders in water resource management, use and protection is envisaged in all countries. In order to implement the hydrographic principle of water resource management, the **basin organizations** have been established or are in the process of establishment in the countries. Basin councils function quite successfully in Kazakhstan as consultative and advisory bodies and a mechanism for involvement of all stakeholders. The process of establishing basin councils in Tajikistan, particularly in the basin zones of the Syrdarya, Zeravshan, Panj, Vakhsh and Kafirnigan Rivers has started.

Water users organizations are water management institutions at the local level: associations of water users/water consumers in Kyrgyzstan, Tajikistan and Uzbekistan, agricultural production cooperative of water users in Kazakhstan, association of peasant (dehkan) farms in Turkmenistan. The countries experience difficulties in establishing the effective functioning of these structures, which are new to the sub-region and which, on the one hand, should take over the management of the intra-farm water management system and, on the other hand, ensure participation of water users in the decision-making process. Both tasks meet with difficulties of organizational, legal and financial nature.

Further improvement of institutional structures for water resource management in CA countries is included in the ASBP-4 priority directions (Project 4.2).

FUNDING

Funding of the water sector is one of the problematic issues for the CA countries. The current state of funding in water resource development and management is assessed by the countries themselves as low (Kyrgyzstan), moderately low (Kazakhstan, Tajikistan, Uzbekistan) and high (Turkmenistan).[17] The water sector is funded mainly at the expense of the national budget, but 40-80% of actual needs of the sector are covered. Significant physical and moral deterioration of water infrastructure is observed in all countries due to reduction of funding. According to the State Program of Agro-industrial Complex Development of the Republic of Kazakhstan for 2017-2021, about 180 billion tenge from the national budget and international financial institutions were allocated and disbursed for reconstruction and new construction of hydraulic structures in Kazakhstan for the period from 2017 to 2021. Within the framework of the State Irrigation Development Program of Kyrgyzstan for 2017-2026 it is planned for the first time to carry out repair works of irrigation systems to the amount of 1 billion soms. In Tajikistan, the volume of investments in land reclamation and irrigation has decreased 16 times in 30 years and is 0.4% of the national budget (10 million US dollars), while in the late 1980s it was 12.4% of the total budget of the country.[18] In Uzbekistan, the amount of financing of the water sector is 70-80% of the amount actually needed for its sustainable functioning.[19]

According to CAREC estimates, a minimum of 20-25 billion US Dollars[20] is required to modernize the water infrastructure in Central Asia. EDB experts (2021) estimate the **investment needs** in water and energy infrastructure in CA at a minimum of 90 billion US Dollars (about 9 billion US Dollars a year, which is much higher than the current investment trend in the region) for 2021-2030. In the structure of current investments of international financial institutions in the water and energy sector of CA, energy projects prevail over water resource management and water supply projects.[21]

[17] IWRM Data Portal. 2021, http://iwrmdataportal.unepdhi.org/test/countrydatabase

[18] Report of Tajikistan on SDG indicator 6.5.1. IWRM Data Portal. 2021 , http://iwrmdataportal.unepdhi.org/test/countrydatabase

[19] Report of Uzbekistan on SDG indicator 6.5.1. IWRM Data Portal. 2021., http://iwrmdataportal.unepdhi.org/test/countrydatabase

[20] I. Abdullayev, Panel discussion «From integrated water resource management on the Syrdarya and Amudarya rivers to the concept of smart regional investment. The third webinar of the program «Water as a driving force of sustainable restoration». https://bluepeace-centralasia.ch/upload/iblock/59d/10_Iskandar%20Abdullaev_notes.docx

[21] E. Vinokurov, A. Akhunbaev, N. Usmanov, T. Tsukarev, T. Sarsembekov (2021) Investment in Water and Energy Sector of Central Asia. Presentations and Working Papers 21/3. Almaty, Moscow: Eurasian Development Bank.

Analysts believe that relying on existing structures for cooperation (IFAS ICWC, ICSD), SCO, etc.), the CA countries **can start developing joint regional investment projects aimed at addressing regional problems** in water, energy and climate sectors, including in the framework of ASBP-4. These concrete steps will stimulate mobilization of foreign finance, in particular of «green» and climate finance.[22]

SCIENCE AND EDUCATION

According to assessments of experts, the general state of higher **education** in CA countries is characterized by an increase in the number of universities amid lower qualification requirements for scientific-pedagogical personnel and training programs and fragmentation of educational systems. More purposeful efforts are required to train qualified specialists in the water sector taking into account imperatives and prospects of the sector development.[23] With this in mind, the "Water and Education" project was included in ASBP-4.

Science is the most important provider of technical solutions in the countries of the sub-region and requires raising additional financial resources. Insufficient investment in water research reflects the general trend of low investment in research and scientific projects in general.

Over the years of independence, the countries made a lot of efforts in **scientific and technical cooperation on water and environmental issues at the interstate level,** however, some problems still remain. For example, lack of funding and coordination makes it difficult to develop and implement long-term integrated research programs involving all riparian countries and specialists from various fields. In order to implement the need to strengthen scientific cooperation and conduct joint interdisciplinary research on the basis of SIC ICWC and SICSD[24] noted by the President of Uzbekistan, an Expert Platform for advanced research was established in 2019 in the field of water security and sustainable development. The experts of the Platform carry out joint work in such areas as diagnostics of water resources in Central Asia, assessment of presentations and reports made by the countries of Eastern Europe, Caucasus and Central Asia at the UN GA from 1992 to 2020, financing of water sector, water, energy, food, and ecosystems nexus.[25] Support to deepening cooperation between the countries in education and «academic diplomacy» and research is provided at the highest level.[26]

DATA EXCHANGE, TECHNOLOGY AND INNOVATION

The need for developing the information base and exchange of information on scientific and technological progress in the water sector at the regional level is noted in a number of documents, including the Almaty Agreement of 1992[27] and the Regulation on ICWC.[28] Based on these agreements, the regional information system and portal of knowledge on water resources and environment in Central Asia (cawater-info.net) were established. There is some progress in collection, processing and

[22] The third webinar of the «Water as a Driver of Sustainable Recovery» program outlined the economic foundations of regional cooperation. http://bluepeace-centralasia.ch/ru/materials/the-third-webinar-water-as-a-driver-of-sustainable-recovery/

[23] The review of the current state of scientific, educational and research potential in the field of teaching in relation to the water sector of Central Asia was carried out in 2018 by a group of national experts and specialists of the WB under the leadership of Prof. S.R. Ibatullin.

[24] At the Summit of the Heads of States, founders of the IFAS in Turkmenbashi on August 24, 2018 the President of Uzbekistan has identified the need to strengthen scientific cooperation and conduct joint interdisciplinary research, including at the platforms of SIC ICWC and SIC ICSD.

[25] http://cawater-info.net/expert-platform/index.htm

[26] Joint Statement on the Consultative Meeting of the Heads of States of Central Asia (Turkmenbashi, August 6, 2021).

[27] Agreement between the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Uzbekistan, the Republic of Tajikistan, and Turkmenistan «On cooperation in the joint management of use and protection of water resources of interstate sources» (Almaty, February 1992).

[28] Item 2.6. Regulation on the Interstate Commission for Water Coordination in Central Asia (Tashkent, December 1992).

dissemination of information on transboundary waters, however, **further work is needed to improve integrity and transparency of data and information.** In particular, there is a need to enhance the capacity and increase funding for proper information collection and management at national and regional levels (monitoring networks, human resources), to address the issue of legal and administrative obstacles to information exchange at regional level, to build confidence in information sources and organizations that provide and summarize them. ASBP-4 contains relevant project proposals, including joint works on introduction of automated water management systems in the Syrdarya river basin (Project 1.6 for 10 million US Dollars) and on improvement of water accounting and monitoring systems in the Amudarya and Syrdarya river basins (Project 1.7 for 18 million US Dollars).

Mainstreaming of innovative and information-communication technologies (ICT) in water management is an important aspect noted in the water sector development strategies of the countries. In 2020 Kazakhstan started digitalization of the country's major canals.[29] In Tajikistan the National Water Information System (wis.tj) was established and operated by the Ministry of Energy and Water Resources for data on water resources and the Agency for Land Reclamation and Irrigation under the Government of the Republic of Tajikistan. In Kyrgyzstan the Water Resources Service under the Ministry of Agriculture is working on the Water Information System. In recent years, equipment for automation of hydraulic structures has been widely installed on rivers and canals in Turkmenistan. In Uzbekistan the Ministry of Water Management in cooperation with the Korea International Cooperation Agency (KOICA) implements the project on mainstreaming ICT in the water sector. In cooperation with the German Society for International Cooperation (GIZ) the water cadaster was digitalized.

Application of remote sensing methods in the water sector, which significantly increase transparency and trust between the countries deserves special attention. In 2017, SIC ICWC in partnership with the University of Würzburg launched a satellite monitoring tool WUEMoCA (Water Use Efficiency Monitoring in Central Asia), which allows comparing long-term data on changes in water availability, cropping patterns, changes in the efficiency factor.[30] Remote sensing methods are used to monitor the dynamics of changes in the water surface area and wetlands of the Western and Eastern parts of the Aral Sea and lake systems of the Amudarya River delta.[31] Since 2014, Kazakhstan launched KazEOSat-1 and KazEOSat-2 remote sensing satellites into orbit. Changes in the flow of rivers are tracked, agricultural production is monitored (time of sowing and harvesting of crops on cultivated land, condition, weed growth level - these data are the most reliable and based on them yield forecasts are given). On the basis of geoservice the floods[32] situation is monitoring daily from space. The Central Asian Institute for Applied Geosciences (CAIAG) has created an open-source GeoNode platform for geospatial data and map exchange.[33]

[29] https://bluescreen.kz/news/cifrovizacija-vodnyh-kanalov-v-kazahstane/

[30] http://wuemoca.net

[31] http://www.cawater-info.net/aral/data/monitoringamu.htm

[32] https://www.gharysh.kz/kartografiya/

[33] http://geodata.caiag.kg/

WATER SECURITY AND SUSTAINABLE DEVELOPMENT IN CENTRAL ASIA: CHALLENGES FOR THE FUTURE

Every year water volume per capita in CA will decrease due to population growth, economic development and negative impact of climate change, if countries do not introduce advanced approaches to water resource management at national level and mutually beneficial mechanisms on integrated and rational water resources use at interstate level.

Recognizing the importance of the challenges facing the sub-region in ensuring water security for peace and development, the CA countries express their readiness to take further actions and consider it necessary to be guided by the following **principles:**

Solidarity and collective responsibility of the states as the foundation on which regional water cooperation was born 30 years ago;

Trust is the basis for strengthening regional cooperation;

Advanced knowledge, digitalization and innovative development as key factors of medium and long-term economic growth and sustainable development;

Reasonable balance between the human and ecosystem needs as a reminder of the social and environmental effects of unsustainable use of natural resources in the sub-region.

During the discussions at the Central Asian Sub-regional Preparatory Conference on October 19-20, 2021 in Dushanbe, Tajikistan and follow-up consultations, the countries of Central Asia emphasized the importance of the following **objectives for the future in the 6 priority thematic areas:**

1. **Ensuring universal access to safe water and adequate sanitation to respond to contemporary challenges, including COVID-19 (SDG 1.4, 6.1, 6.2, 6.3, 6.b).**

   - Attracting investment, rehabilitation of old and construction of new drinking water supply and sanitation systems, especially in rural areas, including through public-private partnerships;

   - Improving the legislation of countries to strengthen intersectoral coordination, introducing an investment-attractive tax policy and a socially oriented tariff system to increase the level of supply of population with drinking water and improve its quality;

   - Increase technical equipment of the sector, including providing all consumers with gauges, use of new technologies, development of treated waste water reuse, implementation of digitalization and informatization;

   - Development of education, science, invention, professional training, as well as formation of value and careful attitude to water among population;

   - Ensuring access to safe water, improving water supply, sanitation and hygiene services to fight viruses and preserve the health and well-being of millions of people. The COVID-19 pandemic demonstrated the critical importance of water in preventing and containing disease.

2. **Transboundary water cooperation for sustainable development (SDGs 6.5, 6.a, 9.1, 16.3, 16.6, 16.7, 17.16, 17.6).**

- Joint search of mutually beneficial solutions, including beyond the water sector, to ensure integrated use and protection of water resources taking into account social, environmental and economic value of water and its systemic nexus with energy, food, and ecosystem health;

- Supporting processes of dialogue and cooperation through the collection and exchange of reliable data and robust information, including through existing platforms and institutions;

- Strengthening the educational, scientific and expert base for transboundary water cooperation, including by creating enabling environment for training and retraining of highly qualified personnel, strengthening partnerships between educational and scientific institutions, improving curricula and teaching methods, and integrating science into decision-making processes;

- Developing coordinated response procedures for natural disasters and water-related emergencies.

- Involvement of youth in transboundary water cooperation processes.

3. **Effective water resource management to increase agricultural production and employment in rural areas (SDGs 2.3, 2.4, 2.6, 5.5, 5.a, 6.4, 6.5, 6.b, 8.4, 12.2, 16.6, 16.7, 17.18)**

- Implementation of integrated water resource management principles and systemic nexus approaches at all stages of water resource management;

- Widespread implementation of modern resource-saving technologies, automated control and accounting systems, modern data collection and exchange systems, including remote sensing methods;

- Capacity building and incentives for implementation of advanced water-saving technologies (drip irrigation, sprinkling, etc.), as well as strengthening of regional cooperation on knowledge and experience exchange in water saving, creation of conditions for development of innovation and interdisciplinary approach;

- Rehabilitation, modernization and development of water infrastructure to improve irrigation efficiency at all levels;

- Implementation of differentiated economic mechanisms of water use and subsidies in irrigated agriculture, development of public-private partnership and public participation in water resource management system;

- Ensuring integrated basin planning and adaptive water resource management to improve agricultural production and resilience to climate change, especially in rural areas and communities;

- Supporting the activities of «champion farmers», many of whom are women, to increase agricultural production in a sustainable manner.

4. **Water, energy, food and environment nexus (SDGs 2.3, 2.4, 6.6, 7.1, 7.2, 7.a, 15.1, 15.3, 15.4, 15.5, 17.16).**

- Formation and implementation of coordinated regional policies and measures in water, energy, environmental and socio-economic areas;
- Enabling environment and platforms for discussing the water-energy-food-environment nexus at the national and regional levels with involvement of mass media, regional and international organizations;
- Proper consideration in planning and management processes of water, agriculture, energy, trade, health, environment and climate change impacts;
- Increasing the sustainability of application of the water-energy-food-environment nexus approach through greater involvement of key stakeholders in countries in its implementation;
- Promoting scientific and practical research, the results of which will help to improve the socio-economic situation in the countries through practical recommendations on systemic nexus for sustainable food production, energy, water saving, transboundary water management and ecosystems preservation.

5. **Adaptation to climate change and reduction of water-related disaster risks (SDGs 1.5, 11.5, 11.b, 13.1, 13.3, 13.b).**

- Improvement of the environment, conservation and restoration of disturbed ecosystems, including glaciers, flow formation zones, river deltas and the dry bed of the Aral Sea, as well as reduction of negative effects of the climate change;
- Strengthening regional cooperation and coordination to share reliable data, robust information, experiences and actions aimed at adaptation to climate change and reduction of water-related disaster risks;
- Assessing water-related risks and climate vulnerability in order to develop practical recommendations, taking into account political, socio-economic and institutional aspects of their implementation;
- Rational use of water resources, including through the application of water-saving technologies and other adaptation measures;
- Implementation of climate investment mechanisms, i.e. preliminary calculation of costs for cases of impact of projected climate change on planned activities;
- Improvement of legal and regulatory framework for proper consideration of adaptation to climate change, promotion of active participation of CA countries in international agreements, greater public involvement in climate processes.

6. **Financing the water sector (SDGs 1.4, 2.a, 4.4, 8.4, 9.1, 9.5, 10.b, 17.1, 17.3, 17.6, 17.7, 17.7).**

- Raising additional funding to cover the costs of operation, maintenance and modernization of water infrastructure, including through public-private partnership mechanisms;
- Creating enabling environment for increasing the attractiveness of the water sector to private capital, including risk reduction, and lending;
- Increase investment in water education and science;
- development of cooperation for joint identification, selection and funding of sustainable projects of regional significance in the area of environmental management and climate change («smart regional investments»).

The above-mentioned tasks imply **coordinated work of CA countries:**

- At the strategic level, in terms of joint development, coordination, financing, implementation and monitoring of regional programs and strategies on adaptation to climate change, rational use of water resources and nexus of sectors and other priority issues;
- At the legislative level, in terms of strengthening exchange of experience with the aim of improving and harmonizing national legislations in the field of water resources and sustainable environmental management; in terms of creating conditions for attracting financing to the water sector;
- At the operational level, in terms of strengthening organizational structures and mechanisms for implementing national measures and joint regional programs; strengthening intersectoral coordination and data exchange;
- At the expert level, to strengthen exchange of experience and knowledge, as well as to improve skills of personnel in the sector through greater support to education, science and innovation;
- In terms of empowerment of women, youth and the public to participate in the planning and implementation of water-related decisions.

ANNEXES

ANNEX 1. FINAL DOCUMENT OF THE CENTRAL ASIAN SUB-REGIONAL PREPARATORY CONFERENCE FOR THE 9TH WORLD WATER FORUM «WATER SECURITY FOR PEACE AND DEVELOPMENT (October 19-20, 2021, Dushanbe, Tajikistan)

RESOLUTION

of participants of the Central Asian sub-regional Preparatory Conference for the 9th World Water Forum «Water Security for Peace and Development»

(19-20 October, 2021, Dushanbe)

We, the participants of the Central Asian Sub-regional Preparatory Conference for the 9th World Water Forum, representing governments, international and regional organizations, UN agencies, financial institutions, civil society and other stakeholders of the sub-region:

Considering the importance of preparing a coherent Central Asian agenda for the 9th World Water Forum, making a worthy contribution to this global event and to the UN Water Conference to be held in New York City on March 22-24, 2023;

bearing in mind the key role given to ensuring sustainable development, peace and security in the Central Asian sub-region, to efficient management of water, energy and other natural resources at all levels, developed water, energy, transport and other infrastructure to meet the growing challenges;

noting the transboundary nature of major watercourses in the sub-region, common socio-economic and environmental problems amid intensifying water scarcity, climate change effects, degradation of ecosystems and risks of water-related natural disasters;

recognizing the positive contribution to ensuring water security and cooperation in the sub-region, existing bilateral and multilateral agreements, regional organizations and advanced approaches in national legislations;

underlining the different level of economic development and reforms, the importance of improving the legal framework, information exchange, integration processes, as well as expanding and strengthening effective mechanisms of water cooperation and diplomacy, especially at transboundary level, including through measures to mitigate the Aral ecological disaster of planetary scale, adaptation to climate change and other new challenges, including COVID-19 pandemic;

emphasizing the importance of improving access to safe drinking water and sanitation for the population of the sub-region, which is an essential and necessary prerequisite for achieving the SDGs and the goals of the International Decade for Action «Water for Sustainable Development», 2018-2028;

stressing the importance of the agreements reached on the results of the Consultative Meeting of the Heads of States of Central Asia on August 6, 2021 in Turkmenbashi, Turkmenistan, especially on issues related to the IFAS activities, including the importance of ongoing work to improve the organizational structure and legal framework of the IFAS, taking into account the interests and participation of all Central Asian States;

noting the adoption by the IFAS Board on June 29, 2021 in Dushanbe, Republic of Tajikistan, of the Aral Sea Basin Program (ASBP-4), which is the basis for the governments of the sub-region countries, IFAS structural divisions and development partners to develop and implement projects aimed at improving water, environmental and socio-economic situation in the Aral Sea Basin;

having discussed in the context of existing and potential water problems and risks of the Central Asian sub-region the priorities of the 9th World Water Forum (water security and sanitation; cooperation; water for rural development; means and tools) requiring intensified actions to achieve the water-related goals and targets contained in the 2030 Agenda for Sustainable Development:

noted that:

- Not all people in Central Asia have access to safe drinking water and adequate sanitation, especially in rural and social areas. Supply with safe drinking water in sufficient quantity for everyone and reliable water disposal systems (sewerage, wastewater treatment), especially taking into account COVID-19 pandemic control, should become the highest priority issues in national development strategies and programs, basin water management plans;

- existing problems in the Aral Sea basin as well as new global and regional challenges require urgent adaptation response in the countries of the sub-region to achieve resilience to their negative impacts. Among these challenges amid population growth and increasing water consumption, the most alarming and requiring adequate measures are climate change causing intensive melting of glaciers and reduction of water reserves, deterioration of water quality, water disasters, degradation of irrigated lands, collector-drainage systems and ecosystems in general;

- Integrated Water Resource Management (IWRM) is an important tool for effective nexus of different types of water use, rational use of water resources and achievement of water, food, energy and environmental security. Central Asian countries are moving towards transition to IWRM and making efforts to implement it using successful experience and best practices of other countries and river basins. Full-scale implementation of IWRM principles, especially in drinking water supply, wastewater and sanitation in general, hydropower, industrial water supply and waste disposal, water conservation, land reclamation, development of water recreation, requires considerable human, financial and technical resources, legal regulation and appropriate institutional mechanisms;

- the use of water resources for "green" development can be stimulated by linking the economic, social and environmental aspects of water with the application of new financial and economic mechanisms, innovative technologies and infrastructure in all areas of its application in order to curb the increasing negative impact and pressure on water resources;

- rehabilitation and modernization of obsolete water infrastructure and water projects under construction on transboundary watercourses in the sub-region, implementation of water- and energy-saving technologies, automation and digitalization are important tasks for achieving sustainable development and efficient water resource management and provision of water services;

- improvement of water and land productivity should be considered as a priority direction of agricultural sector development;

- for effective transboundary water resource management, it is necessary to improve existing and develop new forms and tools of cooperation, strengthening dialogue, mutual understanding and responsible partnership;

- effective and coordinated implementation of ASBP-4 will make a worthy contribution to solving existing water, environmental and socio-economic problems in the countries of the region;

- improving the institutional structure and legal framework of IFAS will contribute to the creation of sustainable and effective regional institutions and mechanisms capable of adequately addressing existing problems and responding to new challenges and risks.

Participants of the conference, taking into account the above mentioned as well as other main aspects of the discussions at the plenary and thematic sessions, **address:**

- the governments of Central Asian countries to make additional efforts to improve institutional and legal mechanisms, attract and apply progressive technologies and innovative approaches in water and environmental management, increase financing of water-related measures, and strengthen water cooperation;

- financial institutions, international organizations, donor countries and other development partners to provide all possible financial, technical and technological support to Central Asian countries to achieve sustainable development, including through active participation in the implementation of ASBP-4;

- the representatives of private sector to assist in addressing water problems and introducing «green» technologies, including by introducing alternative energy sources and attracting investments, in particular through the mechanism of public-private partnership;

- the scientific/expert and civil societies to actively participate in discussions of water problems and generation of ideas, proposals to join efforts with governmental, private sectors and international organizations to address them.

Conference participants also:

- are supportive and ready to contribute to the international community's efforts to successfully prepare and hold the UN Water Conference in 2023 to make it a turning point for water issues at all levels;

- are calling upon all stakeholders to continue consultations in the preparatory process for the 9th World Water Forum and in other international formats;

- considering the unique platform of the 9th World Water Forum, are inviting the Organizing Committee to continue preparatory work in order to adequately represent Central Asia at the Forum and further contribute to addressing water problems in the sub-region;

- are appealing to the Executive Committee of the International Fund for saving the Aral Sea taking into account discussions at the conference and subsequent consultations with all stakeholders to finalize the draft position paper of the sub-region on priority themes of the 9th World Water Forum, presenting it as a side event at the Forum.

The conference participants express their appreciation to the Government of the Republic of Tajikistan for warm hospitality, and thank the Executive Committee of the International Fund for saving the Aral Sea, the Interstate Commission for Water Coordination, the Interstate Commission on Sustainable Development and other partners for organizing the conference at a high level and created conditions for fruitful work.

Adopted
October 20, 2021
Dushanbe, Republic of Tajikistan

ANNEX 2.
LIST OF PROJECT PROPOSALS FOR THE ARAL SEA BASIN ACTION PROGRAM (PBAM-4)[34]

Activity 1. Integrated water resources use

1.1. Maintaining an optimal regime of water-development projects operation for preserving and restoring aquatic ecosystems in the Syrdarya river delta

1.2. Modernization and rehabilitation of existing irrigation water structures to ensure rational use of water resources in the Aral Sea basin (including all projects proposed by countries for modernization and reconstruction)

1.3. Ensuring safety of dams and large hydraulic structures in Central Asia: capacity building and regional cooperation (exclude from the text of the project proposal the issues related to the development and conclusion of an interstate agreement)

1.4. Impact assessment of reservoir siltation in Central Asia on the efficiency of flow regulation and improvement of methodologies of integrated studies and forecast of the siltation process

1.5. «Improvement of reclamation state of irrigated lands in Amudarya and Syrdarya river basins» (project includes proposals of Nexus project and project proposals of countries in this area)

1.6. Introduction of automated systems of technological process management for water allocation, accounting and monitoring in the Syrdarya river basin. Creation of national water information systems as a basis for subsequent creation of regional information system

1.7. Improvement of systems for accounting and monitoring of water resources in the Amudarya and Syrdarya river basins

1.8. Modernization of reclamation pumping stations for improving reclamation state of lands in Kanibadam city and B. Gafurov district from the impact of the reservoir «Bakhri Tojik» and shore protection works on the shores of this reservoir

1.9. Rehabilitation and improvement of technical condition of reclamation facilities of interstate significance

1.10. Rehabilitation and development of small local water bodies in the Amudarya river delta

1.11. Implementation of advanced methods for specifying crop irrigation regimes

1.12. Introduction of water conservation and reuse technologies in water use sectors

1.13. Capacity building and strengthening of material and technical base of regional and national water management organizations

1.14. Water and education: educating for water conservation in Central Asian states

[34] Aral Sea Basin Program (ASBP-4), approved by a decision of the IFAS Board on June 29, 2021.
Full version https://ecifas-tj.org/wp-content/uploads/2021/08/ilovepdf_merged-1-1.pdf

Activity 2. Environment

2.1 Joint actions on adaptation to climate change, including measures on adaptation of the most vulnerable sectors: water and agriculture, drinking water, energy, biodiversity, forest, pasture and mountain ecosystems, consisting of two directions: development of a regional action plan on adaptation to climate change (2.1.1) and dissemination of best climate adapted agricultural practices (2.1.2)

2.2 Glaciological study and monitoring of glaciers in the Republic of Tajikistan

2.3 Regional program for protection of biological resources of Central Asia

2.4 Conservation and restoration of ecosystems in the Amudarya and Syrdarya river basins

2.5 Systematic reforestation in the Aral Sea region zone and on the dry bed of the Aral Sea

2.6 Integrated solid waste management

2.7 Development of a system for monitoring the state of the environment and water resources in the Aral Sea region and on the dry seabed

2.8 Environmentally sustainable land use and rural livelihoods, including prevention of desertification, soil degradation and salinization

2.9 Development of ecological innovation and technologies in the Aral Sea region zone

2.10 Improvement of water quality in rivers and reservoirs in accordance with international standards, pollution control and prevention, including from industrial wastes

2.11 Risk reduction of natural disasters associated with floods, mudflows and droughts in the Aral Sea Basin

2.12 Development of transboundary eco-corridors, regional networks of specially protected natural areas (SPNA) for biodiversity conservation

Activity 3. Socio-economic field

3.1. Provision of access to drinking water and sanitation for the Aral Sea Basin population

3.2. Increasing the quality of medical services

3.3. Increasing the productivity of irrigated lands and pastures

3.4. Developing ecotourism and enhancing tourism potential

3.5. Development of renewable energy sources and energy efficiency

3.6. Development of agricultural production and agribusiness

Activity 4. Improvement of the organizational and legal framework of IFAS

4.1. Improvement of the organizational and legal frameworks of IFAS

4.2. Improvement of institutional structures for water resources management in Central Asian countries at national level.

Executive Committee of the
International Fund for saving the Aral Sea:
Republic of Tajikistan, 734024,
Dushanbe, st. Aini, 48
E-mail: info@ecifas-tj.org
Web: www.ecifas-tj.org