UNRCCA
The United Nations Regional Centre for Preventive Diplomacy for Central Asia

OSCE

WATER YEARBOOK: CENTRAL ASIA AND AROUND THE GLOBE 2020

Tashkent 2021

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CENTRAL ASIA AND AROUND THE GLOBE

2020

Tashkent 2021

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Content

List of Abbreviations

ACN	Academic Community Network
ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
ALRI	Agency for Land Reclamation and Irrigation (Tajikistan)
ASB	Aral Sea Basin
ASBmm	Aral Sea Basin model
ASBP	Aral Sea Basin Program
AWC	Asia Water Council
BISA	Basin Irrigation System Administration
BWA	Basin Water Authority
BWO	Basin Water Organization
CA	Central Asia
CALPESD	Central Asian Leadership Program of Education for Sustainable Development
CAREC	Regional Environmental Centre for Central Asia
CDW	Collector-drainage water
CIS	Commonwealth of Independent States
CMC ICWC	Coordination Metrological Center of ICWC
CSTO	Collective Security Treaty Organization
CTWC	Chu-Talas Water Commission
DWRLR	Department for Water Resources and Land Reclamation at the Ministry of Agriculture, Food Industry and Land Reclamation (Kyrgyzstan)
EBRD	European Bank for Reconstruction and Development
EC IFAS	Executive Committee of IFAS
ECOSOC	UN Economic and Social Council
ED IFAS	Executive Directorate of IFAS
EECCA NWO	Eastern Europe, Caucasus, and Central Asia Network of Water Management Organizations
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System
GIZ	German Agency for International Cooperation (Gesellschaft für Internationale Zusammenarbeit)
GWP	Global Water Partnership
ICID	International Commission on Irrigation and Drainage
ICSD	Interstate Commission for Sustainable Development of Central Asia
ICWC	Interstate Commission for Water Coordination of Central Asia
IFAD	International Fund for Agricultural Development
IFAS	International Fund for Saving the Aral Sea
IFCA	Investment Fund for Central Asia
INBO	International Network of Basin Organizations
IsDB	Islamic Development Bank
IUCN	International Union for Conservation of Nature
IWAC	International Water Assessment Center
IWMI	International Water Management Institute

IWRA	International Water Resources Association
IWRM	Integrated Water Resource Management
KR	Kyrgyz Republic
MAEP	Ministry of Agriculture and Environmental Protection (Turkmenistan)
MEGNR	Ministry of Ecology, Geology and Natural Resources (Kazakhstan)
MFA	Ministry of Foreign Affairs
MPHSTF	UN Multi-Partner Human Security Trust Fund for the Aral Sea region in Uzbekistan
MWM	Ministry of Water Management (Uzbekistan)
NASA	National Aeronautics and Space Administration
NHMS	National Hydrometeorological Services
NGO	Non-governmental organization
OECD	Organization for Economic Cooperation and Development
OIC	Organization of Islamic Cooperation
OPEC	Organization of the Petroleum Exporting Countries
OSCE	Organization for Security and Co-operation in Europe
RCH	Regional Center of Hydrology
REAP	Regional Environmental Action Plan for Central Asia
REP4SD-CA	Regional Environmental Program for Sustainable Development in Central Asia
RES	Renewable Energy Sources
RK	Republic of Kazakhstan
RMCCA	Regional Mountain Centre of CA
RT	Republic of Tajikistan
Ruz	Republic of Uzbekistan
RWG	Regional Working Group
SCO	Shanghai Cooperation Organization
SDC	Swiss Agency for Development and Cooperation
SDG	Sustainable Development Goal
SIC ICSD	Scientific-Information Center of the Interstate Commission for Sustainable Development
SIC ICWC	Scientific-Information Center of the Interstate Commission for Water Coordination
SIWI	Stockholm International Water Institute
SPECA	Special Program for the Central Asian countries
UN	United Nations
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-IHP	UNESCO's Intergovernmental Hydrological Program
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	UN General Assembly
UNIDO	United Nations Industrial Development Organization
UNRCCA	United Nations Regional Centre for Preventive Diplomacy for Central Asia
UNSC	UN Security Council
UN SPAS	UN Special Program for the Aral Sea Basin
USAID	United State Agency for International Development
VNR	Voluntary national review
WB	World Bank
WCA	Water Consumer Association
WHO	World Health Organization
WMO	World Meteorological Organization
WUA	Water User Association
WWC	World Water Council

Preface

Dear readers!

We are pleased to present the fourth edition of our Water Yearbook. The year 2020 has been defined by the COVID-19 pandemic. Lockdown and self-isolation affected our daily life and changed communications and information flows. Within weeks, work, studies, meetings and communication of most of us have moved to an online space and made the humankind even closer to the information society. Despite the pandemic, the water sector kept functioning in the Central Asian countries and all over the world as reflected in the Yearbook.

The High-Level Conference "Green Central Asia" as part of the implementation of the new EU Strategy for CA and Afghanistan, the Central Asian Conference on Climate Change, the International Conference "Give Life to Aral", the Symposium "Ecological Restoration and Management of the Aral Sea", and the Regional Conference "Silk Road of Knowledge" were the important events shown among others in the 2020 Calendar.

In 2020, ICWC members met at its regular meetings in the online format on 10 April and 24 November. New members were appointed to represent Kazakhstan, Tajikistan, and Turkmenistan in ICWC. The executive bodies of ICWC and ICSD and the regional organizations continued working on water and environmental matters. In late 2020, under the chairmanship of Tajikistan, IFAS set to work on the regional dialogue on institutional and legal improvement of the Fund and the implementation of ASBP-4 (IFAS and Other Regional Organizations in Central Asia).

The Central Asian Presidents exchanged on bilateral or regional partnership via telephone calls. Cooperation was maintained within the framework of the Chu-Talas Water Commission, working groups on water management (Kazakhstan/Uzbekistan), Commission on Environment Protection and Water Quality in the Syr Darya River Basin and other water-related arrangements (Bilateral Water Cooperation between the Countries of Central Asia).

SIC ICWC together with the International Innovation Center for the Aral Region (IICAR) under the President of Uzbekistan conducted the second expedition on the exposed bed of the Aral Sea from 28 May to 26 June 2020. The results of the first and second expeditions (2019-2020) are described in section on Water Management Situation in the Aral Sea Basin.

As usual, the Yearbook presents key water developments in the CA countries, activities of the United Nations and its specialized agencies, international water organizations and initiatives, as well as activities of international partners in the region. Particular attention is paid to water related events in Africa, Asia, America, Australia and Oceania, Europe and Middle East. Such topics as capacity building in the region and activities of leading research institutes in the EECCA countries are updated in the sections dedicated to Water Education and Science and Innovations, respectively.

In addition to annual updates on climate change and SDGs progress, this year Thematic Reviews reflect on global hydropower development in 2020 and the Sardoba dam collapse. The later event had a devastating effect on both Uzbekistan and Kazakhstan but also illustrated cohesive work of two countries in dealing with its consequences.

In its final sections, the Yearbook contains information about key publications, Central Asia water awards, risks in 2021 and 2021 water calendar.

We would like to thank for all contributions made to this edition of the Yearbook in response to our requests. Special thanks are due to the United Nations Regional Center for Preventive Diplomacy for Central Asia and the Organization for Security and Co-operation in Europe for their financial support.

Last but not the least. When the 2020 edition of the Yearbook was nearing completion, our Leader, Mentor and Visionary Professor Viktor Dukhovniy passed away. He will be forever missed but his legacy will remain strong.

Editorial team

August 2021

Section 1

2020 Calendar of Events

Due to the COVID-19 pandemic, all events were organized in the online format since March

January

- **13-16 January** – International Water Summit 2020/World Future Energy Summit 2020/ EcoWASTE 2020, Abu Dhabi, UAE
- **28 January** – ADBI-ICHARM Policy Dialogue on Water-Related Disaster Resilience under Climate Change, ADB Institute, Tokyo, Japan
- **27-28 January** – High-Level Conference "Green Central Asia" as part of the implementation of the EU New Strategy for Central Asia and Afghanistan, Berlin, Germany

February

- **2 February** – World Wetlands Day
- **19-20 February** – 9th Meeting of the EU-CA Working Group on Environment and Climate Change, Brussels, Belgium
- **12-13 February** – 4th Annual International Congress and Exhibition "Hydropower Central Asia and Caspian 2020", Bishkek, Kyrgyzstan

March

- **10-11 March** – Workshop on Achievement of Environmental Goals through Energy Reform in the Asia-Pacific Region, Nur-Sultan, Kazakhstan
- **14 March** – International Day of Action for Rivers
- **22 March** – World Water Day
- **26 March** – Aral Sea Day
- **30-31 March** – 2nd Meeting of the Expert Group on the Transboundary Water Allocation Handbook under the UNECE Water Convention

April

- **10 April** – 78th meeting of ICWC (chaired by Kazakhstan)
- **22-23 April** – Workshop on Integration of Renewable Energy in Energy Systems: Perspectives on Investment, Technology, and Policy (ADB Institute), Tokio, Japan

May

- **15 May** – 19th Meeting of the Compliance Committee under the Protocol on Water and Health
- **18 May** – Meeting of the Implementation Committee under the UNECE Water Convention, Geneva, Switzerland

20 May – 7th Asia-Pacific Forum on Sustainable Development, Bangkok, Thailand

22 May – International Day for Biological Diversity

June

1-10 June – June Momentum for Climate Change

5 June – World Environment Day: "Time for Nature"

12 June – Conference "Women and Water Governance at Local, National and Transboundary Level", Almaty, Kazakhstan

15 June – 1st Meeting of EU-CA WGECC Coordination Committee

15-19 June – 2020 Asian Clean Energy Forum, ADB

17 June – Desertification and Drought Day

18-19 June – ADBI-Central Asia Regional Economic Cooperation (CAREC) Climate Change Regional Policy Dialogue: Learning from the COVID-19 Pandemic

22-24 June – Virtual Workshop on Meeting Environmental Objectives through Energy Sector Reforms in Asia and the Pacific: Energy Pricing Reforms and Emissions Reduction, ADB Institute

23-24 June – 2020 Berlin Climate and Security Conferences by the German Federal Foreign Office

25 June – Virtual Conference "Ecosystems", San-Francisco, California, USA

July

27 July – Virtual Meeting on Water Security for Peace and Development in the Islamic World: Preparing the 9th World Water Forum, Dakar 2021"

28-29 July – Workshop on Legal Frameworks for Transboundary Water Cooperation within the UNECE Water Convention, Geneva, Switzerland

August

12 August – Day of the Caspian Sea

12-14 August – Virtual Conference on Low-Carbon Finance and the Sustainable Development Goals, ADB Institute

22 August – Earth Overshoot Day

24-28 August – Online World Water Week

31 August-2 September – 11th Meeting of the Implementation Committee under the UNECE Water Convention, Geneva, Switzerland

September

- **14-20 September** – 11th Central Asian Leadership Program on Environment for Sustainable Development, Almaty, Kazakhstan
- **17 September** – Asia Region Online Workshop "Supporting the Monitoring and Implementation of Sustainable Development Goal (SDG) indicator 6.5.2 on Transboundary Water Cooperation", UNESCO, UNECE, ESCAP, GWP
- **19 September** – World Cleanup Day
- **22-23 September** – Regional Meeting on Water Resource Allocation and Environmental Flow Assessment in a Transboundary Context, Nur-Sultan, Kazakhstan
- **23 September-1 October** – Virtual Workshop on Mobilizing Private Investment in Sustainable Infrastructure in Asia: Central Asian Experience, ADB Institute
- **30 September-1 October** – 15th Meeting of the Working Group on Integrated Water Resources Management, Geneva, Switzerland

October

- **2 October** – 11th Meeting of the Task Force on Water and Climate under the UNECE Water Convention, Geneva, Switzerland
- **5-6 October** – Virtual Regional Workshop on Equitable and Sustainable Water Allocation
- **15 October** – International Day of Rural Women
- **19-23 October** – 3rd Central Asian Conference on Climate Change, Dushanbe, Tajikistan
- **20-21 October** – 3rd Meeting of the Expert Group on the Transboundary Water Allocation Handbook, Geneva, Switzerland
- **22-23 October** – 6th Meeting of the Task Force on the Water-Food-Energy-Ecosystems Nexus, Geneva, Switzerland
- **29-30 October** – IWRA Conference "Addressing Groundwater Resilience under Climate Change"

November

- **3 November** – Webinar "Earth Observation and Geographic Information System: Applications for Agriculture Development", ADB
- **4 November** – International Online Conference "Give Life to Aral", Tashkent, Uzbekistan
- **10 November** – INBO International Liaison Bureau Meeting at the 18th "Europe-INBO 2020" International Conference
- **16-18 November** – 7th International Conference on Drylands, Deserts and Desertification, Israel
- **17-20 November** – meeting of the Technology Executive Committee to UNFCCC, Bonn, Germany
- **19 November** – 10th Annual Central Asian Trade Forum "Central Asia: Development and Prosperity", Tashkent, Uzbekistan

- **24 November** – 79th ICWC Meeting (chaired by Turkmenistan)
- **24 November** – Preparatory meeting for the 12th Meeting of the Implementation Committee under the UNECE Water Convention
- **24-25 November** – International Symposium "Ecological Restoration and Management of the Aral Sea", Urumqi, China
- **24-27 November** – Regional Scientific and Practical Online Conference "Silk Road of Knowledge", Almaty, Kazakhstan

December

- **7-8 December** – 71st Meeting of the International Executive Council of ICID
- **7-8 December** – 6th Meeting of the Roundtable on Financing Water
- **10 December** – Korea International Water Week 2020, Daegu, Republic of Korea
- **16-17 December** – UNECE Global Workshop on Financing Transboundary Basin Development

Major Events in Central Asia

High-level Conference "Green Central Asia" within the framework of the new EU Strategy for Central Asia and Afghanistan, 28 January, Berlin, Germany

To launch the Green Central Asia initiative, the German Federal Foreign Office hosted a Conference on 28 January in Berlin. It brought together the foreign ministers of the Central Asian states and Afghanistan, as well as more than 250 participants to discuss the climate and security challenges facing Central Asian countries and Afghanistan, and how the "Green Central Asia" initiative could contribute to addressing them.

While the discussions touched on a wide range of issues, some key messages were highlighted. Particularly, Central Asia and Afghanistan are "hot spots" where the impacts of climate change will result in economic and environmental losses. A common regional strategy, with the support of international actors, could help make successes more systematic. Mutual trust is essential for this.

The meeting resulted in the signing of a Joint Declaration of Intent on cooperation in the field of climate and security in Central Asia and Afghanistan within the framework of Green Central Asia.

The Conference Summary is available on:
https://www.adelphi.de/de/system/files/mediathek/bilder/Green%20Central%20Asia%20Conference%20Report.pdf

Green Central Asia
Conference Berlin 2020

German Federal Minister for Foreign Affairs H.E. Heiko Maas and his colleagues from Central Asia and Afghanistan in Berlin, 28.01.2020, © Florian Gaertner/photothek.net

Best of Green Central Asia Conference 2020 on YouTube:
https://www.youtube.com/watch?v=hlrzHk3Xf6s

Central Asia Climate Change Conference, 19-23 October, Dushanbe, Tajikistan

The Third Central Asia Climate Change Conference (CACCC-2020) was organized within the framework of the "Climate Adaptation and Mitigation Program for the Aral Sea Basin" (CAMP4ASB) and was a continuation of the World Bank's initiative on climate change knowledge and regional information exchange in Central Asia launched in 2013.

The main objective of the Conference was to strengthen a regional dialogue on climate change and sustainable development by promoting information and knowledge exchange in Central Asia. Other task of the Conference was to raise awareness of the countries in the region on lessons have been learned in times of the pandemic. The event brought together 232 people from 13 states.

There were four thematic sessions on: (1) Climate change impacts and policy making process in times of COVID-19; (2) Science and research perspectives on climate change in times of COVID-19; (3) Climate-related information and knowledge: challenges and perspectives; (4) Financing climate change actions: international funds and other resources.

The Outcome Document calls for countries in the region to actively participate in the development of IPCC[1] assessment reports and regional climate change research, develop and present a regional position on climate change at the 26th session of the Conference of the Parties to UNFCCC, mobilize private investors for climate financing, and appeal to the Green Climate Fund to pay more attention to applications for national and regional projects.

The full report on CACCC-2020 in Russian is available on https://drive.google.com/file/d/1DxSDwftqxpWyVy-MMRaMwR2suGbsn59L/view.

[1] The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. IPCC was established in 1988 by WMO and UNEP to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options

International Online Conference "Give Life to Aral", 4 November, Tashkent, Uzbekistan

The Agency of Information and Mass Communications under the Administration of the President of the Republic of Uzbekistan in cooperation with UN offices in Uzbekistan held the International Online Conference "Give life to the Aral Sea" as part of the framework of the "The Aral Sea Region – a zone of ecological innovations and technologies" President's Initiative. The Conference brought together at about 100 people. They discussed innovative tools and mechanisms in the field of environmental restoration; priority measures to address health problems in the Aral region, as well as prospects of implementing international experience in the development of social entrepreneurship in the region as an additional measure to mitigate the consequences of the environmental disaster. At the same time, the hashtag #GiveLifetoAral has been launched in social networks to disseminate current information about the situation around the Aral Sea (#GiveLifetoAral).

UN Uzbekistan
4 ноября в 21:39 ·

Statement by Helena Fraser, UN Resident Coordinator in Uzbekistan on the International Online Conference: "Give Life to Aral":

"Excellent ideas were voiced at the #GiveLifeToAral Conference to increase the global awareness about the Aral Sea tragedy.

The UN family in Uzbekistan is deeply committed to support the Government's efforts to Give (new) life to the Aral Sea.

The sea is gone, but the people are not"

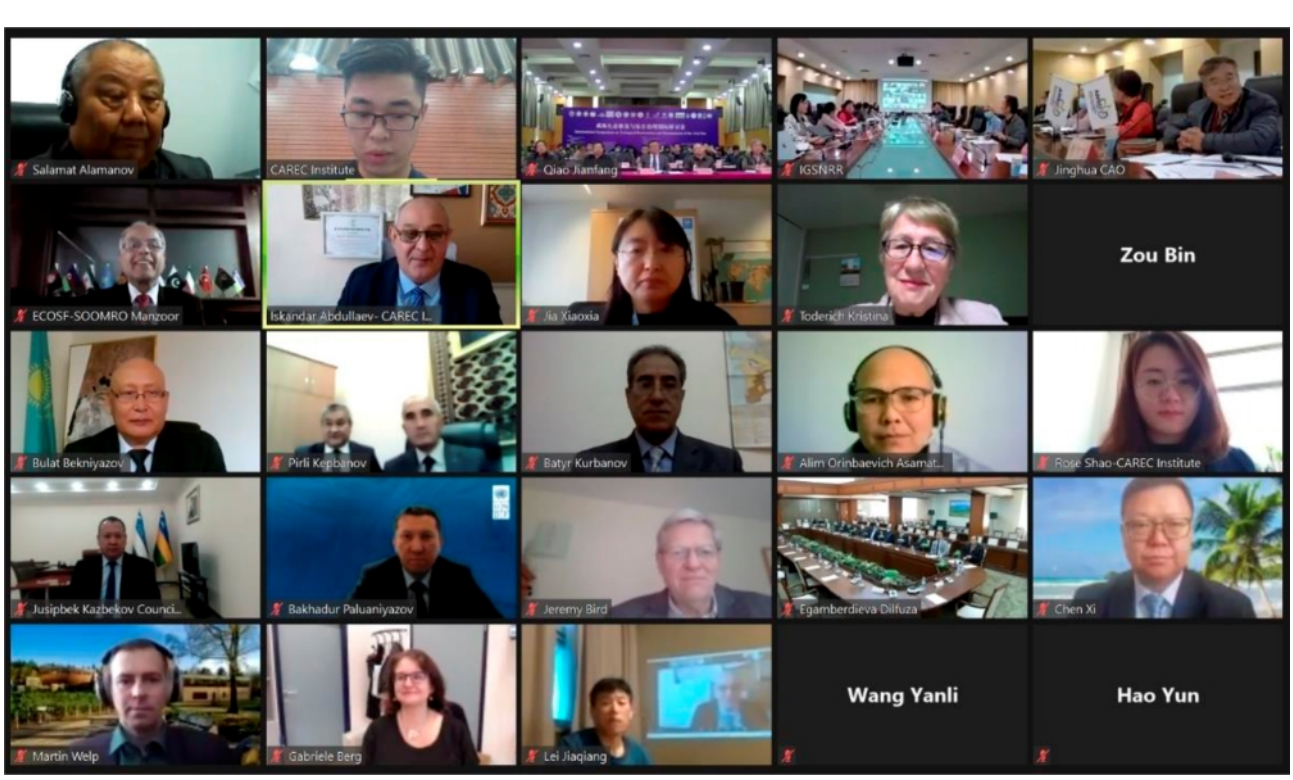
https://www.facebook.com/UN.Uzbekistan/posts/3527918273958045/

International Symposium "Ecological Restoration and Management of the Aral Sea", 24-25 November, Urumqi, China

The International Symposium was organized by CAREC Institute in partnership with UNEP, Xinjiang Institute of Ecology & Geography, CAS and in co-operation with the Secretariat of the Alliance of International Scientific Organizations (ANSO), CAS, UN Office in China, Secretariat of the United Nations Convention to Combat Desertification (UNCCD), Embassy of the Republic of Uzbekistan in China, Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan, National University of Uzbekistan and a number of other international and national research centers, organizations, and HEIs.

More than 200 participants from more than 30 countries and regions attended the symposium. The main aim of this symposium was to establish an international platform for scientific research promotion and knowledge sharing on ecological safeguarding and restoration of the Aral Sea. Participants discussed the most pressing issues related to restoration of the natural environment in the Aral Sea region affected by the desiccation of the Aral Sea.

On the second day, a bilateral webinar was held on the "Joint Uzbek-Chinese Key Laboratory of Eco-Biomes in Arid Land". The CAREC Institute proposed the creation of an Aral Sea Observatory as the next step in laying the groundwork for a practical platform for multi-stakeholder cooperation.



Regional Scientific and Practical Online Conference "Silk Road of Knowledge", 24-27 November, Almaty, Kazakhstan

The Regional Scientific and Practical Online Conference "Silk Road of Knowledge" was organized by GKU with the financial support of the Federal Foreign Office of Germany. It gathered 300 people.

The Program of the Conference included 7 thematic sessions: (1) Climate Impact Assessment; (2) Water under Climate Change; (3) Land Management and Food Security under Climate Change; (4) Potentials of Digitalization for Increasing Sustainability in Agriculture; (5) Water and Climate Security in Central Asia; (6) Regional Infrastructure and Logistics under Climate Change; (7) Decarbonization of Energy Systems and Climate Neutrality, as well as Youth Session: Rational Water Use.

An abstracts volume has been launched on the Conference as well.

SILK ROAD OF KNOWLEDGE

SCIENTIFIC AND PRACTICAL CONFERENCE

Prior to the Conference, an online event "UNESCO Water Family: Cooperation in Education and Science in Central Asia" was organized by GKU in partnership with UNESCO Office in Almaty (24 November, videos: https://www.facebook.com/NRIKGU/videos/403056580834205).

Section 2

Water Management Situation in the Aral Sea Basin

2.1. Water-Related Situation in the Amu Darya and the Syr Darya River Basins

Water Resources

In 2020, the total annual flow in the basins of the Amu Darya and the Syr Darya was 96.44 km^3 or 82% of average annual flow.

Amu Darya Basin

The annual flow in the basin, including the Amu Darya River and its tributaries plus the Zarafshan River, was 64.2 km^3, of which 49.91 km^3 in the Amu Darya River (at the nominal Kerki section located upstream of the Garagumdarya River). The water content of the Amu Darya in this monitoring section was: 82% of the norm in the first quarter; 81% in the growing season; and, 72% in the first half of the non-growing season 2020-2021.

As of the 1st of January 2020, the total water accumulation in the Nurek and Tuyamuyun reservoirs was 13.486 km^3.

Syr Darya Basin

The annual flow in the basin, including the Naryn, Karadarya, Chirchik and small rivers, amounted to 32.24 km^3, of which 19.38 km^3 referred to the Syr Darya River (estimated by inflow into three reservoirs – Toktogul, Andizhan, and Charvak).

As of the 1st of January 2020, the total water storage by reservoirs in the basin was 22.34 km^3, including 16.57 km^3 in the key reservoirs in the flow formation zone.

Operation of Reservoir Hydrosystems

The annual inflow into the Nurek reservoir was 17.19 km^3, including 13.3 km^3 (77%) – over the growing season. Water releases from the reservoir were in the amount of 17.39 km^3/year, of which 9.47 km^3 or 54% of annual flow was discharged during the growing season.

Because of lower flow along the Panj River[2], the annual inflow into the Tuyamuyun reservoir was 19.71 km^3. This was 7.55 km^3 lower than the forecast, including by 6.3 km^3 lower for the growing season. Annual water releases from the reservoir were 20.53 km^3 or 78% of the value set in the schedule of the BWO Amu Darya. Water releases amounted to 14.15 km^3 or 72% during the growing season.

The annual inflow into the Toktogul reservoir located on the Naryn River was 11.68 km^3, of which 8.68 km^3 (74%) – during the growing season. Annual water releases from the reservoir amounted to 14.41 km^3 and only 5.15 km^3 (36%) were discharged from the reservoir during the growing season. Such re-distribution of flow led to drawdown of the Toktogul reservoir from 14.94 to 12.24 km^3 during the year.

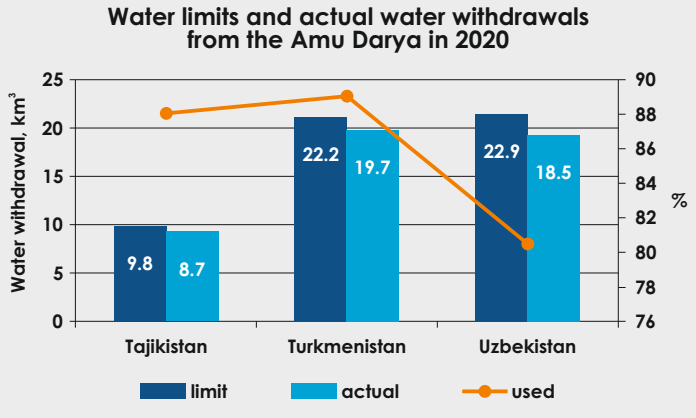
Water Allocation and Shortage

Amu Darya Basin

In 2020, given the established limit of water withdrawal from the Amu Darya Basin at 55 km^3, actually 46.88 km^3 were diverted, including 32.51 km^3 during the growing season. 85% of annual water limit was used in total, of which 82% of the established limit of water withdrawal into canals or 39.67 km^3 was used during the growing season. The following situation was observed at country level:

- **Tajikistan** – given the water limit of 9.83 km^3, the actual water withdrawal was 8.66 km^3 or 88.1%;
- **Turkmenistan** – given the water limit of 22.19 km^3, the actual water withdrawal was 19.75 km^3 or 89%;
- **Uzbekistan** – given the water limit of 22.95 km^3, the actual water withdrawal was 18.47 km^3 or 80.5%.

During the growing season, in the reach from the Nurek HPP to the Tuyamuyun reservoir the water shortage was estimated at 12% in Tajikistan, 5% in Turkmenistan, and 7% in Uzbekistan. In the reach from the Tuyamuyun hydrosystem to the Samanbay post, Turkmenistan and Uzbekistan has received by 30% and 31% less water, respectively, than they required during the growing season.



Syr Darya Basin

The total water withdrawal in the Syr Darya Basin was 12.41 km^3, including 8.9 km^3 or 75% of the established

[2] Lower flow along the Panj River is possibly explained by increased water diversion by Afghanistan, improper accounting of water along the main course of the Amu Darya or inaccurate evaluation of open-channel losses. The exact causes of such lowering need thorough examination.

limit (11.83 km^3) of water intake to canals during the growing season. 0.017 km^3 of water were discharged from the Syr Darya into Arnasay. The water allocation plan of BWO Syr Darya was fulfilled by 79% on average. In the reach from the Toktogul reservoir to the Chardara reservoir, the water shortage was estimated at 24% in Tajikistan, 43% in Kyrgyzstan, and 31% and 24% in Kazakhstan and Uzbekistan, respectively.

Inflow into the Aral Sea Region

According to the data of the Kazakhstan's Committee for Water Resources, in 2020, inflow into the Northern Aral Sea from the Syr Darya was 1.82 km^3, and 1.0 km^3 were discharged from the Northern Sea into the Large Aral Sea (Eastern part).

Based on SIC's estimates, the South Aral region should receive 8 km^3 of water from the Amu Darya in average and wet years (in terms of flow) and 3.5 km^3 in dry years. Actually in 2020, 2.69 km^3 or 34% of 8 km^3 was delivered to the South Aral region.

River Channel Water Balance Discrepancies

In 2020, balance discrepancies along the Amu Darya River increased as compared to the previous year: 6.93 km^3 during the growing season and 2.49 km^3 during the non-growing season or 9.42 km^3 in total.

Balance discrepancies along the Syr Darya were estimated at 5.85 km^3 (1.11 km^3 during the growing season and 4.74 km^3 during the non-growing season, i.e. increased by 27% as compared to the previous year (4.59 km^3)).

Meeting Demands

The table below shows how water demands were met among the CA countries.

CA countries	Meeting water demands in growing season, %	
	Amu Darya	Syr Darya
Kazakhstan	–	69
Kyrgyzstan	–	57
Tajikistan	88	76
Turkmenistan	87	–
Uzbekistan	75	76

Source: SIC ICWC using the data from BWO AmuDarya and BWO SyrDarya

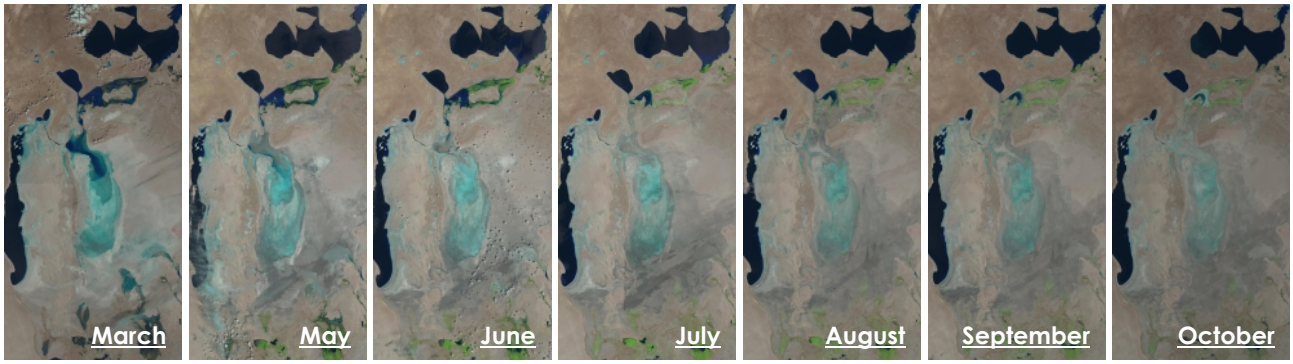
2.2. Monitoring of Changes in the Water Surface Area of the Large Aral Sea and the Amu Darya Delta

In 2020, SIC ICWC continued monitoring changes in the water surface area of the Eastern and Western parts of the Large Aral Sea (LAS) as well as lake systems of the Amu Darya delta through Landsat 8 OLI images (http://www.cawater-info.net/aral/data/monitoring_amu.htm).

New Methodology

From 2012 to 2019, for classification of sea's water surface areas, the satellite data were digitized manually, with following comparison of NDVI (Normalized Difference Vegetation Index). Since 2019, SIC ICWC has been applying a new improved methodology for interpretation of satellite imagery by using the AWEI indexes (Automated Water Extraction Index). The new methodology minimizes erroneous interpretation of the area under consideration as a water or land surface (e.g. if plants cover the water surface). Now, water and non-water sites are classified automatically in "R" and GIS on the basis of AWEI. Accordingly, there could be discrepancies in the data over previous years.

Figure 1. Satellite images of Western and Eastern parts of the Large Aral Sea, *Landsat 8 OLI (2020)*

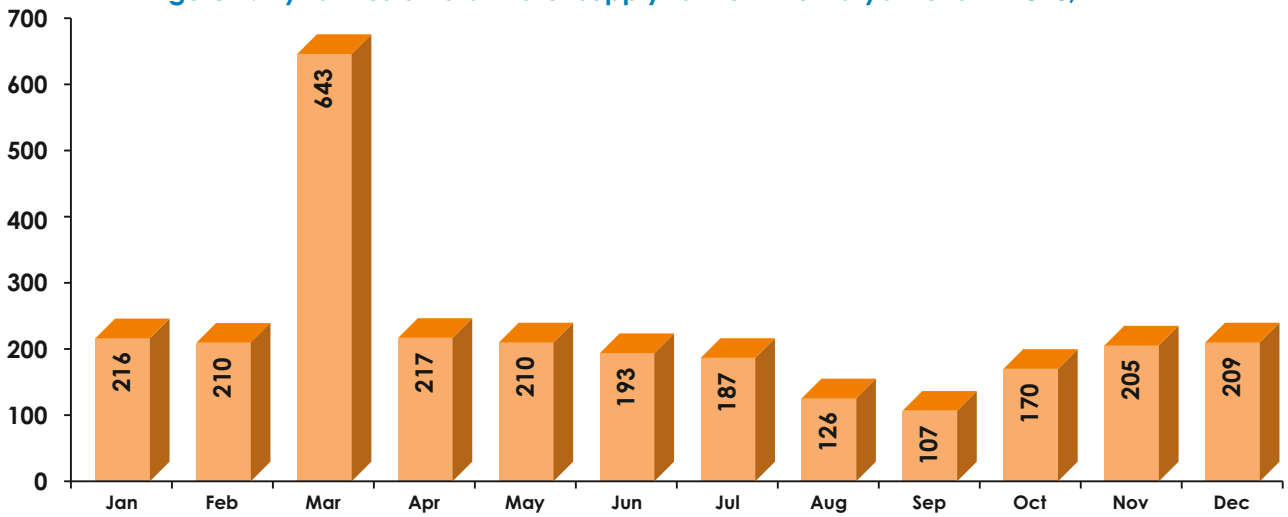


2.2.1. Water Supply to the Amu Darya Delta and the Large Aral Sea

Water Supply to the Amu Darya Delta

The analysis of water-related situation in the Amu Darya Basin in 2020 (based on the data of BWO Amu Darya) shows that, in fact, 2,693 Mm^3 of water (flow from the river and water discharged from canals and collecting drains) reached the Amu Darya delta[3]. This is 516 Mm^3 lower than in 2019.

Figure 2. Dynamics of total water supply to the Amu Darya Delta in 2020, *Mm^3*



Flow from the Main South-Karakalpak collecting drain to the exposed bed of the Large Aral Sea

Bypassing the Amu Darya Delta, 369 Mm^3 of collector-drainage water flowed towards the exposed bed of the Large Aral Sea from the Main South-Karakalpak (Right-bank) collecting drain (Table 1)[4]. This is almost 2.24 times lower than in 2019 (828.3 Mm^3).

Table 1. Flow from the Main South-Karakalpak collecting drain to the exposed bed of the Large Aral Sea in 2020, *Mm^3*

Jun	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YEAR
50	28	50	52	44	31	28	22	17	16	14	17	**369**

Total inflow into the Large Aral Sea

In 2020, as compared to 2019, inflow into the Large Aral Sea (1) decreased from the Amu Darya delta, including collector-drainage water from the Main South Karakalpak collecting drain, by 620 Mm^3 and made up 597 Mm^3; (2) increased slightly from 830 to 1,003 Mm^3 from the Northern Aral Sea (NAS) (Table 2). The total amount of water discharge into LAS decreased 1.3 times from 2,047 (2019) to 1,600 km^3 (2020). Water flowing from NAS is partially accumulated in Eastern part, also reaches Western part of LAS, and is partially lost through evaporation and infiltration.

Table 2. Total inflow into LAS, *Mm^3*

Year	Northern Aral Sea[5]		South Aral region		Total discharge into LAS
	Total inflow into NAS from the Syr Darya, Karateren section	Discharge from NAS into LAS	Total inflow into the Amu Darya Delta	Discharge from the Amu Darya Delta into LAS, including flow from Main South Karakalpak coll.drain[6]	
2019	3,697	830	3,209	1,217	**2,047**
2020	1,822	1,003	2,693	597	**1,600**

[3] Source: BWO AmuDarya
[4] Source: Aral Sea Region Delta Administration at the Ministry of Water Management of Karakalpakstan
[5] Source: Committee for Water Resources of the Republic of Kazakhstan
[6] Source: Aral Sea Region Delta Administration at the Ministry of Water Management of Karakalpakstan

2.2.2. Dynamics of Changes in the Open Water Surface and Wetland Area of Eastern and Western Parts of the Large Aral Sea

As monitoring and GIS data shows, from February to October 2020, the water surface area in Eastern part of LAS shrank from 76.2 to 12.8 thousand ha (Table 3), while the area of the exposed bed increased by 63.4 thousand ha. The water surface area in Western part also decreased – from 248.8 to 234.0 thousand ha – over the period under consideration (Table 3).

Table 3. The area of wetlands and open water surfaces in the Eastern and Western parts of the Large Aral Sea, 2020[7]

Month	Feb 19	Mar 22	May 25	Jun 10	Jul 12	Aug 13	Sep 14	Oct 16
Western part of the Large Aral Sea, ha								
Wetland	cloudy	312,526	312,359	314,138	317,639	320,543.7	318,593	327,267
Water surface	cloudy	248,823	248,993	247,212	243,710	240,806.5	242,757	234,087
Eastern part of the Large Aral Sea, ha								
Wetland	1420530	1,402,136	1,431,090	1,445,300	1,462,442	1,474,628	1,478,120	1,483,932
Water surface	76,294	94,688	65,733	51,523	34,381	22,195	18,703	12,892

2.2.3. Lake Systems of the Amu Darya Delta

The lake systems of the Amu Darya delta are represented by small local water bodies of the South Aral region. Generally, as compared to 2019, the hydrological situation in the South Aral region changed for the worse in 2020.

The open water surface area of the lake systems shrank from 74.5 to 19.1 thousand ha in February-October (Table 4). The actual water area of lake systems accounted for 50 (February) to 10% (October) of the design area[8].

The supply of 2,693 Mm^3 to the Amu Darya delta does not provides necessary conditions[9] for fishery and ecosystem in such lakes as Sudoche, Rybache, Muynak and Djiltirbas. The reason is the lack of a special plan for filling of the lakes with water and the failure to control this process.

Table 4. The area of open water surface of the lake systems in South Aral region in 2020[10], *ha*

Water body	Feb 19	Mar 22	May 25	Jun 10	Jul 12	Aug 13	Sep 14	Oct 16
Sudoche	35,274.6	36,724.9	24,725.4	20,900.5	11,885.5	10,008.2	9,231.84	9,960.12
Mejdureche	8,674.2	9,381.6	5,678.98	3,588.66	2,771.91	1,736.73	1,006.47	763.2
Rybache	4,535.64	2,151	2,618.73	2,405.84	1,945.62	1,765.08	1,830.78	1,989.45
Muynak	2,871.72	2,913	1,012.05	604.44	231.48	219.15	182.16	224.64
Djiltyrbas, dam-terminated	8,500.68	8,828	4,891.87	4,680.27	4,656.33	4,842.09	4,730.31	5,540.58
Djiltyrbas (together with former right and left streams)	10,595.66	6,230.7	1,711.71	687.15	107.95	74.7	77.67	300.06
Dumalak	552.87	435.15	71.1	18.54	1.62	0.81	0	0
Makpalkul	1,167.84	1,010.5	401.78	133.29	275.31	227.79	50.58	37.8
Mashan Karadjar	1,473.21	1,228.5	661.82	339.03	224.55	154.35	179.37	319.5
Water surface southward of Muynak	95.49	95.68	0	0	0	0	0	0
Water surface along Kazakhdarya river channel	0	0	0	0	0	0	0	0
Zakirkol Lake	411.84	593.5	8.13	3.06	3	0	0	0
TOTAL	**74,517.84**	**70,682.8**	**41,781.53**	**33,360.75**	**22,103.5**	**19,028.88**	**17,289.18**	**19,135.35**

[7] Source: SIC ICWC using the GIS data derived from Landsat 8 OLI images, http://www.cawater-info.net/aral/data/monitoring_amu.htm
[8] V.A. Dukhovny, Joop de Schutter, "South Prearalie – New Perspectives", 2003
[9] According to SIC's estimations, the South Aral region should receive 8 km^3 of water from the Amu Darya in average and wet years (in terms of flow) and 3.5 km^3 in dry years (like 2020), http://cawater-info.net/biblio/Publicationview.php?KodItem=1179
[10] Source: SIC ICWC using the GIS data derived from Landsat 8 OLI images, http://www.cawater-info.net/aral/data/monitoring_amu.htm

The decreased supply of water to the delta (Figure 2) during the growing season leads to lower inflow of collector-drainage water into local water bodies in the South Aral region (Table 5).

Table 5. Inflow into local lakes in South Aral region during 2020[11], *Mm3*

Lake	Monthly inflow into lake												Total over 2020
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Sudoche	38.8	30.9	52.2	45.0	48.3	48.8	50.2	29.5	24.8	27.0	22.6	17.9	436.4
Karateren	7.2	6.3	7.1	8.0	7.2	6.9	2.7	0.6	0.0	0.0	0.0	0.0	46.0
Djiltyrbas	50.4	28.1	50.3	52.3	44.4	30.9	28.2	22.5	17.3	15.8	13.9	16.8	371.0

The wetland area of the lake systems in South Aral region increased from 279.1 to 334.5 thousand ha over the observation period (Table 6).

Table 6. Wetland areas of lake systems in the South Aral region in 2020[12], *ha*

Water body	Feb 19	Mar 22	May 25	Jun 10	Jul 12	Aug 13	Sep 14	Oct 16
Sudoche	37,422.31	24,828.1	47,471.64	51,796.53	60,811.51	62,688.82	63,465.16	62,736.88
Mejdureche	29,109.8	24,402.4	32,105.02	34,195.34	35,012.09	36,047.27	36,777.53	37,020.8
Rybache	6,957.36	9,341.7	8,874.27	9,087.16	9,547,38	9,727,92	9,662.22	9,503.55
Muynak	13,292.2	13,251	15,151.95	15,559.56	15,935.52	15,944.85	15,981.84	15,939.36
Djiltyrbas, dam-terminated	38,971.71	38,644.3	42,580.52	42,792.12	42,816.06	42,630.3	42,742.08	41,931.81
Djiltyrbas (together with former right and left streams)	87,991.34	92,720.3	97,239.29	98,263.85	98,843.05	98,876.3	98,873.33	98,650.94
Dumalak	15,497.13	15,614.8	15,978.9	16,031.46	16,048.38	16,049.19	16,050	16,050
Makpalkul	7,516.16	7,873.4	8,282.22	8,550.71	8,408.69	8,456.21	8,633.42	8,646.2
Mashan Karadjar	25,727.79	25,972.5	26,539.18	26,861.97	29,976.45	27,046.65	27,021.63	26,881.5
Water surface southward of Muynak	9,509.51	9,509.3	9,605	9,605	9,605	9,605	9,605	9,605
Water surface along Kazakhdarya river channel	4,751.5	4,751.5	4,751	4,751.5	4,751.5	4,751.5	4,751.5	4,751
Zakirkol Lake	2,379.46	2,251.7	2,783.17	2,788.24	2,788.3	2,791.3	2,791.3	2,791.3
TOTAL	**279,126.4**	**282,961.3**	**311,862.7**	**320,283.4**	**331,540.9**	**334,615.3**	**336,355.01**	**334,508.8**

Conclusion

Dynamics of changes in the water surface area and wetlands in LAS and Southern Aral Region in 2020 indicates to a complex hydrological situation due to variations in water availability during the year. Moreover, the water surface area of lakes was unstable. In this context, coordinated actions of the riparian countries are needed for water conservation and rational water use in order to deliver the necessary amount of water for environmental needs of the Aral Sea region and the sea itself on a sustainable basis. The required measures include in particular, the following:

- Complete the construction of a deltaic infrastructure in the Amu Darya River delta, including Mejdureche reservoir, and the system of lakes to make use of collector-drainage water from Ozerniy collecting drain;
- Improve accuracy of water accounting as unrecorded losses and balance discrepancies in upper and middle reaches of the Amu Darya amount to 12 km^3, on average, reaching 20 km^3 in some years (2010 – 20 km^3; 2005 – 17 km^3);
- Improve performance of BWO Amu Darya and basin organizations in lower reaches;
- Introduce the integrated monitoring system combined with application of RS-measurements for the Aral Sea region and the Aral Sea.

[11] Source: Aral Sea Region Delta Administration at the Ministry of Water Management of Karakalpakstan
[12] Source: SIC ICWC using the GIS data derived from Landsat 8 OLI images, http://www.cawater-info.net/aral/data/monitoring_amu.htm

2.3. Expeditions on the Exposed Bed of the Aral Sea in 2019-2020

In 2019, SIC ICWC together with the International Innovation Center for the Aral Region (IICAR) under the President of Uzbekistan organized two expeditions to study the state of the exposed bed of the Aral Sea.

The expeditions were funded within the framework of the joint UNDP-UNESCO project "Addressing the urgent human insecurities in the Aral Sea region through promoting sustainable rural development" by the UN Multi-Partner Human Security Trust Fund (MPHSTF) for the Aral Sea region (see "United Nations Development Program").

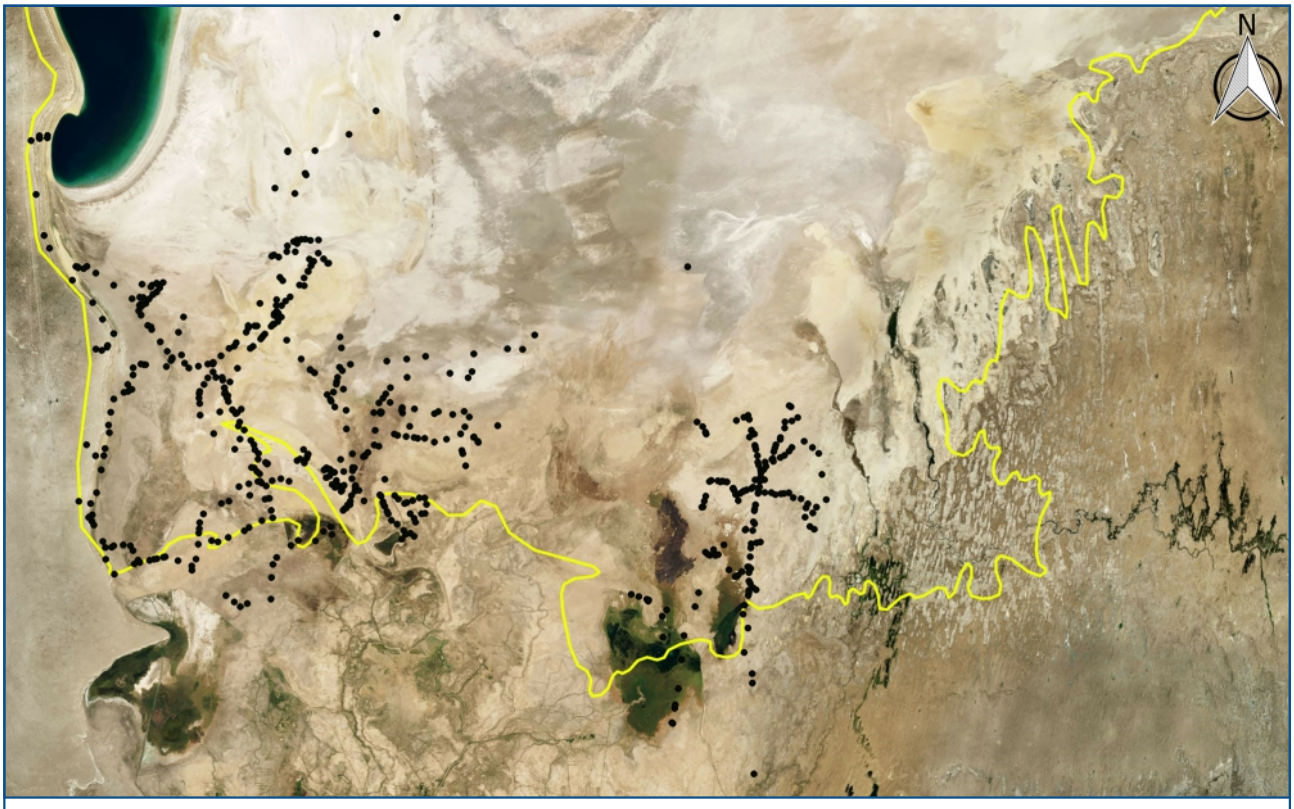
The first (fall) expedition was organized in the "Muynak zone" on an area of 650,000 ha – from the cliff of Ustyurt Plateau to the Amu Darya riverbed, and from the level of 53 m A.S.L. to the water's edge of Western Aral Sea. The expedition took place from 20 September to 20 October 2019 (see 2019 Water Yearbook, section "Results of the Expedition on the Exposed Bed of the Aral Sea in September-October 2019").

The second (summer) expedition was conducted in the "Djiltyrbas zone" from 28 May to 26 June 2020, on an area of 600,000 ha from the Amu Darya riverbed (delta and avandelta) to the Kokdarya River and Togyzarkan stream, from the level of 53 m A.S.L. to the water's edge of Eastern Aral Sea (as close as possible). The total coverage of the study area was 1.25 million ha out of 2.7 million ha in the Uzbek part of the exposed seabed.

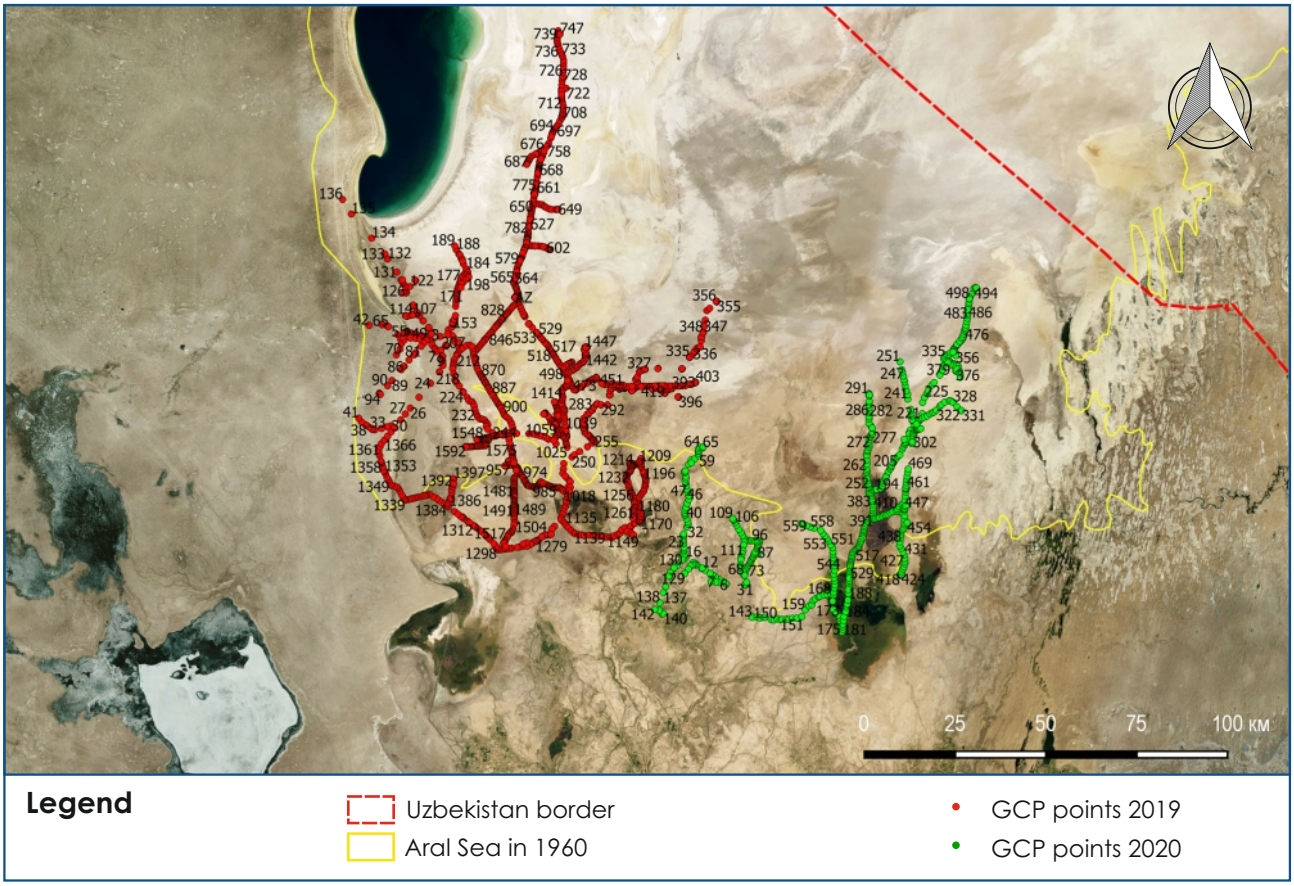
The expeditions were multi-disciplinary and included environmentalist, soil expert, hydrogeologist, dendrologist, botanist, and GIS experts.

Along with ground-based observations of soil, vegetation, ecology, and groundwater level and salinity, SIC ICWC in cooperation with MapTailor Geospatial Consulting GbR (Fabian Löw and Dimo Dimow, Germany) studied the territory using Sentinel and Landsat images.

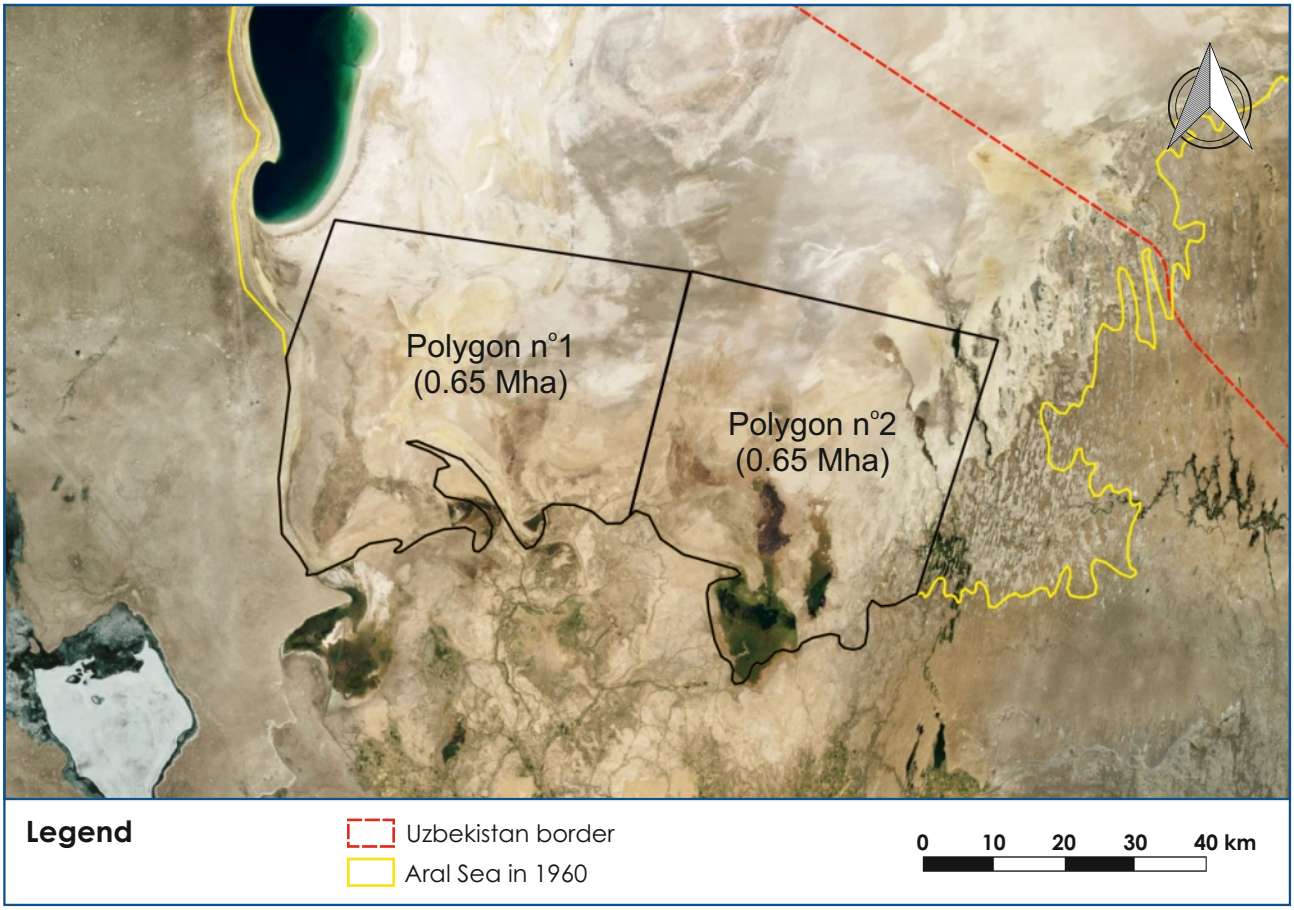
Based on spatial recognition of landscape classes, environmental risk zones were identified and characterized, with following comparison with the study results for 2006.



Field points of expedition routes in 2006-2007 and 2009



Field points of expedition routes 2019-2020



Uzbek part of Aralkum – the area within the coastline of the Aral Sea in 1960. Two polygons of the study area

Summer expedition – May-June 2020

Two camps were established during the expedition. The first camp was set near Kazakhdarya settlement to cover the route from the Amu Darya riverbed to Djiltyrbas bay. Three sites were studied. The second camp was organized within the boundaries of nearly destroyed GTZ's central camp. Nine sites were studied from this camp between Djiltyrbas, the Kokdarya River and an area between the Kokdarya and Togyzarkan stream (extension of Kitaiskiy collecting drain).

In the course of the summer expedition, the following work has been completed: comprehensive description of 562 points in situ for image identification; botanical description of vegetation, identification of plant for-mations; determination of the status of natural vegetation and afforestation, including varieties, height and projective coverage by vegetation; identification of plant self-organization processes; cutting of 21 soil profiles for morphological description of profiles and sampling of soil by henetic horizon; monitoring within operational hydrological network of 2 transects and 6 self-discharging wells, measurement of water table and water sampling; description of environmental conditions of the area and preliminary assessment of environmental risk.

Key findings from the expeditions 2019-2020

The two complex expeditions helped to make geomorphological, hydrogeological, landscape, soil, dendrological and botanic assessments of 40% of the exposed Aral Sea bed within the boundaries of Uzbekistan (1.25 million ha in southwest and southeast out of 2.7 million ha) and compare the data with the results of 2006-2010 expeditions. Consequently, the following findings could be made:

1. **The drying up of the Aral Sea has resulted in** degradation of the Amu Darya delta; intensification of desertification processes on vast territories; transportation of salt and dust from the exposed Aral Sea bed; pollution and salinization of water and land resources; shortage of drinking water; depletion of the gene pool of flora and fauna; changes in the climate and landscape in the Aral Sea region; deterioration of the health of population and its gene pool; disappearance of traditional livelihoods, such as fishing and livestock farming, as well as hunting.

2. Both **desertification and natural soil formation processes** can be observed on the exposed seabed. These processes occur under influence of changes in water table, wind transport, and formation of new soil and vegetation cover.

3. **Landscapes become stabilized** and substantial land areas transform into higher classes, such as meadows on alluvial plains and shrubs. The area of high ecological risk (class IV) decreased from 505,000 ha in 2006 to 414,000 ha in 2019.

4. **Soil characteristics as of 2020**. The processes of the Aral Sea desiccation have led to formation of a new soil cover on the dried seabed. The newly formed soil is considered to be radically different from zonal soil, namely in dynamics of soil formation in space and time. The solonchak soil evolution consists of stages. During the last stages, solonchak processes caused by hydromorphic conditions fade out, and the influence of arid-zonal factor increases many times, thus making further soil development run as desert type process. The chain of solonchak transformation ends in formation of desert-sandy soil. The parent rock of the current soil formation on the exposed bed of the Aral Sea is of marine, limnic, alluvial and aeolian genesis.

5. **Groundwater regime and salinity depend on distance from the sea and recharge from local lakes**. The Aral Sea impacts the groundwater level only within the distance of 15-25 km. In the newly dried area the groundwater level is 3-4 m (data collected from wells drilled in 2019). In more distant points (Muynak area) the groundwater level is 7.9 m (2017) and relies on releases of water from Sudoche Lake and Rybache. Groundwater virtually does not contribute to the Aral Sea balance. According to the recent data, the discharge of groundwater into the Aral depression is minimal (0.12 m^3/year).

6. **Quantity of plants and taxonomic units is increasing in South Aralkum every year**. The plant coverage, with prevailing saxaul, is 32% in the zone of the first expedition and over 60% in the area surveyed by the second expedition, because of higher watering. In the course of the expedition, an approach for afforestation of the exposed seabed by potentially productive plant species *(Tamarix hispida, T. ramosissima, Halostachys belangeriana, Haloxylon aphyllum, Salsola dendroides, S.orientalis, Climacoptera aralensis, Nitraria schoberi, Lycium ruthenicum, Limonium otolepis)* was developed to stabilize shifting sand and solonchak, and the usability of species in this region as a resource base for republican pharmaceutics was identified.

7. **Root-taking of forest plantations is not uniform** and varies depending on a way of planting (plane, hang glider or agricultural machine), type of soil, level and salinity of groundwater, and observation of afforestation schedule. The higher tree percent of 64% is observed in the area of the second expedition. The lower tree percent was recorded in strongly saline soil and in furrows that lacked sandy layer.

8. Since 2008, the area of self-organization of plants in the study area has increased by 160 thousand ha and reached **393 thousand ha in 2020**. This allows saving about $170 million in the future afforestation. Self-organization of plants is particularly intensive around and at the end of appropriately selected afforested plots (plantations of international projects or State Forestry Committee).

9. The newly formed ecosystem in the exposed seabed is highly impacted by the anthropogenic activity. The positive impact of human activity inclu-

des large-scale afforestation and delta conservation measures, while the negative impact is reflected in instability of watering, including desertification and eolian deflation, destruction of already afforested and stabilized risk zone by heavy prospecting and extraction machines and equipment and chopping of saxaul for fuel. All this requires stronger measures from the side of environmental services.

Recommendations

While summarizing the results of the two expeditions, it seems expedient to focus attention of authorized organizations on the following actions and measures:

1. Organize **effective governance in the dried up and drying seabed and the Aral Sea region** under the overall supervision of the Government of Karakalpakstan. There should be clear division of responsibilities for sustainable water supply (Ministry of Water Management of Uzbekistan in cooperation with BWO AmuDarya), protection of Aralkum ecosystem (State Ecological Committee of Uzbekistan), planning and implementation of afforestation (State Forestry Committee of Uzbekistan), development, use and maintenance of pastures (Ministry of Agriculture). The organized system of governance should prevent further distortion of environmental equilibrium and contribute to stabilization of landscapes through (a) afforestation of the territory subjected to desertification; and, (b) making the area of the former Amu Darya delta sustainable.

2. Organize **permanent monitoring of the Aralkum ecosystem and lakes in the Aral Sea region** through year-round RS-based and, at least, once a year ground-based observations of environmentally unstable zones. Include this monitoring in the list of regular activities of the International Innovation Center for the Aral Region.

3. For sustainable delivery of water to the exposed seabed and the Amu Darya delta, the following is needed:

   a. delivery of required environmental flow to Samanbay section (8 km^3 in average year and 4 km^3 in dry year) must be ensured, as well as year-round functioning of the constructed water bodies.

   b. 3 km^3 of drainage water formed in Khorezm oasis in the territory of Uzbekistan should be re-directed from Daryalyk collecting drain to the Amu Darya delta.

4. Pay particular attention to **self-organization of plant** on the exposed bed and plan future afforestation with due consideration of the former (State Forestry Committee).

5. Make inventory of all available **water wells** and group them into wells suitable for watering of pastures and those with hot water for balneology.

6. Use the developed **methodology of combined remote and ground observations** for mapping and quantitative assessment of land cover and for solution of other tasks of territorial management in the context of afforestation of the exposed seabed, including determination of suitability of land for afforestation and monitoring over development of existing or new afforestation sites.

7. Adopt a **plan for construction of black roads** in the Aral Sea region and on the exposed seabed so that to prevent unauthorized building of local roads and stabilize traffic routes over the territory.

8. Order local authorities of Muynak, Karauzyak, Kungrad and Takhtakupyr districts together with the Government of Karakalpakstan to **make inventory of nearly destroyed and abandoned buildings** that were previously used by forest farms, fishermen, and pasture farms and think on **their new use**, probably for tourism, by herdsmen or for development of medical centers.

9. Organize **collection and processing of medicinal plants** in Aralkum and consider constructing a medicinal plant factory in Muynak town (Ministry of Health of Uzbekistan and the Uzbek pharmaceutical industry).

10. Activate efforts for **protection of plants** (applying pesticides/biopesticides) against insects, pests and diseases as old and self-organized saxaul vegetation is affected by locust and powdery mildew.

11. Organize **integrated ground- and remote-based studies in the remaining area of the exposed seabed** (1.5 Mha in the territory of Uzbekistan) in 2021 so that to complete in 2022 mapping of the whole area for development and management of the exposed seabed. Additional expeditions are needed to clarify characteristics of six out of 17 available classes (difficult for interpretation by satellite data) and to classify all 17 initial classes of land cover in northeast, north and northwest parts of the study area to have spatially balanced sampling. This will allow having a full picture of the exposed seabed in Uzbek territory, providing a working tool for organizations responsible for the territorial management and having a single mapping base.

12. Based on the data of past and future expeditions, develop a **geoinformation system (GIS) of the dried seabed and the Aral Sea region** at IICAR. By using this system, IICAR can effectively coordinate all actions on the exposed seabed for the development of earlier existing sectors, such as fishery, muskrat breeding, livestock breeding, mineral extraction, local building material production and of new ones, like greenhouse farming, medicinal plants, spa treatments, etc.

See details on the expeditions in "Monitoring of the Dried Seabed of the Aral Sea", ed. by Doctor of Technical Sciences Professor V.A. Dukhovny, Doctor of Biological Sciences G.V. Stulina, and Doctor of Biological Sciences Sh.M. Kenjabayev. Tashkent: UNDP-UNESCO 2020. Online: http://cawater-info.net/library/rus/un_pub_uz_report_aral_sea.pdf

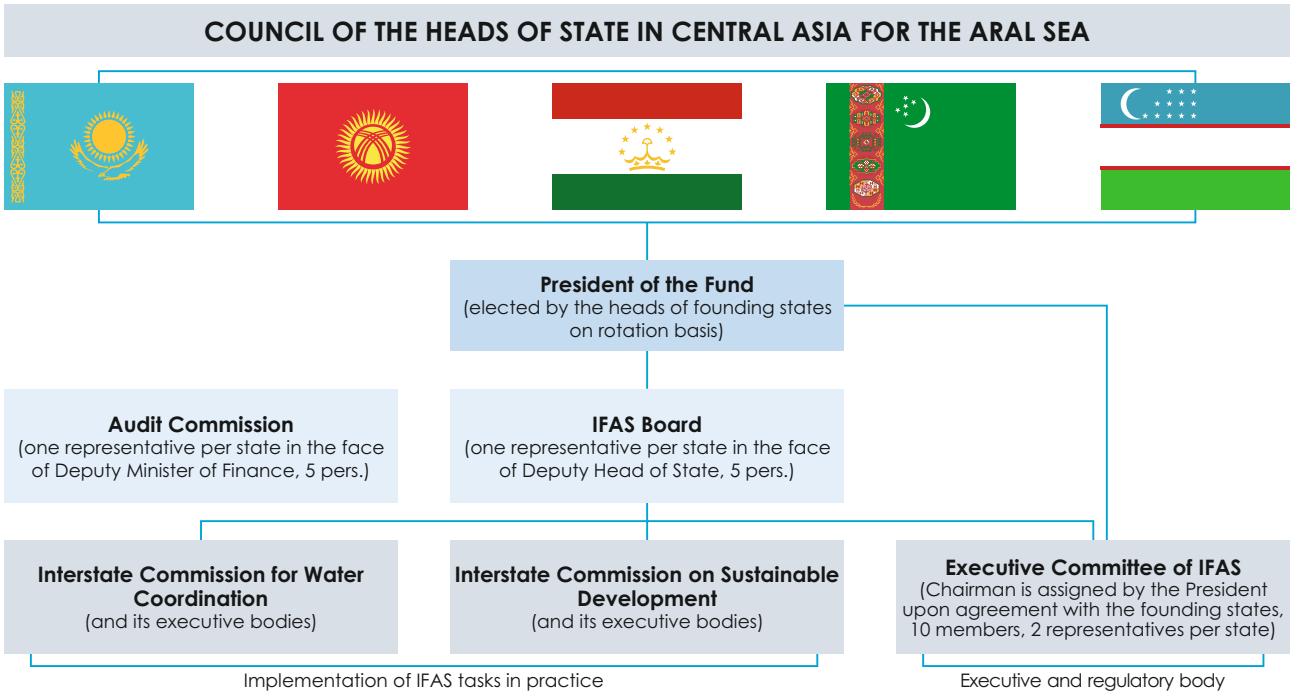
Source: SIC ICWC, V.A. Dukhovny and G.V. Stulina (expedition leader)

Section 3

IFAS and Other Regional Organizations in Central Asia

3.1. International Fund for Saving the Aral Sea

The International Fund for Saving the Aral Sea (IFAS) was established by a decision of the Heads of CA states on the 4th of January 1993 with the aim of developing and funding environmental and applied research projects and programs in order to improve ecological situation in the areas affected by the Aral Sea catastrophe and address the socioeconomic issues in the region. The organizational setup of IFAS is shown below.



Tajikistan took over the IFAS chairmanship for the period of 2019-2022 in line with the decision of the Second Consultative Meeting of the Heads of CA States (November 29, Tashkent). President Emomali Rahmon will be chairing IFAS over that time.

3.1.1. Implementation of initiatives of the Presidents of CA States voiced at XII Summit of the Heads of IFAS Founder-States

The Presidents of CA States have put forward important initiatives and proposals at XII Summit of the Founder-States, which was held in the city of Turkmenbashi on the 24th of August 2018. Following the Summit, a Joint Communiqué was adopted. Implementation of the initiatives in 2020 is described in the subsections of ICWC (3.3) and ICSD (3.4) executive bodies and in Key Water Developments in the Countries of Central Asia.

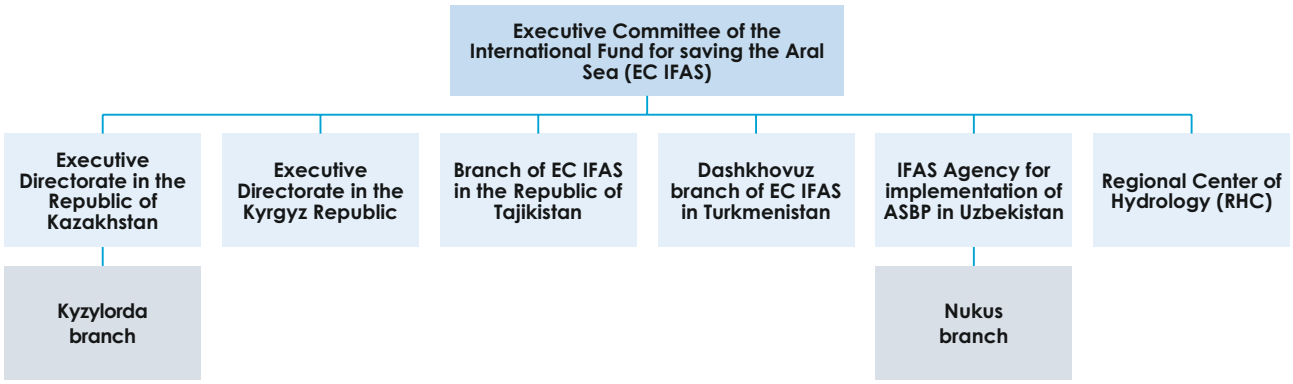
3.2. Executive Committee of IFAS and its National Branches

3.2.1. Executive Committee of IFAS

The Executive Committee of the International Fund for Saving the Aral Sea (EC IFAS) was formed by a decision of the Interstate Council of 13 July 1993. It serves as a platform for dialogue between the CA countries and the international community.

The Chairman of EC IFAS – Mr. Sulton Rakhimzoda – was appointed on 28 September 2020 by the Decree of the President of IFAS, the President of the Republic of Tajikistan.

Plans. The regional dialogue on institutional and legal improvement of IFAS and the implementation of the Aral Sea Basin Program (ASBP-4) after its approval are considered as priorities of Tajikistan's chairmanship. Development of a regional plan for adaptation to climate change and building capacities of national hydrometeorological services for studying Central Asian glaciers are also under consideration.



Location of EC IFAS by Country and Year

Activity of EC IFAS in 2020

Projects. EC IFAS ensures regional coordination and is involved in implementation of regional components of the Climate Adaptation and Mitigation Program for the Aral Sea Basin (CAMP4ASB). To continue the Central Asia Hydrometeorological Modernization Project (CAHMP), EC IFAS and the International Development Association signed an Agreement on additional financing of $11.5 for 2019-2023 (3 December 2019), including: component A (regional) – $3.5 million; component B (Kyrgyz Republic) – $5 million; and, component C (Tajikistan) – $3 million.

Meetings. EC IFAS had online meetings with:

- UN Resident Coordinator in Tajikistan, Ms. Sezin Sinanoglu. During the meeting, the parties discussed the issues of strengthening cooperation and collaboration within the framework of the International Decade for Action "Water for Sustainable Development", 2018-2028, including the organization of the High-level International Conference in Dushanbe in 2022. (17 November);

- World Bank Regional Director for Central Asia Ms. L. Burunciuc. The parties discussed priority areas of bilateral cooperation, including ASBP-4, reformation of IFAS, prolongation of CAMP4ASB Component 1 and Sub-component 3.1, and the possible implementation of a project for studying and monitoring glaciers in CA (17 November);

- EU Special Representative Mr. P. Burian. Institutional and legal improvement of IFAS, implementation of ASBP-4 and other matters were discussed during the meeting (20 November);

- GIZ, on development of cooperation within the framework of the "Green Central Asia" initiative. The parties agreed on signing a Memorandum of Understanding (27 November);

- Head of the European Union Delegation to Tajikistan, Ambassador Marilyn Yosefson. Among other matters, the parties addressed those related to climate adaptation and mitigation at the regional level, the impact of glacier melting on regional water resources, and institutional and legal improvement of IFAS (4 December);

- Chair of the Governing Council of Asia-Pacific Water Forum, Mr. Ravi Narayanan. The parties agreed to hold a preparatory webinar to the 4th Asia-Pacific Water Summit on water issues in Central Asia, as well as to organize a joint session within the framework of the Stockholm World Water Week in 2021 (9 December).

The UN General Assembly, at its 75th Session, unanimously adopted a draft resolution (A/RES/75/212) entitled "United Nations Conference on the Midterm Comprehensive Review of the Implementation of the Objectives of the International Decade for Action "Water for Sustainable Development", 2018-2028" (21 December).

3.2.2. Regional Center of Hydrology

The Regional Center of Hydrology (RCH) at EC IFAS was established on the 23rd of August 2002 in line with a decision of the IFAS Board to improve the system of hydrometeorological forecasts, environmental monitoring and data exchange between the national hydrometeorological services in the region.

3.2.3. Executive Directorate of IFAS in Kazakhstan

ED IFAS renders assistance in addressing topical issues and coordinating measures to improve water-related, socio-economic and environmental situation in the Kazakh part of the Aral Sea basin.

Activity of ED IFAS in Kazakhstan in 2020

Projects:

- The WB "North Aral Sea Development and Revitalization" Project (P170187) was under preparation in the course of the year.

- "Ensuring Safety, Conservation and Development of Fish Stocks in the Northern Aral Sea Region. Capacity Development of the Aral-Syrdarya Basin Council" as part of the Berlin Water Initiative: the presentation event of the project and a fish protection structure at the Kokaral dam was held on 17 June; the monitoring of operation of the fish protection structure and of fish stock in head-water and tail-water was conducted in July and August. Thanks to the project it became possible to save about 4 thousand tons of adult fish (53 million population) and 1 thousand tons of young fish (30 million population). ED IFAS took part in the XXV meeting of the Aral-Syrdarya Basin Council, where diversification of irrigated agriculture, water conservation, non-growing season operations and other issues were discussed (8 December).

- "Development of the Aral Region Wild Animals Adaptation": a hunting farm was organized on 47 thousand ha on the North Aral Sea south coast (Kokaral peninsula) to monitor fauna and flora.

- The demonstration project "Afforestation of the Dried Bottom of the Aral Sea: Piloting a Closed Root System" was started as part of the EU funded project "Nexus Dialogue in Central Asia" on a land plot of the Eco-Aral Science and Tourism Center located on 10 ha of south coast of Kamystybas/Kambash Lake. The demonstration project aims to improve survival rate of plants in this area.

- As part of the "EU and Central Asia: New Opportunities for a Stronger Partnership" Strategy and the "Capacity Building for Cooperation on Dam Safety in Central Asia" Project, representatives of the Slovakian state enterprise "Vodohospodarska Vystavba" during their field visit monitored hydraulic structures with a view to develop a dam safety system and organize construction of small hydropower (24-27 February, Almaty, Taraz). A meeting was held on safety of hydraulic structures on 15 June. The participants discussed the issue of resuming the process on the regional cooperation agreement on hydraulic structure safety in CA.

- The possibilities of cooperation under the project "Development of RS-based assessments of the present environmental state of the Aral Sea region in Kazakhstan territory as an increased risk area" were discussed with the representatives of the National Center for Space Research and Technology (6 January).

- The issues related to implementation of the regional project "EU-Central Asia Cooperation on Water – Environment – Climate Change" (WECOOP), third phase were addressed at the 9th meeting of the EU-Central Asia Working Group on Environment and Climate Change (WGECC) (12-13 February, Brussels).

- As part of implementation of the State Program for tourism development in the Republic of Kazakhstan for 2019-2025, the working group conducted field studies of abandoned ships on the Kazakh part of Vozrozhdeniya Island for possibility of organization of an open air museum (21-28 September) and development of the Aral tourist cluster (28-30 September).

Regional and international cooperation. ED IFAS in Kazakhstan took part in the following events: working meeting on Central Asian water and energy consortium (25 August, Nur-Sultan); discussion on the draft Agreement between Kazakhstan and Uzbekistan on the use and protection of transboundary watercourses (25 August, MEGiPR RK); survey of interstate hydrotechnical constructions in the territory of the Republic of Uzbekistan within the expert group on monitoring of hydrotechnical constructions in riparian countries (23-30 September); finalizing the national part of the Strategic Action Program for the Chu and Talas River basins within the working group (5-6 March); 28th meeting of the Chu-Talas Commission (8 December, Taraz); meetings organized by the International Water Assessment Center (22-23 September, 20 November, 14 December, see UN Economic Commission for Europe); working meeting of the representatives of ICSD bodies on preparation of an ICSD Advisory Coincil meeting (15 December, Tashkent).

ED IFAS has discussed with (1) representatives of German Foreign Office and Embassy of Germany in Almaty the possible ways to involve German investors in the Kazakh agribusiness (17 January); (2) Astana International Financial Center (AIFC) the future actions to mobilize green finances and technology for the Kazakh part of the Aral Sea region (4 November). Memorandum of Understanding and Partnership was signed with AIFC Green Finance Center (14 December). USAID and U.S. Embassy in Kazakhstan organized a field trip to the Kazakh part of the Aral Sea region to take stock of the topical issues in situ (1-4 December).

Capacity building and education. A Memorandum of Understanding was signed between ED IFAS and the Central Asia Sustainable Innovation Bureau (CASIB) at the German Federal Ministry of Education and Research to promote cooperation through the exchange of knowledge and practices between the two countries (9 September). Also, ID IFAS took part in:

- (1) the meeting of the Scientific-Methodological Alliance on training in the 6B074 "Water Economy" topic (23-24 January, Taraz); (2) approval and examination of a final report on Professional Standards (27-30 January), as part of development of cur-

ricula and training plans on the basis of Water Professional Standards;

- the work of the regional academic expert group on discussion of a model curricula on unification of training in "Hydrotechnical reclamation" and "Hydraulic structures" topics for CA (12 November);

- seminars at the International Training Center for the Safety of Hydrotechnical Constructions for advanced training of KazNIIVH specialists (6-8 February, Taraz); on financing transboundary water cooperation and basin development (16-17 December);

- organization, jointly with GKU and the "Barsakelmes" State Nature Reserve, of events as part of the Second Aral Sea Summmer School and the ESERA (Ecosystems, Society and Economics of the Region of Aral) Project (25-30 August);

- the Global Disruptive Tech Challenge 2021: Restoring Landscapes in the Aral Sea Region as a member of the judging panel (8 October, 15 December);

- Discussion of the "Comprehensive Analysis of the Kazakhstan's Water Code for Ammending and Supplementing It in Light of the Present State of the Water Sector" (23 December).

Media outreach. The "Kazakhstanskaya Pravda" newspaper published materials on topical issues of the water sector and problems in the Aral Sea region (15 October). Interviews were given to: "QazaqZerno" on perspectives of the Aral Sea (29 October); "Inbusiness.kz" e-newspaper on planned exploration of "Tau-Ken-Samruk" in the Ile River delta (30 October); and, Berlin Radio (25 November-4 December). With the assistance of the Direction, special correspondent of the "Novaya Gazeta" public newspaper Mr. Khasanov traveled to the Kazakh part of the Aral Sea region and interviewed A.K. Kenshimov (18-20 November).

Source: ED IFAS in Kazakhstan, www.kazaral.org

3.2.4. IFAS Agency for Implementation of the Aral Sea Basin and GEF Projects

The GEF Agency of IFAS established in 1998 is a working body of IFAS. It has the status of international organization and accreditation at the MFA of Uzbekistan as a representative body of EC IFAS in Uzbekistan.

Activity of the GEF Agency of IFAS in 2020

The **project activities** are carried out together with the Nukus branch of EC IFAS through the state budget of Uzbekistan as its contribution to IFAS and the donor's grants.

Work was done as part of the following projects

- "Construction of small local water bodies in the Amu Darya Delta. Phase II". Work was continued on (1) "*Reconstruction of a road dam along Maipost Lake and construction of an overflow structure on the Amu Darya River (Akdarya) together with measures to prevent canyon formation processes in Domalak Lake*". The work implemended by the contractor in the face of the "Kuprikkurilish" Trust costed 377.153 billion soum; (2) "*Reconstruction of the Muynak Canal*". The total cost is 28,691.451 million soum, of which 13.54 billion soum were disbursed. Contractor – GUP "Zarafshanmakhsussuvkurilish"; (3) "*Provision of irrigation water for the subsidiary plots (65 ha) of the Muynak city citizens through a pressure pipeline network composed of 250 mm diameter polyethylene pipes*". The total cost, including the construction of irrigation pipeline network in the city and of the pumping stations, is 10,546.357 million soum; contractor – OOO "Guldirsinkurilish". The work is to be completed in early 2021; (4) "*Construction of a protective dam at the Muynak airport and the subsurface horizontal drainage*". The total cost is 18,856.907 million soum; contractor – OOO "Guldirsinkurilish". Construction of the protective dam has been completed (14,359.475 million soum), and that of drainage is to be completed in early 2021.

- "Protective afforestation in Akhantai site" and "Protective afforestation in Akkum ridge". No afforestation work was made in 2020. Resources (saxaul seeds, young plants) and contractor's workers were mobilized for planting a "green cover" on the exposed bed of the Aral Sea. The work on the above projects will be restarted in 2021.

- "National water resources management in Uzbekistan" (SDC). Support was rendered to MWM in the development of the 2030 Water Sector Development Concept. An agreement was signed between the Government of Uzbekistan and the Government of Swiss Confederation on the Project Phase II (16 June).

The Agency took part in the feasibility study of the GEF project "Conservation and sustainable management of lakes, wetlands and riparian corridors as pillars of a resilient and land degradation neutral Aral basin landscape supporting sustainable livelihoods".

Activities in support of IFAS. The Agency prepared information on cooperation between the Russian Federation, Uzbekistan and IFAS and supported the application of Russia to become an observer in IFAS.

Political participation. The Head of the Agency V. Sokolov took part in a session of the Uzbek Oliy Majlis' Senate Committee on the Aral Sea region development (18 November) and was selected as a member of the Expert Group. The Agency also participated in three meetings of the Tashkent City Council of the Ecological Party of Uzbekistan and a session of the Party Plenum (20 November).

Promotion of water-environmental agenda. Efforts were made to attract attention of the international community and donors to water and environmental problems in the region, promote the initiative of the President of Uzbekistan titled "Aral Sea Region as an Area of Environmental Innovation and Technologies", and further a CA regional water conservation program.

GWP – GEF Agency of IFAS. The National Water Partnership of Uzbekistan has been functioning at the Agency since 2017. In 2020, organizations in Uzbekistan were mobilized for participation in the Water Change Maker Awards, the analytical review "Degree of SDG 6.5.1 indicator achievement – implementation of IWRM in the Republic of Uzbekistan in 2020" was done and the "Global Water Partnership's support for water management initiatives of key partners in Uzbekistan" was published.

Asia Water Council (AWC). Mr. Sokolov as the Chairman of the Council's Special Committee on Water-Energy-Food Nexus participated in the following online events: (1) meeting of representatives of AWC Special Committees, to discuss selection of water projects and progress of preparation to the 2nd International Asia Water Week/2-AIWW titled "Sustainable, clean and sufficient water for all" (26 March); (2) 11th and 12th AWC Board meetings (8 July, 16 December, see International Water Organizations and Initiatives).

Republican and international events. The Agency took part in the Green Aral Sea crowdfunding campaign launched with the UNDP's support, the aim of which was to plant a 100-hectare forest of 100,000 saxaul saplings on the dried seabed (11 March). Presentations were made at (1) a video conference organized by the Tashkent branch of the Russian Economic University named after Plekhanov and dedicated to international cooperation on Aral Sea problem (20 May); (2) a video conference to discuss a new project on "Development of new technologies for monitoring and controlling the use of water resources to combat salinization and improving land productivity and food security in the Aral region" as part of the JICA Science and Technology Research Partnership for Sustainable Development (SATREPS) (27 August); (3) a roundtable "Initiatives of the President of Turkmenistan for the environmental improvement in the Aral Sea region and their implementation" (2 December); and, other events.

During the year the staff of the Agency participated in a webinar series as part of the preparation for the 4th Asia-Pacific Water Summit/APWS (23 September, 7 October, 10 November, 26 November, 22 December); a webinar "Introduction of environmental technologies and innovations in the Aral Sea region as part of the new EU strategy for Central Asia: cooperation between Uzbekistan and Belgium" (22 October).

Media outreach. Events organized by the Agency were covered in media. These included in particular, the interviews for "Uzbekistan 24" TV-channel (7 February, 20 May), Uzbekistan 24 radio-channel (12 March), etc. Agency's publications are available on https://aral.uz/wp/category/newspaper/ and https://aral.uz/wp/category/net/. A number of research papers, reports, brochures and books is accessible on https://aral.uz/wp/publications/p3/.

Source: GEF Agency of IFAS; https://aral.uz/wp/about/

3.3. ICWC of Central Asia

The Interstate Commission for Water Coordination in Central Asia (ICWC) is a regional body of the CA states that deals with the issues related to control, efficient use and protection of water from the interstate sources of the Aral Sea basin and implements jointly developed programs on the basis of cooperation and mutual respect for the parties' interests. The Commission was formed on 18 February 1992. The organizational set-up of ICWC is shown in the figure below.

3.3.1. ICWC meetings

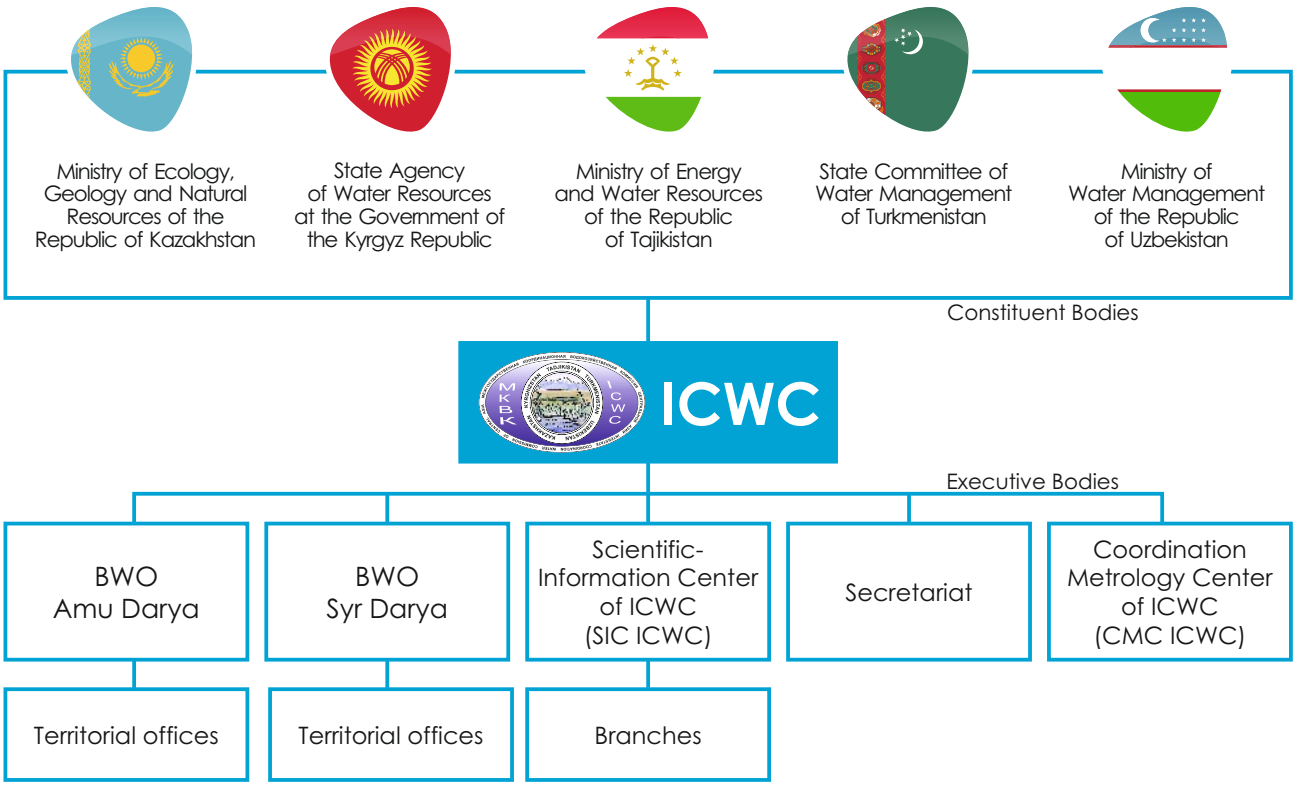
In 2020, ICWC held two meetings in a video conference format: 78th (10 April) and 79th (24 November). ICWC members from Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan[13], as well as executive bodies (SIC ICWC, Secretariat of ICWC, BWO Amu Darya and BWO Syr Darya) and invited persons took part in those meetings.

Issues addressed

The main items on the agenda of the meetings were the limits of water withdrawals and the operation regimes of reservoir cascades in the Syr Darya and the Amu Darya basins. The Commission summarized the results on the above items in the non-growing season 2019-2020 (78th meeting) and the growing season 2020 (79th meeting).

The limits of water withdrawals for both river basins were approved for the growing season 2020 (78th meeting). The forecast operation regimes of the reservoir cascades in the basins proposed by BWO Amu Darya and BWO Syr Darya were taken into account.

[13] Since the 68th meeting, representatives of the Kyrgyz Republic have not taken part in ICWC activity



ICWC members in 2020

Sergey N. Gromov,
(since August 14, 2019)
Vice-minister of Ecology, Geology and Natural Resources

Yerlan N. Nysanbayev,
(since October 6, 2020)
Vice-Minister of Ecology, Geology and Natural Resources

Usmonali Yu. Usmonzoda,
(since May 6, 2019)
Minister of Energy and Water Resources

Djamshed Sh. Shoimzoda,
(since November 3, 2020)
First Deputy Minister of Energy and Water Resources

Joshmyrat Sedekov,
(since September 23, 2019)
Acting Chairman of the State Committee of Water Management
(temporary appointed)

Guizgeldy N. Baijanov,
(since February 7, 2020)
Chairman of the State Committee of Water Management

Shavkat R. Khamraev,
Minister of Water Management

An agreement was reached to further review and approve by the end of May the operation regimes on the basis of more accurate forecasts of water availability.

BWO Syr Darya has developed and submitted to ICWC members for their consideration the revised forecast operation regime for the Naryn-Syrdarya reservoir cascade.

Regarding *measures to ensure additional discharge from reservoirs in the Syr Darya River Basin during the growing season* (78th meeting), the Parties agreed to take actions to ensure the inflow and appropriate water releases from reservoirs of interstate character in light of anticipated low water level during the growing season 2020. Relevant bi- and trilateral protocols have been signed.

According to the protocol of bilateral negotiations between the Republic of Kazakhstan and the Kyrgyz Republic dated May 26, 2020, the Republic of Kazakhstan concluded an agreement with the Kyrgyz Republic on the reception of electricity, which allowed releasing additional 321 Mm^3 of water from the Toktogul Reservoir during the period from June to August.

Based on a working meeting between the Republic of Kazakhstan, the Republic of Tajikistan and the Republic of Uzbekistan of June 30, 2020, a tripartite protocol was signed and the Republic of Kazakhstan concluded an agreement with the Republic of Tajikistan on the reception of electricity, which allowed releasing additional water from the Bakhri Tojik reservoir in the amount of 306 Mm^3 during the period from July to August.

Due to the deteriorating water situation impacting the Naryn-Syrdarya reservoir cascade, the Republic of Uzbekistan and the Republic of Tajikistan signed a protocol dated July 15, 2020 to drawdown the Bakhri Tojik reservoir by additional 170 Mm^3 in the period from July to August as compared to the trilateral protocol.

The forecast limits of water withdrawal were approved and the proposed operation regimes of the reservoir cascades for both river basins were taken into account for the non-growing season 2020-2021 (79th meeting).

The Kazakh party proposed to consider and approve limits of water withdrawal for the Karadarya and the Chirchik rivers. In this context, the parties requested BWO Syr Darya to draft a proposal on the determination and approval of water withdrawal limits for those rivers.

The information by SIC ICWC on *progress in implementation of the proposals and initiatives voiced at the Summit of the Heads of IFAS Founder-States in Turkmenbashi* was taken into consideration at 78th and 79th meetings.

The efforts of the ICWC executive bodies on implementation of those proposals and initiatives of the Heads of IFAS Founder-States were acknowledged (78th meeting).

3.3.2. Activities of ICWC Executive Bodies in 2020

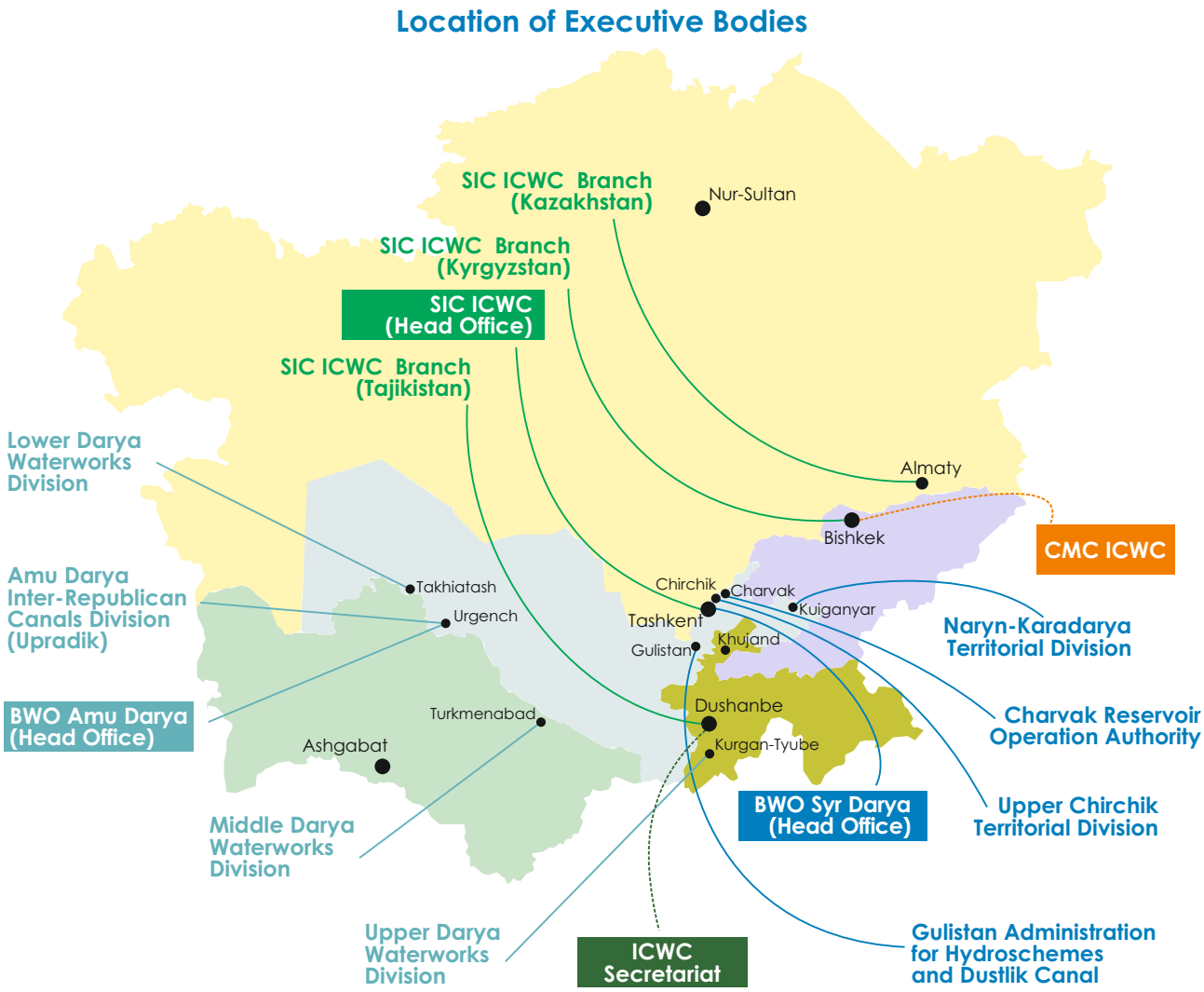
Executive bodies of ICWC

BWO Amu Darya	Responsible for routine management and distribution of water resources among the riparian states, timely and reliable delivery of water, according to the agreed limits, to users, and provision of sanitary and environmental flow for Prearalie and the Aral Sea. Established in September 1, 1987, with the headquarters in Urgench and four territorial divisions.
BWO Syr Darya	Responsible for routine management and distribution of water resources among the riparian states, timely and reliable delivery of water, according to the agreed limits, to users, and provision of sanitary and environmental flow for Prearalie and the Aral Sea. Established in September 1, 1987, with the headquarters in Tashkent and four territorial divisions.
ICWC Secretariat	Responsible for fulfillment of ICWC assignments, preparation, together with other executive bodies, of programs, measures and draft decisions for ICWC meetings, control over the flow of funds from ICWC founding states for financing of ICWC executive bodies (allocated for field operations, capital repairs, etc.), and coordination of international contacts. Established by the decision of the 6th ICWC meeting on the 10th of October 1993 in Dushanbe.
SIC ICWC	Responsible for backstopping of ICWC activities on regional and global stages. Contributes to transboundary water cooperation and sustainable water management in Central Asia through information support, training, networking, research, and expertise. Established on the 5th of December 1992, with the headquarters in Tashkent and 3 branches.
CMC ICWC	Coordinates and implements technological policy in the field of metrological support to ICWC programs and decisions on the use, protection and accounting of water resources in sources and systems. Established on the 23rd October 1999, with the headquarters in Bishkek.

BWO Amu Darya

Activity of BWO Amu Darya in 2020

BWO Amu Darya continued working on interstate water allocation and real-time control over observance of the established water withdrawal limits approved at the ICWC meeting (see Water-Related Situation in the Amu Darya and the Syr Darya River Basins), on modernization and operation of waterworks facilities that are under responsibility of BWO, and prepared materials for and participated in two ICWC meetings (see ICWC meetings) and 15 meetings of water management organizations responsible for the river's lower reaches on the issues of water allocation.



Despite the COVID-19 pandemic, BWO Amu Darya maintained cooperation with national water agencies of Turkmenistan, Tajikistan and Uzbekistan, national hydrometeorological services, SIC ICWC, and IWMI. Representatives of BWO Amu Darya and its territorial branches took part in regional programs, conferences, and training workshops. In particular, with the support of GIZ, training was held for BWO's staff on how to handle the software for evaluation of snow cover in the catchment area of the Amu Darya.

Source: BWO Amu Darya, http://amudarya-bwo.org/

BWO Syr Darya

Activity of BWO Syr Darya in 2020

Despite lockdown measures, BWO Syr Darya kept maintaining waterworks facilities, including canals, gauging stations, communication facilities, buildings and other structures under responsibility of the organization to ensure efficient use of water resources and trouble-free and sustainable supply of water to user-states.

ICWC meetings. BWO Syr Darya took part in preparation of 78th and 79th ICWC meetings. The reports on forecast and actual operation regimes of the Naryn-Syrdarya cascade of reservoirs and the limits of country water withdrawals for the growing season 2020, with account of the expected low-water conditions (forecast and actual), and the non-growing seasons 2019-2020 (actual) and 2020-2021 (forecast) were submitted for consideration and approval. The forecast and actual data from UzHydromet, CDC "Energy", Ministry of Water Management of Uzbekistan, and Committee for Water Resources of Kazakhstan were used for that purpose.

Repair and rehabilitation operations. The territorial branches of BWO carried out ongoing maintenance of waterworks facilities, buildings and control stations. For the Dustlik canal, gates of check structures at 24 km and 39 km and at the old head structure were repaired and a gate of the check structure at 26 km was replaced. The slopes of the Dustlik canal were rehabilitated. The gates of head structures at the Big Fergana Canal and the Zardarya Canal were repaired. The gates of the head structure at Khakulabad divider on the Feeder Canal, DP15 were replaced. Also, canals and structures were mechanically cleaned as planned.

"Smart Water" system. With the financial support of KOICA and assistance of the Uzbek Ministry of Water Management the Smart Water system's equipment was installed at four structures (K-1, K-3, Right-bank offtakes of the South Golodnostepskiy Canal (SGC) and the Dustlic canal) of the Gulistan Waterworks and Dustlic Canal Authority to measure water levels and quantities in automatic mode and transmit the data online.

Reconstruction and modernization. As part of the investment program, the tail-water of Kuyganiar hydroscheme[14] was reconstructed and the construction[15] of additional protection structure downstream of the hydroscheme's dam was partially done. The reconstruction would ensure reliable and long-term operation of the hydroscheme and guarantee irrigation of 230,000 ha in the Fergana Valley. In line with the Governmental Decree of 10 January 2020 on measures for development of social and production infrastructure in the Republic of Uzbekistan in 2020-2022, the construction and repair work was done as part of "Reconstruction of the tail-water of the head structure at Northern Fergana canal in Uchkurgan district, Namangan province" and the "Reconstruction and modernization of the head structure at DP 145+00 of SGC in Shirin town, Syrdarya province", 1st stage.

Source: BWO Syr Darya, https://bwosyrdarya.org/

ICWC Secretariat

Activity of the Secretariat in 2020

The ICWC Secretariat together with other executive bodies took part in organization of the two meetings of ICWC (see ICWC meetings), fulfillment of decisions and assignments of ICWC.

Source: ICWC Secretariat

Scientific-Information Center of ICWC

SIC ICWC was established on 5 December 1992. SIC ICWC has headquarters located in Tashkent and its branches in Kazakhstan, Kyrgyzstan and Tajikistan. The Center contributes to implementation of ICWC tasks through organizational and technical support, information and analytics, capacity building, international communications, scientific research and expert advise.

Activity of SIC ICWC in 2020

ICWC Working Groups. The work was continued in four areas as part of the "Implementation Plan on strengthening ICWC activities in key directions":

Water conservation. The "Methodology for scheduling water use and water delivery for farms" was refined according to comments (Russian and Uzbek versions).

Implementation of integrated water resource management and adaptation to climate change. The following reviews were prepared: "Lessons and vision of the adoption of the hydrographic and public participation principles in the CA water sector"; "Basin planning: theory and practice"; "Establishment and functioning of national water governance organizations: theory and practice" (Russian version); "Water pricing system abroad and in Central Asia" (Russian version); "Rules and procedures of Basin Councils"; and, "Legal and institutional aspects of water management in the Central Asian countries" (Russian version).

Improvement of water accounting quality and accuracy. SIC ICWC developed project proposals on "Automation of Tuyamuyun reservoir's structures (Amu Darya River)" and "Automation of gauging stations and hydraulic structures along the Syr Darya River", prepared the review on "Generalization of existing water accounting and reporting practices" (Russian version), the paper "Automation of the Syr Darya and the Amu Darya Rivers" (Russian version), and gained approval from working group's members from BWO Amu Darya and BWO Syr Darya on the Manual on measuring water discharge in canals (Russian version).

Building capacity of regional and national organizations. SIC ICWC prepared reviews on "Strengthening water cooperation between regional and national organizations in Central Asia" (Russian version) and "Regarding international experience in vocational education" (Russian version). The draft procedural documents such as the "Rules of ethics and official conduct for the staff of ICWC organizations" and the "Procedure of interactions of ICWC organizations with one another and with outside agencies" were disseminated among ICWC members and heads of executive bodies for consideration.

Organizational and technical activity. SIC together with other bodies of ICWC took part in organization of the two meetings of ICWC (see ICWC meetings), fulfillment of decisions and assignments of ICWC. SIC has developed analytical reports on the water-related situation in the region for growing and non-growing seasons. The work was continued on the analysis of the state of the South Aral region and the Aral Sea, including monthly estimations of the inflow from the Amu Darya River and collecting drains and the changes in the water surface in Eastern and Western parts of the Aral Sea and lake systems of the Aral Sea region using satellite imagery: 19 February, 22 March, 25 May, 10 June, 28 July, 20 August, 14 September, 16 October. It was found that during the year there were periods with insufficient inflow of water into the Aral Sea region and a sharp reduction in the water surface of lakes (compared to design areas). The results are available on the CAWater-Info portal in its section dedicated to the Aral Sea (see Monitoring of Changes in the Water Surface Area of the Large Aral Sea and the Amu Darya Delta).

SIC ICWC took part in the follow-up activity to the Joint Communiqué adopted at the Summit of the Heads of IFAS Founder-States, implementation of the CA country presidents' initiatives. Prof. Dukhovny reported on the activity of SIC ICWC on (1) Automation of operation of gauging stations in the Amu Darya and Syr Darya River basins; (2) Establishment of an International Water and Energy Consortium; (3) Water diplomacy and IWRM; (4) Water conservation and rational use of water resources; (5) Water accounting; (6) Preparation of the Regional Program for Rational Use of Water Resources in Central Asia; (7) Mitigation of consequences of the Aral Sea catastrophe; (8) Scientific cooperation; (9) Development of ASBP-4; and, (10) Reform of IFAS at 78th and 79th ICWC meetings. This information was also presented in 84th and 85th ICWC bulletins. For effective development and implementation of the Presidents' initiatives and for the improvement of water management system in Central Asia, SIC ICWC has drafted and submitted

[14] Kuyganiar hydroscheme was built on the Karadarya River in 1939. The carrying capacity is 1,210 m^3/s. The hydroscheme was damaged as a result of strong flood in 2010

[15] The construction is to be completed in 2021

proposals on each direction for further consideration by ICWC members.

Technical, information and expert assistance was rendered to **national and regional** organizations through timely provision of relevant materials on their request. In particular, the following information and analytical contributions were made to:

- **fulfillment of decrees of the President and the Cabinet of Ministers of Uzbekistan:** "On the establishment of the International Innovation Center for the Aral Region under the President of Uzbekistan" (PP-3975 of 16.10.2018); "On measures for organizing the work of the Research Center for Water Problems at the Cabinet of Ministers of Uzbekistan" (PKM 744 of 25.11.2020); "On approval of regulations governing the work of the Ministry of Water Management of Uzbekistan" (PKM 500 of 03.07.2018); "On measures for further improvement of the water management system" (PP-4486 of 09.10.2019); "On measures for further improvement of water management in Uzbekistan to ensure wider access to drinking water and improve its quality" (UP-5883 of 26.11.2019); "On formation of a single water budget of the Republic of Uzbekistan" (VQL-3339/20); "On 2020 state budget of the Republic of Uzbekistan" (ZRU-589 of 09.12.2019); and, "Concept of water sector development in Uzbekistan in 2020-2030" (UP-6024 of 10.07.2020);

- **draft documents:** Governmental Decree on the adoption of the strategy of water supply and sanitation in the Republic of Uzbekistan for the period up to 2035 (ID 20815 of 10.08.2020); "Concept of water sector development in Uzbekistan in 2020-2030"; "Strategy of water management and irrigation sector development in Uzbekistan in 2021-2023" (staged implementation of the above Concept); Environmental Code; Concept of the National management information system for the water sector;

- **issue related to the development of cooperation between CA countries and Afghanistan:** information on potential uses by Afghanistan of water resources in the Amu Darya River; analytical document on Afghanistan's interests in the use of Amu Darya's water; and, proposals on the involvement of Afghanistan in ICWC activity;

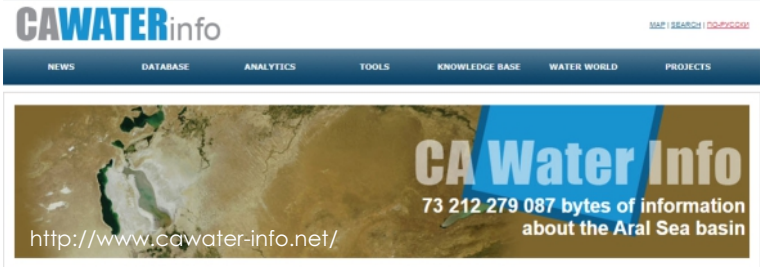
- **issue related to Sardoba dam collapse:** expert analysis on potential consequences of the Sardoba dam collapse; translated article on the collapse in foreign media for information; information on the alleged causes of dam collapse and the need for radical solution on the future of the Syr Darya River basin. The check calculations made for possibility of dam collapse under the effect of wave fetch observed on the 1st of May in this area gave the negative answer;

- **development of agroclusters** and organization of a centralized system of agricultural extension services.

Information and analytical activity. The regional database on water and land use in the Aral Sea basin (CAWater-IS) is populated with the key information on all provinces of the riparian countries up to 2020: 45 indicators on land resources; 17 socio economic indicators; 11 indicators on water resources and their use (data received from national correspondents). The databases on the Amu Darya and the Syr Darya basins have been updated on ten-day basis (jointly with BWO Amu Darya and BWO Syr Darya). *Two new sections* "Water-related situation in the Amu Darya River Basin" and "Water-related situation in the Syr Darya River Basin" have been opened on the SIC ICWC website, where analytical reports showing the situation for each ten-day period are available. This allows increasing openness and transparency of ICWC activity. The assessment of expected inflow into the Toktogul, Andizhan, and Charvak reservoirs and at Kelif gauging station for the growing season 2020 was uploaded as well.

Information and publication activity. The information support of activities of ICWC was further provided through issue and dissemination of publications and upgrade of databases and the knowledge base, analytical tools and models – the ASB management model (ASBmm) and the WUEMoCA tool, regional web-resources, including the CA water and environment knowledge portal (CAWater-Info), ICWC, SIC ICWC, and EECCA NWO web-sites and the "Atlas of water-management and environmental organizations in EECCA countries".

The knowledge base "Water in Central Asia" was populated with 1457 new entries, such as monographs, research papers, manuals, reference documents (guidelines, recommendations, etc.) and other publications.



Projects. SIC ICWC

- under the contract with OECD, refined the Diagnostic Report on Rational Use of Water Resources in Central Asia, based on comments from national water agencies, research institute, academia and regional organizations in CA. This work was published in the form of a discussion document titled "Overview of the use and management of water resources in Central Asia".

- as part of the joint UNDP-UNESCO project "Addressing the urgent human insecurities in the Aral Sea region through promoting sustainable rural development", organized, together with IIC of the Aral Sea, the second ground-based research expedition (28 May-26 June). The results were presented at a round-table (16 December) and in the publication "Monitoring the Dried Seabed of the Aral Sea" (see details in Water-related Situation in the Aral Sea Basin).

- completed main activities under the CAWA-3 (Regional Research Network "Water in Central Asia") Project in 2019. In 2020, the collection of papers titled "The water use efficiency monitor in Central Asia – WUEMoCA" (in Russian) was published.

- as part of the Project "Support to the Network of Russian speaking water management organizations and organization of a Network conference in Yekaterinburg, September 2019" together with UNECE (and with the support of RF) continued work on updating and population of the Network's web-

site, weekly distribution of the e-newsletter "Water management, irrigation and environment in Eastern Europe, Caucasus and Central Asia". Additionally, the establishment of a regional expert platform on water security, sustainable development and future studies was initiated. Jointly with UNECE's consultants, SIC started the survey on "Statements made by the Central Asian countries at the UN General Assembly in 1992-2020: Key highlights and priorities" and the "Environment and Transboundary Cooperation in the Statements made by the EECCA countries at the UN General Assembly in 1992-2020".

- issued four Aral Sea Basin Transboundary Water Early Warning Bulletins (February-March, March-April, April-May, May-June) as part of the UNRCCA project. The Early Warning Bulletins show the actual situation in the Amu Darya and the Syr Darya basins for the current month and the forecast for the next month.

- compiled and published, with the support of UNRCCA, the 2019 Water Yearbook: Central Asia and around the Globe in Russian and English. OSCE provided financial support for publication of 80 copies of the Yearbook in Russian and 50 copies in English for dissemination.

- developed the methodological and information bases for calculation of river balance items and water balances of reservoirs on 7 balancing sites (from Toktogul hydroscheme to Shardara reservoir) and drafted recommendations on assessment of water losses as part of the work on the more detailed definition of water balance for the Syr Darya River and water balance for the reaches of Toktogul reservoir-Uchkurgan hydroscheme-Bakhri Tojik reservoir and Farkhad hydroscheme-Chardara reservoir.

- developed the methodological and information bases for calculation of water balance of rivers and reservoirs on 12 balancing sites of the Syr Darya River basin and drafted recommendations on assessment of water losses as part of the work on the more detailed definition of water balance for the Karadarya River and the Chirchik River and development of respective computer programs.

Capacity building and training. The web-site "Capacity building and training" was further upgraded. For educational activities of SIC ICWC, please, see Regional Training Center at SIC ICWC. SIC's expert Mr. Muminov defended his doctor's thesis on "Improving the water financing methodology through market mechanisms" (4 September). Also, SIC's staff got training in various online seminars and webinars in the course of the year (see Professional Development Courses and Traininings in 2020). Deputy Director Ms. Ziganshina was invited to join the editorial team of the Central Asian Journal of Water Research (CAJWR) as a responsible editor for water governance and law, and Deputy Director Mr. Kenjabayev started his work as a reviewer of the Land Degradation & Development International Journal. Sh. Muminov has become a member of the editorial team of the e-journal "Actuarial finance and accounting" published by the Tashkent State Economic University.

Publications. 28 publications on water management and law were issued in hard and electronic copies and distributed electronically.

In particular: (1) the UNESCO-SIC ICWC book "Aral Sea and the Aral Region" (in English and Russian), which summarizes work undertaken by SIC ICWC on monitoring and analysis of socio-economic and environmental situation in the period from 1994 to 2018; (2) the book by Prof. Dukhovniy "Water Flows, Water Calls", v.3, "Bactria press" Publishing House and a review to this book by A. Khojaev "A new feat of Viktor Dukhovniy".

Media. Prof. V. Dukhovniy gave an extended interview to Uzreport.tv channel as part of the program series "New Report" with N. Makarenko on "Environmental disaster of the Chirchik River" (March 8).

International cooperation. SIC kept maintaining cooperation with embassies, international organizations and financing institutions and took part in activities of UNECE, WWC, ICID, GWP, and INBO.

As part of cooperation activities with (1) **UNECE**, D. Ziganshina contributed to meetings and activity of expert groups of the UNECE Convention on the protection and use of transboundary watercourses and international lakes; (2) **ICID**, Deputy Director Kenjabayev started working as the Secretary of the Working Group on Irrigation and Drainage in the States under Socio-Economic Transformation (WG-IDSST). SIC leadership took part and made presentations in a number of events, including: meeting of the Working Group (28 October, India); meeting of the Office Bearers Committee (17 November, India); 71st meeting of the ICID International Executive Council meeting (7-8 December). The ICID page on the CAWater-Info Portal was updated, http://cawater-info.net/int_org/icid/index.htm; (3) **INBO**, SIC ICWC made contributions to Newsletter 28, 2020; took part in the webinar "Water information systems, governance and the interest of remote sensing: for an informed water resources management at national and basin levels" (15 September) and the World Liaison Bureau meeting in the context of the 18th International "EUROPE-INBO" Conference (10 November).

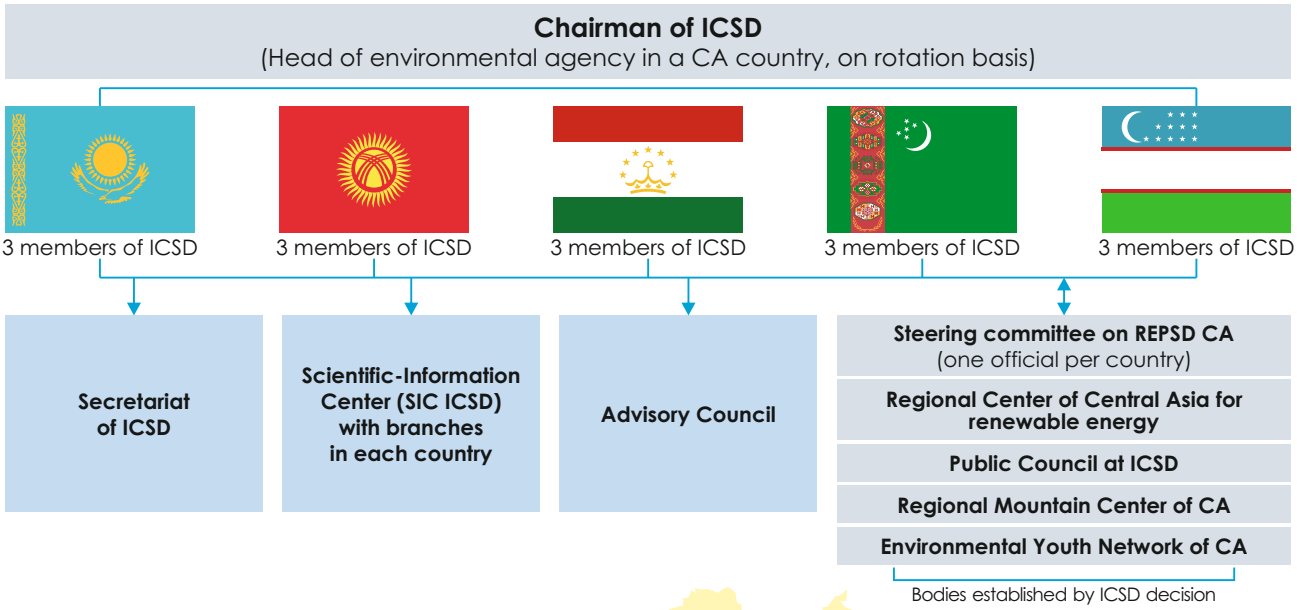
Within the framework of (1) the new EU Strategy on Central Asia: cooperation between Uzbekistan and the European Union, SIC leadership took part in the workshop "Implementation of Green Technologies and Innovations in the Aral Sea Region" and made a presentation on "Transboundary water cooperation in Central Asia: how science informs decision-making" (22 October); (2) membership in the International Water Resources Association participated in seminars: "Power and Diplomacy" (26 August); "Sustainability of engineered rivers in arid lands: challenge and response" (23 September); "Addressing groundwater resilience under climate change" (28-30 October).

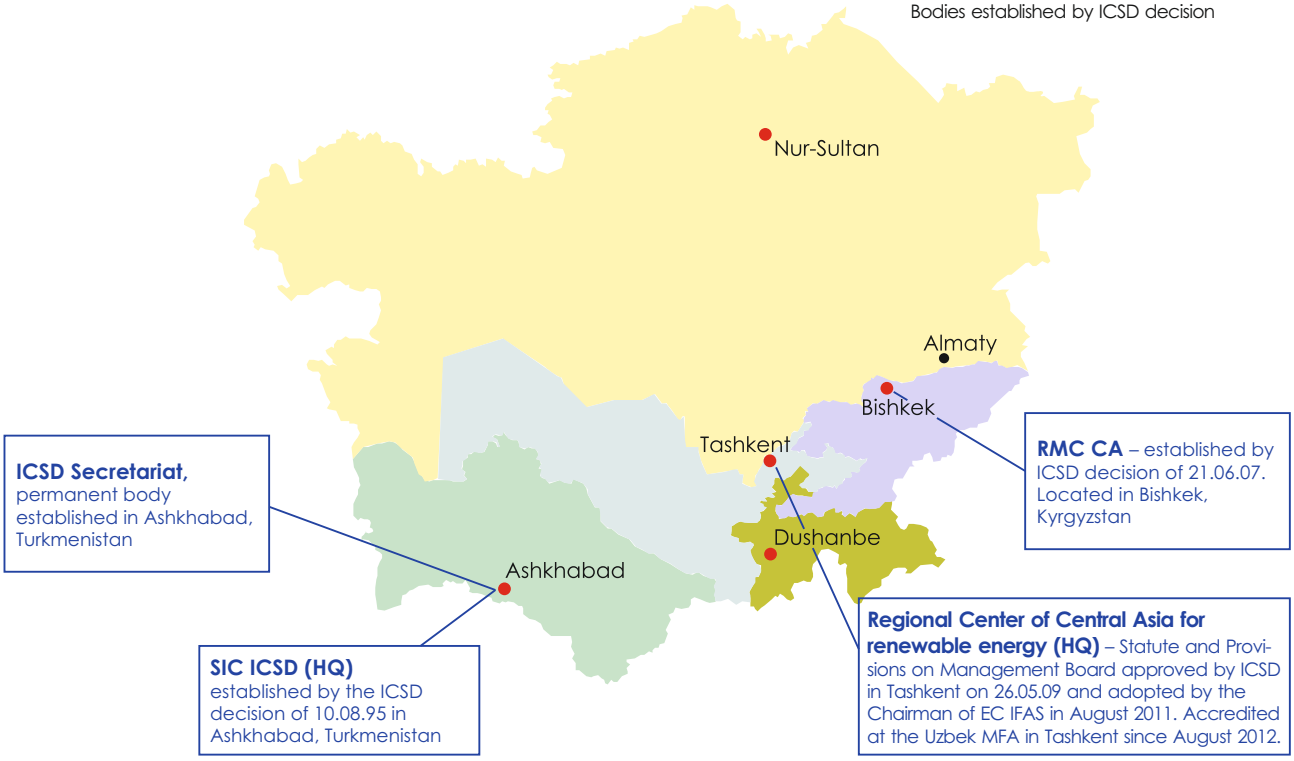
SIC had meetings with (1) Mr. Parssa Razavi from the Irriport to discuss cooperation on digitization of water management and agricultural production processes at field level (26 February, SIC office); (2) Dr. H. Manthritilake on the possibility of developing joint SIC-IWMI projects (3 March, SIC office); (3) experts from the German economic group in Uzbekistan on the use of energy in the water sector as part of the assessment of the benefits of energy trade (8 October, videoconference); (4) ADB consultants and representatives on key water initiatives within preparation of a water pillar under CAREC-2030 (27 November, videoconference); (5) the analytical expert from the Economist Intelligence Unit regarding development of the Blue Peace Index of Central Asia.

Source: SIC ICWC

3.4. ICSD of Central Asia

The Interstate Commission on Sustainable Development (ICSD) was established by the decision of the Interstate Council for the Aral Sea Basin in 1993. It is entrusted with the mission of coordination and management of regional cooperation in the field of environmental protection and sustainable development of the CA states. The organizational setup of ICSD and location of its executive bodies are shown in the figures below. The Republic of Uzbekistan is chairing ICSD over 2020-2021 (30th ICSD meeting, 24 October 2019, Nukus).





Activity of ICSD in 2020

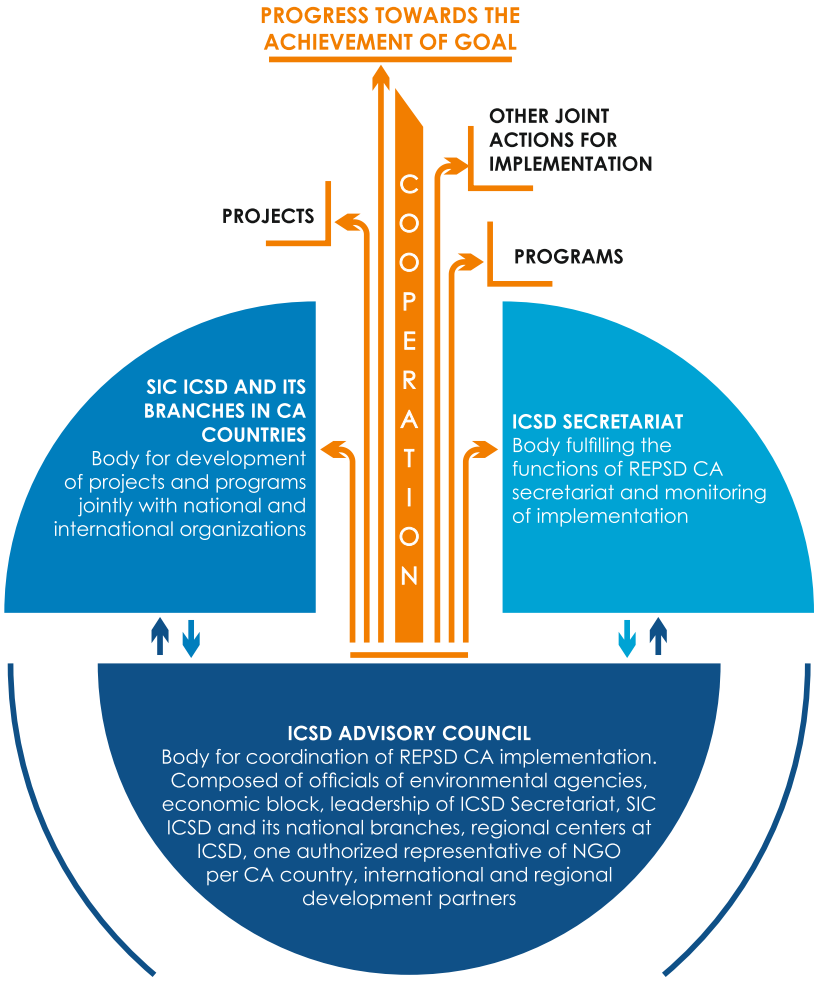
Regional Environmental Program for Sustainable Development in Central Asia (REPSD CA). In 2019, upon an ICSD's initiative, the REPSD CA was developed and approved[16]. The Program aims at better environmental situation in the region and sustainable nature management by enhancing regional cooperation in this field.

[16] By the decision of ICSD No.2 of 24 October 2019

Advisory Council. To maintain cooperation between the ICSD member-countries and coordinate activities on the implementation of REPSD CA, it was decided to establish an ICSD Advisory Council[17] consisting of authorized representatives from environmental agencies, economic block of the ICSD member-countries, and others. The first meeting of the ICSD Advisory Board was held on 11 March 2021 in the format of videoconference. During the meeting, members of the Council viewed the activities of ICSD and discussed possibilities of cooperation with international and regional partners within the framework of implementation of REPSD CA.

Source: Secretariat and SIC ICSD

Graphical presentation of REPSD CA implementation



3.5. Regional Environmental Center for Central Asia

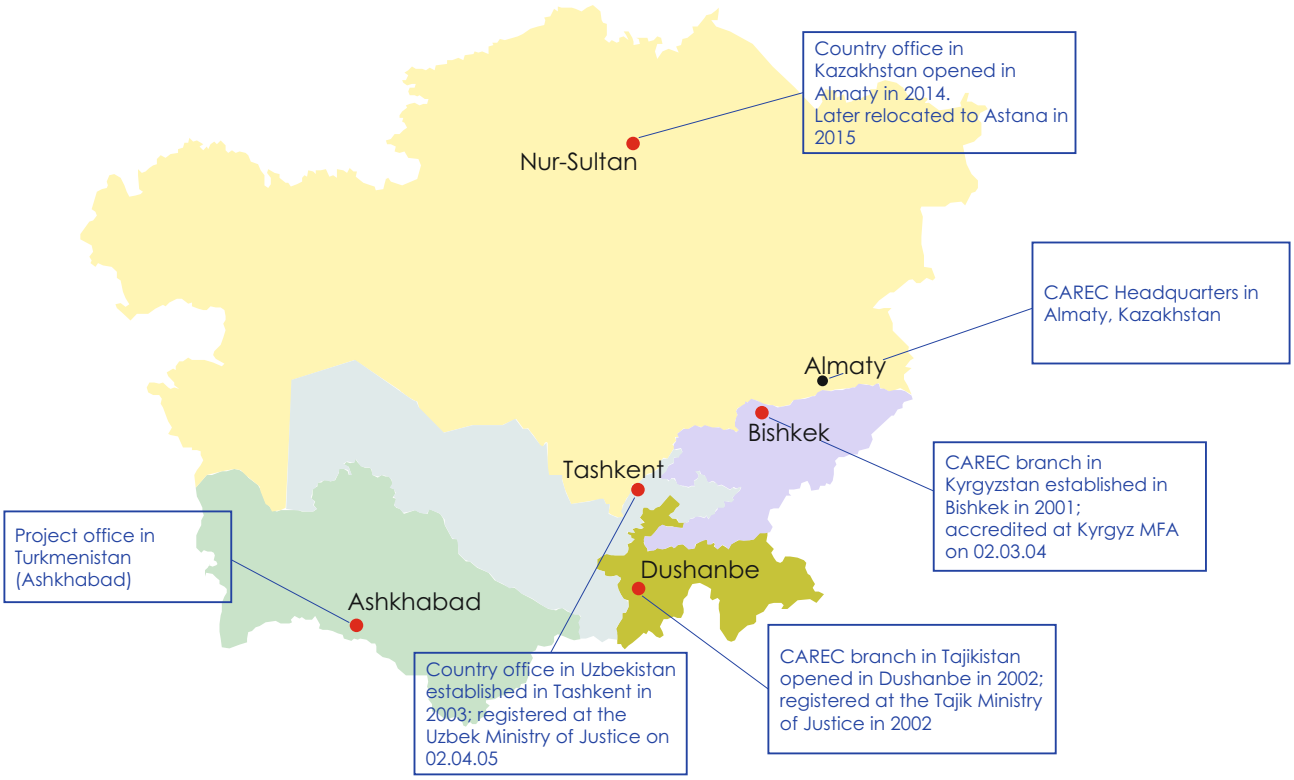
CAREC is an independent, non-profit, nonpolitical international organization, which assists the Central Asian governments, regional and international stakeholders and partners in addressing their environmental and sustainable development issues in Central Asia. The headquarters is located in Almaty, with the country offices operational in five Central Asian states.

Activity of CAREC in 2020

Despite the difficulties associated with the COVID-19 pandemic, the set goals and objectives were successfully achieved. Work was continued on key projects in the countries of Central Asia and Afghanistan, and partnerships and trusted collaboration in the region to address common environmental problems were further developed.

Transboundary water cooperation. The USAID Smart Waters Project was completed. Final events were held in the format of a marathon/series of online events – Smart Waters Grand Finale. During the implementation period, the project has allocated 36 scholarships for nominated governmental employees to let them earn a master's degree in Integrated Water Resources Management (IWRM) from the Kazakh-German University (DKU) and grants for 40 young scientists for

[17] Provision on the ICSD Advisory Council approved by the decision of ICSD No.3 of 24 October 2019



implementation of water research projects; 4 MoUs were signed between CA and Afghan universities; 30 research papers were published by students as part of a competition; 13 Small Basin Councils were established under the project on small transboundary rivers in CA and Afghanistan; 13 basin plans were drafted, and case-studies and GIS maps on the basins were produced.

Activity on water quality. A Regional Working Group on Water Quality (RGW-WQ) was established in 2009 by UNECE and CAREC. Since 2019, the RWG-WQ is supported by the Blue Peace Central Asia (BPCA) initiative of SDC, where CAREC is acting as a Secretariat of the BPCA Dialogue Platform. During the online meeting on 30 June members of the RWG talked about the changes in water quality management, monitoring and transboundary cooperation and outlined future plans. Representatives of Kazakhstan shared their experience in switching to a unified water quality classification of water bodies in the country. According to this classification, monitoring is carried out on 143 water facilities, all data is uploaded monthly to the online interactive map (https://maps.hydromet.kz/). The results of cooperation between Kazakhstan and Uzbekistan were also presented. The countries are working together on environmental protection and water quality in the Syr Darya River basin (see Bilateral Water Cooperation between Kazakhstan and Uzbekistan).

Activity on climate change. The Information Portal on climate adaptation and mitigation in Central Asia has been developed as part of the WB CAMP4ASB project. The Third Central Asia Climate Change Conference (CACCC-2020) was held in an online format (19-23 October). The conference materials are available on https://ca-climate.org/eng/events/conference/.

The 11th Central Asian Leadership Programme on Environment for Sustainable Development (CALP) was held within the framework of the "Year of Volunteers in Kazakhstan" (14-18 September 2020). The event brought together 70 international, regional and national speakers and about 46 representatives of government, academic and civil society from 5 Central Asian countries and Afghanistan. The CALP agenda covered a wide range of issues, including the role of Education for Sustainable Development (ESD) and digitalization of education in response to global challenges, rationalization in the use of natural resources in CA within the framework of the SDGs, Nexus approach, the issues of integrated water resources management and climate change at the global and regional levels.

The new research program[18] "Water as a driver of sustainable recovery: economic, institutional and strategic aspects of water resources management in Central Asia" was launched with its first webinar titled "Post-covid-19 recovery strategies: putting the water sector of CA on an economically and financially sustainable path" (3 November). The Program includes a series of webinars and in presence workshops. During the first introductory webinar, experts from CA countries and Afghanistan presented overviews of the water sector development in their countries. Since water is essential for life, for any economic activity, its sustainable and robust management is also a key to achieve most of the Sustainable Development Goals.

Source: CAREC, https://www.carececo.org/main/

[18] implemented by the Corvinus University of Budapest and supported by the Blue Peace Central Asia initiative (BPCA) of SDC, SIWI, and CAREC within a partnership with the BPCA

Section 4

Bilateral Water Cooperation between the Countries of Central Asia

Due to the complicated epidemiological situation in 2020, almost all interactions between the countries were via telephone calls or videoconferencing.

4.1. Kazakhstan-Kyrgyzstan

High-level contacts

In the course of telephone conversations, the President of Kazakhstan K.-J. Tokayev and the President of Kyrgyzstan S. Jeenbekov discussed implementation of the agreements reached following the President Tokayev's state visit to the Kyrgyz Republic in November 2019, cooperation in the area of digital technologies in order to ease cargo transportation procedures at customs borders (3 February), major aspects of bilateral cooperation (10 February), countering the spread of coronavirus (19 March), joint steps in maintaining momentum of trade and economic cooperation under the pandemic conditions (19 March, 27 March, 4 May), and water sharing issues (27 March).

While confirming a shared commitment to enhancing friendship, good-neighborly relations and strategic partnership, the President K.-J. Tokayev and the acting President and Prime Minister of Kyrgyzstan S.Japarov addressed key considerations on the bilateral agenda through telephone exchange (13 November).

Source: www.akorda.kz

Cooperation within the Chu-Talas Water Commission

Bilateral water relations between Kazakhstan and Kyrgyzstan are regulated by the Agreement on the Use of Water Management Facilities of Intergovernmental Status on the Chu and Talas Rivers (21 January 2000). The Chu-Talas Water Commission (CTWC) is a joint body, which is to ensure the joint operation of the water facilities of interstate use and estimate operational costs required for their safe and reliable operation.

Meetings. Over the period from 2006 to 2020, 27 Commission meetings were held. In May 2020, at the 27th videomeeting the Commission addressed the issues related to operation regimes of interstate water facilities on the Chu and Talas Rivers in the 2020 growing season, allocated funds and the work done at the facilities in 2019, amending the 2000 Agreement, and the outputs of the CTWC Secretariat Working Groups on environment protection, adaptation to climate change and long-term development programs. The Parties also discussed repair and rehabilitation of interstate water facilities following the end of the growing season and other matters related to water management of the transboundary rivers. Given the tragedy of the Sardoba dam collapse in the territory of Uzbekistan, the Commission decided to carry out a joint visual check of the Orto-Tokoy and Kirov reservoirs for their safety.

Working Groups and other activities. On 19 December 2019 at the 26th CTWC meeting, it was decided to divide the Strategic Action Program (SAP) into a joint basin-wide (possibly to be approved by the CTWC Co-Chairs) and national (to be approved at the national levels) components. In the first half of 2020, SAP continued to be finalized. The Working Group on adaptation to climate change and long-term development programs held its six videomeetings with the support of UNDP in Kazakhstan and Kyrgyzstan (14-20 May). The objective was to discuss the Joint Basin-wide Action Program for the Chu and Talas Rivers for 2022-2030, agree on tasks, interventions, expected outcomes, performance indicators, responsible parties, and deadlines on the following priorities: water quantity, water quality, ecosystem preservation, climate change and emergencies, monitoring, and cooperation. The Joint Basin-wide Action Program is an integral part of the Strategic Action Program for the Chu and Talas River Basins developed within the framework of the GEF-UNDP-UNECE project "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Chu and Talas River Basins" (2015-2018). The results of the six meetings were reported at the 27th CTWC meeting. Four online meetings were organized in Kazakhstan and Kyrgyzstan in order to discuss the National Action Plans (NAPs) on such priorities as water quantity, water quality, ecosystem preservation and the procedures for submission and getting approval of NAPs in the countries (11-20 June). To date, all procedures on SAP approval with the interested public bodies in Kazakhstan and Kyrgyzstan have been completed. The outcomes will be reported at the 28th CTWC meeting.

Due to the pandemic, the CTWC Secretariat Working Group on environment protection (WGEP) has done only one water sampling exercise in the Chu and Talas Rivers, including tributaries and canals at the agreed 16 points for 17 hydrochemical indicators (October). This was done with the financial support of the OSCE Office in Nur-Sultan and UNDP. During the 8th WGEP meeting, the results of water sampling were presented, and the WGEP Work Plan 2021 was agreed upon (17 November via videoconferencing).

Source: Head of the Kazakh Party of the CTWC Secretariat

Other water-related arrangements

The Chairman of the State Committee for Industry, Energy and Subsoil Use of the Kyrgyz Republic Ye. Osmonbetov and the Vice-Minister of Ecology, Geology and Mineral Resources of Kazakhstan Ye. Nysanbayev signed a protocol on the exchange of electricity during the growing season 2020 and the electricity supplies from Kazakhstan to Kyrgyzstan in 2020 (26 May). According to the protocol, in order to ensure water releases during the growing season, the parties will exchange electricity up to 300 MkWh at a nominal price of US $0.0000001 per 1 kWh for equivalent water releases through the Uch-Kurgan HPP in the amount of up to 330 Mm^3. Electric energy will be delivered from Kyrgyzstan to Kazakhstan in June-August and further returned from Kazakhstan to Kyrgyzstan from September to November. The Kazakh party pledged to pay for electric energy transmission services through the national Kyrgyz grids 0.21 Som per 1 kWh (excluding VAT 12%) for a total amount of up to 70.56 million Som (including VAT).

For the efficient use of water and energy in the Toktogul reservoir during the low-water season, it has been agreed that the Kazakh side will deliver 500 million kWh of electricity at US$ 0.024 per 1 kWh on DAP terms (Incoterms 2010) in September-December. In the past, Kyrgyzstan already imported electricity from Kazakhstan during the low-water years: at US$0.05 per 1 kWh in 2015 and US$0.03 per 1 kWh in 2016.

Sources: https://www.vb.kg/388457, https://kaktus.media/413824

4.2. Kazakhstan-Tajikistan

High-level contacts

In the course of telephone conversations, the President of Kazakhstan K.-J. Tokayev and the President of Tajikistan E. Rahmon discussed the global pandemic of the coronavirus (April 9), expansion of strategic partnership (October 5, October 12), and developments in Kyrgyzstan, focusing on appropriate solutions to the crisis through negotiations (7 October). The President of Kazakhstan congratulated Emomali Rahmon on the occasion of his re-election as the President of Tajikistan (12 October).

President E. Rahmon also discussed the Tajik-Kazakh relations with the First President of the Republic of Kazakhstan N. Nazarbayev (6 July, 5 October).

Sources: www.president.tj, www.akorda.kz

4.3. Kazakhstan-Turkmenistan

High-level contacts

The President of Kazakhstan K.-J. Tokayev and the President of Turkmenistan G. Berdymukhamedov had a telephone conversation on 29 June. The Heads of State confirmed their commitment to deepening dialogue at the highest level and noted promising prospects in the development of strategic partnership, especially in trade and economy.

Source: www.akorda.kz/ru/events/international_community/phone_calls/sostoyalsya-telefonnyi-razgovor-glavy-gosudarstva-sprezidentom-turkmenistana-gurbanguly-berdymuhamedovym

4.4. Kazakhstan-Uzbekistan

High-level contacts

The President of Uzbekistan Sh. Mirziyoyev **received the Prime Minister of Kazakhstan A. Mamin**, who arrived in Uzbekistan as part of the Second Inter-Regional Cooperation Forum between the two countries (25 February).

The talks were focused on prospects of expanding cooperation in energy, agriculture, education, culture and other priority areas. Particular attention was paid to creating favorable conditions for maintaining high rates of mutual trade, as well as promoting cooperation projects and infrastructure development with the participation of leading companies of the two countries.

Source: https://president.uz/ru/lists/view/3382

A **work meeting** was held between the President of Uzbekistan Sh. Mirziyoyev and the First President of Kazakhstan N. Nazarbayev on 25 September.

The presidents discussed the current state and prospects of bilateral strategic partnerships, touched upon the development of regional partnership, particularly within the framework of agreements reached following the Second Consultative Meeting of the Heads of Central Asia States in November 2019 in Tashkent.

Source: https://president.uz/ru/lists/view/3854

The Presidents of Uzbekistan and Kazakhstan held several telephone conversations, during which they discussed the epidemiological situation and measures to counter the spread of coronavirus infection and minimize its negative impact on bilateral trade and economic relations (18 March, 2 May, 8 May, 17 May); underlined the importance of continuing activities of the Joint Intergovernmental Commission headed by prime ministers of the both countries (2 May) and early implementation of trade and economic agreements, including preparation and promotion of promising projects in agriculture, processing industry and other sectors (8 May); emphasized the need for activation of institutional mechanisms for dialogue and enhancement of joint efforts to increase mutual trade and investment, development of cooperation projects in industry, agriculture, transport and logistics and other priority areas (17 May); exchanged views on recent developments in the region, expressed hope for rapid stabilization in Kyrgyzstan (7 October); noted the importance of facilitation of economic cooperation projects included in the roadmap of mutually beneficial cooperation between Uzbekistan and Kazakhstan (12 November); discussed how to deepen a dialogue within the framework of international and regional organizations, including CIS and SCO (12 November, 1 December).

The President K.-J. Tokayev and the President Sh. Mirziyoyev hold extension discussions on the situation and organization of close coordination on recovery from the **Sardoba reservoir accident** in the border regions of the countries. The Presidents instructed the governments to ensure coordinated work and prompt resolution of all emerging issues (2 May); agreed on

further priority steps to provide targeted assistance to population and rebuild infrastructure in the affected areas (8 May); noted the importance of efficient interaction and measures undertaken to eliminate consequences of the emergency situation (17 May).

President Sh. Mirziyoyev also regularly communicated with the First President N. Nazarbayev. In the course of telephone conversations, they discussed measures to prevent the spread of the coronavirus infection (20 March, 8 May, 22 June); recovery from the Sardoba dam collapse in the border regions (8 May); the role of the Joint Intergovernmental Commission in developing new projects and areas of cooperation to minimize negative effects of the pandemic (8 May); exchanged views on topical points of the international and regional agenda (1 December).

Sources: www.akorda.kz, www.president.uz

The Uzbek and Kazakh regions develop trade and economic cooperation. A meeting of the governmental delegations at the head of the Prime Ministers of Uzbekistan and Kazakhstan took place on 26 February. It concluded with the signature of the Final Declaration of the Second Interregional Cooperation Forum between the Republic of Uzbekistan and the Republic of Kazakhstan. Also the Parties signed 16 other inter-agency and interregional documents.

Source: www.gov.uz/ru/news/view?id=26574

Meetings of the Working Group on Water Management

In 2020, the Minister of Ecology, Geology and Natural Resources of Kazakhstan M. Mirzagaliyev and the Minister of Water Management of Uzbekistan Sh. Khamraev had several meetings.

On 5 February, the ministers met in Tashkent to discuss prospects of bilateral water cooperation.

On 14 May, the ministers held a bilateral meeting in Shymkent to discuss the future of the Sardoba reservoir; measures taken by the Parties for the 2020 growing season in the Syr Darya River basin; draft Bilateral Intergovernmental Agreement on joint management, use and protection of transboundary waters; projects on construction of the Pskem and Mullalak HPPs on the Pskem River and the Nizhnechatkal HPP on the Chatkal River; construction of a diversion canal in the reach between DP 61 and DP 73 of the Dostyk interstate canal in the territory of Uzbekistan; joint work for drafting water balance of the Syr Darya River; consideration of water withdrawal limits in the Karadarya and Chirchik River basins at ICWC meetings.

On 2-3 July, the ministers met in Tashkent and discussed the following: a draft Roadmap of water cooperation; implementation of joint technical survey and monitoring of hydraulic structures built and reconstructed after 1991; draft water agreement between the Government of Kazakhstan and the Government of Uzbekistan. As a result, the Roadmap of water cooperation between the Republic of Uzbekistan and the Republic of Kazakhstan was signed. In particular, the Roadmap provides for joint technical survey and monitoring of hydraulic structures constructed and reconstructed since 1991 and joint measures to ensure additional discharges from the upstream reservoirs.

On 2 November in Tashkent, Minister Sh. Khamraev and Vice-Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan Ye. Nysanbayev met as part of negotiations between the Deputy Prime Minister, Minister of Investment and Foreign Trade of Uzbekistan S. Umurzakov and the Deputy Prime Minister of Kazakhstan R. Sklyar.

On 21 November, Minister M. Mirzagaliyev and Minister Sh. Khamraev met in Turkestan as part of negotiations between the Prime Ministers of the two countries.

In 2020, more than 10 videomeetings were organized to discuss the draft Agreement between the Government of the Republic of Kazakhstan and the Government of the Republic of Uzbekistan on Joint Management and Use of Transboundary Waters.

Source: Ministry of Water Management of the Republic of Uzbekistan

Signing the Roadmap, 3 July 2020, Tashkent. Credits: twitter.com/MirzagalievKZ

Kazakh-Uzbek Joint Working Group (Commission) on Environment Protection and Water Quality in the Syr Darya River Basin

The Kazakh-Uzbek Joint Working Group (Commission) on Environment Protection and Water Quality in the Syr Darya River Basin (hereinafter Working Group) is formed of experts from Uzbekistan and Kazakhstan in line with the Strategy for Economic Cooperation 2017-2019 between Kazakhstan and Uzbekistan. The Strategy was signed during the visit of the President of Uzbekistan Sh. Mirziyoyev to Kazakhstan, as well as the Agreement between the Government of the Republic of Kazakhstan and the Government of the Republic of Uzbekistan on cooperation in the field of environmental protection and environmental management on 2 June 1997.

According to Regulations, the Working Group meets once a year. Its tasks are as follows: analysis of monitoring capacities and the compatibility of national methodologies, including evaluation of resource needs for harmonization; development of instructions for joint monitoring of surface water quality, with account of national standards, for maintaining a unified and comparable quality assurance system; development of recommendations on capacity building for the surface water quality monitoring program; regular water quality monitoring and information

exchange; exchange of environmental regulatory and technical documents; development of joint measures to prevent and respond to pollution in transboundary rivers; identification of sources that have a negative effect on water quality, adoption of preventive measures and exchange of information on them; development of an early warning mechanism on pollution; initiation of joint projects involving international experts, financial and donor institutions; preparation of joint proposals on involvement of upstream countries in the Syr Darya River basin in cooperation on water quality issues. Activities of the Group are carried out on the basis of annual plans.

Meetings. By 1 January 2021, the Working Group had three meetings.

During the 1st meeting, the Working Group discussed the issues of state environment monitoring in the two republics and the environmental status of the transboundary Syr Darya River, adopted the Regulations of the Group, and approved its composition and the Work Plan for 2018-2020 (27-28 September 2018, Tashkent).

At the 2nd meeting, the Parties summarized the results of implementation of the work plan 2019 (7-8 November 2019, Nur-Sultan). Particularly, in 2019, members of the Working Group from Uzbekistan visited Shymkent to get acquainted with the activities of specialized laboratories that monitor the quality of water resources (13-14 March), and experts of the Kazakh party visited the laboratories in Tashkent (15-16 May). A list of 28 surface water quality indicators for joint monitoring has been established; the most acceptable measurement procedures explored; a proposal for sampling points and the frequency of analysis prepared; a survey of the territory of the Syr Darya River basin carried out.

At the 3rd meeting, the work progress on the agreed water sampling and water quality data exchange were presented, the Parties presented also the results of joint observations over water quality in the Syr Darya River, and the criteria for assessing water quality were compared. The Parties summed up the Work Plan for 2020, approved the Work Plan for 2021-2022. Representatives of the Republic of Tajikistan were invited to join the Group. The Parties took note of the proposal of IWAC to jointly implement the project "Improvement of Mechanisms for Preventing and Responding to Pollution of the Syr Darya River in Emergency Situations" (24 December via videoconferencing).

Joint monitoring of 28 surface water quality indicators is to be delivered as part of activities of the Working Group. According to the Work Plan, joint sampling on the Syr Darya River should be carried out on a quarterly basis at 4 agreed border sampling points – two in Uzbekistan and two in Kazakhstan. In 2019-2020, 5 joint water samplings and information exchange were organized. Starting from January 2020, information exchange has been carried out by e-mail according to minutes of the second meeting, approved Work Plan and agreed order of information submission. The results of the joint sampling were discussed at the meetings.

Source: www.carececo.org

On interactions between Kazakhstan and Uzbekistan for recovery from the Sardoba dam collapse see Thematic Reviews.

4.5. Kyrgyzstan-Tajikistan

High-level Contacts

The President E. Rahmon and the President S. Jeenbekov discussed through telephone calls the entire range of aspects related to bilateral relations, placing a special emphasis on the situation in border areas of the two countries and on delimitation of the state border line (11 January); reached an agreement to continue on a permanent basis relevant working groups of the parties (24 January); stressed the importance of working closely together to contain further cross-border spread of coronavirus and the urgency of even greater coordination of efforts at the regional level (28 March).

Source: www.president.tj

4.6. Kyrgyzstan-Turkmenistan

High-level Contacts

The President of Kyrgyzstan S. Jeenbekov and the President of Turkmenistan G. Berdymukhamedov had a telephone conversation on 29 June. The Heads of State discussed perspectives of Kyrgyz-Turkmen cooperation and outlined joint plans for its enhancement.

Source:
www.president.kg/ru/sobytiya/novosti/16985_sostoyalsya_telefonniy_razgovor_prezidenta_sooronbaya_gheenbekova_sprezidentom_turkmenistana_gurbanguli_berdimuhamedovim

4.7. Kyrgyzstan-Uzbekistan

High-level Contacts

In the course of telephone conversations, the President of Kyrgyzstan S. Jeenbekov and the President of Uzbekistan Sh. Mirziyoyev discussed the current spread of coronavirus and supported measures taken by countries to minimize negative consequences of the pandemic primarily for the development of trade and

economic relations (27 March, 4 May, 1 June); addressed the issues related to recovery from the accident at the Sardoba dam (4 May); supported the proposal on holding regular meetings of the joint Intergovernmental Commission and the Uzbek-Kyrgyz Council of the Heads of Border Region Administrations (1 June); discussed new areas for mutually beneficial cooperation, as well as the prospects for regional cooperation and important infrastructure projects (24 July).

The President of Uzbekistan Sh. Mirziyoyev and the Acting President of the Kyrgyz Republic S. Japarov through a telephone call considered key aspects of bilateral relations in the spirit of friendship, good neighborliness and strategic partnership, paid special attention to joint projects and programs and the need to strengthen activities of the Intergovernmental Commission on Delimitation and Demarcation of the State border, the Joint Commission on Bilateral Cooperation and the Council of Borderland Heads (14 November).

Sources: www.president.kg, www.president.uz

Meetings of the Working Group on Water Management Issues

In 2020, there were no bilateral meetings between the Kyrgyz and Uzbek sides.

4.8. Tajikistan-Uzbekistan

High-level Contacts

The President of Tajikistan E. Rahmon received the Prime Minister of Uzbekistan A. Aripov, who arrived in Dushanbe for a work visit (29 September). The parties drew attention to positive trends in development of bilateral relations, including the active work of the Intergovernmental Commission on Trade and Economic Cooperation. The President of Tajikistan, while mentioning the priority of Tajik-Uzbek relations in Tajikistan's foreign policy, emphasized the importance of constant political contacts at the highest level. Taking into account the global threat of COVID-19, the Parties spoke in favor of taking measures to prevent the negative impact of the world economy crisis on dynamics of trade and economic relations between the two countries. Other promising areas of cooperation were identified in the fields of hydropower and road infrastructure.

Source: www.president.tj/ru/node/24134

In the course of telephone conversations, the President E. Rahmon and the President Sh. Mirziyoyev discussed current issues of bilateral cooperation and drew attention to implementation of the reached agreements, including the adopted Roadmap, establishment of a joint fund for promotion of mutually beneficial cooperation projects (3 April); focused on collaboration and close coordination to prevent the spread of coronavirus infection (3 April, 9 April, 5 May); addressed the issues related to recovery from the Sardoba dam collapse (5 May); exchanged views on the situation in the region, focusing on recent events in Kyrgyzstan (7 October); reviewed the schedule of upcoming summits (7 October); and, discussed aspects of multifaceted cooperation (12 October).

Source: www.president.tj, www.president.uz

Meetings of the Working Group on integrated transboundary water use in Central Asia

As part of the state visit of the President of Uzbekistan to the Republic of Tajikistan, an Uzbek-Tajik Working Group on integrated transboundary water use in Central Asia was established (9-10 March 2018). By 1 January 2021, the Working Group had three meetings: on 6 June 2018 in Tashkent, on 28 November 2018 in Dushanbe, and on 15 July 2020 via videoconferencing.

At the meeting on 15 July 2020, the Working Group discussed the current water situation in the Syr Darya River basin and implementation of the trilateral protocol of the working meeting of Kazakh, Tajik and Uzbek Parties on mutual approval of operation regime of the Bakhri Tojik reservoir for July-August 2020.

Other Water-related Arrangements

In 2018, Uzbekistan and Tajikistan resumed energy supplies between the countries. In 2019, 1.4 billion kWh of electricity was exported from Tajikistan to Uzbekistan at a price of 2 cents/kWh. The total electricity export from Tajikistan to Uzbekistan amounted to US $28.5 million.

In 2020, the AO "NES Uzbekistan" and the Barki Tojik company signed an agreement to supply electricity from Tajikistan to Uzbekistan in the period from May to September (2 May). Due to the reduced inflow of water into the Vakhsh River and water shortage in reservoirs, it has been reported that electricity imports from Tajikistan have decreased (25 July). The average daily supply decreased from 12 to 0.3 million kWh. At the beginning of August, to provide the population and economic sectors with electricity, the Barki Tojik company cancelled power export contracts with Uzbekistan and Afghanistan ahead of schedule. To overcome this situation, the AO "NES Uzbekistan" signed a contract with Turkmenenergo on import of electricity since 28 July 2020 and imposed restrictions on domestic consumption. In early September, the Barki Tojik reported that the Nurek reservoir was filled, and electricity exports to Afghanistan resumed. According to the Barki Tojik, 358 million kWh was exported to Uzbekistan in the first half of 2020.

Cooperation on the Zeravshan River

In August 2018, during the state visit of the President of Tajikistan to Uzbekistan, the Parties agreed to explore

possibilities of joint construction of two hydropower projects (320 MW in total) on the Zeravshan River in Tajikistan. See the 2019 Yearbook, Section 4 for details. In 2020, the authorized agencies of the countries continued working on this issue.

On 28-29 January 2020, the first meeting of country working groups took place in Tashkent. The Tajik delegation was headed by the Deputy Minister of Energy and Water Resources D. Shoimzoda and the Uzbek delegation – by the First Deputy Minister of Energy J. Mirzamakhmudov.

The draft intergovernmental agreement on the order and conditions of shared participation in construction and operation of HPPs on the Zeravshan River was discussed during the meeting. After reaching agreements, the details will be fixed in the Agreement.

According to the Uzbek Ministry of Energy, the 2nd meeting of the Joint Working Group was scheduled for March 2020 in Dushanbe. It was planned to discuss the changes made by the Uzbek side affecting the protection of investments, the mechanism for resolution of controversial issues, the order of purchase of electricity generated by the Uzbek side and other issues. However, due to the coronavirus pandemic, the meeting has been postponed.

4.9. Turkmenistan-Uzbekistan

High-level Contacts

In the course of telephone conversations, the President G. Berdymukhamedov and the President Sh. Mirziyoyev discussed how to strengthen bilateral relations in the spirit of friendship, good-neighborliness and strategic partnership and expand multifaceted cooperation (18 March, 27 March); drew attention to the positive dynamics of cooperation and fruitful interagency interactions in trade, energy, transport and transit, industry and agriculture (6 May); touched on issues related to the recovery from the Sardoba dam collapse (6 May); exchanged views on the epidemiological situation due to the spread of coronavirus infection (6 May); supported the continuation of active contacts between the border regions, as well as the expansion of educational, cultural and humanitarian exchanges, and reached an agreement to work on joint programs and projects within the framework of the bilateral Intergovernmental Commission (29 June, 11 December); spoke on the need to promote cooperation projects, primarily in trade, industry, energy, transit, agriculture, and other key sectors to effectively counter the effects of the global spread of coronavirus infection; discussed implementation of the agreements reached in the course of regular Consultative Meeting of the Heads of Central Asia State in Tashkent in November 2019; identified security, economy, innovation, transport, tourism, science, education, and culture as priorities for multilateral cooperation among the countries in the region; emphasized the need to resolve the situation in the Kyrgyz Republic as soon as possible (8 October); and, identified priorities for future cooperation (11 December).

The President of Turkmenistan congratulated the Head of Uzbekistan on fruitful CIS chairmanship and successful summit (21 December).

Source: www.president.uz

Bilateral Meetings on Water Management Issues

On 18 September 2020, the Minister of Water Management of Uzbekistan Sh. Khamraev and the Chairman of the State Committee for Water Resources of Turkmenistan G. Baidjanov held a video-conference.

The following issues were discussed: (1) state of water resources of the Amu Darya River; (2) water availability for irrigation of winter wheat and other agricultural crops in the middle and lower reaches of the Amu Darya River; (3) joint actions to improve water availability in future.

On 30 October, the ministers through a videoconferencing addressed the following issues: 1) the state of water resources of the Amu Darya River; 2) the dates for termination of irrigation of winter wheat and other crops in areas adjacent to the Amu Darya River; 3) water sharing in the middle and lower reaches of the Amu Darya River and accumulation of water in the Tuyamuyun reservoir; 4) maintenance of hydraulic structures located in the border areas of the Parties; 5) approval of the terms for measures on strengthening the dam of the Sultansandjar reservoir; 6) signature of the draft Agreement "On the joint Uzbek-Turkmen Intergovernmental Water Commission between the Government of the Republic of Uzbekistan and the Government of Turkmenistan".

Source: Ministry of Water Management of the Republic of Uzbekistan

Water cooperation between Uzbekistan and Turkmenistan is also maintained within the framework of the **trilateral Working Group**, which includes BWO Amu Darya as well. The Parties constructively, in the spirit of mutual trust and respect for each other's interests, solve the issues related to sharing waters of this river.

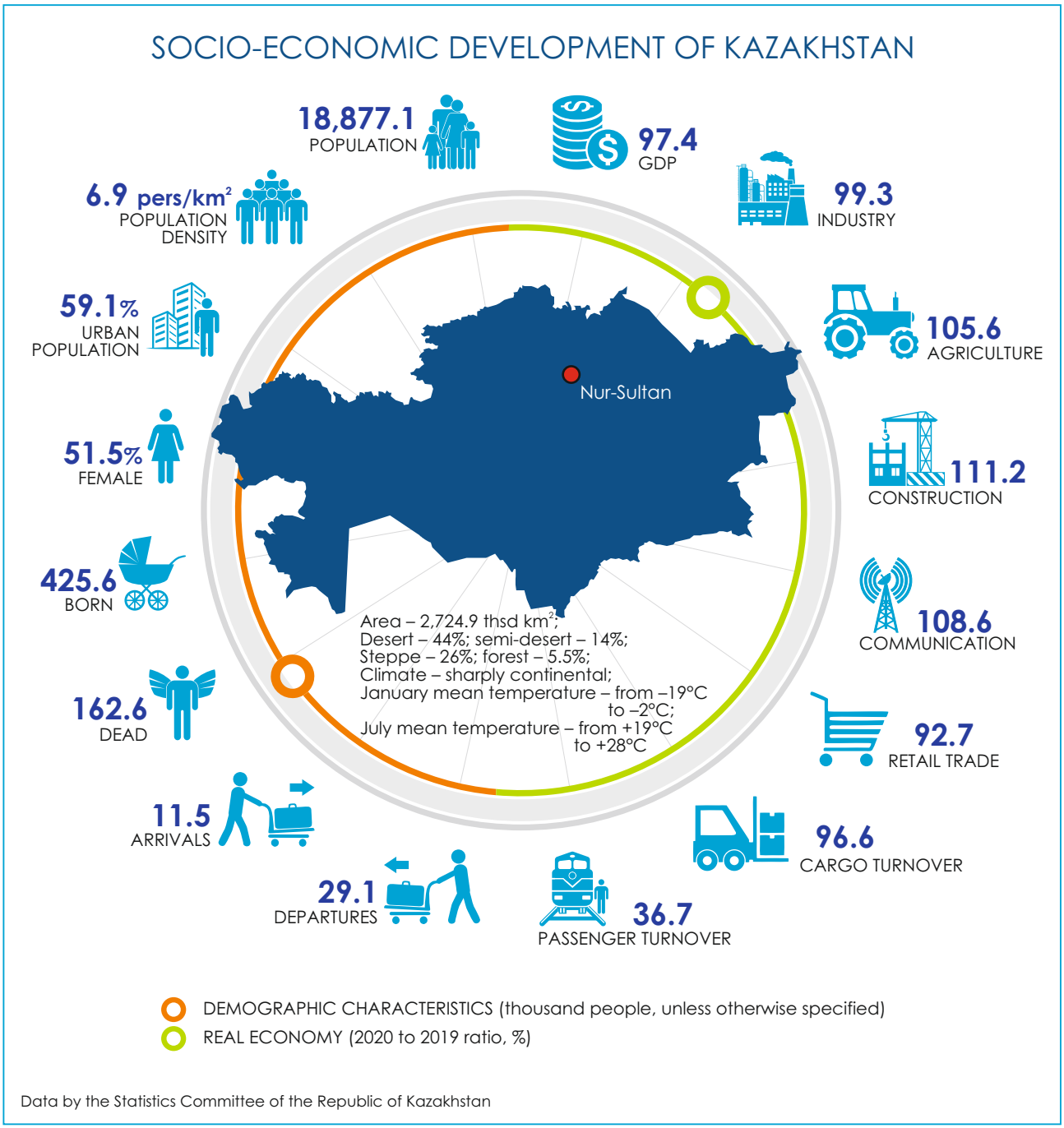
By 1 January 2021, the Group had 219 meetings, including 15 meetings in 2020. The heads of water management organizations of the Amu Darya lower reaches discussed water allocation during the meetings.

Source: BWO Amu Darya

Section 5

Key Water Developments in the Countries of Central Asia

5.1. Kazakhstan



Data by the Statistics Committee of the Republic of Kazakhstan

Water Sector

Water resources. There are 85 thousand rivers, with the largest of them the Irtysh, Ishim, Ural, Syr Darya, Ile, Chu, Tobol, and 48 thousand large and small lakes in Kazakhstan. The largest lakes are the Caspian Sea and the Aral Sea, followed by Balkhash, Zaisan and Alakol lakes. The rivers are fed mainly by glaciers. The total quantity of water in rivers is 101 km^3, of which 57 km^3 are formed within the republican boundaries. The remaining quantity the country gets from neighboring countries: Russia – 8 km^3; China – 19 km^3; Uzbekistan – 15 km^3; Kyrgyzstan – 3 km^3. The available water supply in Kazakhstan is 37 thousand m^3/km^2 or 6 thousand m^3 per inhabitant a year.

Water management. The Committee for Water Resources at the Ministry of Ecology, Geology and Natural Resources (MEGNR) is responsible for water management in Kazakhstan.

Latest developments in legislation. Orders of the Prime Minister of RK "On the establishment of a working group for drafting a State Water Management Program 2020-2030" (66-p of 11.05.2020) and "On amending the Prime Minister's Order of 15 March 2019 concerning the Special Representative of the Prime Minister for transboundary water and water-energy cooperation" (123-p of 23.09.2020); orders of the Minister of EGNR: "On approval of the Rules for allocating water for individual or joint use on a competitive basis"

(178 of 30.07.2020), "On amending the Agricultural Minister's order of 31 March 2015 on the approval of the list of particularly important group and local water supply systems classified as sources having no alternative" (20 of 22.01.2020), "On approval of the Rules for public geology and water services" (117 of 22.05.2020), "On amending the order (1 September 2016) on the Rules for getting approval for location of enterprises and other structures, as well as the conditions of construction and other actions in watercourses, water protection zones and strips" (148 of 18.06.2020), "On approving the rules for public services related to regulation of water uses" (216 of 11.09.2020); and, order of the Minister of Agriculture "On amending the order (30 June 2015) on approval of the rules for subsidizing the cost of water supply services for agricultural producers" (185 of 26.05.2020).

New appointments. Mr. Nurlan Aldamjarov was appointed Chairman of the Committee for Water Resources by the Minister of EGNR on 19 June.

National programs. A Concept of the Water Management Program of the Republic of Kazakhstan for 2020-2030 was approved. The Program includes ten main areas: international cooperation, revision of the regulatory framework, institutional reform, modernization and reconstruction of water infrastructure, water market development, water digitalization, Smart Water, environmentally optimal use of water resources, water training, and implementation of important national water projects. The Program aims to maintain water budget at 100 km^3 by 2030 through additional surface water resources, including: new reservoirs – 5-7 km^3; water saving – up to 5 km^3; and, groundwater – up to 15 km^3. By the indicated period, it is planned to reduce water consumption from 91.2 to 73.0 m^3 per $1,000, build 26 new hydraulic structures, and reconstruct 182 republican and 300 municipal hydraulic structures. The Program sets to construct new irrigation systems to expand irrigated area from 1.7 to 3 Mha, and extend lined main and distribution canals from 3,423 to 19,000 km. The logistical base of basin inspections is to be equipped by 100%, and the forest cover of catchment areas is to be extended from 1 to 200 thousand ha.

The **sixth meeting of the Inter-agency Coordination Council of the National water policy dialogue** was held on 20 November in Nur-Sultan. Particular attention was paid to a mechanism of cooperation between state agencies in prevention of pollution from industrial accidents and to measures implemented under the Protocol on Water and Health.

Results of the growing season 2020. In Kazakhstan the actual water withdrawal was 13.3 km^3 in 2020. In Almaty province the snow cover was 35% less compared to previous years. In Zhambyl province, available water supply was 15-20% lower than the average annual data. In Turkestan province the inflow from the Syr Darya River was lower by 15% due to the fact that water volume in the Toktogul reservoir was 2 billion m^3 less than in 2019. Whereas in Kyzylorda province the irrigation water deficit was exacerbated by an increase in the area under rice. Despite the challenges, the irrigation water supply plan was fulfilled.

Water infrastructure. In 2020, 813 km out of 11 thousand km of main and inter-farm canals were repaired. This helped to reduce transportation losses by 166 million m^3. The rehabilitated irrigation infrastructure allowed putting 53.5 thousand ha into production. Three water pipelines were put into operation. This has improved water supply for 124,500 people in 15 rural settlements and one city.

Projects. The first pilot project on digitalization of 12-km long main canal K-19 was implemented in Makhtaaral district, Turkestan province. The installed water measurement and monitoring system allowed detecting up to 45% of irrigation water over-use. The automated water control and measurement system was implemented jointly with the Australian Rubicon company on the 3-km long inter-farm canal K-32. The canal delivers irrigation water to large agricultural producers on an area of 2,300 ha. In the light of this experience, a 5-year Plan for automation of irrigation network (2021-2025) was drafted for the automation of 119 key canals (total water diversion – approx. 6 km^3) in Almaty, Zhambyl, Turkestan and Kyzylorda provinces.

More information on "Irrigation and drainage in South Kazakhstan, capacity building and awareness raising" (2017-2021) and other projects can be found in the United Nations Development Program and the Executive Directorate of IFAS in Kazakhstan, respectively.

Inter-state cooperation. In 2020, all scheduled meetings of joint water commissions between Kazakhstan and riparian states were held. An exception is a commission with China, which proposed to postpone the commission's meeting to the first quarter 2021 due to the pandemic. Activities were continued with China at the expert level on implementation of the Work Plan on water allocation and assessment in the transboundary river basins of the Yertis, Ile and Yemel.

A meeting of the Kazakhstan-Russian Commission on the Joint Use and Protection of Transboundary Waters resulted in the adoption of a common road map for strengthening research cooperation in the Zhayik, Yertis and other river basins (29 October, Novosibirsk).

A Memorandum of Understanding on water cooperation between the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan and the Ministry of Environment of the Slovak Republic was signed. Cooperation activities under the Memorandum will be implemented in the form of joint projects, information exchange and research (12 December, Bratislava).

Bilateral water cooperation with the Central Asian countries. As part of the Comprehensive Program of cooperation between the Republic of Kazakhstan and the Kyrgyz Republic for 2020-2022, the Kazakh Vice-Minister of Ecology S. Gromov held negotiations with representatives of water and energy agencies of

the Kyrgyz Republic (14 February, Bishkek). See Kazakhstan-Uzbekistan for details on the meetings of the Minister of Ecology, Geology and Natural Resources of Kazakhstan M.Mirzagaliyev and the Minister of Water Management of Uzbekistan Sh.R. Khamraev and achieved results.

As a whole, 11 meetings of a working group for enhanced water cooperation between the countries were organized in 2020. In addition to regular agenda, the issues related to the breach of the Sardoba dam were addressed as well.

The 78th ICWC meeting was held under the chairmanship of Kazakhstan (10 April, online) – ICWC meetings. See also Bilateral water cooperation between the countries of Central Asia and ICWC meetings for details on the agreements reached between the Republic of Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan on additional water releases from reservoirs in the Syr Darya River basin during the growing season.

Agriculture

New appointments. Mr. R. Manatayev was appointed Vice-minister of Agriculture by a Governmental Decree on 17 August.

The Ministry of Agriculture of Kazakhstan developed and submitted to local executive bodies an **algorithm for movement of agricultural producers during the COVID-19 pandemic**, which was approved at a meeting of the State Emergency Regime Commission under the President of Kazakhstan (15 April). Amendments were made to the resolution of the Chief State Sanitary Doctor of the Republic of Kazakhstan to ensure free movement of persons involved in spring field work. Thanks to the above measures, the total crop acreage amounted to 22.7 Mha or 0.5 Mha more than in 2019. In 2020, agricultural workers harvested more than 20.8 Mt of grain in initial weight.

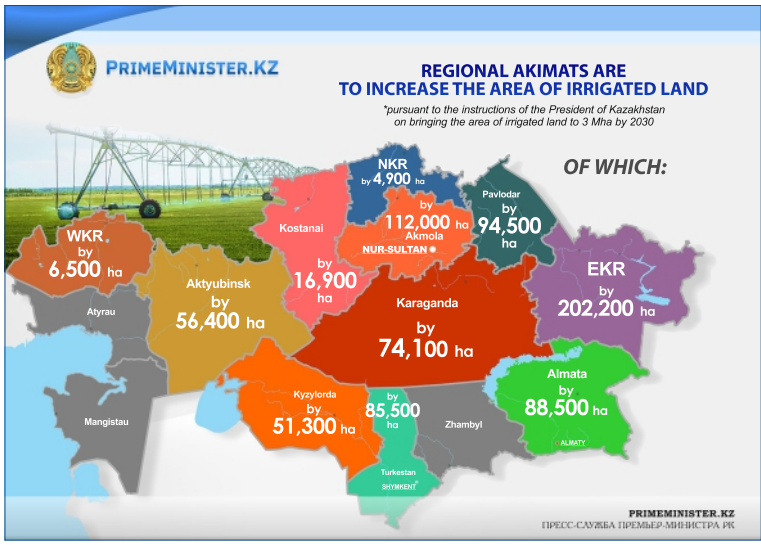
Programs in support of Kazakh agricultural producers during the state of emergency. The following support measures were taken: exemption of agricultural producers from the agricultural land tax until 31 December 2020; suspension of tax penalties until 15 August 2020 and shifting tax reporting to the third quarter 2020; setting of VAT on socially essential foodstuff at 8% until 1 October 2020; tax payment deferrals for all SMEs until 1 June 2020; from 1 January 2020 to 1 January 2023 persons using special tax regimes and recognized as microenterprises or small business, including payers of single land tax were exempt from taxes on income.

A comprehensive plan for economic recovery until the end of 2021 was approved on 20 May 2020 and included measures in support and development of agroindustry, such as: guaranteed purchase of agricultural produce; deferral on and restructuring of loans and leasing for farmers. In order to support agricultural producers, 12.3 billion tenge were allocated from government reserve funds and 92.4 billion tenge were allocated from the local budget for development of livestock breeding and improvement of productivity and quality of livestock products.

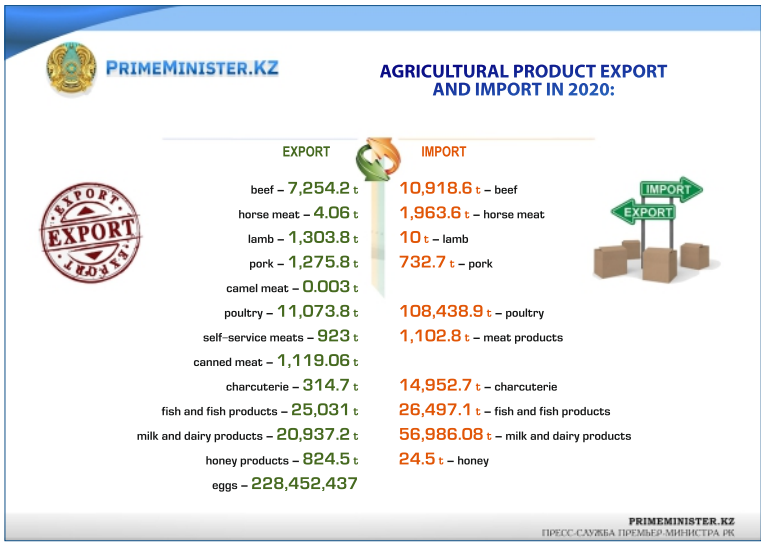
The proposal was supported to finance forward purchase of agricultural produce in order to ensure appropriate and timely implementation of spring field work and achieve a stable harvest. As a result, 483.8 thousand t were supplied against the plan of 365 thousand t. As a whole, under the subsidy program (1) 6,803 farmers received state support for seeds; (2) agricultural producers were able to purchase 533 thousand t of mineral fertilizers, which is 131.3 more than in 2019; (3) 3,602.5 Mm^3 were delivered to 828 agricultural producers for 1.86 billion tenge; (4) agricultural equipment became more affordable.

In 2020, the agroindustrial sector showed positive growth dynamics as a result of implementation of the State Program for Agroindustry Development in 2017-2021. The Ministry of Agriculture started developing a new National Program for the development of agroindustry until 2026.

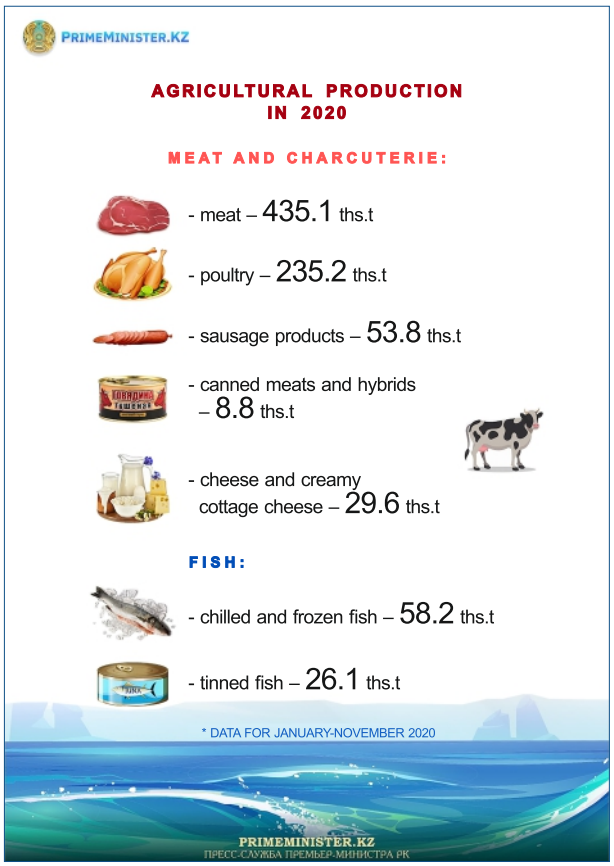
Activities have been launched to **bring irrigated area to 3 Mha by 2030**.



Export and import of Kazakhstani agricultural produce



By 2023, the country will be 100% self-sufficient in meat, fish and dairy products.



Projects. KazNAU jointly with the Michigan State University, the Humanitarian University of Mongolia and the Mongolian Academy of Sciences launched a research project. The project has several objectives, among which: quantifying the interdependent changes of food production, evapotranspiration and radiation balance for Kazakhstan and Mongolia during 1981-2020; quantifying the direct consequences of land use/cover change on evapotranspiration (ET) and albedo through RS-studies; exploring the indirect influences of infrastructure, farmer demography, policy, and climate within three selected provinces in each country.

KazHydromet has developed a specialized Internet-based application "AgroData", which offers agrometeorological services to farmers and other stakeholders in Kazakhstan.

The Committee of Science at the Ministry of Education has developed highly-sensible virus detection systems for fruit and berry crops for diagnostics of seeding material and use by the phyto-sanitary control service.

As part of the FAO/GEF Regional Project "Integrated natural resources management in drought-phone and salt-affected agricultural production landscapes in Central Asia and Turkey" (CACILM-2) aimed at disseminating IWRM practices in the countries whose landscapes are prone to drought and salinity, the following events were held: (1) an online FAO meeting with the staff of the Kazakh Ministry of Agriculture and the heads of Akhal and Dashoguz province authorities. The issues related to effective management of natural resources for drought prevention were discussed during the meeting (16 September); (2) an international training webinar "Sustainable management of pasture resources in Kazakhstan" (2 October). More details on implementation of other FAO projects are available in Food and Agriculture Organization.

Energy

2020 results. Thermal power plants still dominate in the structure of electricity production: their share is 88% (including gas turbine power plants), the share of hydroelectric power plants is 9%, and renewable energy sources account for 3%. There are two stable trends – an increase in generation from renewable energy sources and a reduced generation at hydroelectric power plants, while coal and gas thermal power plants continue to increase production. In 2020, thermal power plants generated 0.4% more electricity than last year, and hydroelectric power plants – 4.3% less. Oil and condensate production amounted to 85.7 million t, oil export – 68.5 million t, oil refining – 15.8 million t, and production of oil products – 11.5 million t. Gas production was 55.1 billion m^3, marketable gas production was 30.5 billion m^3, and the export was 10.7 billion m^3.

Latest developments in legislation. In 2020, the Kazakh Ministry of Energy initiated the adoption of 104 regulatory acts, including three laws, one Presidential Decree, 28 Governmental Decrees, etc. The adopted laws in particular were about: the ratification of the Agreement between Kazakhstan and the Russian Federation on gas supply to Baikonur (305-VI of 26.03.20); amendments to regulatory documents in part of responsibility in the area of nuclear energy use (329-VI of 14.05.2020); amendments to regulatory documents regarding expansion of renewable energy (380-VI of 07.12.2020). The latter creates conditions for the construction of new maneuvering capacities, introduces a mechanism for the centralized purchase and sale of flood power, increases the period of purchase of RES and provides for the obligation to sell hydropower generated in the period of environmental water releases at centralized auctions.

New appointments. Mr. A. Shangitbaev was appointed Chairman of the Committee for Atomic and Energy Supervision and Control at the Ministry of Energy.

RES. As part of the national green economy concept, in 2020 the share of renewables in the total energy budget of the country was increased to 3%. By the end of the year, 115 RES facilities with the total capacity of 1,634.7 MW (29 wind stations – 486.3 MW; 43 so-

lar stations – 911.6 MW; 38 HPPs – 229.04 MW; 5 biofuel power plants – 7.82 MW) were operational. The output from RES was 3.2 billion kWh or 32.2% more than in 2019.

The most dynamic growth is recorded in the solar energy segment, the generation of which increased by 140% (up to 1,350 million kWh) in one year and 15 times in five years. Production of wind energy increased fourfold for a five-year period and amounted to 1,077 million kWh (+50% for the year) by the end of 2020. Small hydropower produced 812 million kWh or 27% less power than in 2019.

In 2020, 16 companies won tenders for RES construction with the total installed capacity of 148 MW: three wind stations for 65 MW; four solar stations for 60 MW; and, nine small hydropower for 23 MW. Most of approved RES capacity is located in energy deficient south zone of the national energy system.

In 2020, solar power stations were commissioned in: (1) Akmola province – "Nura" (100 MW) – the largest one in the CIS space with a projected annual output of 150 million kWh; (2) Turkestan province – Yuxes-50 for 50 MW; (3) Karaganda province, for 26 MW, with an annual output of 34 million kWh; (4) Zhetysai district, Turkestan province – "Zhetysai" (4.8 MW) with a projected annual output of 7.2 million kWh; (5) Almaty province – "Sarybulak" (4.95 MW) and "Kapshagai" (3 MW) with a projected annual output of 14.1 million kWh at the both stations.

Environment and Climate Change

Latest developments in legislation. The new draft Environmental Code was approved on 19 November. The following regulatory documents were adopted also: (1) the law on amending and supplementing the Code on administrative offenses in environmental sector (403-VI of 02.01.2021) and on amending and supplementing legislative acts on designated conservation areas (362-VI of 30.09.2020); (2) Governmental decrees on the draft law on fauna (921 of 30.12.2020) and the draft law on ratification of the Protocol on environmental impact assessment in a transboundary context to the Convention for the protection of the marine environment of the Caspian Sea (923 of 30.12.2020); (3) Order of the Minister of EGNR on amending the order of the Ministry of Energy of 26 February 2015 regarding the approval of the Rules for setting environmental quality targets (111 of 19.05.2020).

The Program for Fishery Development until 2030 has been adopted adopted; territorial branches of the Committee for Forestry and Wildlife were reorganized.

New appointments. Serikkali Brekeshev was appointed Deputy Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan (March 5); Erlan Muratov was appointed Deputy Chairman of the Committee for Forestry and Wildlife under the Ministry of Environmental Protection and Natural Resources (MENR) of the Republic of Kazakhstan (April 15).

Projects and programs. The 2020 results on the development of environmental initiatives, forestry and wildlife, improvement of legislation and measures of state support in the environmental sector were summed up at an enlarged meeting of the Board of MENR. The tasks were set for 2021, in particular: (1) develop a national project "Zhasyl Kazakhstan"; (2) control the implementation of comprehensive plans for

NATIONAL PROJECT "ZHASYL KAZAKSTAN

GOALS:

- creating a favorable living environment for the population and improving the environmental situation in the country
- facilitating development of the sustainable development society

MAIN DIRECTIONS:

Improving water bodies
- reduce discharge of wastewater **by 20%**

Energy efficiency
- reduce energy intensity of country's GDP

Reducing air pollution
- overcome high air pollution **in 10 cities**

Biodiversity conservation
- increase the share of nature reserves from 9.6% **to 10%** of the total country area

Waste management
- increase the share of solid waste recycling from 18% **to 30-35%**

Greening the Republic
- plant **2 billion** trees

To be developed and approved by 1 July 2021

forest reproduction and afforestation; (3) improve the regulatory framework in the field of forestry and protected areas; (4) develop a network of designated conservation areas and ecological tourism.

As part of the projects (1) "Afforestation of the dried bottom of the Aral Sea in Kyzylorda province" (2018-2020), the Committee for Forestry and Wildlife together with the Korean Forest Service of the Republic of Korea and the Foundation for Biodiversity Conservation of Kazakhstan planted 5 million saxaul seedlings on an area of 13.3 thousand ha; (2) CACILM-2, the research on climate-related disaster risk management, early warning and agrometeorological services was started.

For more details on projects in the area of natural resource management, land and ecosystems, climate change, and the SDGs, please, see United Nations Development Program.

Events. Nur-Sultan was ranked 2nd in fastest growing ecosystems in the Global Startup Ecosystem Report 2020. Also, Nur-Sultan showed the highest score on the Environmental Finance Index (June 25).

171 businesses joined the Earth Hour in Kazakhstan on 28 March. As part of the "World Cleanup Day", a tree planting action took part throughout the country upon the initiative of MEGNR.

Environmental education. The President of Kazakhstan proposed to introduce a subject on "Environmental education" in schools (10 July, enlarged meeting of the Government). An agreement was reached to establish a Coordinating Council for Environmental Education (18 August). The Ministry of Education and Science launched a project with the UN to increase the level of environmental culture and education in the academic year 2020-2021.

International cooperation. Kazakhstan and the UN signed a Cooperation Agreement for the period of 2021-2025. The framework program covers three areas of work: human development and equal participation; effective institutions, human rights and gender equality, sustainable environment and inclusive economic development (12 August). The President of Kazakhstan took part in a video conference dedicated to the 75th UN anniversary (21 September).

During the meeting of Mr. Mirzagaliyev with the Mr. Kozlov, Minister of Natural Resources and Environment of the Russian Federation a number of documents were signed in the field of environmental protection and rational nature use, including the Program of Russian-Kazakhstan cooperation on conservation and restoration of the transboundary Ural basin ecosystem for 2021-2024, and the Program of cooperation between the two countries to preserve and restore the ecosystem of the transboundary Irtysh River for 2021-2024 was adopted (4 December, Moscow).

Kazakhstan took part in an informal meeting of environmental ministers from the Caspian riparian states. The ministers discussed cooperation in monitoring of the Caspian Sea, the impact of climate change on the sea ecology, the state of bio-resources, as well as measures to prevent pollution of the coastal zone (9 June).

Emergencies and disasters

Sardoba dam accident in the Syrdarya province of Uzbekistan. As a result of the accident, the border collecting drains in Maktaaral district, Turkestan province of Kazakhstan were overfilled with water and this caused flooding (1 May). More than 5,000 people had to leave their homes and about 500 ha of pastures were flooded. Presidents of Kazakhstan and Uzbekistan discussed how to organize effective cooperation to overcome the consequences of the emergency accident in border regions of the countries. The Government Commission was formed for mitigation of flooding consequences in Turkestan province (4 May). See details in Sardoba Dam Collapse.

In 2020, forest fires covered an area of 41.8 thousand ha. The more significant acreage was burned in Zhambyl, East Kazakhstan, West Kazakhstan, Pavlodar and Turkestan provinces, as well as in the "Semei ormany" reserve. The total damage from the fires amounted to 2.1 billion tenge.

As a result of rising water level along the Lengerka River and overflowing, settlements were waterlogged in Tole Bi district of Turkestan province (6 May). More than 300 people were evacuated from the zones of flooding by rainwater in Shymkent (14 May).

Sources:

Official sites of:

the President of Kazakhstan (www.akorda.kz/ru);

Ministry of Ecology, Geology and Natural Resources (www.gov.kz/memleket/entities/ecogeo/about?lang=ru);

Ministry of Agriculture (www.gov.kz/memleket/entities/moa?lang=ru);

Ministry of Energy (www.gov.kz/memleket/entities/energo?lang=ru);

Legal Information System of RK http://adilet.zan.kz/rus

Information agencies:

https://inbusiness.kz/ru;

https://ainews.kz/;

www.kazenergy.com/ru/;

https://forbes.kz/;

https://kursiv.kz/;

https://informburo.kz/;

https://liter.kz/;

http://kazaral.org;

https://kazakh-zerno.net;

https://lenta.inform.kz/ru;

https://kaztag.kz/ru;

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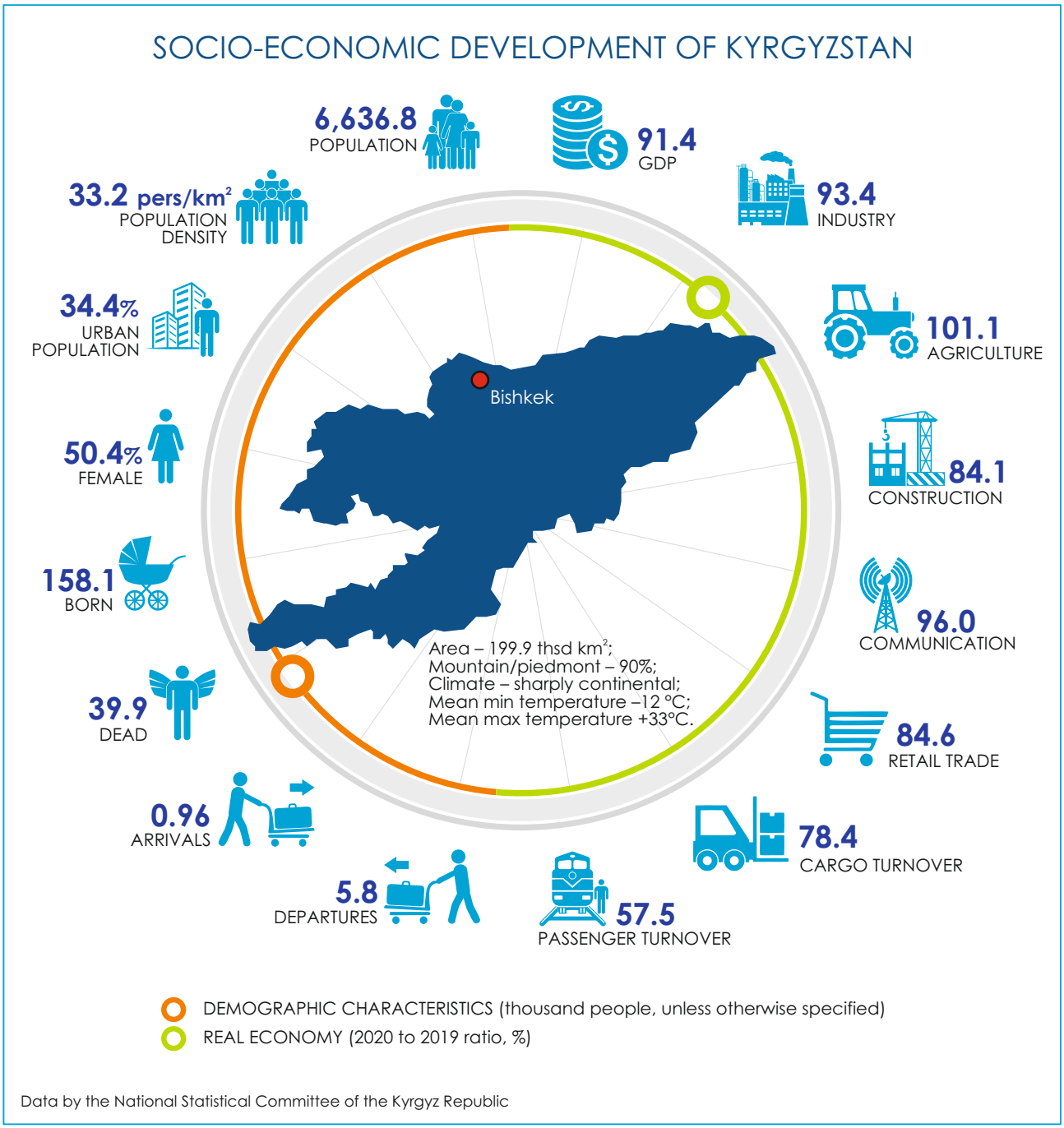
5.2. Kyrgyz Republic



Data by the National Statistical Committee of the Kyrgyz Republic

Water Sector

Water resources. The total available water resources in KR are 2,458 km^3, including 650 km^3 (26.4%) in glaciers, 1,745 km^3 (71%) in lakes, 13 km^3 (0.5%) as potentially usable groundwater resources, and 44.5 to 51.9 km^3 (2%) as average annual river runoff. There are about 3,000 rivers and streams, the catchment area of which covers 7% of the territory. The amount of annually renewable groundwater in major artesian basins is about 7.7 km^3. The current glaciation accounts for 4% of the country's territory.

The total water consumption in the republic is estimated at 10-12 km^3 a year. The water transportation losses in river channels, canals and irrigation structures amount to 1.7-2.3 km^3. Owing to natural (mainly relief) conditions, irrigation water is supplied mainly from small rivers serving about 800,000 ha or 76% of the total irrigated area: 80,000 ha (11%) are irrigated from regulated sources, while the rest of 720,000 ha, by natural flow.

Public administration reforms. By Decree 38 of 12.02.2021 "On institutional measures amid the adoption of a new Government structure and reform of executive authorities in the Kyrgyz Republic", the following restructuring was undertaken: (1) the Ministry of Agriculture, Food Industry and Land Reclamation was transformed into the **Ministry of Agriculture,**

Water Management and Regional Development; (2) **State Water Resources Agency** was transferred to the Ministry of Agriculture, Water Management and Regional Development, except for the Department for Drinking Water Supply and Sanitation, which was transferred to the Ministry of Transport, Architecture, Construction and Communications; (3) State Agency for Environmental Protection and Forestry was transformed into the **State Forestry Agency** and transferred to the Ministry of Agriculture, Water Management and Regional Development, except for functions on ecology and environmental protection that were passed to the Ministry of Emergencies.

IT-technology is promoted in the State Water Resources Agency's activities, including development of online information bases and integration with the e-system of interdepartmental interaction "Tyndyk". These measures will allow automating the water measurement system, increasing efficiency and transparency of implemented projects.

Water-saving technology. Over 2,450 economic entities on an area of more than 2,410 ha were equipped with drip irrigation. In 2020, 82 ha of agricultural land in Batken province were equipped with drip irrigation system, and water-saving equipment was installed on 18 ha of the Kara-Kuldja forest enterprise. As part of the Sustainable Energy Finance Facility Program (KyrSEFF), a number of projects for water saving has been implemented in the country. This included the installation of drip irrigation on an area of 3.15 ha in a farm in Issyk-Kul province that allowed reducing irrigation water consumption by 60% or more than 724 m^3 annually.

Projects. An agreement between the Kyrgyz Republic and IDA on the Swiss grant (additional financing for the National Water Management Project) was ratified for an amount of $4.5 million. The grant will be used for implementation of measures planned in the water sector under the original project, as well as for strengthening of the newly established water institutions and improvement of O&M of main canals at the inter- and on-farm levels.

A number of **projects were implemented to improve the water supply** of nearby lands, including in Uzgen (1.5 thousand ha), Kochkor (2.5 thousand ha), At-Bashy (2.3 thousand ha), Naryn (5.0 thousand ha), and Aravan (2.6 thousand ha) districts. One of large irrigation projects – construction of "Maksat" culvert in Leilek district, Batken province – will help to add 1,8 thousand ha of irrigated land in the border area and transfer about 3,0 thousand ha from pumped to gravity flow irrigation.

Under the WB **Agriculture Productivity and Nutrition Improvement Project**: (1) 30 WUAs were included into a rehabilitation program as part of *Rehabilitation and modernization of irrigation and drainage infrastructure component* and got equipment for maintenance of the on-farm network, and construction was completed on 6 pilot inter-farm systems; (2) as part of the *Agricultural Advisory Services component*, 33 demonstration sites for drip irrigation and 32 sites for advanced surface irrigation were organized in 65 Aiyl Aimaks.

Within the framework of the National Water Resources Management Project Additional Financing: (1) Basin Plans for the Chui, Talas and Karadarya-Syr Darya-Amu Darya River Basins have been finalized; (2) the Talas and Karadarya-Syr Darya-Amu Darya Basin Water Administrations have been established and their provisions approved; (3) training in improving water use efficiency was held on 16 and 19 March 2021.

Drinking Water Supply

Latest developments in legislation. The Program for the development of drinking water supply and sanitation systems in settlements of the Kyrgyz Republic until 2021, the Plan of measures for implementation of the Program and the matrix of indicators for monitoring and assessment of implementation were approved on 12 June 2020.[19]

Projects and programs. Drinking water supply systems were constructed and rehabilitated in 107 out of 1,819 villages at the expense of the WB, the republican budget, international funds and local budgets.

Clean water projects were implemented in Issyk-Kul, Chui, Osh and Batken provinces. Besides, projects were undertaken for the construction and rehabilitation of irrigation systems and the improvement of water accounting.

A number of loan and grant agreements have been ratified between the Kyrgyz Republic and international partners, in particular:

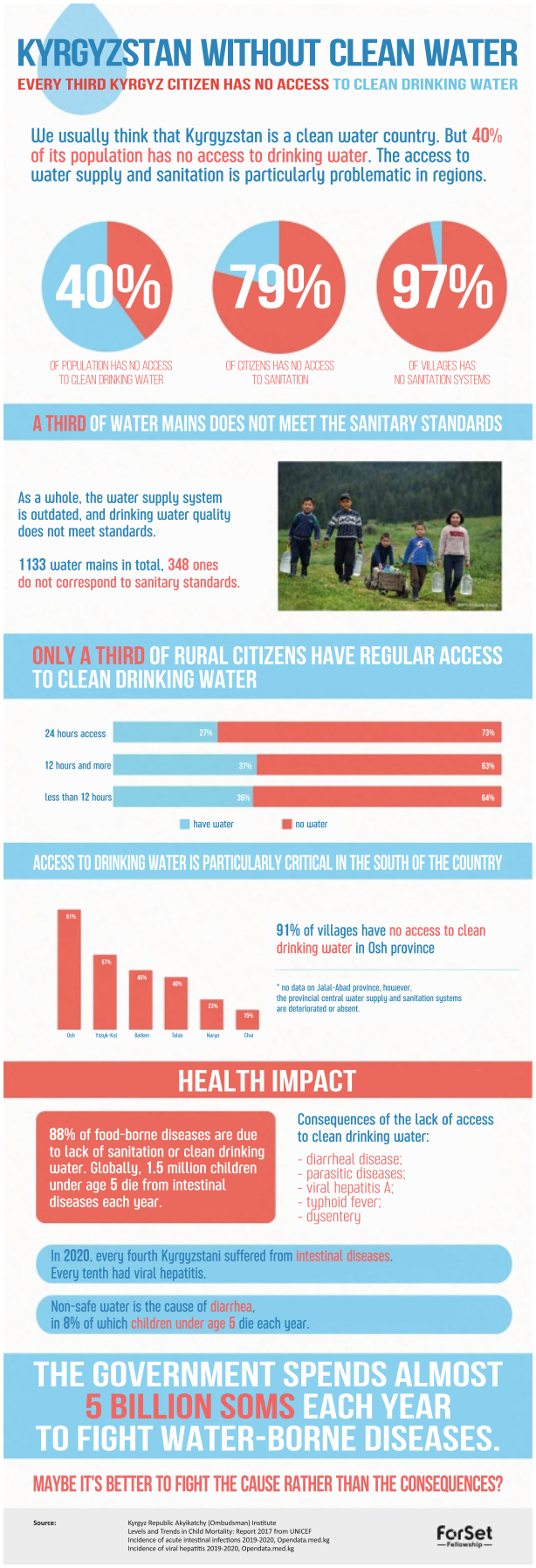
- with **EBRD** on (1) "Rehabilitation of the water supply and sewerage system in Kerben town" for €6.5 million, including: €2.5 million – EBRD loan; €3 million – EU grant from IFCA funds; €1 million – EBRD grant from technical cooperation funds; (2) "Rehabilitation of the water supply system in Isfana town" for €5 million, including: €1.6 million – EBRD loan; €2.4 million – EU grant from IFCA funds; €1 million – EBRD grant from technical cooperation funds. Implementation period – 3 years;

- with **Saudi Fund for Development** on "Rural water supply and sanitation project" for an amount of $30 million. Co-financing from the Government of Kyrgyzstan will be $10 million. Implementation period – 4.5 years;

- with **ADB** on the "Program for rural water supply and sanitation in Naryn province" for an amount of $32.9 million, including $13.7 million – ADB grant; $13.7 million – ADB loan; $5.5 million – co-financing by the Government of Kyrgyzstan; and, the agreement on the financing mechanism of $10 million for the construction and rehabilitation of water supply and sanitation systems in Osh and Karakol, as well as villa-

[19] See https://www.water.gov.kg/images/Programma/PrezintaciyaProgrammy2026.pdf

Drinking water supply – facts and figures



Source:
https://kaktus.media/doc/443413_kyrgyzstan_bez_chistoy_vody._nagliadno_v_cifrah_i_faktah.html

ges in Naryn province and Bazar-Korgon district of Dzhalal-Abad province.

Additionally, (1) the draft law on ratification of the Loan agreement between the Kyrgyz Republic and EBRD on "Water supply and sewerage system rehabilitation in Naryn", Phase 2, and a grant agreement between the Kyrgyz Republic and EBRD on the investment grant provided by the Government of Swiss Confederation and the European Union for this project, and (2) decision of the Government on the Loan agreement between the Kyrgyz Republic and EBRD were approved by Decree 422.

Agriculture

Irrigated area. According to the State Statistical Committee of the Republic, in 2020, the total crop acreage was 223.6 thousand ha or 6.9 thousand ha more than in 2019.

Latest developments in legislation. The Decree of the President "On measures for the development of the agro-industrial sector in the Kyrgyz Republic" has been signed. The Government was recommended (1) to develop and submit for consideration a draft Concept of Agrarian Sector Development in the Kyrgyz Republic and an action plan for its implementation; (2) to improve the efficiency and market turnover of agricultural land; (3) to consider the possibility of transferring a part of land from the State Agricultural Land Fund to an authorized agriculture body for the development of cooperatives, seed production and breeding farms, etc.

Development trends. The Ministry of Agriculture, Food Industry and Land Reclamation continued reforming agriculture and increasing its competitiveness through (1) consolidation of farmers, producers and suppliers into a "hub" of high-quality "halal" products; (2) digitalization by introducing electronic document management in the ministry to provide accurate and timely information to farmers and developing an information system for agricultural services to citizens; (3) processing. The Ministry signed an Agreement on cooperation with the Kyrgyz Stock Exchange in order to support farmers and create opportunities for products to enter the world markets. The Agreement sets the following: creation of a list of exchange commodities; assistance for domestic producers to enter the commodity markets of EAEU (Eurasian Economic Union) member states; and, identification of promising directions of business.

In 2020, production of main crops was increased in the republic as a whole. Over 1.8 million t of grain were milled. This is 4.2% more compared to 2019. The harvest of vegetables amounted to more than 1 million t but was 0.2% lower than in 2019.

Projects. The Governmental Decree No.81 of 14.02.2020 approved the Agriculture Financing – 8 Project, for which 1,250 million soms were allocated. The following interest rate was set for agricultural producers: 10% for small producers, including physical persons; 8% for large ones; and, 6% per annum for food and processing businesses.

The WB Agriculture Productivity and Nutrition Improvement Project under its *Agricultural Advisory Services component* allocated a small grant for 30 WUAs in the amount of $30 thousands with 10% of joint contribution by WUAs for the implementation of WUA development plans and provided agricultural machines, seeds and fertilizers; concluded contracts with agricultural consultants to improve knowledge and skills of farmer-water users; conducted training in agronomy and irrigation; established 1,077 support groups that received certified vegetable and forage crop seeds and small equipment.

International cooperation

A Memorandum of Understanding was signed between the Ministry of Agriculture, Food Industry and Land Reclamation of the Kyrgyz Republic and the Rural Development Authority of Korea. The parties will jointly study and coordinate activities for the development and dissemination of agricultural technologies of mutual interest. Within the framework of this Memorandum, the Center of Korea Project on International Agriculture (KOPIA) was to be established in Kyrgyzstan. Director of the Sixth Political Department / Department of Economic Diplomacy of the Ministry of Foreign Affairs of the Kyrgyz Republic E. Omuraliev met with the Head of KOPIA Mission and discussed the possibilities of developing joint projects for building capacities of the Kyrgyz Republic in the field of agriculture (27 October).

An agreement has been reached with IDB to provide the Kyrgyz Government with a $20 million loan for the "Development of Irrigated Agriculture in Issyk-Kul and Naryn Provinces" project, which aims to improve rural livelihoods through agricultural development and water management adapted to climate change.

Energy

Kyrgyzstan has sufficient hydropower potential, which is estimated at 18.5 million kW or more than 142 billion kWh. In practice, hydropower resources are used by no more than 10%. More than 90% of the country's energy supply comes from the Toktogul HPP and downstream HPPs of the Naryn cascade.

Latest developments in legislation. The "Regulations on the conditions and procedures for electricity production and supply with renewable energy sources" were approved by Governmental Decree No. 525 of 30.10.2020.

According to the Governmental Decree "On institutional measures amid the adoption of a new Government structure and reform of executive authorities in the Kyrgyz Republic", the State Committee for Industry, Energy and Subsoil Use was re-organized into the Ministry of Energy and Industry.

Modernization of HPPs. In 2020, Kambarata-2, Upper Naryn cascade, and Uchkurgan HPP have undergone modernization.

As part of the "Toktogul HPP Rehabilitation Project" Phase 2, the "ZMEC (China)& SMP (Korea)" consortium made underwater survey to detect defective places of a gate at the HPP and cleaning from water build-up. In general, as part of rehabilitation of Toktogul HPP, 4 transformers and 4 cable lines of VL-500 were replaced and the work on replacement of hydroelectric units of HPP has been started.

Reconstruction of At-Bashi HPP was continued: the third hydrounit was put into operation and the assembling of fourth hydrounit was started.

The Parliament approved an additional agreement between the Kyrgyz Republic and EDB for $110 million on commissioning the second hydrounit of Kambarata-2. A loan and grant agreements between KR and ADB on the "Modernization of the Uch-Kurgan HPP" worth $100 million, of which $40 million as a grant and $60 million as a soft loan, were ratified. The project will increase the capacity of the plant from 180 to 216 MW (by 20%) and will ensure stable energy generation for the next 35-40 years.

Small hydropower. Just over 10 small HPPs are in operation in Kyrgyzstan. However, the hydropotential of small rivers is used by about 3%, and the country has capacities to build 100 small hydropower projects of 180 MW.

Regional and international cooperation. The following documents have been signed among others: (1) Protocols of negotiation between representatives of water and energy sectors of Kyrgyzstan and Kazakhstan on the exchange of electric energy during the growing season 2020 and electric energy supplies from Kazakhstan to Kyrgyzstan in 2020 (26 May); (2) a Memorandum of mutually beneficial cooperation between the State Committee for Industry, Energy and Subsoil Use and the Turkish company "CengizHolding" (10 July); (3) a Memorandum of mutual understanding and cooperation between the State Committee for Industry, Energy and Subsoil Use and "B&JCorporation"(19 August).

Additionally, the Chairman of the Board of the National Energy Holding had a meeting with representatives of the Japanese company "Yokogawa Electric Corporation" (February). And the 4th Annual International Congress and Exhibition "Hydropower: Central Asia and the Caspian 2020" was held on 19-20 February in Bishkek.

Environmental Protection and Climate Change

Latest developments in legislation. The staff size of the **State Environmental and Forestry Agency** at the Government of the Kyrgyz Republic was re-considered, and the republican and local environmental and forestry development funds has been liquidated (Decree 154 of 13.03.2020). The following regulatory documents were adopted: (1) the law "On amending the legislative acts on protection of aquatic biological re-

sources", including additions to the Code of Misconduct and the Code of Offences envisaging liability for the import, production, manufacture, sale and use of synthetic fish nets and electrofishing systems (No.21 of 28.02.2020); (2) the law "On amending the Law of KR on biosphere territories" to remove existing shortcomings and drawbacks in the socio-economic development of biosphere territories, develop a single system of rules, regulations and restrictions on natural resource use and environmental protection, as well as to ensure sustainable development of the "Issyk-Kul" biosphere (No.26 of 13.03.2020.); (3) the law "On amending the legislative acts on clean air and tax management" (No.122 of 12.08.2020); (4) the law "On wastewater disposal and treatment facilities within the territory of "Issyk-Kul" biosphere to ensure the rights of citizens to a healthy environment and preserve integrity of the ecosystem, taking into account its inclusion in the UNESCO World Network of Biosphere Reserves (No.133 of 17.08.2020).

International cooperation. The Kyrgyz Republic presented its Voluntary National Review (VNR) of Sustainable Development Goals (SDG) on 16 July 2020 at the High Level Political Forum on sustainable development (HLPF) of the UN Economic and Social Council (ECOSOC). The National Review describes key directions in the Republican policy, main achievements and challenges in implementation of the Agenda 2030 goals and targets.

Agreements between the Governments of the Kyrgyz Republic and the Federal Republic of Germany on financial and technical cooperation for 2019-2020 have been ratified. The agreements envisage allocation of grants worth €41.8 million for a number of projects, including "Green Economy and Sustainable Private Sector Development" (€6 million); "Biodiversity Conservation and Poverty Reduction through Community-based Management of Walnut Forests and Pastures" (€2.9 million).

The Green Climate Fund approved a $2.6 million grant for the development of a **national adaptation plan** and sectoral adaptation action plans for emergency, health, agriculture and irrigation. Assistance will be provided for strengthening institutions, enhancing horizontal and vertical coordination, and improving scientific and technical support of adaptation planning.

A **Coordination Council on Green Economy and Climate Change has been established**. The Council combines the functions of former Commissions on climate change and green economy to make a comprehensive effort in planning and implementation of relevant activities.

EBRD launched a Green Technology Selector for the Kyrgyz Republic. This is a catalogue of high-performing green technologies that are pre-approved for green financing via local financial institutions. It is the largest international virtual-store like platform that helps manufacturers and vendors of green technologies find potential clients.

Emergencies

Natural disasters. More the half of the Republican territory is prone to avalanches. The area of 3,200 km^2 is subjected to flooding. In May, destructive mudflows in Dzhalal-Abad and Batken provinces damaged residential buildings, roads, businesses and crops. The damage was estimated at about 130.5 million soms. Rising water in the Chon-Naryn Canal led to flooding of 30 home yards, household buildings and roads in Batysh, Alma-Bak, Ak-Korgon and Kotormo in June.

International Cooperation. The Kyrgyz Parliament has approved draft laws on (1) ratification of the Agreement between the Kyrgyz Republic and IDA on financing the Enhancing Resilience in the Kyrgyz Republic Project. The Project consists of five components, such as strengthening disaster preparedness and response systems, improving safety and functionality of school infrastructure, enhancing financial protection, and contingent emergency response (8 June); (2) ratification of the Agreement between the Kyrgyz Republic and IDA on financing the Social Protection Emergency Response and Delivery Systems Project worth $50 million (3 September). The World Bank's Board of Directors approved Additional Financing for the Enhancing Resilience in the Kyrgyz Republic Project in the amount of $55 million from IDA on highly concessional terms.

Foreign Policy and International Cooperation

In 2020, the President of the Kyrgyz Republic paid **formal visit** to Hungary (September) and **working visits** to the Russian Federation (February, September, December). **The country was visited** by Foreign Ministers of Hungary (February) and PRC (September).

Meetings were also held with the Swedish Parliament delegation headed by the First Vice-Speaker (January), Ambassadors of the Russian Federation (October) and the Republic of Kazakhstan (November), Permanent representative of IMF (March), Heads of ADB and WB missions in the Kyrgyz Republic (March), Director of EBRD for Central Asia (March) and others. Telephone calls took place with leaders of a number of countries and heads of international organizations.

As a **foreign policy priority** in 2020, Kyrgyzstan built and strengthened bilateral relations with its closest partner countries and far abroad countries. 2020 was declared the Cross year of Kyrgyzstan and Russia. Significant efforts were made to mobilize external assistance for measures to prevent and combat COVID-19 pandemic and support the national budget. The total amount of the received assistance was more than $95 million, including over €36 million from EU as rapid and short-term emergency response and bud-

get support. In total, agreements were reached with donors for allocation of $774.4 million, including $343.3 million as financial assistance, $271.3 million as loans and $72.0 million as grants. Additionally, it was agreed to temporarily suspend servicing of foreign debt before a number of countries.

Development of alliances and strategic partnerships. A Roadmap was signed for deepening and strengthening cooperation between **Uzbekistan and Kyrgyzstan** in order to intensify trade and economic relations, extend the range of exported goods, and revive joint projects in the industrial and agricultural sectors, the construction of logistics centers and free economic zones in the border areas of the two countries. An agreement has been also reached on establishment of permanent working groups between the ministries of economy, agriculture, transport and customs authorities of the two countries for quick handling of urgent matters. The mechanisms and technical details of formation of a joint Kyrgyz-Uzbek investment fund were discussed (See Bilateral Cooperation).

In 2020, representatives of Kyrgyzstan took part in a number of important international events, among which were: the Global Forum for Food and Agriculture (GFFA) and the Annual Agriculture Ministers' Conference (January, Berlin); 7th meeting of Joint Kyrgyz-Austrian Commission on Bilateral Foreign Economic Relations (January, Vienna); meeting of the Eurasian intergovernmental council (January, Almaty); C5+1 Ministerial Meeting (February, Tashkent); 32nd session of the FAO Regional Conference for Europe (November, Tashkent); Joint meeting of the Governmental delegations of Kyrgyzstan and Uzbekistan on delimitation and demarcation of the Kyrgyz-Uzbek border (December, Bishkek). Additionally, numerous meetings in the format of video-conference also took place at Central Asia, CIS and UN levels and were attended by representatives of the Kyrgyz Republic.

Sources:

Official sites of the:

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Parliament (www.kenesh.kg);

Ministry of Justice (http://cbd.minjust.gov.kg);

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State Water Resources Agency (https://www.water.gov.kg);

State Committee for Industry, Energy and Subsoil Use/Ministry of Energy and Industry (http://www.gkpen.kg/)

Ministry of Agriculture, Food Industry and Land Reclamation (https://agro.gov.kg/language/ru/main/)

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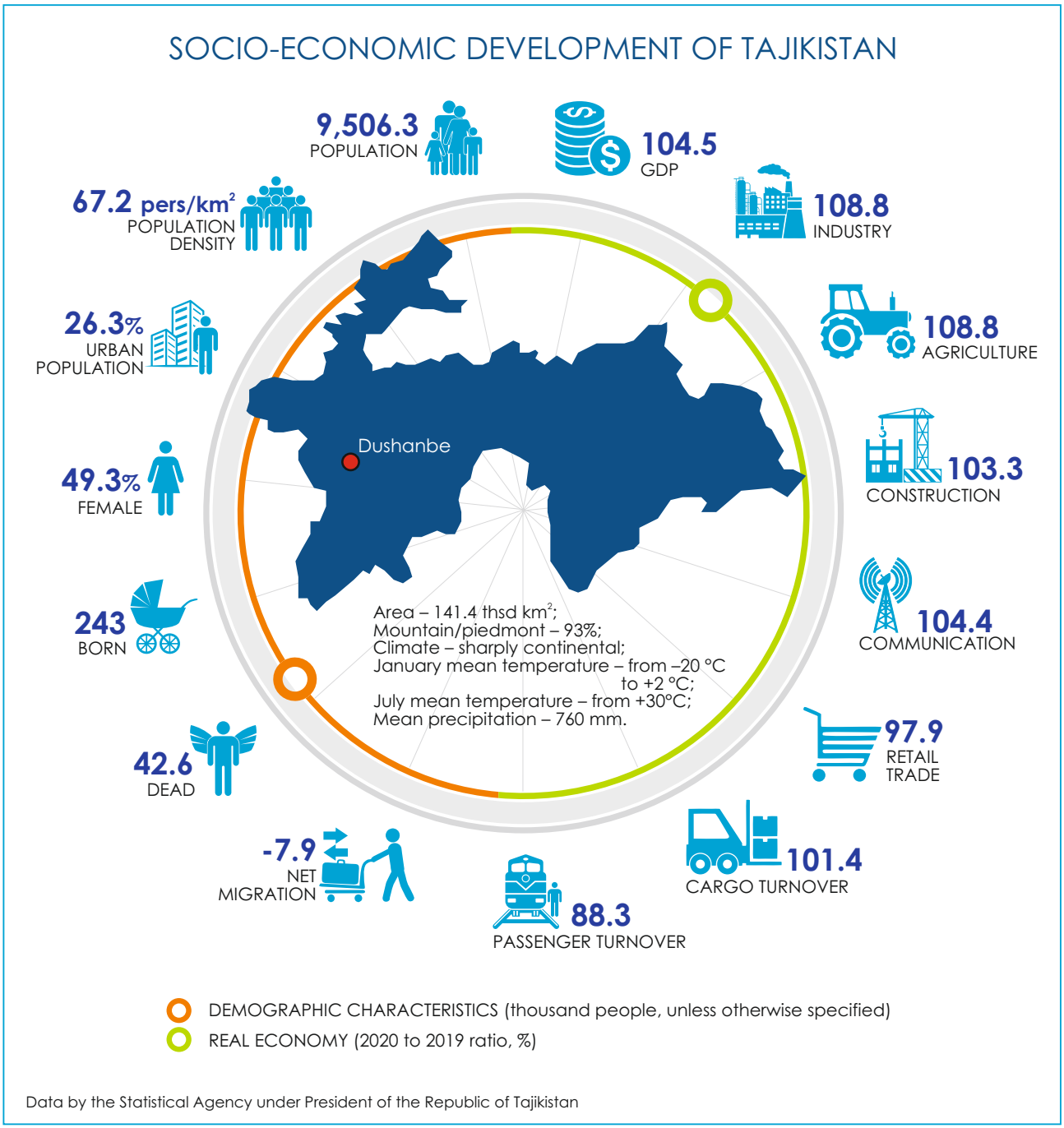
5.3. Tajikistan



Data by the Statistical Agency under President of the Republic of Tajikistan

Water Sector

Water resources. Tajikistan has got water resources from glaciers, rivers, lakes, reservoirs and groundwater. There are 14,509 glaciers with the total glaciation area of 11,146 km^2 (approx. 8% of the country's area) and the total glacial volume of about 845 km^3. 947 rivers stretching to more than 28,500 km flow across the country. The main watercourses are the Amu Darya and the Syr Darya and their tributaries. The average annual runoff generated in Tajikistan is 64 km^3/year (62.9 km^3/year in the Amu Darya basin and 1.1 km^3/year in the Syr Darya basin) or 55.4% of the average annual surface runoff in the Aral Sea Basin. Tajikistan possesses about 1,300 lakes covering 705 km^2. The lakes contain over 46.3 km^3 of water, including 20 km^3 of freshwater. The potential groundwater stock is 18.7 m^3/year, while usable groundwater resources are estimated at 2.8 km^3/year.

Latest developments in legislation. A number of regulatory documents were adopted in 2020, including: (1) the law on Water User Association, which sets economic, institutional and legal framework of WUA activities and aims at water conservation and efficient operation of waterworks facilities in WUA's service area (1668 of 02.01.2020); (2) the Water Code of Tajikistan (1688 of 02.04.2020), which governs public relations in the area of water ownership, use and exploitation and aims at conservation and rational use of

water resources and legal protection of water users; (3) the governmental decree (241 of 29.04.2020), which assigns the Agency for Land Reclamation and Irrigation under the Government of Tajikistan the coordinating function of WUA activities; (4) the governmental decree on assignment of an authorized state body for regulation of water use (548 of 27.10.2020) in the face of the Ministry of Energy and Water Resources; (5) the governmental decree on the procedures for development, approval and fulfillment of basin water plans (680 of 31.12.2020); (6) the governmental decree on the procedure of establishment and functioning of river basin councils (681 of 31.12.2020).

New appointments. Mr. Daler Shofakir Jum'a was appointed Minister of Energy and Water Resources of Tajikistan in connection with the appointment of Mr. Usmonzoda as Deputy Prime Minister of Tajikistan.

Mr. Orif Khamid Amirzoda was appointed Director of the Institute of Water Problems, Hydropower and Ecology at the National Academy of Sciences (NAS).

Projects. ADB approved a grant of $15 million for the Water Resources Management in the Panj River Basin Project. This will be used for the construction of a sediment tank in the Chubek irrigation system, which is the largest one (50,160 ha) in the basin. Due to deterioration of the system, including sedimentation, the system's flow capacity decreased to 80 m^3/s in 2013 against the design capacity of 150 m^3/s (1950).

In December 2020, GEF approved a grant for the FAO's "Institutionalizing transboundary water management between Tajikistan and Afghanistan for the Panj River Sub Basin" project worth $7.9 million. The project objective is to establish new operational mechanisms and foster effective transboundary water management between Tajikistan and Afghanistan to manage nexus trade-offs in the Panj River basin. The Project is comprised of 4 components: (1) jointly agreed transboundary diagnostic analysis considering climate change, environmental flows, and development related nexus trade-offs; (2) transboundary water management strategy and action program and underpinning institutional arrangement for the Panj River basin; (3) demonstration projects to pilot interventions for improved transboundary water management (focused on climate change, drought and flood mitigation, sustainable water and land management, policies, practices and technologies); (4) enhanced capacity of key stakeholders, reinforced participatory processes, mainstreamed gender equality focus, and effective project progress monitoring.

Events. The Republican Research-to-Practice Conference "Accounting, formation, distribution and use of water resources as the main factor of sustainable development in Tajikistan" was organized by the Ministry of Energy and Water Resources and TajikNIIHiM and held on 21 October in Dushanbe.

Water sector reform. As part of the Program for water sector reformation in Tajikistan for the period of 2016-2025, the following results were achieved:

- *Legislative and regulatory development:* (1) adopted a new Water Code, the laws on drinking water supply and sanitation and on Water User Associations, nine bylaws and 10 draft ones are in process of approval; (2) developed drafts of the National Water Strategy until 2030 and the basin water plans for the Syr Darya, Zarafshon, Panj, Kofarnikhon, Isfara and Isfana River Basins; a Program of water supply rehabilitation in the industrial sector and equipping with water meters is in process of approval; a methodology for tariffication of irrigation water supply services;

- *Institutional reforms:* (1) determined basin zones (territorial units of water management); (2) established five river basin organizations; (3) formed four Basin Dialogues on IWRM in the Syr Darya, Zarafshon, Panj and Kofarnihon basin zones and held their scheduled meetings; (4) started the process of establishing river basin councils in the Syr Darya, Zarafshon, Panj and Kofarnihon basin zones; (5) work on developing a draft State Program on water supply and sanitation for the period until 2030 and improving the governance structure in this sector is underway;

- *Infrastructure rehabilitation:* (1) 11 projects worth $180 million in the water supply and sanitation sector; (2) 5 projects worth $149 million in the sector of land reclamation and irrigation (+bank enforcement) are ongoing;

- *Supporting instruments of the water sector reform:* (1) developed a Concept on the National water information system and a methodology for coding water bodies and catchment basins in the Republic and completed coding of water bodies; the State water cadastre, Water budgets, and Irrigation database applications are under development; (2) work on the establishment of an IWRM Innovation and Research Cluster on the base of the Tajik Agrarian University is underway with the support of CAREC Tajik branch and SDC; (3) held workshops and trainings to build capacities of those, who work in the water sector.

Drinking Water Supply

Latest developments in legislation. The following regulatory documents were approved: (1) Procedure of accounting and reporting in the drinking water supply and sanitation sector (117 of 27.02.2020); (2) Procedure of establishment of trust funds for drinking water supply and sanitation.

Projects and programs. The first stage of the "Water Supply Line from Dehmoy Spring of Jabbor Rasulov District in Khujand" was commissioned to provide clean drinking water for more than 15,000 residents. The Project was implemented at the expense of the republican budget, with the cost of the first stage of more than 16 million somoni.

The construction of a 15,282 m long water pipeline was completed and now provides water for 537 households of the Guliston community in Kulkand Isfara Jamoat. The total cost of the facility is 1,162,972 somoni, of which 861,372 somoni – grant contribution,

and 301,600 somoni – contribution from local residents.

As part of the "Strengthening the Water Service Management of Pyanj and Khamadoni Vodokanals in the Republic of Tajikistan" Project, the JICA Tajikistan Office provided assistance to the "Khojagii Manziliu Kommu" utility company in the amount of 9,555 thousand somoni for purifying drinking water.

Under the "Safe Drinking Water and Sanitation Management Project" (SWSMT), the Aga Khan Agency for Habitat in Tajikistan (AKAH) successfully completed technical feasibility, hazard and environmental assessments for water supply systems in 75 targeted villages. It also established a water quality testing laboratory. The piped water supply systems were constructed in 10 districts and more than 6,000 households across the target villages were benefited from this water supply.

Agriculture

In 2020, the **agricultural production** reached 33.6 billion somoni or over $2.9 billion. This is by 8.8% more than in 2019. The rates of crop and livestock production growth amounted to 8.2% and 10.7%, respectively. The country's agricultural sector produced more than 842,300 tons of grain (excluding corn), 656,500 tons of potato, 404,000 tons of cotton, etc.

The per capita gross domestic product (GDP) was a little over 8,740 somoni ($773) in 2020. The total GDP was 82,543 billion somoni (more than $7.3 billion). Agriculture accounted for 22.6% in GDP.

Agricultural export. As of 21 October 2020, Tajikistan exported a little over 120,400 tons of agricultural produce (more than 90,800 tons of vegetables, 12,100 tons of fruits, 95 tons of melons and gourds, more than 15.4 tons of dry fruits, and 1,900 tons of other products) for more than $17.1 million. This is 41.7% or 35,400 tons more as compared to 2019.

Latest developments in legislation. The following regulatory documents were approved: (1) Governmental decree (566 of 28.10.2020) on the Concept for establishment and development of agro-industrial clusters in Tajikistan for a period up to 2040. The Concept sets objectives of agro-industrial clusters and institutional, organizational, methodological and administrative bases of cluster development; (2) Governmental decree (386 of 25.06.2020) on the Program of food security in Tajikistan for 2020-2024. The Program's objective is to supply population and processing enterprises with safe and nutritive local agricultural produce.

New appointments. Mr. Sulaymon Rizoi Ziyozoda was appointed Minister of Agriculture by Presidential Decree on 3 November 2020.

International cooperation and projects. As part of the "Agriculture Commercialization" Project, a new agricultural information platform "Tajik produce" was launched. The online platform containing the necessary information on local agricultural produce is to expand cooperation between Tajik businessmen and importers from CIS countries.

Energy

Power production and export. In 2020, Tajikistan generated about 19.8 billion kWh, which is 4.4% (906 million kWh) less than in 2019. About 95% of electricity in the republic was generated by hydroelectric power plants, and the remaining part – by thermal power plants. Electricity export amounted to more than $ 56.4 million, which is 40% less than in 2019.

An agreement was signed between Uzbek and Tajik (OJSC "Barki Tojik") energy agencies for electricity supply from Tajikistan to Uzbekistan in the period from May to September (2 May). Because of reduced inflow to the Vakhsh River and water shortage in reservoirs, the average daily supply was reduced from 12 to 0.3 MkWh (25 July). In early August, to supply the population and national economy with electricity, OJSC "Barki Tojik" terminated the agreements of electricity export to Uzbekistan and Afghanistan. In September, the agency informed on filling the Nurek reservoir and the resumption of exports to Afghanistan.

A single Republican command center was established to ensure rational use of electricity and detect illegal connections to electrical grids (10 December). The Center will raise awareness on the rational use of electricity and check consumption in households, factories and institutions irrespective of their ownership form.

New appointments. Mr. Jamshed Shodi Shoimzoda was appointed first Deputy Minister of Energy and Water Resources on 3 November 2020.

HPP modernization

Kairakkum HPP. The Government of Tajikistan has ratified a grant agreement between OJSC "Barki Tojik" and EBRD for the project on modernization of Kairakkum HPP (08.04.2020). Under the Project second phase it is planned to complete the rehabilitation of HPP that will increase the current installed capacity from 126 to 174 MW, prevent water losses through spillways, and provide an opportunity to generate more hydropower using the same flow.

Nurek HPP. The WB Board of Directors approved additional grant for $50 million from IDA for the "Nurek HPP[20] Rehabilitation Project", phase II. The total cost of the Project phase II is $192 million. It is planned to rehabilitate the remaining six aggregates and the Nurek bridge and repair HPP building and other key structures. Upon completion, electricity generation will increase almost by 300 MkWh.

[20] Put into operation in 1972

Sarband HPP. Aggregates 2 and 6 of 39 and 49 MW, respectively, were commissioned on 22 September. Rehabilitation of aggregate 3 has been started.

HPP construction

Rogun HPP. By October 2020, two aggregates of Rogun HPP generated 1.7 billion kWh of electricity for the national energy system. In 2020, 1.872 billion somoni were allocated from the state budget for the pre-contract construction-assemblage work, procurement of equipment, construction materials and services. The construction-assemblage work was continued in the site of spare and main fourth gate. The Webuild is to ensure timely construction of the dam up to a level of 1,110 m and focus on reinforcement of the dam and prevention of flooding. To ensure safety of HPP and organize technical and technological monitoring at 53 structures of HPP, 4,000 measurement devices were installed. Eleven digital satellite seismic stations have been set up around the Rogun and Nurek reservoirs with connections to the seismic centers of the Rogun HPP and the Geophysical Service of the Tajikistan's National Academy of Sciences.

Sebzor HPP. The Ministry of Economic Development and Trade has signed a trilateral grand agreement with the German Development Bank for construction of Sebzor HPP worth €18.6 million (22 July). For the construction of 11-MW HPP and its infrastructure in Roshkala district, GBAO $55.2 million were mobilized in total.

Shurab HPP. A feasibility study for the construction of 8th stage of the Vakhsh cascade – Shurab HPP – was started. The HPP of 862 MW will be located between Rogun HPP and Nurek HPP, 110 km far from Dushanbe. $ 1 billion will be needed for the construction. It is planned that the Tajik Aluminum Company will take care of the preparation, with the involvement of authorized agencies and consulting companies.

HPPs on the Zarafshan River. The Tajik and Uzbek delegations negotiated the joint construction of two HPPs on the Zarafshan River in Tajikistan (28 January, Tashkent). At the first stage, it is planned to build Yavan HPP with the estimated cost of $282 million. The 140-MW HPP will generate 700-800 MkWh. At the next stage, the parties will consider the construction of a 135-MW hydropower plant on the Fandarya River with the estimated cost of $270 million to generate 500-600 MkWh. The HPPs will produce up to 1.4 billion kWh "exclusively for the needs of Uzbekistan" (see Bilateral Cooperation).

CASA-1000. As part of the project, excavation and concrete work have been completed in Tajikistan, and metal structures, anchor bolts, and drainage pipes have been delivered to the construction site. By agreement with the MEWR, negotiations have been concluded between the Kalpataru contractor and Nokili TALCO for the procurement of 1,780 km of cable at 9.7 million somoni. Construction of the transmission line will be completed by the end of 2021. The contractor was selected for the supply and installation of equipment at Isfara-1 substation and the improvement of 110/10 kV distribution networks, transmission line and substation.

Alternative Energy

The world's tallest new solar power plant of 220 kW was put into operation with the assistance of USAID in Murghab district, GBAO. The plant will increase the available daily electricity by 50%. The project also includes a hybrid pumped storage hydro of 180 kWh. With the commissioning of the power plant, more than 6,000 people in the city of Murghab now have access to electricity.

Climate Change, Glaciers and Environmental Protection

New appointments. Mr. Dilovarsho Saidakhmad Dustzoda was appointed Director of the Hydrometeorology Agency at the Committee for Environmental Protection on 8 June 2020.

International cooperation and projects. Tajikistan and Afghanistan signed a Memorandum of Understanding on protection of mountain ecosystems in the Panj and Amu Darya river basins (1 October). The Memorandum was signed for 5 years and implied measures for (1) counteraction to climate change; (2) biodiversity conservation; (3) water quality monitoring; (4) environmental assessment; (5) exchanges in ecosystem management.

The Government of Tajikistan signed an agreement to launch a climate change adaptation project titled "Building Climate Resilience of Communities through Capacity Strengthening and Livelihood Diversification in Mountainous Regions of Tajikistan" funded by the Green Climate Fund (GCF).

Events. The Tajik delegation took part in the International Conference "Green Central Asia" (28 January, Berlin). The Green Climate Action Month was launched as part of the partnership to strengthen action on climate change and biodiversity conservation (since 24 October, Committee for Environmental Protection and GIZ). The International Science-to-Practice Online Conference "Integrated use of water and land resources in Central Asia in the context of global climate change" was organized on 3-4 December by the Institute of Water Problems, Hydropower and Ecology at the National Academy of Sciences of Tajikistan.

Emergencies and Disasters

Emergencies. In 2020, 213 natural emergency situations (680 – in 2019) were recorded in the territory of Tajikistan. 25 of them caused material damage to the population and the national economy in the amount of 58.9 million somoni. Eight people died, 141 residential buildings, 14 bridges, 89 km of roads, over 18,817 ha were damaged.

Prevention measures. The Committee of Emergency Situation of Tajikistan has signed a contract for delivery and installation of weather radar to detect hail and other weather phenomena. The radar is to be put into operation in March 2021.

Capacity building. As part of the EU-funded project "Stabilization of Tajikistan's southern border region with Afghanistan", the OSCE Programme Office in Dushanbe in co-operation with the Committee of Emergency Situation organized the first round of training course to improve skills of rescuers in conducting field-based emergency response operations under challenging conditions.

International cooperation on transboundary disaster risks. An agreement was signed on cooperation between the Institute of Seismology of the Uzbekistan's Academy of Sciences and the Institute of Geology, Antiseismic Construction and Seismology of the Tajikistan's Academy of Sciences. The Parties agreed to exchange methodologies and geological-geophysical and seismological information in the field of earthquake prediction and seismic zoning.

Foreign Policy and International Cooperation

Working and official visits. In 2020, the President of Tajikistan paid a working visit to the Russian Federation to take part in special events dedicated to 75th anniversary of the Victory in the Great Patriotic War (26 June). Official visits were also paid to the Russian Federation by the Minster of Foreign Affairs S. Mukhriddin (24-25 February), Chairman of Parliament R. Emomali (24-25 November). The Russian delegation headed by Deputy Chairman of the Government visited Dushanbe.

Visits of the Tajik Minister of Foreign Affairs to Brunei, South Korea, Qatar, Germany, Russia, Serbia and Uzbekistan and meetings with his colleagues from India, China, Kyrgyzstan, Pakistan and US allowed discussing priority areas of bilateral cooperation in economic sector, trade, investments and infrastructure.

Development of alliances and strategic partnerships. Despite complex situation due to the pandemic, bi- and multilateral cooperation between Tajikistan and partner countries, international and regional organizations continued developing. A Tajik-Uzbek Investment Forum took place on 29 September and resulted in signature of contracts worth $50 million.

Foreign investments. Due to the COVID-19 pandemic, FDI flow to Tajikistan fell by 53% in 2020. Investment in the economy of Tajikistan amounted to $428 million, including $162 million of FDI. According to the State Investment Committee, 70 investment projects worth more than $3.5 billion are implemented in the country. About 50% is loans, more than 45% is grants, and the remaining percentage is the Government's contribution. The projects are designed for rehabilitation and development of transport, energy, municipal sector, agriculture, land reclamation, as well as for health protection, education, social protection, state governance.

Reinforcement of the country's image. The UN General Assembly has adopted its resolution 72/212 "United Nations Conference on the Midterm Comprehensive Review of the Implementation of the Objectives of the International Decade for Action, "Water for Sustainable Development", 2018-2028", which was offered by Tajikistan and the Netherlands together with the vast majority of UN member countries – 190 countries (21 December).

Chairmanship. Tajikistan assumed the responsibility of chairmanship in the SCO (10 November) and the CSTO (2 December). Speaking at summits of these regional organizations, Emomali Rahmon voiced priorities of his country chairmanship.

Tajikistan also has been chairing IFAS since 2019 to 2022. See IFAS and Other Regional Organizations in Central Asia.

Participation in high-level events. The President of Tajikistan spoke at (1) the UNGA 75th session, noting that Tajikistan intends to take active efforts for the promotion of its constructive initiatives on water and climate change together with other countries (22 September, online); (2) the meeting of the CIS Council of Heads of State, where Dushanbe was declared the cultural capital of the Commonwealth in 2021 (18 December).

The virtual participation of the Tajik Minister of Foreign Affairs S. Mukhriddin was organized at the High-Level Forum "Accelerating implementation of the 2030 Agenda through **water, sanitation and climate action**" on 29 May, the International Conference of Foreign Ministers within the **"Belt and Road Initiative"** on 18 June, the Annual Meeting of Foreign Ministers of the Group of Landlocked Developing Countries (LLDCs) on 23 September, the Special Meeting of Foreign Ministers of the Conference on Interaction and Confidence Building Measures in Asia (CICA) on 24 September and the 27th Session of Ministerial Council of OSCE on 3 December.

Sources:

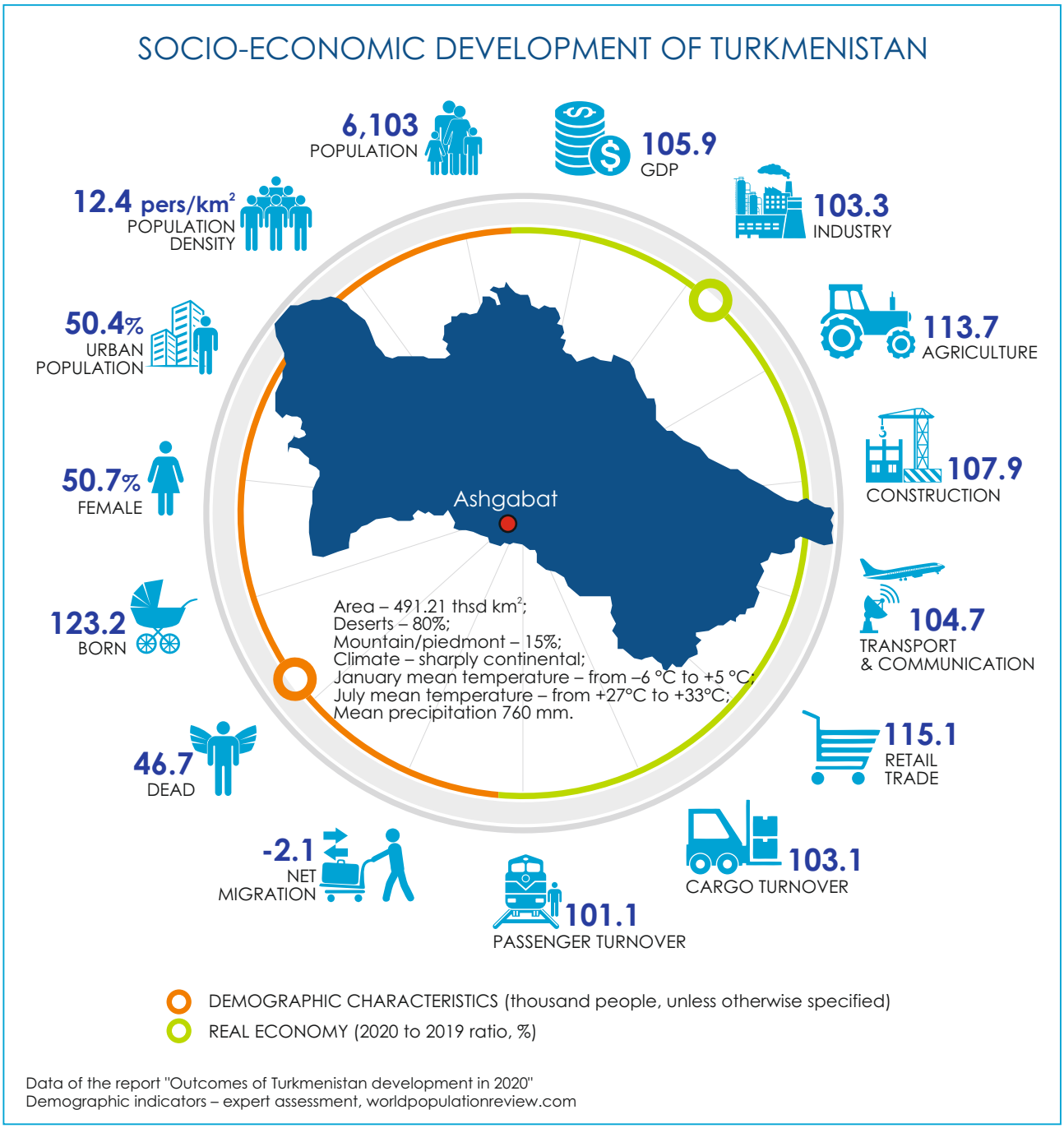
Official sites of the:

President (www.president.tj);
Ministry for Foreign Affairs (https://mfa.tj);
Ministry of Economic Development and Trade (https://medt.tj);
Committee for Emergency Situations and Civil Defense (https://khf.tj);
Agency for Land Reclamation and Irrigation (https://www.alri.tj);
Agency for Hydrometeorology (http://www.meteo.tj/);
Ministry of Energy and Water Resources (https://www.mewr.tj/);
Ministry of Agriculture (https://moa.tj/ru)

Information agencies and sites:

http://khovar.tj;
www.dialog.tj;
https://east-fruit.com;
https://tajikta.tj;
http://avesta.tj;
https://tj.sputniknews.ru;
https://fergana.agency;
http://sugdnews.com;
http://eco.uz;
http://base.spinform.ru

5.4. Turkmenistan



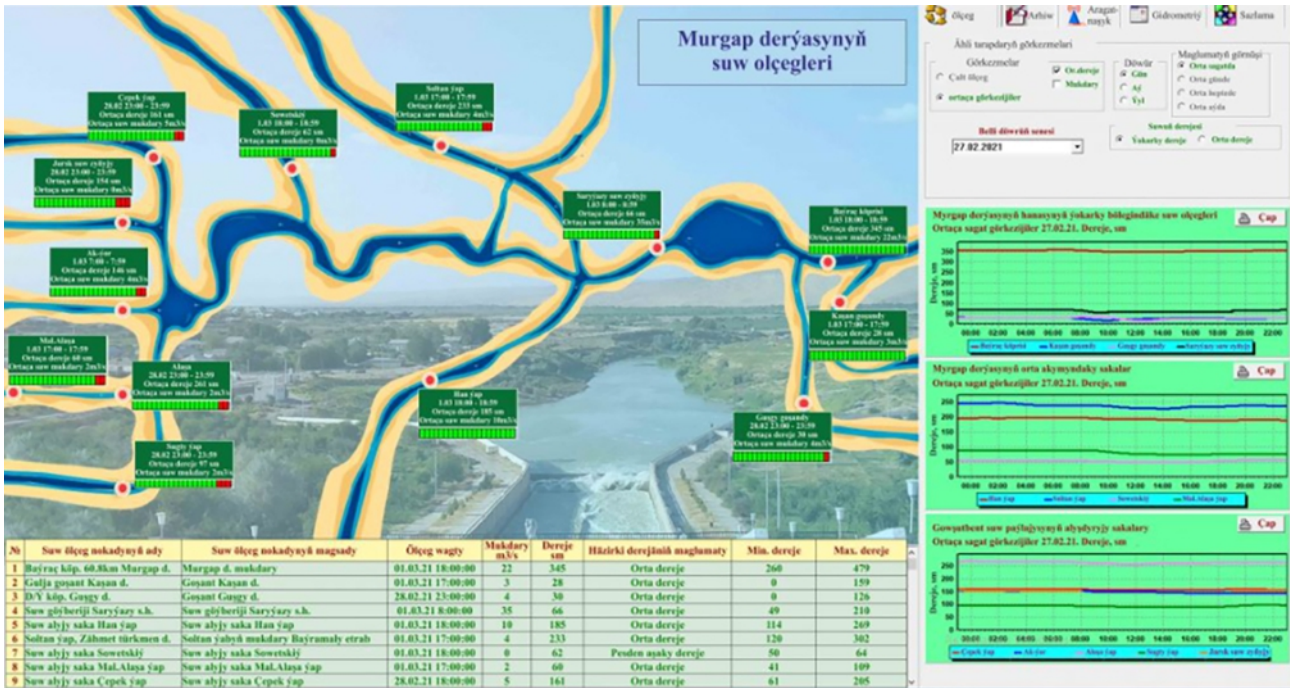
Data of the report "Outcomes of Turkmenistan development in 2020"
Demographic indicators – expert assessment, worldpopulationreview.com

Water Sector

Water resources. The total volume of water resources of Turkmenistan is comprised of the surface runoff of the Amu Darya (88%), Murgab (6.5%), Tedjen (3.5%), and Atrek, Sumbar and Chandyr (1.4%) rivers, as well as the small watercourses of the northeast slopes of Copetdag (0.6%), and the insignificant groundwater resources and collector-drainage waters. All large rivers of Turkmenistan are transboundary, i.e. 95% of surface water in the water balance of Turkmenistan is formed outside the country.

Water accounting. As part of the Socio-Economic Development Program for 2019-2025, the efforts are made to save water and augment water stock. In particular, water meters have been installed in 13 points along the Murgab River in Mary province[21]. The automated water monitoring system allows the Mary water authority and the State Committee for Water Management control water level and irrigation water supply in real time for better water planning. The system is also important for early warning of local communities about floods.

[21] Equipment was provided to the State Committee for Water Management as part of the USAID-funded "Water, Education and Cooperation" Project implemented by CAREC



№	Suw ölçeg nokadynyň ady	Suw ölçeg nokadynyň magsady	Ölçeg wagty	Mukdary m3/s	Dereje sm	Häzirki derejäniň maglumaty	Min. dereje	Max. dereje
1	Bayraç köp. 60.8km Murgap d.	Murgap d. mukdary	01.03.21 18:00:00	22	345	Orta dereje	260	479
2	Gulja goşant Kaşan d.	Goşant Kaşan d.	01.03.21 17:00:00	3	28	Orta dereje	0	159
3	D/Ý köp. Gusgy d.	Goşant Gusgy d.	28.02.21 23:00:00	4	30	Orta dereje	0	126
4	Suw göýberiji Saryýazy s.h.	Suw göýberiji Saryýazy s.h.	01.03.21 8:00:00	35	66	Orta dereje	49	210
5	Suw alyjy saka Han şap	Suw alyjy saka Han şap	01.03.21 18:00:00	10	185	Orta dereje	114	269
6	Soltan şap, Zähmet türkmen d.	Soltan şahyň mukdary Bayramaly etrab	01.03.21 17:00:00	4	233	Orta dereje	120	302
7	Suw alyjy saka Sowetskiý	Suw alyjy saka Sowetskiý	01.03.21 18:00:00	0	62	Peseden aşaky dereje	50	64
8	Suw alyjy saka Mal.Alaşa şap	Suw alyjy saka Mal.Alaşa şap	01.03.21 17:00:00	2	60	Orta dereje	41	109
9	Suw alyjy saka Çepek şap	Suw alyjy saka Çepek şap	28.02.21 18:00:00	5	161	Orta dereje	61	205

Source: Official site of the Turkmenistan's State Committee for Water Management, http://turkmenwater.gov.tm/ru/cherez-czifrovuyu-sistemu-dlya-kontrolya-urovnya-vody-i-ee-potrebleniya-ustanovleny-schetchiki-vody-v-reke-murgap/

Capacity building. A number of seminars and trainings were organized and held on water saving technologies (17 September); water diplomacy practices (7 October); water and energy cooperation (10 November); operation of pumping stations, audit of pumping units and planning of water use at the inter-farm irrigation systems (24 December).

International cooperation. Turkmenistan chaired the 79th meeting of ICWC (24 November, online). See ICWC of Central Asia.

The meeting between representatives of water management organizations of Turkmenistan and Uzbekistan took place on 30 October (see Bilateral Water Cooperation between the Countries of Central Asia). At the 4th meeting of the Water Coordination Commission between Turkmenistan and Afghanistan (22 November), the parties discussed water sharing along the Amu Darya, Murgab and Tedjen rivers and signed the resulting protocol. During a work meeting on the regional water use, officials and experts of the State Committee for Water Management of Turkmenistan, the Ministry of Energy and Water Resources of Tajikistan and EC IFAS considered the results of water use in the region, the analysis of water stock for 2021, and the forecast of flow in the main rivers (3 February 2021).

A Memorandum of Understanding was signed on 2 December between the State Committee for Water Management of Turkmenistan and the UNDP mission in Turkmenistan on sustainable water resources management.

Drinking Water Supply

Water treatment facilities were put into operation as part of the **"General Clean Water Program"**. Experts of exploration companies at the State Corporation "Turkmengeology" make efforts to explore groundwater, update groundwater stock, and determine the state of currently operational wells. In 2020, new sources of drinking water were discovered in freshwater lenses in Uchkepderi of Gurbansoltan-eje district and Dostluk of Gubadag district (Dashoguz exploration company), as well as in "Çukur" aquifer in Serdar district and "Arçaly" aquifer in Makhtumkuli district (Balkanabad exploration company).

Agriculture

Latest developments in legislation. In line with the Land Code of Turkmenistan and the Presidential Decree (14668 of 18.03.2016) "On governing land relations in Turkmenistan", an Order was adopted for abolishing the right of respective legal entities to use land on the basis of contracts for allocation of their land plots for enterprises and institutions, members of the Union of Industrialists and Entrepreneurs.

The President of Turkmenistan signed a decree, which sets the acreage of agricultural land fund, from which land plots will be allocated for stock companies, peasant farms, other legal persons and citizens in the country. The land will be leased for 99 years, provided that wheat, cotton and other crops from the 'state order' list are grown on contractual basis on, at least, 70% of the land area. Crop surplus can be used by owners of land plots on their own or sold by state purchase price to the state.

Strengthening of physical infrastructure and digitalization of agriculture. In January-September, machine-handling in crop production increased by 61.8% as compared to the similar period in 2019, mainly, through procurement of up-to-date agricultural equipment. 785 units of such equipment were bought from the American "John Deer" company. Modern 'smart' farms with automated production processes are in the process of establishment (e.g., a poultry farm, greenhouses in Balkanabat and Mary district).

Projects.

■ As part of the EU-funded Project "Support to Further Sustainable Agriculture and Rural Development in Turkmenistan – SARD III", the 7th work meeting of the Project's Steering Committee (17 June), a seminar for farmers (27-28 August), and a webinar "Vegetables production in greenhouses and key aspects of greenhouse business management" (25 November) were held. The Project aims to develop small- and medium-scale business in the agroindustry and introduce international standards and best practices. One of the main aspects of the Project is the improvement of water and land use and contribution to environmental security.

■ Under the UNDP/GEF Project "Supporting climate resilient livelihoods in agricultural communities in drought-prone areas of Turkmenistan": the local adaptation plans were developed jointly with local authorities, farmers and livestock breeders to overcome the effects of climate change (droughts, floods, desertification, etc.); a webinar "Establishing agricultural advisory services and knowledge dissemination services in Turkmenistan" was held on 16 October. The Project supports 6 farm associations and 2 livestock farms in Lebap and Dashoguz provinces, continues providing grants in support of community projects and holds trainings on the development of grant-seeking proposals, introduction of agricultural innovations, including water accounting, laser land leveling, solar energy use and the modernization of water collecting facilities.

Energy

Latest developments in legislation. The internal regulations of the Ministry of Energy and the structure of its headquarters have been approved.

The energy sector continues increasing the generating capacities. Two gas turbine energy blocks, 70 MWh each, will be constructed and an existing power station at Turkmenbashy oil processing complex will be reconstructed by the Turkish Çalik Enerji Sanayi ve Ticaret A.Ş. A 432 MW gas turbine power station is under construction in Charjew district, Lebap province. The work is carried out together with Sumitomo Corporation, Mitsubishi Hitachi Power Systems (Japan) and Turkish Rönesans Holding. Energy Equipment Maintenance and Service Centre will be opened in 2022. The construction is carried out by the consortium of Çalik Enerji Sanayi ve Ticaret A.Ş (Turkey) and Çalik Enerji Swiss AG (Switzerland).

International cooperation. A Program of energy diplomacy development in Turkmenistan for 2021-2025 was approved. It sets the key areas of cooperation with UN agencies, the International Energy Agency, the Secretariat of the Energy Charter and other relevant organizations (5 December). A Memorandum of Understanding was signed between the Ministry of Energy and UNDP on cooperation in the field of sustainable development of the electric energy industry on 11 December.

Energy Charter. On April 28, a videoconference meeting with the Secretary General of the Energy Charter Dr.Urban Rusnák was held in the premises of the MFA of Turkmenistan. The parties discussed a number of issues related to further development of bilateral cooperation between Turkmenistan and the Energy Charter, modernizing the Energy Charter Treaty, transit of energy carriers. Turkmenistan took part in meetings on the modernization of the Energy Charter Treaty. The participants discussed the issues related to energy transit, access to infrastructures, principles of tariff setting, sustainable development, corporative social responsibility, dispute settlement, and transparency of actions of the parties in energy deals and agreements (2 June, 8 July, 8 September).

Events. A number of seminars and conferences were held in Turkmenistan in the energy sphere, in particular: a webinar on net energy consumption as a new ecological and energy-saving system (14-17 October); online seminar on energy diplomacy (11-12 November, Ashkhabad); International science-to-practice conference "Stable energy cooperation as an essential condition for global development" (1 December, Ashkhabad).

Alternative Energy

National strategies and programs. There is ongoing transition to green economy and to modern environmentally safe and resource-saving technology in industry and social sectors under the State Program for Energy Saving for 2018-2024. A National strategy on renewable energy development in Turkmenistan until 2030 was approved on 5 December.

Solar energy. The "Täze energiýa" company installed solar panels to supply electricity to: (1) three settlements in Akhal province (total capacity 10 kW) and large livestock farm in Dashoguz province[22]; (2) cell towers in the same province and for street lighting on Ashkhabad-Mary and Bugdaily road. It is also planned to install 11 stations of 4.3 MW in remote settlements. In addition, a software called "Digital Photovoltaic Solar System Design" was developed in this context.

International cooperation. In order to further develop renewable energy, Turkmenistan cooperates with the International Renewable Energy Agency (IRENA)[23], EU, OSCE and UN agencies. Ambassador Extraordinary and Plenipotentiary of Turkmenistan to the UAE S.S. Garadjaev was appointed Permanent Representative of Turkmenistan to IRENA (26 June). It is planned to nominate Turkmenistan for election to the IRENA Council for 2021-2022.

Environment and Climate Change

Latest developments in legislation. The Law "On Environmental Information" was adopted on 14 March (227-VI). This law defines the legal, institutional, economic and social frameworks for access to environmental information and is aimed to ensure rights of legal entities and individuals to full, reliable and timely

[22] Within the UNDP Project "Energy Efficiency and Renewable Energy for Sustainable Water Management in Turkmenistan"
[23] In October 2018, Turkmenistan became a full member of the International Renewable Energy Agency (IRENA, https://www.irena.org/aboutirena)

information on the state of the environment and natural resources. The law provides for the establishment of a State Fund of Environmental Information. On 23 October 2020, the Intersectoral Commission on Environmental Protection was established.

The following **resolutions of the Mejlis (Parliament) were adopted**: "On ratification of the amendment to the Montreal Protocol on substances that deplete the ozone layer", "On accession to the Agreement on the conservation of African-Eurasian migratory waterbirds", "On accession to the Convention on the conservation of migratory species of wild animals", "On accession to the Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization to the Convention on Biological Diversity".

Implementation of national strategies and programs. The implementation of the National Strategy of Turkmenistan on Climate Change[24] is underway. The Strategy provides for a gradual shift of all major industries to more environmentally friendly mode, including energy efficiency and energy conservation, rational use of energy and natural resources, adoption of innovative technologies, advanced scientific and technological solutions, alternative energy sources, etc.

Forests. Turkmenistan joined the UNECE's Trees in Cities Challenge to plant more than 2.2 million trees in the cities of Turkmenistan in 2020. As part of the National Forest Program (2013-2020), 10 million (21 March) and 15 million (7 November) seedlings of deciduous, coniferous, fruit trees and grapes were planted.

Projects.

- Within the framework of the Central Asian Desert Initiative (CADI) (Greifswald University, German/FAO), a workshop was held on 28-31 January on the Island of Vilm and the 3rd Steering Committee meeting took place on 13 November. The rationale for revision of functioning and expansion of the Bereketli Garagum nature reserve and for the creation of better habitats for wild ungulate animals was developed; the preparation of the series of transnational World Heritage nomination "Temperate Deserts of Turan" was underway. On the basis of the Vilm Declaration[25], national working groups of Kazakhstan, Turkmenistan and Uzbekistan have developed draft lists of national nominations. In Turkmenistan those included Bereketli Garagum, Kaplankyr and Repetek nature reserves.

- As part of the Sustainable Cities in Turkmenistan: Integrated Green Urban Development in Ashgabat and Awaza (UNDP/GEF), a work plan for 2020 was signed; campaigns for plastic waste collection in exchange for young plants took place in March and August; dedicated equipment was installed to measure and monitor atmospheric air by the Environmental Control Service and laboratories of provincial environmental offices; a training in monitoring environmental state in cities was also held.

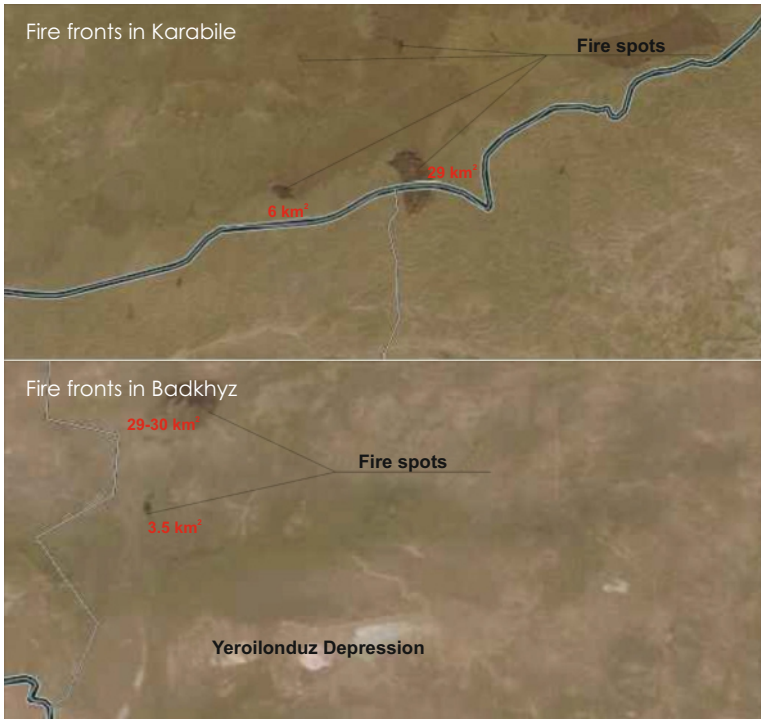
Events. A number of events were held in 2020, with the key ones including: a seminar on the outcomes of the high-level conference "Green Central Asia" and the 9th meeting of the EU-CA working group on the environment and climate change (28 February); a science-to-practice conference dedicated to the World Environment Day (5 June); a science-to-practice conference "Environmentally safe habitat is the basis of life" (5 June); a video conference "Preservation of the unique nature and ecological system of Turkmenistan is a key to sustainable development" (2 December).

Turkmenistan took part at the high-level Conference "Green Central Asia" (28 January, Berlin, Germany), the 3rd Central Asia Climate Change Conference (19 October, Dushanbe, Tajikistan); a meeting of the Technology Executive Committee of the Framework Convention on Climate Change (UNFCCC) (17-20 November, Bonn, Germany).

Emergencies

Floods. A break of the Sultan Bent dam on the Murgab River caused damage to more than hundred houses and farmland in Iolant district of Mary province (June). Flooding was also recorded in the south of Lebap province near Gabshal, Novruz, Ussatlar, and Khatap villages in the south of Kerki, as well as in Dashrabat, Bozarik and Khatap villages due to the outflow of the Amu Darya (June).

Fires. Every year, steppe fires occur in Badkhyz and Karabil in the south of Turkmenistan. In 2020, fires were recorded from May till August.



Source: Meteojournal, http://meteojurnal.ru/novosti/ploshhad-stepnyh-pozharov-na-yuge-turkmenistana-dostigla-neskolkih-desyatkov-kvadratnyh-kilometrov/

[24] Adopted in a new version on 23.09.2019

[25] Joint declaration of intent and schedule towards the World Natural Heritage nomination of the "Cold winter deserts of Turan" prepared on 30 January 2020 on the Isle of Vilm, Germany

Preventive measures. As part of the project "The set of mudflow protection structures in the southern part of Ashkhabad city", the Russian company "Vozrozhdenie" started the construction of 7 mudflow collectors. These structure will be capable to collect simultaneously the maximum volume of mudflow and withstand the design seismic activity of 9-9.5 points.

Since May, fire-fighting activities, including arrangement of trench strips and clearing of vast areas from grass vegetation, patrolling of areas, have been carried out in the country. There are fire-fighting checkpoints equipped with rapid response facilities at the Department of Fire Safety of the Ministry of Internal Affairs, the Ministry of Agriculture and Environmental Protection.

International cooperation. Meetings were held (1) between the Deputy Minister of Defense Mr. Durdiyev and UN representatives to discuss possible expansion of disaster prevention activities (9 July, online); (2) between the heads of ministries and agencies of the central civil defense and emergency services and the heads of UN agencies to discuss priority areas of cooperation for 2021 (16 November).

In 2021, the governments of Kazakhstan and Turkmenistan plan to sign an emergency cooperation agreement.

SDGs in Turkmenistan

SDG targets and indicators are integrated into the Socio-Economic Development Program of Turkmenistan for 2019-2025.[26]

United Nations and the Government of Turkmenistan signed the new Sustainable Development Cooperation Framework (SDCF) for 2021-2025 (14 March). It envisions that the country, by 2025, will make a significant progress in achieving the following three strategic priorities: people-centered governance and rule of law; inclusive, green, and sustainable economic growth; good quality, inclusive and affordable health, education, and social protection. The successive session of the National Leading and Coordinating Committee of the Partnership Framework Development Program between Turkmenistan and the UN for 2016-2020[27] (14 February) and the first meeting of the Steering Committee for the implementation of SDCF for 2021-2025 were held at the Ministry of Foreign Affairs of Turkmenistan (16 December).

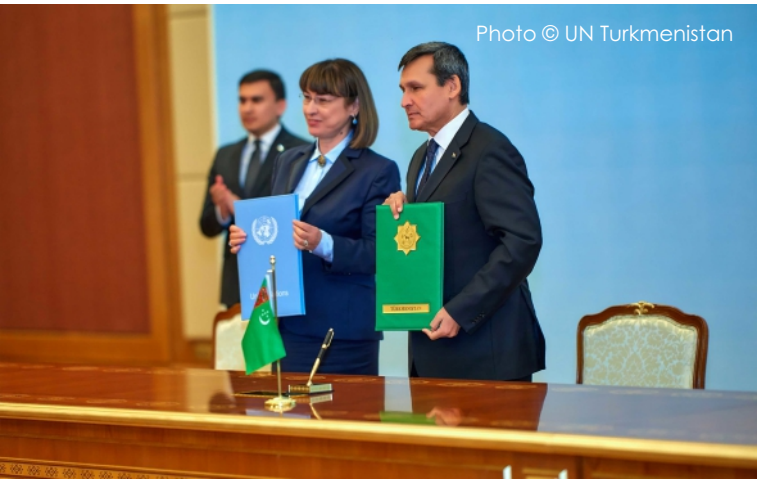


Photo © UN Turkmenistan

As part of SDG-related events, the Global Session "National Indicators and the National Voluntary Reviews on the Sustainable Development Goals" (27 April); an international seminar "Financing the implementation of the Sustainable Development Goals: the role of integrated national financing mechanisms" (28 May); a webinar "Building robust data ecosystems for achieving the SDGs" (17 November); and, a webinar "Review and guidance on global, international and regional funds to finance the SDGs in Turkmenistan" (18 December) took place in Turkmenistan.

Cooperation on the Caspian Sea

Turkmenistan scales up cooperation on the Caspian Sea. The development of the international treaty framework of the riparian country partnership is underway. Turkmenistan hosted:

- meetings of authorized representatives of the Caspian riparian states to discuss (1) the draft Protocol on cooperation in the field of securing maritime safety in the Caspian Sea (27-29 January); (2) the draft Agreement between the Governments of the Caspian States on Cooperation in Conducting Search and Rescue Operations in the Caspian Sea (30-31 January);

- meetings of experts of the Caspian riparian states to discuss (1) the draft of the Protocol on cooperation in the area of combatting illegal extraction of biological resources (poaching) in the Caspian Sea (3-5 February); (2) the draft Agreement between the governments of the Caspian states on cooperation in the field of scientific research on the Caspian Sea (6-7 February).

Establishment of a reliable system of environmental protection of the Caspian Sea is among the tasks of Turkmenistan's environmental strategy. Mejlis of Turkmenistan at its tenth meeting of sixth convocation adopted a resolution "On ratification of the Protocol on environmental impact assessment in a transboundary context to the 2018 Framework Convention for the Protection of the Marine Environment of the Caspian Sea" (22 August).

The Institute of the Caspian Sea held: a meeting on the issues of cooperation between Turkmenistan and Azerbaijan, including resource usage and collaboration in the Caspian, research, innovation and technological cooperation of the two countries within the framework of prior agreements (7 May); a roundtable on prospects of cooperation between Turkmenistan and the International Ocean Institute. During the meeting the parties discussed also training programs and courses of the Institute (30 October).

The preparation to the VI Summit of the Heads of Caspian Riparian States to be hosted by Turkmenistan was underway.

[26] Adopted on 01.02.2019
[27] Signed on 04.04.2016

Turkmenistan took part in the informal meeting of environmental ministers of the Caspian riparian states (9 June), International science-to-practice conference on Caspian bioresources (14 September), fourth session of the Commission for conservation, rational use of aquatic bioresources and management of their joint stock (21-23 December).

Foreign Policy and International Cooperation

In 2020, the President of Turkmenistan visited Azerbaijan (11 March), held 20 meetings with official representatives of other countries, heads of foreign corporations and companies, and had 40 telephone calls. Ashkhabad was visited by the Prime-Minister of Kazakhstan, who paid a working meeting on 17 September.

Key developments in the foreign policy of Turkmenistan

Development of alliances and strategic partnerships. Turkmenistan extends mutually beneficial relationships with the CA countries based on the good-neighborliness and equality principles, both in a bi- and multilateral format. In particular, cooperation is developed in energy, transport, trade, ecology, water, etc. The country is a member of the Central Asia Regional Cooperation Program (CAREC) since 2010. Turkmen delegation took part in the Senior Officials' Meeting in the framework of CAREC on 20 October. Partnership relations are enhanced under CIS umbrella. During meetings of the Council of CIS State Leaders Turkmenistan signed a number of documents, including the Strategy of CIS economic development until 2030, the draft Priority areas of CIS member states cooperation in the field of transport until 2030, etc. (29 May, 6 November). The President of Turkmenistan spoke at the meeting of the Council of CIS State Leaders on 18 December.

The partnership with Afghanistan is developed within the framework of a number of large projects (construction of the Turkmenistan-Afghanistan-Pakistan-India gas pipeline and the Turkmenistan-Afghanistan-Pakistan transmission line) and socio-economic and humanitarian programs (Afghan students study in Turkmen education institutions, relief consignments are regularly sent to Afghanistan, and energy is delivered on preferential terms). The President of Turkmenistan approved the program of humanitarian aid to the Islamic Republic of Afghanistan for 2020-2022 on 20 February. Turkmenistan and Afghanistan signed a set of documents to facilitate further implementation of joint infrastructure projects on 30 September. Turkmenistan also participated at the high-level Afghanistan Conference that was held under the chairmanship of the Governments of the Islamic Republic of Afghanistan and the Republic of Finland jointly with the United Nations (23 November, Geneva). A meeting of cooperation "Central Asia + Afghanistan + China" took place on 9 December.

Promotion of the national interests and reinforcement of the country's image

2020 was declared the year of "Turkmenistan as the land of neutrality". In the course of the year, the events dedicated to Turkmenistan's 25th neutrality anniversary were organized[28]. Upon Turkmenistan's initiative the political platform "Group of Friends of Neutrality" was established at the United Nations. The first states that became the members of the Group were Russia, China, Uzbekistan, Pakistan, Egypt, Qatar, Iran, Ireland, Costa Rica and others. An international exhibition was organized just before the International Neutrality Day[29]. Ashgabat hosted an international conference "Policy of neutrality and its importance in ensuring international peace, security and sustainable development" on 12 December. A session was held under the theme "International cooperation in environmental protection and climate change" within the framework of the above International Conference at the Turkmen State University named after Makhtumkuli. The Final document of the International Conference was adopted and disseminated as an input to the UNGA 75th session and published in UN official languages.

Turkmenistan actively cooperates with the United Nations, EU, OSCE, and OIC. In 2020, Turkmenistan was elected Vice-Chairman of the 75th UNGA (29 June). The A/RES/75/28 resolution "The role and importance of a policy of neutrality in maintaining and strengthening international peace, security and sustainable development" was adopted by the GA (7 December). 2021 was declared the International Year of Peace and Trust by GA upon Turkmenistan's initiative.

As part of cooperation between Turkmenistan and EU, a meeting under the Turkmenistan-EU dialogue on human rights (18 June), the 19th meeting of the Turkmenistan-EU Joint Committee (25 June), and a meeting between the Minister of Foreign Affairs of Turkmenistan and the Ambassador Extraordinary and Plenipotentiary of the European Union to Turkmenistan, where the parties discussed the development of a Roadmap for cooperation in such priority areas as energy, transport, trade and education, took place.

Sources:

The official web-sites of:

MFA (www.mfa.gov.tm/ru);
State Committee of Water Management of Turkmenistan (http://turkmenwater.gov.tm/ru/glavnaya/);
Ministry of Justice (http://minjust.gov.tm/ru);

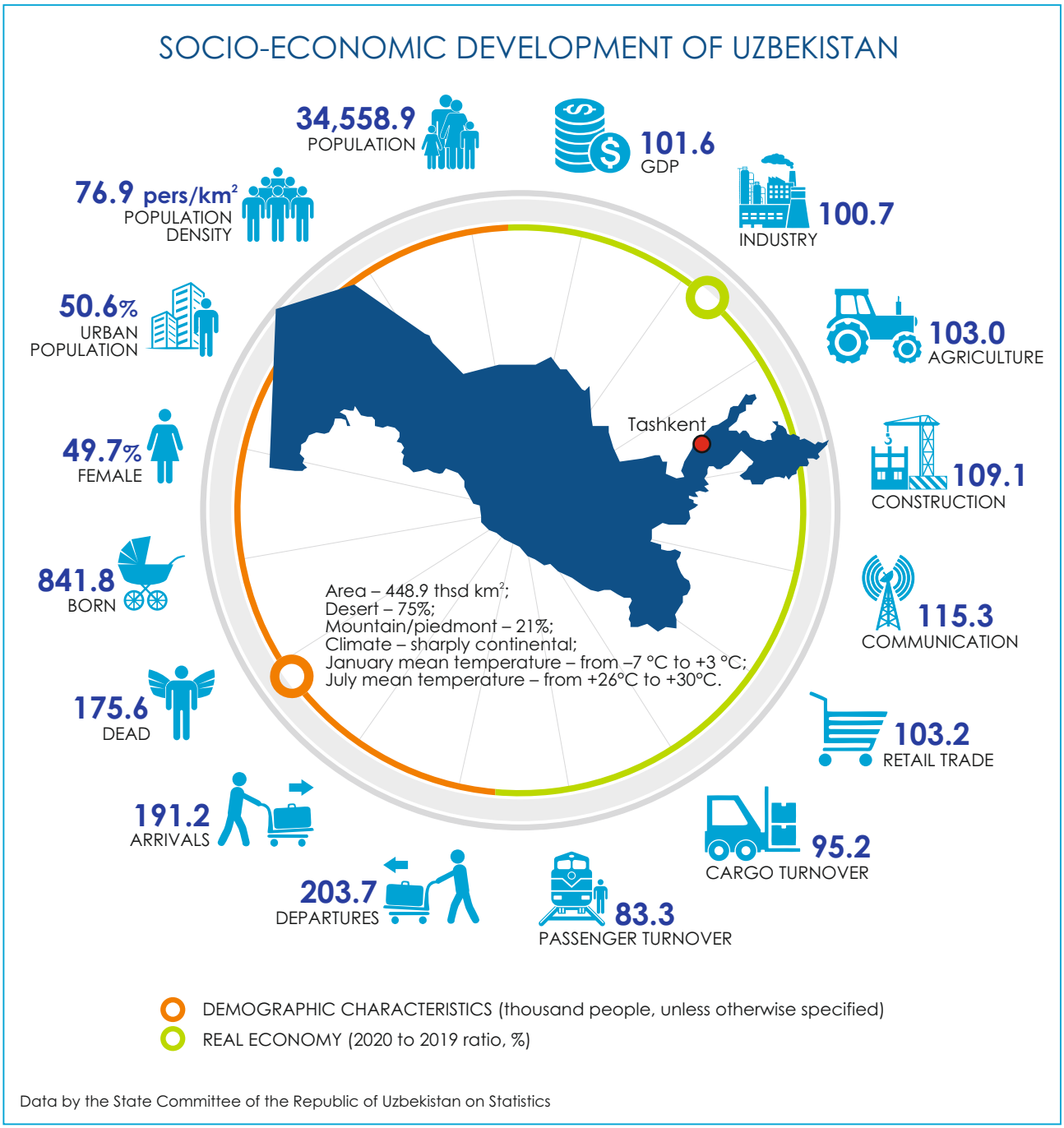
Information agencies:

https://turkmenistan.gov.tm/ru/;
http://tdh.gov.tm/ru/;
https://turkmenportal.com/;
https://www.oilgas.gov.tm/ru/;
https://orient.tm/ru;
https://arzuw.news/;
https://www.parahat.info/

[28] In 1995, Turkmenistan declared itself a neutral state. In December the same year, the UNGA recognized and supported the neutral status of Turkmenistan by adopting a resolution "The Permanent Neutrality of Turkmenistan" (A/RES/50/80 of 12.12.95)

[29] On the initiative of the President of Turkmenistan, the UNGA adopted a resolution proclaiming 12 December the International Neutrality Day (A/RES/71/275 of 02.02.17)

5.5. Uzbekistan



Data by the State Committee of the Republic of Uzbekistan on Statistics

Water Sector

Water resources. Uzbekistan's average water use is 51-53 billion m^3, of which 80% (approx. 41 km^3/year) is provided through transboundary river water.[30] The estimated natural fresh and brackish groundwater deposits potentially yield 27.6 km^3/year; however, they are unevenly distributed throughout the country. The demand of water users is met through a combination of surface water (50.9 km^3/year), groundwater (0.5 km^3/year), and the reused collector and drainage water (1.6 km^3/year). The average water use by sector is as follows: 90-91% – agriculture; 4.5% – municipal sector; 1.4% – industry; 1.2% – fisheries; 0.5% – thermal power; 1% – other sectors.

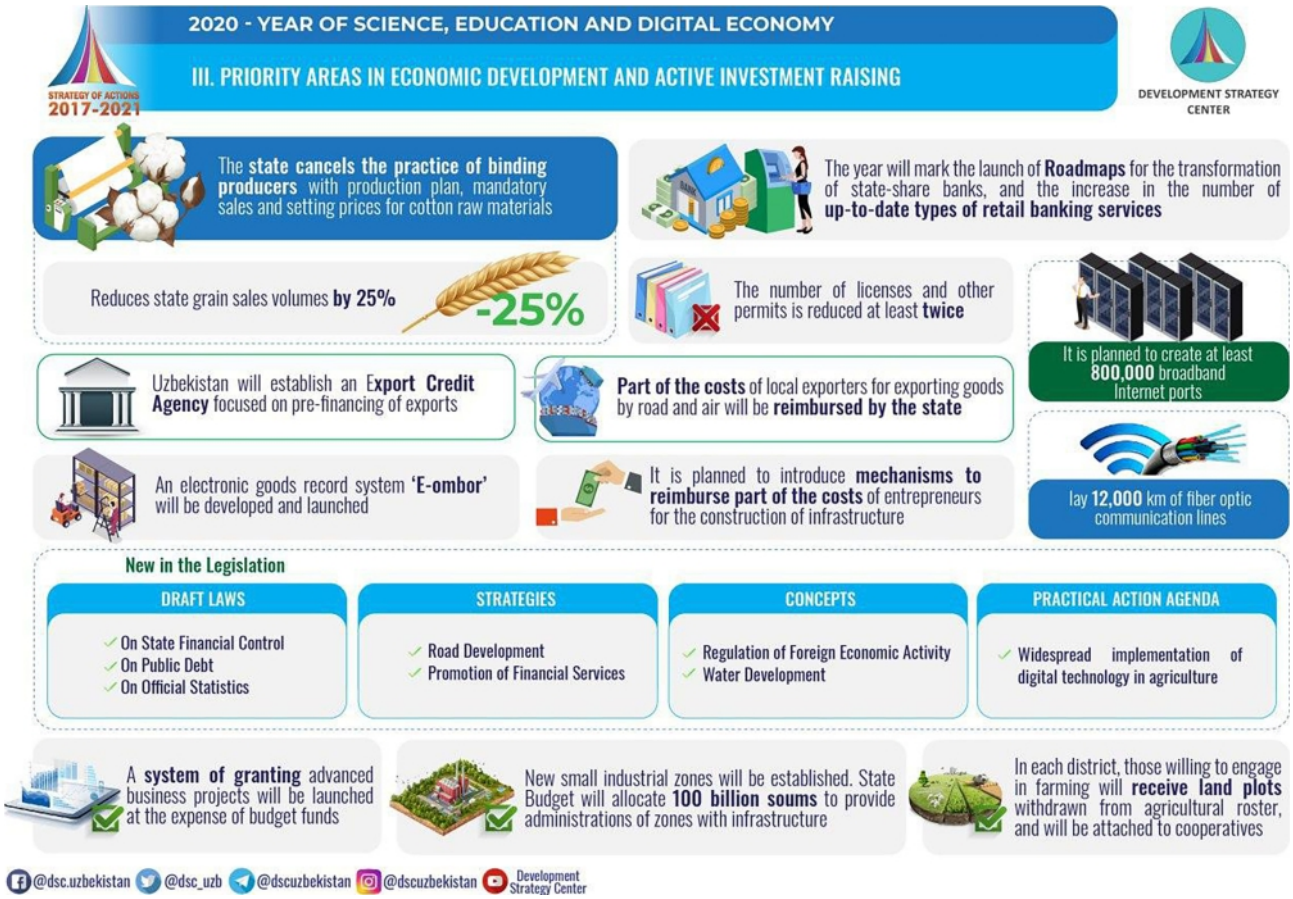
Latest developments in legislation. The Concept approved by the President Decree UP-6024 on 10 July 2020 defines **priority areas of water sector development in Uzbekistan**, including the improvement of water accounting system, transparency of water data, modernization and automation of large infrastructure on the base of digital technology, introduction of

[30] Source: Concept on Water Sector Development 2020-2030, https://water.gov.uz/ru/posts/1545735855/396

Smart Water technology, development of synergies between education, science and production, etc. Additionally, it is planned to improve efficiency of irrigation systems from 0.63 to 0.73, reduce irrigation areas with low available water supply from 560,000 to 190,000 ha, and decrease saline irrigated area by 226,000 ha.

National strategies and programs. A State Program was approved for implementation of the Strategy of Actions in five development priority areas for 2017-2021 in the Year of Science, Education and Digital Economy Development (UP-5953 of 02.03.2020).

Source: https://strategy.uz/



Implementation of initiatives of the Uzbek President voiced at XII Summit of the Heads of IFAS Founder-States. A State Program for development of the Aral Sea region in 2017-2021 was approved by President Decree in 2017. In 2020:

- relevant decrees were adopted on: (1) measures for comprehensive socio-economic development of the Republic of Karakalpakstan in 2020-2023; (2) additional measures for the improvement of performance of the International Innovation Center for the Aral Region that supports an agro- and eco-touristic project titled "My garden in the Aral Sea";

- During the 75th session of the UNGA, the President of Uzbekistan initiated a special resolution about declaring the Aral Sea region an area of environmental innovation and technologies and marking the date of adoption of this important document as the International Day for the Protection and Restoration of Ecosystems (23 September);

- A Committee for development of the Aral Sea region was formed at the Senate of the Supreme Council of Uzbekistan to coordinate activities, projects and programs undertaken in the region and increase control over implementation of the state policy aimed at the restoration of natural environment and the improvement of living conditions in the Uzbek territory of the Aral Sea region (October). An Advisory Committee was established in support of sustainable development in the Aral Sea region at the MPHSTF for the Aral Sea region. WHO has joined the MPHSTF. The Governments of Finland and the Republic of Korea contributed to the MPHSTF;

- UNDP Uzbekistan's Accelerator Lab in partnership with ministries and agencies launched the Green Aral Sea crowdfunding campaign. https://greenaralsea.org./ is the website, where everyone may contribute: every dollar or 10,000 soums donated will go for planting a saxaul tree (March);

- SIC ICWC together with IICAR undertook the second research expedition to the exposed Aral Sea bed as part of the joint UNDP-UNESCO project "Addressing the urgent human insecurities in the Aral Sea region through promoting sustainable rural development" funded by the MPHSTF for the Aral Sea region (28 May-26 June). See Expeditions on the Exposed Bed of the Aral Sea in 2019-2020.

Water management system. The total length of the main and inter-farm irrigation network is 28,940 km, the farm and on-farm networks comprise 155,000 km. More than 54,000 hydraulic structures are operated along the main and inter-farm canals; and 114,000 structures are operated on the on-farm network. More than 12,400 wells are used for abstraction of groundwater, including 4,069 wells being operated by the MWM, the other are operated by individual economic entities and population. Also, 56 water reservoirs and 13 mudfow reservoirs (debris basins) are operated in the country, and their total storage capacity is more than 20 billion m^3. The total length of drainage network is 142,800 km, of which 106,100 km are open collectors (collecting drains) and 36,700 km are subsurface horizontal drains. For land reclamation purposes, the MWM also operates 172 pumping stations, 3,788 vertical drainage wells and 27,648 observation wells. For irrigation purposes, 1,687 pumping stations are operated in the country and are under responsibility of the Ministry. More than 5,285 pump units consume 8.0 billion kWh annually. Also, more than 10,280 pumping units are operated on the on-farm irrigation networks[31].

Water saving technologies. In 2020, water saving technologies were introduced on 133,600 ha. The total land area with water saving technologies reached 291,200 ha (about 7% of the total irrigated area). As a result, during the growing season, 280 Mm^3 of water were saved and irrigation water supply of more than 300,000 ha was improved.

According to the decree on measures for promotion of water-saving technologies in agriculture (PP-4919 of 11.12.2020), the rate of introduction of drip and sprinkler irrigation systems, as well as of discrete irrigation, including laser land leveling should be increased 5 times. In 2021, water saving technologies will be introduced on 230,000 ha, and 200,000 ha will be laser leveled.

Land reclamation. As a result of repair of 13,584.1 km of collector-drainage network and 324 vertical drainage wells, 294,500 ha of irrigated land have been reclaimed. In particular, the strongly to moderately saline land area has been reduced by 29,800 ha.

The adopted decrees on urgent measures for the effective use of water resources and the reclamation of land in Jizzak and Syrdarya provinces (PP-4801 of 11.08.2020) and in the Republic of Karakalpakstan (PP-4912 of 05.12.2020) set a plan of construction and reconstruction efforts on irrigation and drainage infrastructure until 2023.

To improve water management and accounting and land reclamation, a Research Center for water problems has been established at the Cabinet of Ministers of Uzbekistan on the base of the Khorezm experimental farm.

Groundwater. GUP Uzbekhydrogeology and its 4 field offices carry out activities on groundwater exploration and assessment. In particular, it is planned to put into operation 11 wells in Chust district, Namangan province for irrigation of unused land by groundwater. Similar wells have been drilled in Dzhizak (12), Bukhara (11) provinces, etc. The monitoring is maintained to prevent illegal use of groundwater and illegal drilling of water wells.

Projects. An agreement was signed between the Uzbek Government in the face of MWM and the Swiss Government in the face of SDC on the **National Water Resources Management Project in Uzbekistan**, Phase II (2020-2024) aimed to improve living conditions of the rural population through IWRM (16 June).

The **UzWaterAware Project**[32]/Raising Awareness and Partnership for Sustainable Water and Environment Development in Uzbekistan has been completed (November 2016-2020, EU, €2.2 million). On 28 and 30 October 2020, final and reporting event of the Project took place in Tashkent. Nine active water-environmental NGOs of the country were involved in the joint implementation of activities, close cooperation was established with the Ministry of Water Management, the State Committee of Ecology and their press services, 100 events of different formats were held, and different knowledge products were developed.

The following projects were continued: (1) "South Karakalpakstan Water Resources Management Improvement Project" (2014-2022, $376.7 million, including $214.9 million of WB loan); (2) "Fergana Valley Water Resources Management Project", Phase II (2017-2024, $225 million, including $144.9 million – WB loan); (3) Amu Bukhara Irrigation System Rehabilitation (2014-2020, $406.29 million, including $216.75 million – ADB loan, $108.97 million - JACA loan); (4) a feasibility study for the "Preparing the Climate Adaptive Water Resources Management in the Aral Sea Basin Project" (since August 2019, ADB, $1.35 million) and others.

See United Nations Development Program on implementation of "Sustainable Management of Water Resources in Rural Areas in Uzbekistan: Component 2 on Technical Capacity Building" (2016-2020) and other projects related to land resources, ecosystems, climate change and activities on the Aral Sea.

Drinking Water Supply

In the regions of Uzbekistan, 26,900 km (38%) out of 70,400 km of drinking water supply network and 1,700 km (22%) out of 7,600 km sewerage network need repair. 3,500 (38%) out of 9,300 drinking water supply facilities must be reconstructed. Centralized drinking water supply reaches[33] 85% of the population in Fergana province, 75% in Tashkent province, 61.9% in Khorezm province and 54.2% in Kashkadarya province.

[31] Source: Concept on Water Sector Development 2020-2030, https://water.gov.uz/ru/posts/1545735855/396
[32] Component 3 of the European Union Programme "Sustainable Management of Water Resources in Rural Areas in Uzbekistan"
[33] From the reports of the Committee for Ecology and Environmental Protection's session (11.05.2020)

Latest developments in legislation. By the Decree "On measures for the development of social and industrial infrastructure of the Republic of Uzbekistan in 2020-2022" (PP-4565 of 10.01.2020) the **Target Program for construction and reconstruction of drinking water supply and sewerage facilities in 2020** was approved. As part of the Program, the Fund for Development of Water Supply and Sewerage Systems[34] allocated 1,277 billion soum for the construction and reconstruction of 120 water supply facilities, as well as for the construction of 3,400 km of drinking water and sewerage networks at 216 sites.

In order to solve the problem of water supply for rural settlements, by a decree of 25.09.2020 the MHCS will give annual social orders to NGOs and other community organizations for provision of drinking water for rural settlements with the population of not less than 15,000 people that have no access to centralized water supply.

International cooperation and investment projects. The Tashkent Province Water Supply Development Project is continued jointly with ADB (2017-2021, $143.8 million). 265,000 people in 58 villages in Kibray, Zangiata and Tashkent districts will get the improved drinking water supply.

In 2020, a number of agreements and memorandums of cooperation were signed between the Uzbek water supply agency (AO Uzsuvtaminot) and the Singapore Alpha Global Capital (s) Pte Ltd company, for installation of a wastewater treatment and water production system, with the Avelar Solar Technology, the OOO "Ecolos-Proyektstroy", the Korean Ministry of Ecology and Environment and others.

The efforts have been made to ensure continuous supply of drinking water to population in provinces, including installation of solar panels, modernization and improvement of old water facilities, and application of bio-purification methods at aeration stations.

Agriculture

The total agricultural land area is 20,236,300 ha, of which: cropland – 3,988,500 ha; perennial plantation area – 383,100 ha; fallow land – 76,000 ha; hayfields and pastures – 11,028,300 ha; and other land area – 4,760,400 ha.

Latest developments in legislation. For the implementation of the Agricultural Development Strategy of the Republic of Uzbekistan for 2020-2030 a number of decrees were adopted, such as: (1) "On measures for fulfillment of Strategy tasks in 2020" (PP-4575 of 28.01.2020); (2) "On measures for wider application of market principles in cotton growing" (PP-4633 of 06.03.2020) and in grain production (PP-4634 of 06.03.2020); (3) "On measures for further improvement of agriculture and food production governance system" (PP-4643 of 18.03.2020). These decrees canceled the so-called state orders for cotton and grain. Grain produced by farmers and other enterprises will be sold through exchange auctions or direct contracts at free prices. The practices setting purchasing prices for raw cotton have been abolished.

By the decree on measures for radical improvement of land inventory (UP-6061 of 07.09.20), the **Ministry of Agriculture has got powers** to monitor agricultural land and crops, cropping patterns, deliver state control over protection of agricultural land, make assessment of soil quality, etc.

Subleasing of agricultural land was legalized on 29 September.

Support of farm enterprises, dehkan farms and garden plots' owners. The analysis of January-December 2020 showed that dehkan (subsistence) farms produced 68% of the total agricultural produce, farm enterprises – 27.8%, other agricultural enterprises – 4.2%.

In order to develop and support farms, a number of decrees were adopted in 2020. Those provided for: allocation of the land put outside of production and the land comprising groundwater stock on easy terms for putting back such land into agricultural production (PP-4700 of 01.05.2020); subsidies for irrigation equipment, seeds and seedlings, and greenhouses (PP-4716 of 18.05.2020); zero customs duties for agricultural equipment bought for subsistence farms until 1 January 2022 (PP-4767 of 30.06.2020); subsidies to cover partially drilling of vertical wells, purchase of facilities for pumping water from rivers and canals for irrigation of subsistence plots and non-agricultural land in the regions suffering from water shortage (PKM 459 of 30.07.2020); allocation of 200 billion soums in support of farm enterprises and dehkan farms (PP-4964 of 27.01.2021).

Agroclusters. Uzbekistan is applying a cluster-based form of production that would cover the full chain of agrobusiness – from growing to selling of agricultural produce. There is ongoing work on the establishment and development of grain-growing, potato-growing and intensive horticultural clusters[35]. 96 cotton-textile clusters on 907,783 ha have been established. A cotton-textile cluster association has been established in line with Decree No. 397 of 22 June to counteract systemic problems that clusters face, regulate relations between farms and clusters, etc.

For upscaling water-conservation technologies a new order of state support to agricultural producers who applied water-conservation technologies has been set (PP-4919 of 11.12.2020).

Adoption of smart agriculture and innovation technologies. The Strategy of innovative agrarian education

[34] Established according to the Decree on the Program for comprehensive water supply development and modernization (PP-2910 of 20.04.2017)

[35] Decree on measures for increased production of potato and further development of potato seed growing in the Republic (PP-4704 of 06.05.2020)

development until 2030 (approved on 15 December) provides for modernization of the agrarian sector, improvement of education in this area, introduction of resource-saving smart agriculture and information technologies, and better integration of education, science and production. A Center of Agro-Industry Digitization has been established to maintain "Digital Agriculture" information system.

The first innovation Center of Agro-services will be opened in Fergana province to serve more than 500 farming entities on the PPP base. An innovation project is ongoing in Andizhan province on agricultural land management through satellite data. Provincial districts have been digitized and inputted into the Monterra platform. Now the land owners can get recommendations on their land management.

Projects and programs. Uzbekistan and WB signed an Agreement on financing the Agriculture Modernization Project in Uzbekistan[36] (2020-2026, $659.3 million) aimed to digitize the agricultural sector and transfer to more efficient land and water use.

The Project for Horticulture Value Chain Promotion[37] (2020–2025, $337.6 million, of which $213.2 million – JICA loan, $58.9 million – Uzbekistan's contribution, $65.5 million – contribution from participants) was started. The project is designed to provide financing via commercial banks to horticultural entrepreneurs in the form of soft loans.

See Food and Agriculture Organization on implementation of FAO-GEF projects, such as: (1) Integrated natural resources management in drought-phone and salt-affected agricultural production landscapes in Central Asia and Turkey (CACILM-2); (2) Smart farming for the next generation; (3) Shifting food systems and land use to a sustainable track and supporting land restoration.

The "Agricultural diversification and modernization"[38] Project is continued in Andizhan, Namangan and Fergana provinces (2018-2023, with the involvement of IFAD). A loan agreement was signed for financing the project phase 2[39] (04.08.2020) aimed to increase incomes of more than 375,000 people in the region through the introduction of modern farming methods and creation of additional high-paid jobs.

International cooperation. The Global Agro-Industrial Forum of Uzbekistan was held as part of the International Agricultural Exhibition on 11-12 March. The agricultural ministers of the CA countries met via a video-conference on 19 May. A video-meeting was organized with the European Commissioner for Agriculture and Rural Development on 8 December. The Ministry of Agriculture signed a framework cooperation agreement with the French company "Rungis Semmaris" on 9 December.

Energy

The available generating capacities in Uzbekistan amount to[40] 12,900 MW, of which 11,000 MW (84.7%) – TPP; 1,850 MW - HPP (14.3%); and, more than 133 MW (1%) – isolated stations. The main source of energy generation is 11 thermal plants, including 3 cogeneration plants. The capacity of modern energy-efficient blocks is 2,825 MW (25.6% of the total capacity of TPP).

The hydropower sector includes 42 HPPs, including 12 large ones, with the total capacity of 1,680 MW (90.8% of the overall HPP capacity), 28 small HPPs of 250 MW in total (13.5%) and 2 micro plants of 0.5 MW. 30 HPPs with the total capacity of 532 MW (4 large plants – 317 MW and 26 small plants – 215 MW) are located along watercourses. 10 HPPs are a part of reservoir systems and have the total generating capacity of 1,400 MW. The hydropower use coefficient is 27% in Uzbekistan.

In 2020, 66.4 billion kWh of electric energy were produced in Uzbekistan. TPP generated 60.7 billion kWh (56.4 billion kWh in 2019), while HPP generated 5 billion kWh (6.5 billion kWh in 2019).

Latest developments in legislation. According to the "Digital Uzbekistan-2030" Program and the Decree "On the state program for implementation of the Strategy of Actions in five development priority areas, 2017-2021 in the Year of Science, Education and Digital Economy Development", the supervisory control and data acquisition (SCADA) and the energy consumption management (EMS) systems are introduced in the energy sector.

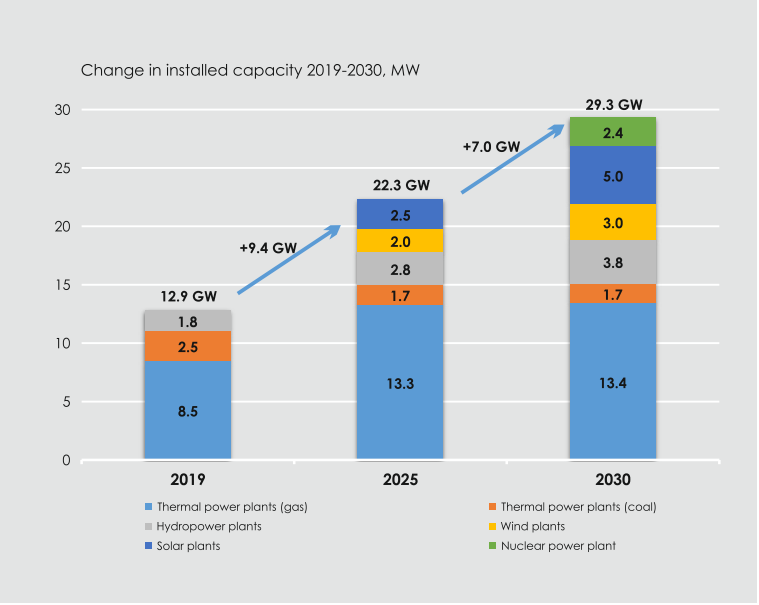
The Law on amending and supplementing the law on rational energy use (628 of 14.07.2020) sets the order of state control over energy efficiency aimed to limit production and import of produce, which is not energy efficient, and promote energy saving by public agencies and institutions. The Ministry of Energy was appointed responsible for promotion of rational energy use.

Provisions on the Extrabudgetary intersectoral fund for energy saving were adopted (PKM-640 of 09.10.2020) to mobilize investments and financing for energy efficiency projects in economic sectors, social sector, and dwellings.

National strategies and programs. The Government approved the Concept on provision of the Republic of Uzbekistan with electric energy for 2020-2030. The Concept envisages modernization and reconstruction of power stations, construction of new stations on the base of energy efficient technologies, improvement of energy accounting system, development of RES, etc. In particular, by 2030 it is planned: (1) to raise

[36] Decree on measures for implementation of Agriculture Modernization Project in Uzbekistan (PP-4803 of 11.08.2020)
[37] Decree on measures for implementation of the Project for Horticulture Value Chain Promotion with the involvement of JACA (PP-4669 of 10.04.2020)
[38] Decree on measures for implementation of the "Agricultural diversification and modernization" Project (PP-4021 of 20.11.2018)
[39] Decree on additional measures for implementation of the "Agricultural diversification and modernization" Project PP-4830 of 15.09.2020)
[40] Source: Concept on provision of the Republic of Uzbekistan with electric energy for 2020-2030, http://minenergy.uz/uploads/1a28427c-cf47-415e-da5c-47d2c7564095_media_.pdf

capacities from 12.9 to 29.3 GW and increase power production from 63.6 to 120.8 kWh; (2) to reduce the use of natural gas from 16.5 to 12.1 billion m^3; (3) to decrease transmission losses to 2.35% and distribution losses to 6.5% (1.85 times lower than in 2019).



Source: Concept on provision of the Republic of Uzbekistan with electric energy for 2020-2030

A national Low-Carbon Energy Strategy is developed on the basis of the Concept and with assistance from the EBRD. By 2030, it is planned to deploy up to 3 GW of wind energy, 5 GW of solar energy, and 2.4 GW of nuclear energy.

Hydropower. The Ministry of Energy informed on the beginning of construction of a small hydropower at Sardoba reservoir (2020-2022, €21.3 million, installed capacity – 10.7 MW) in line with the relevant decree of 29 January 2020. The dam of Sardoba reservoir collapsed on 1 May. See Sardoba Dam Collapse.

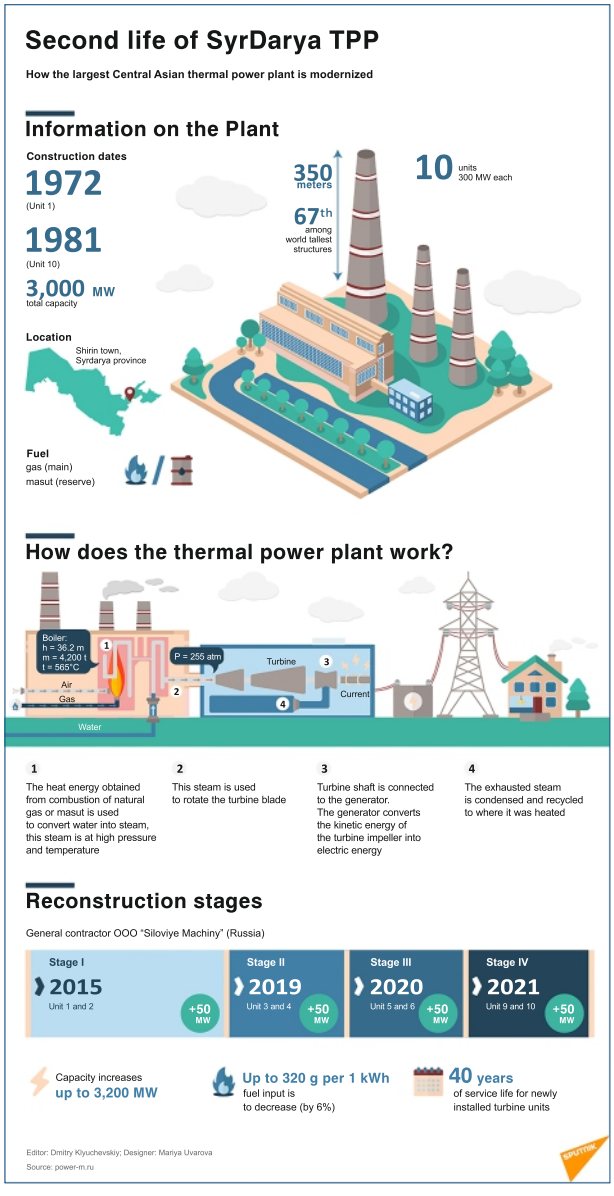
In 2020, modernization of the following plants was completed[41]: (1) 15 MW HPP-14 on the Bozsu Canal; (2) 7.05 MW HPP-2 on South-Fergana Canal in the cascade of Shakhrikhan HPPs; (3) 15.34 MW Kadyr'i HPP-3 as part of Chirchik-Bozsu water-energy conveyance system.

Regional and international cooperation. Negotiations between Uzbekistan and Tajikistan are underway on joint construction of two HPPs of the total capacity at 320 MW on the Zarafshan River[42] (see Bilateral Water Cooperation, Key Water Developments – Tajikistan).

The Russian company "Siloviye mashiny", which opened its representative office in Tashkent, works on: (1) construction of small hydropower on the Dargom (two hydroaggregates 3.2 MW each) and the Bogishamol canals (three hydroaggregates 2.15 MW each); (2) modernization of Farkhad HPP (127 MW) and Tupalang HPP (175 MW). It was planned to deliver equipment for Lower Chatkal and Pskem HPPs and small HPP at Sardoba reservoir.

The French Development Agency signed an agreement with the Ministry of Finance for provision of a €55.8 million loan, of which €46.5 million would go to construction of Paitak small HPP in Andizhan province, small hydropower on the South-Fergana Canal and €9.3 million – for safety of Charvak HPP.

Thermal energy. In line with the above mentioned concept, the efforts are undertaken under the following projects: (1) construction of third 650 MW unit at Navoyi TPP[43], construction of new TPP in Syrdarya province[44]; (2) modernization of Talimarjan TPP; (3) modernization of Syrdarya and Takhiatash TPPs; (4) reconstruction of Fergana TPP.



[41] As part of fulfilment of the Decree on Program of measures for further development of hydropower in 2017-2021 (PP-2947 of 02.05.2017)
[42] The issue of joint construction is addressed in the Joint Statement of the Presidents of Uzbekistan and Tajikistan signed on 17 August 2018
[43] The project is to be implemented in 2020-2024
[44] PP-4799 of 10.08.2020

International cooperation. Investment agreements were signed for construction of TPPs in Tashkent province by Turkish companies: (1) "Cengiz Enerji", 240 MW; (2) "Aksa Enerji Üretim A. Ş", 240 MW[45].

Atomic energy. The UzAtom Agency jointly with Russian experts continues surveying the site selected for construction of a nuclear station in Jizzak province.

As part of cooperation with IAEA, negotiations were held with IAEA delegation on 12 October and pre-INIR online mission[46] was undertaken to discuss a self-evaluation report submitted by Uzbekistan (9-12 November). The INIR mission is planned for the first half of 2021.

As decided, Uzbekistan will re-join the Joint Institute for Nuclear Research as a full member since 1 January 2021.

The UzAtom's delegation paid a working visit to India to study the country's experience in construction and operation of nuclear stations and hold negotiations with relevant agencies on establishing cooperation in peaceful use of atomic energy (16-19 February). A Memorandum of Cooperation was signed between the UzAtom and the Global Center for Nuclear Energy Partnership at the Atomic Energy Department of India for education and training of experts in this field (21 September).

Alternative energy

Solar energy. As part of the Scaling Solar Program, with the support of International Financial Corporation: (1) financing was approved for construction of 100 MW SPP in Navoyi province[47]; (2) a construction tender was announced for two SPPs 200 MW each in Samarkand and Jizzak provinces; (3) construction of photovoltaic stations Sherabad I was started in Surkhandarya province; (4) preparatory work was started on photovoltaic stations in Bukhara (250 MW), Namangan (150 MW) and Khorezm (100 MW) provinces; (4) an agreement was signed with the French "Total Eren SA" for construction of 100 MW SPP in Samarkand province (13 May)[48].

Wind energy. An Investment Agreement was signed with "Masdar" (UAE)[49] for the project on design, financing, construction and operation of 500 MW wind power plant in Navoyi province (10 June). Another agreement was signed with ACWA Power (Saudi Arabia) for the construction of wind power plants with the total capacity of 1000 MW in Bukhara[50] and Navoyi provinces.

Capacity building. Representatives of the Ministry of Energy took part in: (1) the opening ceremony of the international course "Future leaders" (25 May, course duration – from May till December); (2) training in regulation in the energy sector (9-13 November); (3) webinar "Expansion of RES and their integration in energy infrastructure: legal and technical aspects", with the focus on German experience (23 November).

Events. The following events were held in 2020: (1) International Conference CONMECHYDRO-2020 (23-25 April); (2) roundtable with participation of a number of international financing institutions to discuss steps in reformation of the energy sector in Uzbekistan (23 October); (3) 16th meeting of the Taskforce on regional energy cooperation in Central and South Asia (2 November); (4) second Festival of Science and Atom organized by the Information Atomic Technology Center in Tashkent with the support of the UzAtom and RosAtom Corporation (27-28 November).

Environment and Climate Change

Latest developments in legislation. By the Decree on measures for further improvement of the hydrometeorological service in Uzbekistan (PP-4896 of 17.11.2020) the following documents were approved: (1) the Concept of hydrometeorological service development in Uzbekistan for 2020-2025; (2) a Roadmap for implementation of the Concept; (3) the Program for extension and automation of the observation network of the Hydrometeorological Service (UzHydromet). **UzHydromet is assigned responsible state body in the field of hydrometeorology, monitoring of climate change and environmental pollution**. It also functions as the Regional specialized meteorological center of WMO and the Regional telecommunication center for collection, processing and dissemination of hydrometeorological information of the WMO World weather service for the CA states. It is envisaged to establish the Center of information technology development in hydrometeorology on the base of the UzHydromet's Information-Technological Department "Meteoinfosystem".

A decision has been made to **establish the Southern Ustyurt National Nature Park** on the total area of 1,447,143 ha and the **Kitab Geological National Nature Park**.

The following regulatory documents were approved also in 2020: General technical regulations on environmental security; Concept of forestry development in Uzbekistan until 2030; Decree on further improvement of the mechanism of environmental impact assessment; Decree on additional measures on afforestation in Republican regions and the Aral Sea region.

Projects. As part of a GEF/UNEP/UzHydromet project, UzHydromet prepares the Fourth national communication and the First biennial update report of the Re-

[45] PP-4807 of 13.08.2020

[46] INIR (Integrated Nuclear Infrastructure Review) is a holistic peer review to assist Member States in assessing the status of their national infrastructure for the introduction of nuclear power. Upon request from a Member State, the IAEA conducts an INIR mission. Before receiving an INIR Mission, the country must complete a self-evaluation of the 19 nuclear power infrastructure issues included in the IAEA's "Milestones" approach

[47] PP-4677 of 14.04.2020

[48] PP-4712 of 13.05.2020

[49] PP-4933 of 22.12.2020

[50] PP-5001 of 23.02.2021

public of Uzbekistan for UNFCCC. The systemic and effective work is done in line with the Montreal Protocol within the framework of the Project "Complete HCFC Phase-out in Uzbekistan through promotion of zero ODS, low GWP and energy efficient technologies" (Goscomecology/UNDP/GEF)[51]. The project results were presented at the third Steering Committee meeting on 4 December. Representatives of Goscomecology and the State Customs Committee have become nominees of the Montreal Protocol Award for Europe and Central Asia for 2019-2020. As part of the UNDP/GEF/Goscomecology Project "Sustainable natural resource and forest management in key mountainous areas important for globally significant biodiversity", a Biodiversity Conservation Information Management System (BCIMS) was developed. BCIMS (http://bcims.uznature.uz/bcims/main) is a restricted platform. The website http://bcims.uznature.uz/wordpress/ has been developed for open access.

Events. A number of online events were held: (1) an expert discussion on environmental problems related to water, air and urban development in Uzbekistan under the aegis of IWPR and CABAR (18 April); (2) first Central Asian Conference on climate journalism. During the conference, journalists, bloggers, researchers and experts from Kazakhstan, Tajikistan, Uzbekistan and Kyrgyzstan presented joint project results and held seminars on climate data handling, climate change disinformation, climatic activism and journalism (26-27 November); (3) eco-challenge #BeTheWave for youth to share their vision on climate change (1-7 December, EU Delegation in Instagram).

The Uzbek delegation took part in (1) High-level Conference "Green Central Asia" as part of implementation of the new EU strategy for CA and Afghanistan (28 January, Berlin); (2) 9th meeting of EU-CA working group on environment and climate change (12-13 February, Brussels, Belgium) and the 1st Meeting of EU-CA WGECC Coordination Committee[52] (15 June); (3) third Central Asia Conference on climate change/CACCC-2020 (23 October).

SDG in Uzbekistan

The group of UN organizations in Uzbekistan together with the Senate of Oliy Majlis of the Republic of Uzbekistan and the National Movement "Yuksalish" have launched the initiative "Decade of Action to achieve the Sustainable Development Goals in Uzbekistan by 2030" (2 March). A meeting of the Parliament's Commission for control over implementation of the national Sustainable Development Goals in Uzbekistan was held on 13 May to discuss the draft Voluntary National Review (VNR)[53].

6

TOZA SUV VA SANITARIYA

МАҚСАД

Барча учун сув ресурслари ва санитариянинг мавжудлиги ҳамда улардан оқилона фойдаланишни таъминлаш

CLEAN WATER AND SANITATION

GOAL

Conservation and rational consumption of water and sanitation for sustainable development and their availability for all

ЧИСТАЯ ВОДА И САНИТАРИЯ

ЦЕЛЬ 6

Сохранение и рациональное использование водных ресурсов в интересах устойчивого развития, обеспечения их наличия и развития санитарии для всех

TARGET

6.1. By 2030, achieve universal access to safe drinking water

6.2. By 2030, ensure universal and equitable access to adequate sanitation and hygiene for all, paying special attention to the needs of those in vulnerable situations

6.3. By 2030, significantly reduce any pollution of the aquatic environment, including as a result of land activities and increase the scale of safe reuse of wastewater

6.4. By 2030, substantially increase water-use efficiency across all sectors of economy

6.5. By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

6.6. By 2030, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.b. Support and strengthen the participation of citizens' self-government bodies in improving water and sanitation management

[51] The Montreal Protocol on Substances that Deplete the Ozone Layer was adopted on 16 September 1987. By present, 197 countries, including Uzbekistan has ratified the Protocol

[52] The EU project "European Union – Central Asia Water, Environment and Climate Change Cooperation (WECOOP)"

[53] VNR is the process by which countries assess and present progress made towards the global Sustainable Development Goals and "Leave no one behind" Commitment

Uzbekistan presented its first VNR at the UN High-Level Political Forum on Sustainable Development on 15 July. The implementation of SDGs in Uzbekistan concurred with ambitious reforms under the Strategy of Actions in five development priority areas of Uzbekistan. There are ongoing efforts to integrate national SDGs into Republican, sectoral and regional development strategies and programs, including the developed Concept of comprehensive socio-economic development in Uzbekistan and the Strategy of poverty reduction by 2030. According to the Sustainable Development Report 2019, Uzbekistan was on the 52nd position among 162 countries[54]. The strategic goals and tasks before Uzbekistan are set as follows: (1) further reduction of poverty and inequality; (2) improving quality and access to social services, particularly health care and education, with the focus on remote regions and vulnerable groups; (3) ensuring sustainable employment, especially among youth and women; (4) more rational use of water, energy and land resources for sustainable development and adaptation; (5) ensuring rule of law, freedom of speech and press, transparency and quality of public services, fighting against corruption.

Source: "National sustainable development goals and tasks" (http://nsdg.stat.uz/publications/1)

UN agencies launched a new Joint Programme "The Integrated National Financing Framework for Sustainable Development in Uzbekistan" to support Uzbekistan's financing of the Sustainable Development Goals on 9 December.

Emergencies

Latest developments in legislation. The Decree "On further improvement of the state system for prevention and actions in emergency situations in the Republic of Uzbekistan" was adopted on 26 August 2020.[55] In this context, operational territorial units for protection of population and territories from emergencies will be established at relevant state administrations and khokimiyats. These units will provide operational control, forces and facilities to eliminate emergencies and will have automatic systems for warning of the risks of emergencies and information.

Dam collapse. The dam of Sardoba reservoir collapsed in Syrdarya province on 1 May. This has resulted in flooding of settlements and destruction of roads. About 70,000 people had to be evacuated. The disaster affected the south of Kazakhstan as well. More than 30,000 people had to be evacuated there. A governmental commission and an intergovernmental Uzbek-Kazakh group were formed for recovery from the accident. See Sardoba Dam Collapse.

Preventive measures. To prevent flooding during spring rains, the Ministry of Emergency Situations and other relevant services of Jizzak province made efforts to clear channels and protect banks. Representatives of the Ministry of Emergency Situations, UzHydromet and Goskomgeologiya have made aerial surveys in the basins of the Pskem and Oygaing rivers to assess risks in case of potential breakthrough of high-mountain lakes in Tashkent province.

Foreign Policy and International Cooperation

In 2020, the President of Uzbekistan paid formal and working visits to Turkey (February), the Russian Federation (June) and Kazakhstan (September).

The country was visited by the Foreign Minister of RF (January), US State Secretary (February), Prime-Minister of Kazakhstan (February), as well as by delegations from WB (January), Hungary (January), China (February), and EBRD (March).

More than 20 high-level dialogues and over 80 meetings and interdepartmental visits were organized in the online format under the pandemic conditions. Uzbekistan sent humanitarian aid to a number of countries, including Azerbaijan, Belarus, Kyrgyzstan, Tajikistan, Afghanistan, etc.

Key developments in the foreign policy of Uzbekistan

Development of alliances and strategic partnerships. The CA region is among the priorities of the Uzbekistan's foreign policy. In 2020, the volume of trade exceeded $3 billion with Kazakhstan, $900 million with Kyrgyzstan, $500 million with Tajikistan and was about $530 million with Turkmenistan. The CA countries prepare a five-sided interstate document on friendship, good neighborliness and cooperation for the CA development in XXI.

The meetings of Joint Demarcation Commissions with Tajikistan (7 January, Tashkent) and with Kazakhstan (18-24 February 2021, Almaty) were held for successful delimitation and demarcation of the national frontier.

Upon the initiative of the President of Uzbekistan, the International Institute for Central Asia[56] was established in Tashkent in 2020. The Institute will serve as a platform for studying ongoing processes in the region and developing promising multilateral projects for mutually beneficial cooperation (see Science and Innovations).

[54] Sustainable Development Report 2019, https://s3.amazonaws.com/sustainabledevelopment.report/2019/2019_sustainable_development_report.pdf
[55] For the enforcement of the Decree "On institutional measures for the improvement of emergency bodies" (PP-4276 of 10.04.2019)
[56] https://t.me/iica_uz

"…Today, the Central Asian states face an important strategic task. This is to ensure deep integration of our region into the global economic, transport and transit corridors. In this regard, we propose to establish a ***Regional Centre for the Development of Transport and Communications****…"*

(from the statement of the President Shavkat Mirziyoyev at the 75th Session of the UNGA).

Bilateral cooperation with **Afghanistan** is developed. During the visit of Afghan delegation to Uzbekistan, an agreement was signed between the Uzbek national energy company and the Afghan "Da Afghanistan Breshna Sherkat" (DABS) on power supplies to Afghanistan for a period of 10 years. The parties also discussed how to accelerate the construction of Surhan-Pulehumri transmission line, approved and initialed a draft agreement between the countries on international motor service (28-29 August).

Decrees were adopted in 2020 on measures for further extension and enhancement of economic cooperation with Afghanistan (4892 of 12.11.2020) and on measures for development of specialized economic and small industrial zones in Surkhandarya province and Tashkent city (6109 of 12.11.2020) to create new legal environment for cooperation with Afghanistan.

Participation in international organizations

In 2020, **Uzbekistan chaired the CIS**. Under the chairmanship of Uzbekistan, over 100 multilateral events were organized, including meetings of the Council of CIS Foreign Ministers (12 May and 10 December), the Council of the CIS Heads of Government (29 May and 6 November) and the Council of the CIS Heads of State (18 December). The Permanent Representative of Uzbekistan at UN presented the resolution "Cooperation between the United Nations and the Commonwealth of Independent States"[57], which was unanimously adopted on 23 November. In 2020, Uzbekistan also joined several sectoral bodies of CIS, including the Council for youth affairs, Advisory Committee for labor, migration and social protection, Advisory Committee for consumer rights protection, and the CIS Interstate Council on industrial safety.

Uzbekistan got the **status of observer in EAEC** in 2020[55].

On July 7, Geneva hosted the 4th meeting of the Working Group on the accession of the Republic of

[57] See the Resolution on https://undocs.org/A/RES/75/9
[58] By the decision of the Supreme Eurasian Economic Union (14 of 11.12.2020)

Uzbekistan to the WTO via video-conferencing. The meeting resulted in agreement on bilateral negotiations on ensuring access to the market of goods and services from July 20 to July 31 2020, as well as on transition to the next stage of negotiations on accession to the WTO, namely, the preparation of an evidence summary, which is the basis for the Report of the Working Group on Uzbekistan's accession to the Organization.

Uzbekistan took the two-year chairmanship of the FAO Regional Conference for Europe at its 32nd session (2-4 November).

Promotion of the national interests and reinforcement of the country's image

The law on ratification of the Charter of the Hague Conference on private international law (605 of 02.03.2020) and the Decree on the improvement of Uzbekistan's position in international ratings and indices (6003 of 02.06.2020) were adopted.

Also, Uzbekistan has become a member of the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions .

As part of Uzbekistan-EU cooperation, (1) experts discussed preparation of the UNGA draft special resolution on the announcement of the Aral Sea region as an area of environmental innovation and technologies at the webinar "Introduction of environmental technologies and innovations in the Aral Sea region within the framework of implementation of the new EU Strategy for Central Asia: Cooperation between Uzbekistan and Belgium" (22 October); (2) negotiations were conducted on the Extended Partnership and Cooperation Agreement[59]. Uzbekistan took part in a videoconference on "Prospects and opportunities for enhancing cooperation between the European Union and Central Asian countries. The role of Uzbekistan in implementation of the European Strategy in the region" (3 July). The European Commission has made a positive decision on the Uzbekistan's application to get the beneficiary status in the Generalized Scheme of Preferences (GSP+).

Participation in regional and international videoconferences: "Strengthening regional and international cooperation to ensure peace, stability and sustainable development in the Central Asian region" (22 June); "The Future of Afghanistan: Perspectives from Central Asia and Iran" (9 July); "The Caspian Region in the COVID-19 Era: Implications for Security Policy and Regional Cooperation" (11 July); "China-Pakistan Economic Corridor and Central Asia: Emerging connectivity opportunities" (9 September); "Central Asia and the EU: Multilateral cooperation to achieve sustainable development of the Eurasian region" (30 September); Economic Forum "EU-Central Asia dialogue on partnership for prosperity" (7 December).

The following events were also held in 2020: "Efforts of Uzbekistan and Pakistan in resolving the situation in Afghanistan: Prospects for mutually beneficial cooperation" (12 August); online conference "Cooperation between Central and South Asia in the process of a peaceful settlement in Afghanistan" (20 August); videoconference "Policy of good neighborliness and mutually beneficial cooperation in Central Asia: Prospects for cooperation between Uzbekistan and the EU" (24 September).

Sources:

Official sites of the:

President (https://president.uz/ru);
Legislative chamber of Oliy Majlis (http://parliament.gov.uz/ru/);
MFA (https://mfa.uz/ru);
Ministry of Investment and Foreign Trade (http://mift.uz/ru);
Ministry of Water Management (http://www.water.gov.uz/ru);
Ministry of Energy (http://minenergy.uz/ru);
Goskomecologiya (http://eco.gov.uz/ru);
Ministry of Agriculture (http://www.agro/uz/ru);
National law database (http://www.lex.uz);
Institute for Strategic and Regional Studies (http://isrs.uz/ru/);
http://cis.minsk.by/news;
http://e-cis.info

Information agencies and sites:

http://www/uzdaily/uz/;
http://norma.uz;
https://dunyo.info/ru;
http://ru.sputniknews.ru;
http://kun.uz

[59] EPCA will replace the former agreement effective since 1999

Section 6

United Nations and its Specialized Agencies

United Nation's 75th Anniversary

On 24 October, UN celebrates its 75th anniversary. It was created at the end of World War II in an attempt to maintain international peace and security and to achieve cooperation among nations. Four months after the San Francisco Conference ended, the United Nations officially began, on 24 October 1945, when it came into existence after its Charter had been ratified. UN is commemorating its 75th anniversary amidst huge upheaval affecting the whole world, which is aggravated by an unprecedented global health crisis fraught with serious economic and social consequences. Are we able to overcome this upheaval? Are we ready to work together? Or lack of faith in each other and inability to get together will not let us do this? 2020 should be the year of dialogue to discuss shared priorities and ways to build a better future for all.

In January 2020, the United Nations launched the global consultation to mark its 75th anniversary. Over one million respondents from all UN Member States and Observer States have thus far taken part in the consultations, including through representative polling of 50,000 people in 50 countries. Through surveys and dialogues, it asked people about their hopes and fears for the future – representing the UN's most ambitious effort to date to understand expectations of international cooperation and of the UN in particular. The results are presented in the report **"UN75: The Future We Want, The UN We Need"**[60].

On 21 September, Member-States held a high-level event to mark the UN's 75th anniversary, and to adopt a forward-looking political declaration that will be negotiated through an intergovernmental process on: "The future we want, the United Nations we need: reaffirming our collective commitment to multilateralism".

6.1. General Assembly

The General Assembly (GA) occupies a central position as the chief deliberative organ of the United Nations. It is comprised of all Members of the United Nations, each having one vote. It is authorized to discuss full spectrum of issues covered by the Charter. The UNGA meets on September each year.

The theme of the 75th Session is "The Future we want, the United Nations we need: reaffirming our collective commitment to multilateralism – confronting COVID-19 through effective multilateral action". Video recordings of the country leaders' speeches were broadcasted live.

Statements from Central Asian countries at the general debate of the UNGA 75th Session

Address by the President of the Republic of Kazakhstan

H.E. Kassym-Jomart Tokayev, President of the Republic of Kazakhstan, called **for the prevention of trade protectionism and political nationalism in times of pandemic, and for avoidance of politicization of vaccine development**. He suggested that the idea of a network of Regional Centers for Disease Control and Biosafety under the UN auspices should be closely examined. Kazakhstan stands ready to host such a regional center. **"The whole world is on the verge of dramatic upheavals that may lead to irreversible consequences. Lack of mutual confidence, misunderstanding of international competition, trade wars and sanctions really undermine the prospects and hopes for a better world…"** underlined the President. In the post-Cold War world, the global society missed the chance to build a truly just, people-centered international system.

Sustainable Development Goals. The next 10 years are critical for implementing 2030 Agenda. "The very basic target, zero hunger is to be provided unconditionally […]. We should renew our commitment to leave no one behind, especially women, youth, children, elders, persons with disabilities, disproportionately affected by the crisis. The largest disruption of education systems in history should be stopped from becoming a generational catastrophe. Civic engagement and private sector involvement are also critical for solving current pressing problems. During past months we have witnessed strong solidarity all over

[60] Available on https://www.un.org/sites/un2.un.org/files/un75report_september_final_english.pdf

the world through volunteering. To acknowledge the role of volunteers, I propose the United Nations to proclaim an International Year of Mobilizing Volunteers for Development. In Kazakhstan I announced the current year as a Year of Volunteers".

Erosion of the Nuclear Non-Proliferation Regime. "Kazakhstan has been the role model of a responsible state by willingly abandoning its nuclear arsenal and shutting down world's biggest nuclear test site. However, continuous erosion of the non-proliferation regime leaves us in a dangerous position… That is why we urge all P5 countries to ratify the respective Protocols to the Nuclear-Weapon-Free-Zone Treaties, including Semipalatinsk Treaty".

Climate Change. "Another existential crisis for our civilization is the climate change. It is not only a dangerous problem in itself, but is also a "threat multiplier". The climate emergency is a race we are losing. But the post-COVID recovery gives us unique opportunity to put environmental protection at the forefront of international agenda. We must unite around the UN's six climate positive actions. Kazakhstan is very vulnerable to the various effects of the climate change. The tragedies of Aral Sea and Semipalatinsk Nuclear Test Site, the rapid melting of glaciers, and desertification threaten not only Kazakhstan and Central Asian region, but also the entire world. Although Kazakhstan is highly dependent on fossil fuels and has a long way to go to meet Paris 2030 targets, our commitment to develop a decarbonized economy has no alternative. We will reduce our greenhouse gas emissions by 15% by 2030 through economic overhaul and industrial modernization. And yet, in next five years we will plant more than two billion trees […]".

Regional Cooperation. […] "Regional cooperation has always been our main focus and commitment. Central Asia is undergoing rapid transformation

The emphasis must be shifted on the root causes, preventive measures, and increasing the efficiency of our limited resources

through significant expansion of regional cooperation in various fields. No doubt that a prosperous, strong and united Central Asia is beneficial both for regional and global stakeholders. As to regional stability, the rational use of transboundary water resources is instrumental. We thus propose the establishment of a Regional Water and Energy Consortium. To coordinate development agenda in the region we intend to institutionalize a UN-led regional SDGs Center in Almaty […]".

Text Resume:
https://news.un.org/en/story/2020/09/1073322

Full text:
https://estatements.unmeetings.org/estatements/10.0010/20200923/bVdkQECcmuDt/Qpd6Tkqup8Dh_en.pdf

Video: https://www.youtube.com/watch?v=bnC_Dy7S69o

Address by the President of the Kyrgyz Republic

President of Kyrgyzstan H.E. S. Jeenbekov spoke on climate change, melting glaciers, shrinking water resources, and the need to develop green economy, raised problems related to the coronavirus pandemic, and underlined the importance of regional cooperation.

Coronavirus Pandemic and External Debt. […] "The pandemic impedes the implementation of the 2030 Agenda and has greatly exacerbated the external debt crisis. I would like to express my gratitude to the G20 and international financing institutions for the decision to suspend debt payments. We also ask you to support our proposal for a deep restructuring of external debt in exchange for sustainable development projects. We count on the active support of our initiative […]".

Developing Clean Energy and Combating Climate Change. […] "The Kyrgyz Republic is committed to attaining the 7th [61] and 13th [62] Sustainable Development Goals. Last November, we ratified the Paris Climate Change Agreement. The Kyrgyz Republic sees the development of green economy as an important step in implementing these commitments. We are endeavoring to become a country with environmentally clean production and clean energy. Kyrgyzstan intends to gradually lower the use of traditional energy sources. We consider it important for us to use our hydroenergy potential through the building of hydroelectric plants and participation in the CASA-1000 international project. This will help to save water resources for the irrigation needs of our neighbors and for sustainable development of the entire region. The Kyrgyz Republic needs in support of the interna-

[61] Cheap and clean energy
[62] Fighting with climate change

We are actively engaged in a regional high-level dialogue platform to address existing problems

tional community to adapt to the negative consequences of climate change".

Water Resources, Ecosystem Development and Biodiversity Conservation. "Climate change reduces glaciers and water resources in the Kyrgyz Republic. This could lead to a shortage of freshwater, could pose a threat to public health, land degradation and economic risks. In this context, we advocate for the implementation of those projects which are aimed at studying the issue of glacier melting and protection. We also think it very important to preserve the mountainous ecosystems in those areas where glaciers form. To this end, the Kyrgyz Republic has launched a number of global initiatives. We have conducted two Global Forums on protecting snow leopard and its mountainous habitat. We passed a resolution on the role of the international community to prevent the threat of radiation in Central Asia. In August last year, the Group of Friends of Mountainous Countries was created. Today it has 23 countries in its ranks. It is also important to safeguard biodiversity. Therefore, Kyrgyzstan at this present UN Session put forward a new draft resolution "Nature Knows No Borders: Cross-border Cooperation is a Key Factor in the Preservation and Sustainable Use of Biodiversity". We hope that there will be support to our initiative".

Regional Cooperation. "The Kyrgyz Republic attaches special importance to regional cooperation in Central Asia. Cooperation amongst our countries is developing and developing dynamically. We actively participate in the regional dialogue platforms at the highest level in order to resolve the existing issues. One of the main goals here is to removing barriers to economic cooperation in order to ensure that we enhance the well-being of our peoples. Of vital importance for us is developing a system of transport and communication corridors, logistical hubs and terminals. We need to restore the main axes that existed in the ancient Great Silk Road. The building and the launching of the China-Kyrgyzstan-Uzbekistan railroad will be a meaningful contribution into linking Asia and Europe […]".

Video:
https://www.unmultimedia.org/avlibrary/asset/2561/2561438/

Address by the President of the Republic of Tajikistan

…The countries of the region are concerned with the shifts in the hydrological cycle

In his speech, the President of Tajikistan H.E. E. Rahmon outlined the main challenges the country faces, such as terrorism and drug trafficking, climate change, and the economic consequences of the pandemic.

Pandemic and Economy. The COVID-19 outbreak has had a significant impact on the Republic of Tajikistan. The government, in close cooperation with WHO and other partners, has launched a major effort to prevent the spread of the infectious disease and to help those who are infected. The damage to the economy in 2020 alone has been estimated at US $2 billion.

Security. "Terrorist and extremist groups pose tremendous challenge to national security, seriously jeopardizing stability in different regions of the country." It is extremely important for Tajikistan to cooperate with international organizations, including UN, CIS, SCO, and CSTO, in the field of counterterrorism. Tajikistan is ready to share its experience in combating terrorism, drug trafficking and peaceful conflict resolution. In this context, the country nominated its candidacy for the first time for a non-permanent seat in the UN Security Council for 2028-2029.

Tajikistan welcomes UN's Peacekeeping Operations. Tajik police forces are involved in the UN peacekeeping operations in Darfur, South Sudan and the city of Abey of Sudan.

Peace Process in Afghanistan. Tajikistan shares almost 1,400 km of border with Afghanistan. The Afghan case has no military solution and Tajikistan indeed welcomes the peace-building negotiation processes and supports any approach aimed at addressing political crisis in this country.

Sustainable Development Goals. […] "We have ten years left until the end of the 2030 Agenda and its SDGs. The international community has made a significant progress in this direction over the past five years. However, the economic and financial indicators of the countries and severe negative consequences of COVID-19 call into question the timely implementation of SDGs, particularly in developing countries. The repercussion of the COVID-19 will also negatively affect our country, which is one of the proactive members of the global community in implementing the 2030 Agenda […]".Tajikistan was one of the first countries to adopt its 2030 National Development Strategy and present its National Voluntary Report.

Climate Change. "Over the past sixty years, the average annual temperature in Tajikistan has increased by one degree. It has resulted in increased number of days with heavy precipitation and intensity of natural hydro-meteorological phenomena, which have year after year been affecting all countries throughout the world. Tajikistan, with 93% of its territory covered by mountains, bears losses equal to hundreds of millions of dollars annually as a result of water-related disasters. Such natural disasters often cause casualties. The areas of glaciers located in our country which are essential for all Central Asia have noticeably decreased over the recent decades. One thousand out of thirteen thousand glaciers located in Tajik mountains have melted away so far. This happens although when up to sixty percent of Central Asia's water resources are formed in the territory of Tajikistan. This year, due to low precipitation in winter, we have seen a significant decline in water stock in the region's rivers, which in turn led to low-water during the irrigation season and caused a severe drought. This situation causes a negative impact on quantity and quality of safe drinking water, as well as on all water using sectors, particularly agriculture and energy. **In this context, the countries in the region are concerned with the shifts in the hydrological cycle**. Thus, we would like to call on the United Nations and other international and regional organizations to support Tajikistan in organizing an expedition to study glaciers in Central Asia… In this context, I would like to once again put forward the following ways to address climate change, which I had previously introduced in other international forums: (1) encourage a widespread use of renewable energy, which would facilitate friendly environment for green economy development; (2) comprehensive support by donor countries and international and regional financing institutions in implementing national adaptation strategies and programs; (3) reinforce regular monitoring of water sources, especially glaciers; (4) strengthen international cooperation on protection of water resources and implementation of Tajikistan's proposal to establish the ***International Glacier Preservation Fund***; (5) render all-round financial and technical assistance, by developed countries and international organizations, to developing and least developed countries to monitor and preserve glaciers and other sources of water. We hope that our international partners will support further steps Tajikistan undertakes forward in these areas".

Water Resources. "UN acknowledged Tajikistan as an initiator and champion country in advancing water agenda. Our country has launched the majority of the United Nations' initiatives and resolutions on water, including "The International Decade for Action "Water for Sustainable Development" 2018-2028". Owing to support of the UN Member-States, we have been able to revive and strengthen the global water agenda over the past decades. Tajikistan's Resolution entitled "Comprehensive Mid-Term Review of the International Decade for Action "Water for Sustainable Development" 2018-2028 which was adopted in 2018 has further enriched the global water agenda. The Resolution, along with other important goals and objectives, calls for convening the United Nations Conference on a Comprehensive Mid-Term Review of the International Decade for Action "Water for Sustainable Development" 2018-2028 in New York in March 2023.

This event is valued as an important initiative in terms of support towards an implementation of the Decade and conduct of the High-level Political Forum on Sustainable Development. It is worth recalling that the last UN Conference on Water was held yet in 1977 in Mar de Plata, Argentina. It means that the United Nations will host the Water Conference after 46 years. We can confidently claim that the United Nations member states, UN specialized agencies and other organizations have been demonstrating a growing interest and utmost attention to the Decade for Action "Water for Sustainable Development" while some nations have already expressed their willingness to host regional preparatory meetings.

Regretfully, spread of COVID-19 affected their plans and most of the scheduled events have been postponed. I hope that after the victory over the coronavirus pandemic, the stakeholder countries, along with Tajikistan, will be able to take full advantage of the opportunities and convene events they have scheduled. In conclusion, I would like to draw the attention of all United Nations member states to the draft Resolution proposed by Tajikistan on the UN Conference for a Comprehensive Mid-Term Review of the Implementation of the International Decade for Action "Water for Sustainable Development, 2018 – 2028". It is decided to review this Resolution at the UN General Assembly Session. I would like to encourage all distinguished delegates to support our initiative, like they have been so generous in supporting our previous Resolutions".

Full text: https://www.mfa.tj/en/main/view/6418/speech-of-the-president-of-the-republic-of-tajikistan-he-mr-emomali-rahmon-at-the-general-debate-of-the-75th-session-of-the-united-nations-general-assembly

Video: https://www.youtube.com/watch?v=y31YTwpaD2E

Address by the President of Turkmenistan

…we urge the world community to pay closer attention to the problems of the Aral Sea and the Aral region

The President of Turkmenistan H.E. G. Berdymukhamedov proposed adopting a UNGA resolution to ensure stable transportation during emergencies like the current pandemic; called for increased efforts to combat COVID-19, as well as to study the coronavirus genome under the WHO auspices; and drew attention to the problems of the Aral Sea region.

Problem of the Aral Sea Region. […] "Coronavirus pandemic has to varying degree affected many countries all over the world. However, it is especially dangerous to ecologically disadvantaged regions. Unfortunately, there are many such areas when one looks at a map and it is impossible to mention all of them during this statement. Therefore, I wish to touch upon the issue, which is of vital relevance to Central Asian states and nations. It is the Aral Sea disaster. Amidst the escalating pandemic, the situation there is worsening and threatens the lives and health of people and the risk of epidemic outbreak has considerably risen. Under these circumstances, we urge the world community to pay very close attention to the problems of the Aral Sea and the Aral Sea region. Obviously, the work is underway to address these issues. This work is substantive both through the United Nations and by other international organizations that have been providing assistance to IFAS. We thank all of these organizations and we highly appreciate their efforts. However, I wish to be frank today that it is not enough to save the Aral. There is a need for a focused approach, concrete practical assistance and meaningful support to the people living there. Therefore, we strongly believe that the subject of Aral Sea needs systematic and comprehensive approach as well as relevant legal documents; and this issue should be set aside as a separate direction of operations of the United Nations. In this regard, Turkmenistan has put forward an initiative to create ***a Special Program for the Aral Sea Basin***. We also wish to emphasize the importance of what was adopted at our initiative in April 2018 and May 2019. I refer to General Assembly Resolutions adopted on cooperation between the United Nations and the International Fund for Saving the Aral Sea. Today these resolutions serve as a platform to consolidate joint efforts on Aral Sea issues. For the establishment of legal frameworks to address the Aral Sea issue in May 2021 during the session of UNESCAP Turkmenistan will present an initial draft of the concept and structure of the future special program on the Aral Sea. We call upon all states and relevant international organizations to consider and discuss these documents. […]".

Peace process in Afghanistan. "[…] Our country as Afghanistan's neutral and immediate neighboring state is ready to provide necessary political and organizational conditions in our territory to establish peaceful dialogue between the Government of Afghanistan and all parties interested in political settlement of the situation in Afghanistan. We think that the key condition for political stabilization, social and economic recovery of Afghanistan, its successful integration to global economy is to implement large infrastructure projects with Afghanistan's involvement primarily in vital sectors such as energy, transport and communication. As is known, our country consistently working in this direction has initiated the construction of a gas pipeline along Turkmenistan-Afghanistan-Pakistan-India route, as well as railroads and fiber-optic communication lines with access to the territory of Afghanistan, which have already entered the stage of practical implementation. We call on the international community, business structures, and financial institutions to become more actively involved in this work. […]".

Full text:
https://estatements.unmeetings.org/estatements/10.0010/20200922/T3qdozGNpyYp/alvb4N7rfKCj_en.pdf

Video:
https://www.youtube.com/watch?v=P1UHOREJp3U

Address by the President of the Republic of Uzbekistan

The President of Uzbekistan H.E. Sh. Mirziyoyev proposed to declare the Aral Sea region an area of ecological innovation and technologies, recalled the rapid desiccation of the Aral Sea and the devastating effects of climate change, talked about reforms in his country and called for joint efforts to combat COVID-19.

Pandemic. The Head of State proposed to develop under the UN auspices an International Code of Voluntary Commitments of States during pandemics. This document should reflect each state's commitments to its citizens and international partners. "Such a global catastrophe has not been observed on our planet in the last hundred years. This calamity has vividly revealed humanity's vulnerability. The current threatening and complex situation has proved that all states and peoples of the world are interconnected and that regular dialogue, trust and close cooperation among us are extremely important".

Uzbekistan's Modernization. Mr. Sh. Mirziyoyev spoke on "political, social and economic modernization of Uzbekistan". "Today, the process of democratic transformations in our country has become irreversible". The President pointed to the increasing role of women in society, noting that their number in the new parliament has doubled, spoke about projects in support of young people and called for the support of Uzbekistan's initiative to develop a UN Convention on the Rights of Youth.

Regional Cooperation. "The fundamental changes are taking place now in the region of Central Asia. […] Our common achievement is consultative summits of the Central Asian Heads of State. […]. Over the past four years, Uzbekistan's bilateral trade with neighboring states has grown almost five-fold". It was proposed to establish a Regional Centre for the Development of Transport and Communications under the auspices of the United Nations and to hold an International conference on the ten-year results and forthcoming prospects of the Joint Plan of the United Nations Global Anti-Terrorism Strategy, as well as organize the International Forum "Central Asia at the Crossroads of World Civilizations" in the ancient city of Khiva.

Peace Process in Afghanistan. "In order to broadly involve Afghanistan in the process of economic integration in the region, we have started the implementation of major infrastructure projects such as "Surkhan – Puli Khumri" power line and construction of a railway from Mazar-i-Sharif to the sea ports of the Indian Ocean. We believe that the issues of ensuring peace and stability in Afghanistan must remain a constant focus of the United Nations". To this end, it was proposed **to establish a permanent UN commission** on economic and social development of Afghanistan.

The Aral Sea region – an area of ecological innovation and technologies. […] "Another acute problem of our time is related to global climate change. Today, every country feels the negative effects of this process. Unfortunately, such negative developments

…negative developments also pose a great threat to the sustainable development of Central Asia

also pose a great threat to the sustainable development of Central Asia. I would like to once again draw your attention to the devastating effects of the drying up of the Aral Sea. The Aral Sea region became the center of an environmental tragedy. To mitigate the current situation, we are carrying out an enormous work to create two million hectares of new plantations and forests, to form a layer of soil. On our country's initiative, the United Nations Multi-Partner Human Security Trust Fund for the Aral Sea Region was established. We hope that this Fund will serve as a base platform for the international community to provide practical assistance to the population living in a stressed ecological zone. We propose to adopt a special resolution of the UN General Assembly declaring the Aral Sea region an area of ecological innovation and technologies. It would be expedient to mark the date of adoption of this important document as the International Day for the Protection and Restoration of Ecosystems. […]".

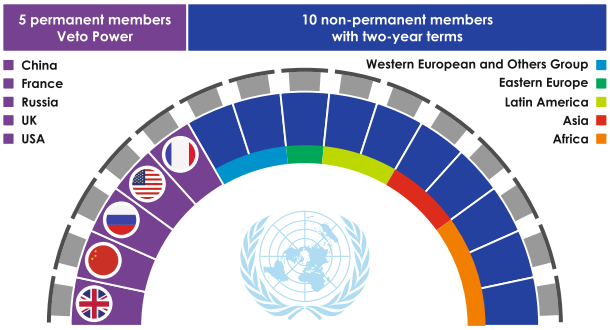
Full text: https://president.uz/en/lists/view/3851

Video: https://www.youtube.com/watch?v=Mlo8KvY8x1I

Selected Resolutions on Water, Environment and Development Adopted by the UNGA 75th Session

Declaration on the commemoration of the 75th anniversary of the United Nations (A/RES/75/1); Observance of environmental norms in the drafting and implementation of agreements on disarmament and arms control (A/RES/75/53); International cooperation on humanitarian assistance in the field of natural disasters, from relief to development (A/RES/75/124); United Nations Conference on the Midterm Comprehensive Review of the Implementation of the Objectives of the International Decade for Action, "Water for Sustainable Development", 2018-2028 (A/RES/75/212); Promoting sustainable consumption and production patterns for the implementation of the 2030 Agenda, building on Agenda 21 (A/RES/75/213); Disaster risk reduction (A/RES/75/216); Protection of global climate for present and future generations of humankind (A/RES/75/217); Implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (A/RES/75/218); Implementation of the Convention on Biological Diversity and its contribution to sustainable development (A/RES/75/219); Harmony with nature (A/RES/75/220); Ensuring access to affordable, reliable, sustainable and modern energy for all (A/RES/75/221); Eradicating rural poverty to implement the 2030 Agenda (A/RES/75/232).

6.2. Security Council



The Security Council (Security Council) has primary responsibility for the maintenance of international peace and security; all UN members are obliged to follow its decisions. It has 15 members, including 5 permanent members with veto power (Great Britain, China, Russia, USA, France) and 10 non-permanent, elected by UNGA for two-year terms for five countries each year.

Arria Formula Meeting on Climate and Security Risks: the Latest Data

On 22 April, an Arria formula meeting on the theme of "Climate and Security Risks: the Latest Data. What Can the United Nations Do to Prevent Climate-Related Conflicts and How Can We Climate-Proof United Nations In-Country Activities?" was virtually held. The objectives of the Arria formula meeting were to: provide a better understanding of the challenges, opportunities and interlinkages between instability, conflict and climate risks; propose the best tools and policies for a comprehensive approach to climate-related conflict prevention; and empower the whole United Nations system to encourage its institutions to integrate climate fragility risks into their policies and operations.

Even with decisive action to reduce greenhouse gas emissions, the pace and intensity of climate change is going to increase in the future. This will have direct and indirect negative consequences in many fields, including political stability, peace and security. Addressing the security impacts of the effects of climate change should also be part of the conflict prevention agenda. The countries welcomed the creation of the climate security mechanism, consisting of six staff from the Department of Political and Peacebuilding Affairs, UNDP and UNEP. Member-States also pointed out that the different agencies of the United Nations system could be better coordinated, notably by the appointment of a special envoy on climate and security. These substantial discussions indicate to converging views among a large majority of those participating and demonstrate the progress the Security Council is making on the issue, while some delegations still saw the need for further discussion.

Source: https://undocs.org/pdf?symbol=en/S/2020/392

Climate and security: ministerial-level open debate

On 24 July, Security Council members held a ministerial-level open debate on **"Climate and Security"** in an open videoconference (VTC) format. The debate was co-sponsored by ten Council members: Belgium, the Dominican Republic, Estonia, France, Germany, Niger, St. Vincent and the Grenadines, Tunisia, the UK, and Vietnam. The debate was focused on how climate change effects can exacerbate, prolong and contribute to conflict and instability around the world. Miroslav Jenča, UN Assistant Secretary-General for Europe, Central Asia and the America, highlighted the diverse impact of climate-related security risks across different regions and stressed the importance of climate-sensitive conflict prevention and peacebuilding interventions. Colonel Mahamadou Magagi, director of the Centre National d'Études Stratégiques et de Sécurité of Niger, described how climate change contributed to food insecurity and climate-induced migration in the Sahel. Coral Pasisi, director of the Sustainable Pacific Consultancy, Niue, explained the impact of climate change on exclusive economic zones, highlighting risks to the national identity and even existence of many Pacific Small Island Developing States.

Debate and Recommendations. Most delegations underscored the direct and indirect risks to peace and stability emanating from climate change impacts, a message underlined by speakers from the most vulnerable Member-States, and focused on concrete next steps to take. A few Member-States emphasized that they continue to see climate change effects primarily as a question of sustainable development, and that a general focus on the link between climate change and security threatened to divert resources and attention from the Council's core mandate, while infringing on the mandates of other UN entities. Many speakers made proposals for enabling a more comprehensive response by the Security Council and the UN system to manage climate-related security risks more systematically. They emphasized in particular that the Security Council needs more thorough and authoritative information on climate-related security risks as a decision-making basis. For this purpose, many delegations requested context-specific reporting on climate-related security risks in relevant situations on the Council's agenda as well as regular, comprehensive and enhanced reporting on climate-related security risks by the Secretary-General to the Security Council.

Moreover, speakers called for further strengthening of UN in-country resources, including in UN peace operations to enable a better response to requests for information and assessment of climate-related security risks. The important work of the UN

Climate Security Mechanism was stressed in this respect. Finally, many speakers highlighted the important role data and forecasting could play in assessing risks early on. In this regard, Germany drew attention to the Global Risk and Foresight Assessment launched during the Berlin Climate and Security Conference 2020, which will provide a basis for evidence-based action on climate and security.

Many delegations also called on the Secretary-General to appoint a Special Representative on Climate and Security, to ensure relevant information reaches the attention of decision-makers across the UN system and to coordinate the UN response to these challenges. Moreover, they emphasized the need for better training and expertise on climate change within UN missions and mediation teams so that climate-related security risks would be systematically mainstreamed into prevention, peacebuilding, peace-keeping, mediation, and diplomatic efforts. In the context of the debate, the ten co-conveners and three incoming Council members – Ireland, Kenya and Norway – announced the convening of an Informal Group of Experts of the Security Council to support it in achieving a more comprehensive and systematic approach.

Conclusion: Climate-Related Security Risks in the UN Security Council. The Security Council members and UN Member-States expect the Security Council to address the security dimension of climate change effects more comprehensively and systematically, in order to safeguard international peace and security in a changing climate. The widespread support for the climate security agenda – encapsulated in an ambitious joint statement by the 51 member-states of the Group of Friends on Climate and Security delivered by Nauru – and the formation of the Informal Expert Group testify to the determination of a vast majority of Council and UN Member States to enhance the Council's response to climate-related security risks.

Sources: securitycouncilreport.org, climate-diplomacy.org

6.3. Secretariat

The Secretariat is one of the main organs of UN. At the head of the United Nations Secretariat is the Secretary-General, appointed by GA upon recommendation of UNSC for a 5-year term. Since January 1, 2017, Antonio Guterres is the Secretary-General (Portugal).

Each year, the Secretary-General reports on the work of the Organization, including priority areas of the UN's activity and future plans. 2020 Report highlights the work in the following areas: promotion of sustained economic growth and sustainable development; maintenance of international peace and security; development of Africa; promotion and protection of human rights; effective coordination of humanitarian assistance efforts; promotion of justice and international law; disarmament; drug control, crime prevention and combating terrorism. The Report presents critical results achieved to date and key transformations of the United to Reform Program, as well as key priorities for the Secretary General's work for 2019-2020: (1) **2030 Agenda and the decade of action** (supported Governments and key stakeholders at all levels to kick-start the decade of action to accelerate implementation of SDGs by 2030); (2) **climate action** (ambitious action to combat climate change and its impacts, including through the 2019 Climate Action Summit initiatives, is vital to achieving the 2030 Agenda and the goals of the Paris Agreement, and to recovering better, together, from the COVID-19 pandemic); (3) **gender equality** (placed the spotlight on dismantling gender inequality and ensuring that equal participation and women's leadership are at the heart of UN efforts to respond to global challenges).

"We must commit to building a more inclusive and sustainable world".

Antonio Guterres, Secretary-General

Source: https://www.un.org/annualreport/2020/

6.4. United Nations Development Program

The United Nations Development Program (UNDP) is the UN's global development network that promotes positive change and gives countries access to the knowledge, experience and resources that help improve people's lives.

It operates in 177 countries and territories.

UNDP Activity in the Central Asian States in 2020

UNDP in Kazakhstan

UNDP in Kazakhstan focuses its activities on SDGs implementation, water and land management, environmental protection, climate change, energy and other relevant development issues. In 2020, UNDP project portfolio in Kazakhstan included 36 projects.

SDGs. The following projects were initiated: "Support of the Government with SDG Financing Strategy" (2020-2021) in aligning policy and financing with SDGs towards adopting the Integrated National Financing Framework; (2) "SDG Finance Accelerator Joint Proposal Development" (2020-2021) aimed at identifying, testing, and scaling up financial mechanisms to support and leverage investment in projects that advance the SDGs in Kazakhstan. Since 2018, the "Partnering for Building a National SDG Platform" project is being implemented (2018-2019) to support the Government to nationalize, implement and monitor SDGs. **The 2020 results:** the Committee on Statistics was supported in organizing a series of workshops to finalize a nationalized set of SDG indicators; targets and indicators will be mainstreamed in national plans by the result of the SDG Coordination council meeting to be held in 2021; capacity of Com Stat was enhanced in providing trainings on methodologies to calculate SDG indicators with a focus on environmental and gender-related indicators; MNE is finalized with involvement of the national think tank JSC Economic Research Institute. The report will be validated by the Government of RK.

Water Management. The "Irrigation and Drainage in Kazakhstan, Capacity Building and Awareness Raising" project was continued (2017-2021) to develop the capacities of RSE "Kazvodkhoz" and its branches in Almaty and Turkestan regions by changing institutional management and improving irrigation water management. **The 2020 results:** the following documents were developed (1) New State Water Management Program 2020-2030 endorsed by the Government of Kazakhstan; (2) one concept on private public partnership in irrigation water sector and three master plans endorsed by the Chairman of the Committee for Water Resources; (3) 3 tariff methodologies submitted to RSE "Kazvodkhoz"; two water extension centers were established in Almaty and Turkestan regions; 750 farmers were trained through 36 on-line training and workshop programs in all six project target regions.

Land Resources and Ecosystem Management. In 2020, the following projects were continued: (1) "Sustainable Forest Management" (2017-2021) for conservation and sustainable management of key globally important ecosystems for multiple benefits; (2) Sixth Operational Phase of the GEF Small Grants Program (2017- 2021) focusing on resilient rural and peri-urban landscapes of steppe and desert ecosystems for sustainable development and global environmental protection; (3) "Sustainable Food Systems and Improved Ecosystems Services" (2019-2020) for restoration and sustainable management of cropland and grasslands in Kazakhstan in line with LDN concept for multiple lands, climate and biodiversity and economic benefits; (4) "Supporting Sustainable Land Management" (2015-2020) to transform land use practices in critical, productive, steppe, arid and semi-arid landscapes of Kazakhstan.

The following projects were launched: (1) "Mapping Nature for People and Planet" to map the Kazakhstan's areas which are essential for human life and biodiversity and ecosystems conservation, for their further protection, management and restoration; (2) "Ecological Education in Kazakhstan" (2020-2025). The key outcome of the project is training of over 6 thousand teachers and creating a network of educational and model sites, preparation of educational and methodological packages in the field of environment protection, natural resource management, and environment and economic security.

Energy and Climate Change: (1) "Low-Carbon Urban Development" (2014-2019); (2) "Energy Efficient Standards and Labelling" (2017-2021) to transform Kazakhstan's markets to energy efficient appliances and equipment, thereby reducing electricity consumption and GHG emissions; (3) "De-Risking Renewable Energy Investment" (2017-2021); (4) Development of Kazakhstan's Eighth National Communication and Preparation of Two (Fourth and Fifth) Biennial Reports (2019-2022) to the Conference of the Parties of the UNFCCC in accordance with the commitment to the UNFCCC (grid emission factor for Kazakhstan is under development, national and international experts are working with statistic data; on 27 October-5 November, trainings were held on "Climate Risk and Vulnerability Assessment"); (5) "Forest Carbon Offset Mechanisms" (2019-2021) to assist the Republic of Kazakhstan in fulfilling international obligations to reduce greenhouse gas emissions by reducing the carbon footprint of electricity suppliers; (6) "National Determined Contributions Program in Kazakhstan" (2020-2022).

Capacity Building. First cohort of 30 participants under the "Supporting the Economic Empowerment of Afghan Women" project were enrolled in academic programs at the Kazakh-British Technical University, Agrarian and Satpayev Universities (Satbayev University).

Sources: kz.undp.org and open.undp.org/projects

UNDP in Kyrgyzstan

UNDP interventions in Kyrgyzstan are guided by the United Nations Development Assistance Framework (UNDAF) for the Kyrgyz Republic 2018-2022, which outlines four priorities: (1) sustainable and inclusive economic growth, industrial, rural and agricultural development, food security and nutrition; (2) good governan-

ce, rule of law, human rights and gender equality; (3) environment, climate change, and disaster risk management; (4) social protection, health and education.

In 2020, UNDP project portfolio in Kyrgyzstan included 28 projects totaling US $24.54 million.

SDGs. Since 2018, UNDP in Kyrgyzstan is establishing a "National SDG Support Platform" (2018-2023) – an anchor point for advancing SDG integrated approaches. Since 2020, the United Nations Joint Sustainable Development Goals Fund is implementing the project to create the Integrated National Financing Framework (INFF).

Environment Protection: (1) "Conservation of Globally Important Biodiversity and Associated Land and Forest Resources of Western Tian Shan Mountain Forest Ecosystems to Support Sustainable Livelihoods" (2017-2021); (2) "Climate Resilience of the Batken Province" (2019-2020) through introduction of climate smart irrigation and mudflow protection measures under the UNDP and Russia Trust Fund for Development's Climate Change Window. Repair works at 8 intra-farm irrigation facilities in the pilot Aiyl Aimaks of Batken province were completed, work was initiated to expand the network of agrometeorological observation; practical classes were held for farmers); (3) "Disaster Risk Reduction and Climate" (2016-2021) to strengthen integrated risk governance capacities and regional cooperation in Central Asia; (4) "Strengthening Capacities for Sustainable Development Finance in the Commonwealth of Independent States (CIS) Region" (2018-2020), which transferred an automated weather station and office equipment worth US $56,786; (5) "Transboundary Cooperation for Snow Leopard and High Mountain Ecosystem Conservation" (2016-2020) to ensure stability of global snow leopard population; (6) "Capacity Building Towards Securing the Resilience of Communities and Institutions to Climate and Disaster Risks and Sustainable and Inclusive Natural Resource Management" (2018-2022); (7) "UN Support for Strengthening Disaster Preparedness" (2012-2020) to support activities of the Disaster Response Coordination Unit Secretariat; (8) "HCFC Phase-out Management Plan (HPMP) – Stage 2" (2015-2020); (9) Advancing "Development of a National Adaptation Plan" process (2020-2023) for medium and long-term adaptation planning and implementation in the Kyrgyz Republic.

A project on climate diplomacy and security in Central Asia was presented. It is implemented by UNDP in cooperation with relevant government agencies in Kyrgyzstan, Tajikistan and Uzbekistan with the support of the UK Government (17 December). The project will foster regional cooperation on climate policy and effective climate diplomacy, positioning by countries of their climate agendas based on science-based commitments to reduce greenhouse gas emissions.

Sources: kg.undp.org and open.undp.org/projects

UNDP in Tajikistan

In 2020, UNDP project portfolio in Tajikistan included 49 projects with overall budget of US $28.83 million.

SDGs. The 2020 ongoing projects: (1) "Financing SDGs in Tajikistan" (2020) to support the Government of Tajikistan in achieving its national SDG targets through an integrated resource mobilization framework; (2) "Monitoring SDGs in Tajikistan" (2020-2021) to explore the needs for and expand support to strengthening national system for monitoring of SDG national indicators in close partnership with the Agency of Statistics under the President of Tajikistan.

Land and Water Resources: (1) "Building Climate Resilience in Agriculture and Water Sectors of Rural Tajikistan" (2019-2022), as a result of which: 4 project sites and 4 practices have been selected; capacity needs assessment conducted in 5 jamoats (13 villages); 803 farmers (319 – 39.7% – women) have got trained in CCA agriculture and effective irrigation methods; field days conducted for farmers of Ayni and Penjikent districts; (2) "Support to Water Initiatives of Tajikistan" (2020-2021), with the overall objective to provide support in organization of the International Water Conference 2020 and to develop a project proposal in support of the implementation of IWRM-based water sector policy reforms; (3) "Tajikistan Water Supply and Sanitation Project, Phase III" (2018-2021) to strengthen policy development and reform at the national level. **The 2020 results:** Decree on tariff setting developed and approved by the Government; 2 meetings of Inter-ministerial working group on drinking water and sanitation organized; 4 policy documents on tariff setting, taxation, construction norms and standards of rural WS systems and sanitation reform developed and published; (4) "Strengthening Communities in Khatlon Region and Rasht Valley" (2020-2022) to ensure that residents of pilot rural areas in Khatlon region and Rasht valley are equipped with skills for employment, self-employment and innovations in farming and agribusiness spheres. The Project Steering Committee meeting was held on 31 January.

Energy. The 2020 ongoing project: "Green Energy SME Development Full-Size Project" (2018-2023) to facilitate the transformation of Tajikistan's energy sector, in particular the emergence of independent energy entrepreneurs.

Climate Change and Ecosystems: (1) "Conservation and Sustainable Use of Pamir Alay and Tian Shan Ecosystems for Snow Leopard Protection and Sustainable Community Livelihoods" (2016-2021); (2) "First Biennial Update Report and Fourth National Communication under the UNFCCC" (2016-2021) to enhance the implementation of disaster and climate risk management measures at national and sub-national levels. **The 2020 results:** the project collected and analyzed data on climatic conditions and socio-economic characteristics of the country over the past 10 years, the forecast of greenhouse gas emissions in Tajikistan until 2030 has been completed, and a tool for forecasting has been developed; (3) "Policy Action For Climate Security In Central Asia" (2020-2022); (4) "Conservation and Sustainable Management of High-Value Arid Ecosystems in the Lower Amu Darya Basin" (2020-2021); (5) "Facili-

tating Climate Resilience in Tajikistan" (2017-2021) is expected to contribute to building climate resilient communities across Tajikistan and address specific threats to lives and social infrastructure posed by climate-induced natural hazards. The Steering Committee meeting was held on 25 December; (6) "Strengthening Disaster Risk Governance in Tajikistan" (2016-2020) to reduce the human and material impact of disasters on Tajikistan by improving the risk governance; (7) "An Integrated Landscape Approach to Enhancing the Climate Resilience of Small-Scale Farmers and Pastoralists in Tajikistan" (2019-2025); (8) "Climate Promise: Support to NDC Revision in Tajikistan" (2020-2021); (9) "Strengthening Disaster Risk Reduction (DRR) and Response Capacities in Tajikistan" (2016-2021) supports the Government of Tajikistan to undertake a nationwide risk assessment, establish and implement risk reduction measures and improve early warning. The Project Steering Committee meeting was held on 18 February.

Sources: tj.undp.org and open.undp.org/projects

UNDP in Turkmenistan

In 2020, UNDP project portfolio in Turkmenistan included 20 projects.

SDGs. The "Partnering for SDG Acceleration" project was continued (2018-2021). In 2020, the following events **were held:** (1) online workshop on digital economy; (2) international seminar on financing for development, with adoption of a final statement; (3) a webinar "Review and Guidance on Global, International and Regional Funds to Finance the SDGs in Turkmenistan".

Water Management. The "Energy Efficiency and Renewable Energy for Sustainable Water Management in Turkmenistan" project was continued (2015-2022). **The 2020 results:** seedlings of orchards and vineyards planted together with the "Turkmensuwylymtaslama" Design Research Institute on a research area of 145 hectares in Gokdepe; 1st edition of a methodology for the development of on-farm and inter-farm water use plans prepared and demonstrated to national water specialists; comments received from the State Committee for Water Management; the regulatory documents in the field of integrated management and protection of water resources developed, agreed with the concerned ministries and institutions, and submitted for approval with a total of 9 documents; three small demonstration projects on solar-based water supply implemented in desert areas. The following events were held: for representatives of the water, agricultural and agribusiness spheres the online training on water saving irrigation organized by the joint project of UNDP and the State Committee for Water Management (17 September); practical classes for students of the Turkmen State Agricultural University (2 July, "Turkmensuwylymtaslama").

Land Management. The "Conservation and Sustainable Management of Land Resources and High Value Ecosystems in the Aral Sea Basin for Multiple Benefits" was launched (2020-2021).

Climate Change and Environment Protection: (1) "Supporting Climate Resilient Livelihoods in Agricultural Communities in Drought-Prone Areas of Turkmenistan" (2016-2022). **Project results:** four gender sensitive local adaptation plans prepared and adopted by three farmers' associations; 529 targeted agricultural farmers and pastoralists reported on improved crop production and livelihoods; 59% participating households from 3 farmers' associations (Watan, Parahat and Yagtylyk) and 1 livestock farm (Garagum) reported 10-15% additional income earned. The following events were held: a webinar "Establishing Agricultural Advisory Services and Knowledge Dissemination Services in Turkmenistan" (16 October); online working meeting to discuss the draft instruction describing data collection and processing procedures and the use of gender-disaggregated data in sectoral planning and budgeting for climate change adaptation (26-27 November); (2) the "Sustainable Cities in Turkmenistan: Integrated Green Urban Development in Ashgabat and Awaza" (2017-2023) project, which held the first working meeting to discuss the development of the draft National Strategy in the field of waste management on 28 February; special equipment purchased and installed to monitor atmospheric air for the Environmental Monitoring Service and regional laboratories of the Nature Protection Departments of the Ministry of Agriculture and Environment Protection. After the conference "Preservation of the Unique Nature and Ecological System of Turkmenistan is the Key to Sustainable Development", the following documents have been signed: MoU between UNDP and the Ministry of Agriculture and Environment Protection on cooperation in the field of environment protection; MoU between UNDP and the State Committee for Water Management on cooperation in the field of water management, protection and use; Annual Work Plans for 2021 of the joint projects (1) between UNDP and the Ministry of Agriculture and Environment Protection "Sustainable Cities in Turkmenistan: Integrated Green Urban Development in Ashgabat and Avaza"; (2) between UNDP and the Ministry of Agriculture and Environment Protection "Supporting climate resilient livelihoods in agricultural communities in drought-prone areas of Turkmenistan" (2 December).

Sources: tm.undp.org and open.undp.org/projects

UNDP in Uzbekistan

The Country Program Document guides UNDP interventions at country level for the period of 2016-2020, which includes four outcome areas: (1) inclusive economic development, with focus on employment and social protection; (2) environmental protection to ensure sustainable development; (3) effective governance to enhance public service delivery; and (4) protection of rights.

In 2020, UNDP project portfolio in Uzbekistan included 35 projects with overall budget of US $22.35 million.

SDGs. The "Financing for Sustainable Development" project (2020-2023) was launched to ensure that the attainment of SDGs in Uzbekistan will be accelerated thanks to more efficient, transparent and results-oriented use of public finance resources.

Water Management. UNDP continued to implement the "Sustainable Management of Water Resources in Rural Areas in Uzbekistan: Technical Capacity Building" project in 6 pilot provinces (2016-2020). **2020 results:** water supply to 13,000 ha of irrigated land improved and led to a 30-50% reduction in water losses through repair and reconstruction of water canals and gates; drip irrigation systems installed in 35 household plots and 1 farm; 14 international standards for metrology and standardization approved by UzStandart and implemented in Uzbekistan; National Unified Capacity Building Program, including 8 training modules for water professionals developed; 3,718 water specialists got new knowledge and improved their practical skills in water management, hydrometry and metrology, large structures and water reservoirs, irrigation and land reclamation, water pumping and energy saving; 6 BISAs, TIIAME and Research Institute of Irrigation and Water Problems equipped with modern digital water meters. Regulations governing contractual relations between water users and water consumers have been developed and approved; normative documents have been developed for adapting irrigation canals to drip irrigation systems and on drip irrigation of agricultural crops. **Future interventions:** ensuring the irrigation infrastructure development; automation of large engineering structure operations; improving the monitoring system, water and energy saving technology application in 6 pilot regions; creation of centers for water saving technologies.

Land Resources and Ecosystem Management. The 2020 ongoing projects: (1) "Sustainable Natural Resource and Forest Management in Key Mountainous Areas Important for Globally Significant Biodiversity" (2017-2022), within the framework of which training in handling the Biodiversity Information Management System and the Biodiversity Information Center of Uzbekistan was held (from 26 February to 3 March); the Resource Center has got modern IT equipment; (2) "Sustainable Rural Housing and Settlements in Uzbekistan" to transform the rapidly growing rural housing sector in Uzbekistan towards a more sustainable and low-carbon development pathway by designing, piloting and scaling-up a green mortgage market mechanism (2015-2023); (3) "Complete HCFC Phase-out in Uzbekistan" through promotion of zero ozone-depleting substances low GWP Energy Efficient Technologies (2018-2024); (4) "Sustainable Development of Mountain Ecosystems" (2017-2022), within the framework of which in 2020 camera traps were installed in snow leopard habitat for detailed data analysis and research on snow leopard species; the project conducted a series of training workshops; a contract was concluded between UNDP and State Cadaster Committee for establishment of a buffer zone of Chatkal State Biosphere Reserve and an ecological corridor between the Ugam Chatkal State Biosphere Reserve and Chatkal State Biosphere Reserve; pasture management plans were developed this year for 8 pilot forest enterprises; forest restoration activities were carried out in 2,730 ha of forest land, and there was natural regeneration of forest in 300 ha in Akhangaran state forest enterprise.

Climate-related activities. Development of the National Adaptation Plan (2020-2022) began to advance medium and long-term climate change adaptation planning in Uzbekistan. The 2020 ongoing projects: (1) "Resilience of Farming to Climate Change Risks in Fergana" aims to institutionalize integrated services to agricultural producers in the pilot region that enhance their adaptation to the impacts of climate change (2019-2021). The project successfully completed installation of a network of 9 agrometeorological stations; the recommendations on improvement of soil and water management, and use of biological pest control methods have been included to respective sections of the Concept of Namangan region development for 2020-2030; 7 business projects have been selected through competitive process for technical and financial support by the project; 8 thematic seminars and 2 webinars were held on certification and standardization of fruits and vegetables, business planning and marketing, climate change and adaptation measures in target areas of the Fergana Valley; (2) "Developing Climate Resilience" project to develop climate resilience of farming and pastoral communities in the drought prone parts of Uzbekistan, specifically Karakalpakstan (2014-2021); (3) "Promoting Green Urban Development in Tashkent" to accelerate the adoption of electric vehicles in the City of Tashkent that can significantly reduce greenhouse gas emissions in the transport sector and improve urban environmental quality (2019-2020).

Activities in the Aral Sea: (1) "Sustainable Management of Lakes and Wetlands" (2020-2021) as pillars of a resilient and land degradation neutral Aral basin landscape supporting sustainable livelihoods; (2) "Building the Resilience of Local Communities Against Health, Environmental and Economic Insecurities in the Aral Sea Region" (2020-2021); (3) "Building the Resilience of Communities Affected by the Aral Sea Disaster" (2016-2019) through a Multi-Partner Human Security Fund for the Aral Sea; (4) "Addressing the Urgent Human Insecurities in the Aral Sea" (2019-2021) to address the environmental, social and economic insecurities in the most vulnerable communities of the Aral Sea (see Expeditions on the Exposed Bed of the Aral Sea in 2019-2020).

UNDP in Uzbekistan launched the Green Aral Sea crowdfunding campaign (11 March); commenced to host the series of trainings to assist national experts and specialists in fine-tuning the Concept Note on "The Aral Sea Region – an Area of Ecological Innovation and Technologies" and developing a Roadmap for its operationalization (from 8 June); with the Ministry of Innovative Development of the Republic of Uzbekistan co-hosted a virtual training on the practical application of the Systems Innovations Approach in support of the process of transforming the Aral Sea region into an Area of Ecological Innovation and Technologies (7-8 October).

Sources: www.uz.undp.org and www.open.undp.org/projects

UN Multi-Partner Human Security Trust Fund for the Aral Sea Region in Uzbekistan

On 27 November, the UN Headquarters in New York hosted a High-Level Event on the launch of the UN Multi-Partner Human Security Trust Fund for the Aral Sea Region in Uzbekistan (MPHSTF).

MPHSTF Activities in 2020

By signing MoU between the UN Participating Organizations (PUNOs) and the UN MPTF Office, WHO **on 24 March** has joined MPHSTF to successfully address health-related problems within the framework of one of the strategic goals of the Fund – ensuring health security of the population in the Aral Sea region.

On 14 July, the 4th meeting of the Steering Committee of MPHSTF was held to review the results of the evaluation of proposals submitted within the Second Call for Proposals. Representatives of UNICEF and UNDP made a brief presentation on the implementation of joint projects approved in accordance with the decision of the second meeting of the Steering Committee (June 3, 2019). One of the main items on the agenda of the meeting was the discussion and decision on the first meeting of the Advisory Committee on Sustainable Development of the Aral Sea region on the platform of the Trust Fund, established per the decision of the Steering Committee of 16 December 2019.

On 1 December, UN in Uzbekistan in cooperation with the Ministry of Investment and Foreign Trade of Uzbekistan jointly hosted the inaugural meeting of the Advisory Committee in support of sustainable development in the Aral Sea Region. Participants of the Advisory Committee agreed to establish two working groups and a technical-level working group, comprised of the members of the Advisory Committee. Working groups will (1) focus on sustainable investments and will guide and oversee the systems innovation approach for sustainable development of the Aral Sea region, building on Uzbekistan's sustainable development and poverty reduction strategies, as well as other relevant national and regional development priorities; (2) strengthen the visibility of the Aral Sea region to ensure raising awareness of the international community about the situation in the Aral Sea region as well as effectively communicating the results of joint initiatives. The **Technical Group** will focus on data and assessments to provide evidence and rationale for portfolio analysis and investments.

Financial Support to MPHSTF. According to the MPTF Office, under standard agreements US $1.5 million, €1 million, and US $5.5 million were allocated by the Governments of Uzbekistan, Finland, and EU, respectively, to MPHSTF. The Government of the Republic of Korea and the UN MPTF Office in New York signed the Standard Administrative Arrangement on the Republic of Korea's contribution of US $1 million (17 December).

Ongoing Projects. In 2020, the following projects were continued: "Improvement of Quality in Perinatal Care Service to Most Vulnerable Mothers and Newborns" (August 2019-April 2021, US $1.61 million) to support the Ministries of Health of the Republic of Uzbekistan and the Republic of Karakalpakstan to ensure access of the population to perinatal service by improving infrastructure and provision of essential equipment for secondary level perinatal referral facilities, and to improve quality of maternal and newborn health service; (2) "Addressing the Urgent Human Insecurities in the Aral Sea Region through Promoting Sustainable Rural Development" (September 2019-February 2021, US $1.46 million) to address the environmental, social and economic insecurities in the most vulnerable communities of the Aral Sea region. Within the framework of the project, autumn (2019) and second (May 28-June 26, 2020) expeditions were conducted to survey the Aral Sea bed, and a round table was organized on the results of these expeditions (December 16). "Monitoring of the Dried Seabed of the Aral Sea" to be published in 2021 provides the detailed information and conclusions on the conducted expeditions (see Expeditions on the Exposed Bed of the Aral Sea in 2019-2020).

Scheduled Projects. Funding was approved for three new projects amounting to more than US $6 million within the Second Call for Proposals addressing such priority areas as Youth, Innovation and Health Security (2020-2023): (1) "Investing in a Resilient Future of Karakalpakstan by Harnessing the Talents of Youth and Improving Water, Sanitation, Hygiene and Nutrition During and After COVID-19"; (2) "Unleashing Young People's and Vulnerable Citizens' Creativity and Innovation by Strengthening Their Adaptive Capacity to Address the Economic and Food Insecurities in the Exposed Communities of the Aral Sea Region"; (3) "Towards Universal Health Coverage and Security in Karakalpakstan".

Source: aral.mptf.uz

6.5. UN-Water

In 2013, the UN System Chief Executives Board for Coordination established the inter-agency coordination mechanism UN-Water. It coordinates the efforts of UN entities and international organizations working on water and sanitation issues. Over 30 UN organizations carry out water and sanitation programs.

In 2020, UN-Water held:

- 32nd meeting, which included agenda items addressing the work program for the coming biennium, the UN-Water 2030 Strategy, and input to the post-2020 global biodiversity framework, which will extend to 2050 (28-29 January, IFAD headquarters). The partici-

pants also discussed a proposed SDG 6 Global Acceleration Framework in the context of the UN Secretary-General's recent call for a Decade of Action to deliver the 2030 Agenda. Planning for engaging at the country and regional levels was discussed in light of ongoing UN reforms. UN-Water's Integrated Monitoring Initiative for SDG 6 and efforts to update monitoring and reporting were also highlighted. The report on the meeting is available on: https://enb.iisd.org/download/pdf/sd/enbplus82num40e.pdf;

- 33rd meeting, which discussed challenges for international water and sanitation policy issues due to the COVID-19 pandemic and opportunities to coordinate the work of their respective organizations to advance progress on SDG 6 (29 September, online).

UN-Water presented (1) its UN-Water 2030 Strategy highlighting the UN-Water's vision, mission and three lines of work, and outlining a Theory of Change through which UN-Water can fully realize its potential during the ten-year period[63]; (2) Analytical Brief on Unconventional Water Resources during the Dresden Nexus Conference under the theme "Circular Economy in a Sustainable Society" (3-5 June, online).

6.6. UN Economic Commission for Europe

UN Economic Commission for Europe (UNECE) is one of five regional commissions of the United Nations set up in 1947. Its main scope of work includes environment, transport, statistics, sustainable energy, trade, wood products and forests, housing and land use, population and economic cooperation and integration.

UNECE and Water Convention

UNECE serves as the Secretariat for the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). In 2019, the Parties to the Convention, together with UNECE, other countries and partners, launched the Program of Work for 2019-2021 consisting of 7 program areas: increasing awareness of and accession to the Convention, monitoring and assessment, promoting an integrated and intersectoral approach to water management, adapting to climate change, facilitating financing, reporting, partnerships and knowledge management. Kazakhstan takes over the chairmanship of the Water Convention for the period of 2019-2021.

Activities in 2020

Under the Water Convention and the Protocol on Water and Health, UNECE organized the following events: 2nd and 3rd meeting of the Expert Group on the Transboundary Water Allocation Handbook (30-31 March, 20-21 October); Webinars on SDG indicator 6.5.2: supporting countries in preparing national reports for the 2nd reporting exercise (12 May-4 June); 23rd and 24th meetings of the Bureau of the Protocol on Water and Health (13-14 May, 4-5 November); 19th and 20th meetings of the Compliance Committee under the Protocol on Water and Health (15 May, 2 November); Webinar "Water Convention and Transboundary Water Cooperation" (26 May); 11th meeting of the Implementation Committee (31 August-2 September); 30th Meeting of the Bureau of the Water Convention (29-30 September); 15th meeting of the Working Group on IWRM (30 September-2 October); 11th meeting of the Task Force on Water and Climate (2 October); Regional Workshop on Equitable and Sustainable Water Allocation (5-6 October); 6th meeting of Task Force on the Water-Food-Energy-Ecosystems Nexus (22-23 October); 11th meeting of the Task Force on Target Setting and Reporting (3 November); virtual workshop on financing transboundary water cooperation and basin development (16-17 December).

For details:
https://unece.org/info/events/unecemeetings-and-events/environmental-policy/waterconvention?page=0

Development of a Handbook on Transboundary Water Allocation

In 2020, the handbook on supporting equitable and sustainable water allocation in the transboundary context has been in the process of development. IWAC is handling this process in Central Asia, addressing such issues as sustainable water allocation in the transboundary context and environmental flow – the basis for conservation of the ecosystem. Two meetings of the Expert Group on the Transboundary Water Allocation Handbook were held to provide strategic advice and inputs (30-31 March and 20-21 October). The drafting team and Water Convention secretariat further developed the main Handbook content chapters in order to complete the first full draft by early 2021.

UNECE Activities in Central Asia

Transboundary cooperation

In 2018, the project "Enhancing Climate Resilience and Adaptive Capacity in the Transboundary Chu-Talas Basin" (September 2015-December 2018), funded by the Finnish Ministry for Foreign Affairs under the FinWaterWei II Initiative, was concluded. It was aimed to establish a framework for regular and strategic cli-

[63] The Strategy can be downloaded on: https://www.unwater.org/publications/un-water-2030-strategy/

mate change adaptation action in the Chu-Talas River Basin and enable the Chu-Talas Water Commission and local authorities to facilitate climate change adaptation in the basin. The Annex on climate adaptation to the Transboundary Diagnostic Analysis (TDA) and measures for climate change adaptation for the Strategic Action Program (SAP) have been developed. After further refinement and discussion with interdepartmental organizations, SAP was adopted at the 248th session of the Chu-Talas Water Commission (April 15, 2021).

The project also proposed, in consultation with local stakeholders, a set of adaptation measures, covering broad range of issues from water quality to monitoring and education, that were assessed against their cost/effectiveness and prioritized.

Following discussions within the Working Group on Adaptation to Climate Change and Long-term Programs of Action of the Chu-Talas Water Commission, the following measures were selected by the project team for the pilot implementation: (1) Floodplain forest restoration; (2) Training on water efficiency measures for irrigation; (3) Kirov dam safety monitoring system support.

The project teamed up with the local NGOs Kyrgyz Association of Forest and Land Users on implementation of the pilot adaptation measures.

The local NGO BIOM is facilitating awareness raising and information campaign that includes preparation of information materials, trainings for local communities, press-tour and other important activities.

Project results are available on:
http://www.unece.org/env/water/centralasia/chutalas.html#c6

and in the brochure:
https://unece.org/%EF%80%81leadmin/DAM/env/water/Chu-Talas/RUS_ClimateProo%EF%80%81ngChuTalas_web_10Dec2018.pdf

National Policy Dialogues

The work to support NPDs under the EU Water Initiative is ongoing in close cooperation with OECD and WECOOP2 project financed by EU. In 2020, the following events were held:

- expert group meeting under NPDs on SDG indicator 6.5.2 (12-13 November, Bishkek). Participants discussed preparation of Kyrgyzstan's national report under SDG indicator 6.5.2 on transboundary water cooperation;

- 6th meeting of the Inter-agency Coordination Council of NPD in Kazakhstan (20 November, Nur-Sultan). During the meeting, the reports were presented on activities under the WECOOP project, Kazakhstan's accession to the Protocol on Water and Health, as well as on activities to strengthen inter-institutional cooperation on mine tailings safety and the prevention of accidental water pollution in Kazakhstan and Central Asia. Participants discussed Kazakhstan's cooperation with its neighboring countries on the protection and use of water resources of transboundary rivers, and the direction of the water resources management Program of Kazakhstan until 2030, as well as developed proposals for the NDPs Plan of Work for 2021.

Cooperation on Dam Safety

The third phase of the project "Capacity Building for Cooperation on Dam Safety" in Central Asia was continued. An online meeting was held. The participants expressed their interest in resuming the work on the draft regional agreement on cooperation on dam safety in Central Asia; took note the progress on the implementation of the interstate agreement between the Kyrgyz Republic and the Republic of Uzbekistan on the joint use of the Orto-Tokoy (Kasansay) reservoir and on the establishment of the Central Asian Platform on Dam Safety within the SPECA Working Group; encouraged national focal points to discuss and agree on the draft Terms of Reference for the platform at the national level for submission and approval at the regional meeting on dam safety (15 June).

Water quality in Central Asia

Within the framework of the "Water Quality in Central Asia" project, a meeting of the Working Group on Water Quality was held to finalize the mandate of RWG-WQ[64], and develop and agree upon the Group's Work Plan for 2019-2020 (5 February, Tashkent).

Facilitating the work of EECCA NWO

To facilitate the collection and exchange of information in the water management sector, UNECE supports EECCA NWO (see International Network of Basin Organizations).

SPECA Program

Together with UNESCAP, UNECE leads the United Nations Special Program for the Economies of Central Asia (SPECA) promoting economic cooperation among the seven participating countries of the Program (see Economic and Social Commission for Asia and the Pacific).

Source: UNECE, www.unece.org/env/water.htm

International Water Assessment Center

The International Water Assessment Center (IWAC) is the center for international cooperation on integrated water resource management, which has been established as a subsidiary body of the Water Convention in Astana in 2017. The main purpose of IWAC is to support the implementation of the Water Convention and its relevant work programs.

IWAC Activities in 2020

IWAC with the official support of the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan and in cooperation with the Water Convention Secretariat, as well as with "ECOTERA" LLC and "Kazakhstan Agency of Applied Ecology" LLC

[64] Regional Working Group on Water Quality

organized an online regional meeting on water resource allocation and environmental flow assessment in a transboundary context (22-23 September). The main outcome of the meeting was that the countries of the region came to a consolidated vision, reflected as recommendations to the global Handbook on water allocation in a transboundary context[65].

IWAC office hosted meetings of S. Akhmetov, IWAC Director, with:

- Mr. Omar Aziz, the Charge d'Affaires of the Embassy of the Islamic Republic of Afghanistan, to discuss the development of cooperation on joint projects to improve the use and protection of the resources of transboundary rivers in Central Asia (15 October);
- Mr. Ruslan Matkerimov, Counselor of the Embassy of the Kyrgyz Republic to the Republic of Kazakhstan, to discuss possible areas of cooperation between IWAC and Kyrgyzstan on the protection and use of water resources, exchange views on current efforts to maintain and further improve mechanisms for managing transboundary water resources at the regional level, as well as exchange information on the current policy of Kyrgyzstan on the protection and use of water resources (6 November).

The 2nd meeting of the Working group on Kazakhstan's chairmanship in the Bureau of the UNECE Water Convention was held online on 14 December. The participants discussed the activities carried out within the framework of Kazakhstan's chairmanship in the Bureau of the Water Convention, considered priority areas of the Convention's work program for 2022-2024 and the work plan of the Working group for 2021.

Source: www.iwac.kz

6.7. Economic and Social Commission for Asia and the Pacific

Established in 1947, the Economic and Social Commission for Asia and the Pacific (ESCAP) is one of five regional missions of the UN. ESCAP works to overcome some of the region's greatest challenges by providing results oriented projects, technical assistance and capacity building to member States in the following areas: macroeconomic policy and development; trade and investment; transport; social development; environment and sustainable development; information and communications technology and disaster risk reduction; statistics and sub-regional activities for development.

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

SPECA Program

ESCAP in cooperation with UNECE manages SPECA. In 2020 under SPECA, the following online events were organized: (1) SPECA Economic Forum on "Regional Cooperation to Support Socio-Economic Recovery in the Wake of COVID-19" (18-19 November); (2) 15th Session of the SPECA Governing Council, where the Bishkek Declaration of the SPECA Economic Forum 2020 was adopted and the SPECA Thematic Working Groups reported (20 November). Uzbekistan was elected as the Chair country of SPECA for 2021. The 16th session of the SPECA Governing Council and the 2021 SPECA Economic Forum will be held in Uzbekistan in 2021.

Source: www.unescap.org, www.unece.org

6.8. United Nations Regional Centre for Preventive Diplomacy for Central Asia

The United Nations Regional Centre for Preventive Diplomacy for Central Asia (UNRCCA) was established on the initiative of the five Governments of Central Asia in Ashgabat, Turkmenistan, in 2007 to support national authorities in identifying and addressing existing and potential threats to regional peace and security. In implementing its initiatives, UNRCCA interacts with regional and international organizations. The Centre began operations in 2008 and is led by a Special Representative of the Secretary General.

In 2010, UNRCCA launched its water project to support five CA countries in their search for mutually acceptable water agreements. In 2019-2021, the Center implemented a project in support of regional transboundary water cooperation in Central Asia. UNRCCA promotes dialogues between the Central Asia states on transboundary water resource management and supports initiatives aimed at solving water, environmental and other problems influencing the situation in the Aral Sea basin. UNRCCA assists the Governments of the region in the development of a comprehensive mechanism for the effective use of water and energy resources, on the basis of recognized norms of international law, and taking into consideration the interests and needs of all states. It supports the governments in capacity building for water diplomacy by developing

UNRCCA
The United Nations Regional Centre for Preventive Diplomacy for Central Asia

[65] The draft Handbook is developed by the Water Convention Secretariat with contributions from experts and practitioners from different regions all over the world

the skills and raising the awareness of civil servants in Central Asia and Afghanistan. The Centre focuses on collecting and sharing data for early warning and on hazards related to glacier melt and climate change, and on identifying the needs of countries in this area.

The 2019-2021 Water Project focuses on the following main areas arising from the preventive mandate of UNRCCA: (1) using preventive and water diplomacy to build confidence; (2) strengthening relevant institutions and legal base in the region; (3) enhancing transparency, cooperation and partnership; (4) encouraging cooperation and interaction between the countries of Central Asia and Afghanistan.

UNRCCA Activities in 2020

UNRCCA virtually organized: (1) a capacity building seminar on water diplomacy practices related to international law and international cooperation in the field of safety of dams and other hydraulic facilities in cooperation with UNECE and international experts. Participants have acquainted themselves with the international legal instruments and international experience on the safety dams and other hydraulic facilities, exploring the nexus between the legal and practical problems of cooperation in the given field between the states of Central Asia; discussed potential for improving regional interaction in this field; briefed on their national efforts, respective legislation and actions to address dam safety and knowledge sharing (7 October); (2) two meetings of experts on water and energy cooperation. The participants had an opportunity to discuss the terms of reference of the ad-hoc expert group on legal and institutional aspects of water and energy cooperation in Central Asia and exchanged views on issues related to the systematization and inventory of regional agreements along with other normative acts related to water and energy cooperation between the Central Asian states. This work will be continued in 2021 (10 November and 21-22 December).

In cooperation with SIC ICWC, four early warning bulletins were issued on transboundary water management in the Aral Sea basin, as well as the third 2019 edition of the Water Yearbook: Central Asia and around the Globe, which featured key water-related events and developments in Central Asia and beyond.

In cooperation with a group of international water experts, the new web portal of the "Central Asian Water Knowledge Management Platform" has been updated (www.waterunites-ca.org).

Sources: https://unrcca.unmissions.org, https://unrcca.unmissions.org/sites/default/files/unrcca_programme_of_action_2018-2020_-_eng-08.12.17.pdf

6.9. World Meteorological Organization

The World Meteorological Organization (WMO) is a specialized agency of the United Nations. It was established in 1950. It is the UN system's authoritative voice on the state and behavior of the Earth's atmosphere, its interaction with the oceans.

WMO and WHO hosted a cross-sectoral dialogue on digital cooperation and Big Data in preparation for the United Nations World Data Forum 2020[66] (19 February).

WMO and the European Centre for Medium Range Weather Forecasts (ECMWF) launched a new web-based interface to help monitor the availability and quality of global meteorological observations within the WMO Integrated Global Observing System (WIGOS) (17 March). The WIGOS Data Quality Monitoring System (WDQMS) monitors the performance of the in-situ observing systems that are a key component of WIGOS.

WMO supported online 5th (27-28 May) and 6th (28-29 October) Arctic Climate Forums and the High Mountain Summit initiated by Columbia (11 December).

The virtual Data Conference was convened by WMO. It set the scene for a comprehensive modernization of the roles, rules and requirements for the international exchange of observations and other data that measure the pulse of the planet (16-19 December).

WMO projects in CA and Afghanistan

In 2020, the following projects were continued: (1) Afghanistan Early Warning System (US $2,4 million); (2) Hydromet & Early Warning Services for Resilience (US $3.7 million); (3) Central Asia Region Flash Flood Guidance (CARFFG) System; (4) Uzbekistan Climate Data Restoration (by February 2020, Uzhydromet has converted over 7 million pages of hydrometeorological observations into digital images and this operation is on track to complete this first phase of data rescue by the end of 2020).

WMO Publications

WMO Bulletins Vol. 69 (1) Climate and Water and (2) Responding to a Global Pandemic; Global Seasonal Climate Update; 2020 WMO Statement on the State of the Global Climate; 2020 State of Climate Services; report "United in Science 2020". *Other publications are available here*.

Source: https://public.wmo.int/en

[66] Held in October 2020

6.10. International Fund for Agricultural Development

The International Fund for Agricultural Development (IFAD) is a multilateral financial institution established in 1977. It mobilizes resources to eliminate malnutrition and improve agricultural productivity and incomes for rural poor in developing countries.

It provides direct financing in the form of loans and grants, attracts additional resources to implement projects and programs. Currently it has a number of ongoing projects in Central Asia.

Kyrgyzstan

Since 1996, IFAD has invested US $97.8 million in rural development in the Kyrgyz Republic. IFAD Country Strategic Opportunities Program (COSOP 2018-2022) aims to support inclusive rural transformation that enables smallholders to reduce poverty and strengthen livelihood resilience. This is addressed through two strategic objectives:

(1) Increase smallholders' equitable and sustainable returns by improving services and developing livestock product value chains that enable rural producers, principally smallholders, to capitalize on market opportunities;

(2) Enhance smallholders' resilience to climate change by implementing innovative approaches that strengthen resilience and ensure sustainable incomes from diversified livelihoods systems.

The 2020 ongoing projects include "Access to Markets" (2018-2023) and "Livestock and Market Development Program II" (2014-2021).

FAO and IFAD join forces to develop e-agriculture in Kyrgyzstan. FAO Representative in Kyrgyzstan and IFAD Country Director signed a partnership agreement, which will be an important initial step in the development of e-agriculture in Kyrgyzstan. This partnership will pave the way to a clear Action Plan which, guided by the Kyrgyz Government, will involve strategic Development Partners towards an inclusive Strategy to accompany the Agricultural sector and Rural Transformation in the country, supported by the New Information and Communication Technologies which already proved successful in the country as well as the sub-region.

Tajikistan

IFAD has been investing in the rural poor in Tajikistan by strengthening local institutions and grassroots organizations, and expanding their access to land, productive technologies and resources. Key activities include: natural resource management; implementing land reforms; and strengthening local institutions and grassroots organizations. The 2020 ongoing projects include "Livestock and Pasture Development, Phase 2" and "Community-Based Agricultural Support". Within the framework of the latter, new agricultural equipment was provided to farmers and the Minister of Economic Development and Trade Mr. Z. Zavkizoda held a videoconference with the IFAD Country Director Mr. M. Kauttu.

Uzbekistan

Uzbekistan joined IFAD in 2011. Since 2014, IFAD has supported three investment projects totaling more than US $435.3 million (US$128.7 million from IFAD) and directly targeting about 105,000 rural families. IFAD projects work to enable sustainable income growth for rural people through viable small-scale agricultural production and rural enterprise systems, with a specific focus on dekhan farmers, rural women and youth. The 2020 ongoing projects include "Dairy Value Chains Development Program" and "Agriculture Diversification and Modernization". A financing agreement was signed for US $ 47 million within the framework of the 2nd phase of the project (4 August).

Source: www.ifad.org

6.11. United Nations Educational, Scientific and Cultural Organization

UNESCO is the United Nations Educational, Scientific and Cultural Organization. It coordinates international cooperation in these areas. Established in 1945, it includes 193 member-states.

UNESCO's programs contribute to the achievement of the SDGs defined in the Agenda 2030. Key areas of activity include the following five program sectors: education, natural sciences, social and human sciences, culture, and communication and information.

On 17 June, UNESCO in partnership with Pakistan Council of Research in Water Resources and National University of Sciences and Technology hosted a webinar "Policy Dialogue on Integrated Water Resources Management (IWRM) as a Tool for Prevention and Smart Monitoring of COVID-19". More than 50 national and international participants including experts, members from academia and students attended the event. It highlighted the challenges faced in implementing IWRM.

On 28 July, the UNESCO Water Family in the Asia and the Pacific held its first online gathering. The agenda was focused on the Covid-19 pandemic and its impact in different parts of the region – from the Small Island Developing States of the Pacific to the mountain countries of Central Asia. The principal outcomes of the meeting were a commitment to collaboratively mobilize water science and innovation to address the pandemic and its impacts and to reinforce work towards SDG 6 and other water-related SDG targets.

In October, UNESCO and France have formalized the creation in Montpellier of the International Centre for Interdisciplinary Research on Water Systems Dynamics (ICIReWaRD), which will provide expertise, carry out research and training actions in management and governance, water science and technology in vulnerable regions, focusing in particular on problems linked to rapid urbanization, demographic pressure and the foreseeable effects of climate change. This research institute, within the University of Montpellier, will promote partnerships in the field of research and training, in order to strengthen the capacities of Member-States. It also aims to train future professionals with the skills and expertise to tackle complex water issues.

On 26-27 October, the UNESCO Water Family in Asia and the Pacific conducted a virtual meeting of the Intergovernmental Hydrological Program (IHP) – Regional Steering Committee. The special session was held to ensure that the water science community continues its important deliberations on cooperation and exchange in the hydrological sciences amidst the Covid-19 pandemic. The new IHP strategy coming into effect in 2022 was also discussed.

On 28-30 October, UNESCO-IHP in cooperation with IWRA[67] and IAH[68] held an online Conference "Addressing Groundwater Resilience under Climate Change" to raise awareness of the links between groundwater and climate change, which are key to the management of this vital resource.

On 7-11 December, the UNESCO Division of Water Sciences in cooperation with the Greater Paris Metropolis, SIAAP and ARCEAU-IdF organized an online Pre-Conference "Water, Megacities and Global Change" to respond to the urgent and pressing need of initiating discussion on the challenges and solutions related to water, megacities and global change which was planned to take place during the Second International Conference "Water, Megacities and Global Change", but had to be postponed to December 2021.

Activities of the UNESCO Cluster Office in Almaty

Project Activities. The UNESCO Cluster Office in Almaty held, (1) in relation to the preparation to the **GEF-UNDP-UNESCO project on glaciers**, a technical meeting **in cooperation with IHP and in coordination with the UNDP Istanbul Regional Center** to approve the project proposal and submit it to the GEF Secretariat for consideration for funding. Participants discussed issues related to the last stage of submitting a project proposal and components, as well as details and features of its implementation (16 June); **an online consultation meeting** with civil society organizations. The participants had an opportunity to familiarize themselves with the proposed structure of the project, as well as to provide comments concerning coordination of sub-regional and basin-level planning efforts, importance of gender aspects and availability of the project communications and learning materials for local communities (30 September, Almaty); (2) a technical online meeting within the framework of the 3rd phase of the **"Governance of groundwater resources in transboundary aquifers"/GGRETA project** (2020-2022) (10 December). During the event, the project countries presented the progress of the project implementation in 2020, as well as discussed the work plan for the next year. The current phase of the project aims to strengthen cooperation between Kazakhstan and Uzbekistan for sustainable water resources management and to develop a numerical model of the Pretashkent transboundary aquifer as a basis for joint, sustainable water resources management.

On 10 September, the UNESCO Almaty Cluster Office and Swiss 'Adventure of Science' initiative organized an online conference on Women and Glaciers in Central Asia, which focused on motivating women and girls by sharing their visions, and combat stereotypes of gender in science. The conference brought together 50 people from Central Asia and Europe. The event was divided into three sessions: Gender equality, Climate change and Environment Protection, and Citizen science projects, and attendees shared visions and knowledge for consideration during the time of COVID-19 crisis.

On 16 October, the UNESCO Almaty Cluster Office in cooperation with the United Nations Agency for Disaster Risk Reduction, the Center for Emergency Situations and Disaster Risk Reduction in Almaty (CESDRR) and the Disaster and Climate Resilience Youth Network (DACRYN) organized an online event "Youth and SENDAI 7", on the occasion of the International Day for Disaster Risk Reduction. More than 150 people attended the event from Central Asia,

[67] International Water Resources Association
[68] International Association of Hydrogeologists

Eastern Europe and South-East Asia. The program included a panel session "Youth and DRR Policy: Bridging the Gap" and a plenary session "Sendai 7 and Youth in Central Asia", during which speakers and participants shared their vision, knowledge and experience in the field of DRR on relevant for the Central Asian region topics.

On 24 November, GKU in partnership with the UNESCO office in Almaty organized a pre-conference online event on "UNESCO Water Family: Cooperation in Education and Science in Central Asia" at the occasion of the Silk Road of Knowledge online conference. The meeting aimed at identifying the needs and agreeing on a common approach for promoting better networking and partnership among the UNESCO Water Family, water related research and educational institutions in Central Asian countries.

On 26 November, the UNESCO Cluster Office in Almaty in cooperation with UNECE and UNEP organized an online High-Level Policy Dialogue "Building a Resilient Future in Coalition with Nature in Central Asia" to share knowledge, strengthen and scale actions in "building back better" from the COVID-19 pandemic. The event helped to take stock of the considerable efforts already made and underway by the Central Asian countries with regards to the environment at national and regional levels. The countries were able to showcase their work on nature protection and identify priority areas, such as ecotourism, green economies, rational use of natural resources and low-carbon development, in response to the COVID-19 pandemic and related economic challenges.

On 22-24 December, the Public Fund Center "Cooperation for Sustainable Development" (Kazakhstan), with the support and participation of the UNESCO Almaty Office, organized an online training for teachers to familiarize them with a new learning module on "Water and COVID-19" developed for 5-9 grade students. The module includes five thematic lessons, covering various aspects of water use in the context of climate change and COVID-19 pandemic, water pollution and efficiency. During the 3-days training, about 70 teachers from four Central Asian countries were trained on the new module and learned about specificity of teaching this important subject.

Source: UNESCO Cluster Office in Almaty, www.unesco.org

6.12. Food and Agriculture Organization

Food and Agriculture Organization of the United Nations (FAO) was established in 1945.

Nutrition, climate change, gender equality, social protection, and decent rural employment are cross-cutting issues of FAO activity in the Central Asian region.

FAO Activities in the Central Asian States in 2020

Kazakhstan

The portfolio of FAO technical assistance projects in Kazakhstan for 2010-2025, excluding planned projects under the Partnership Program, totals 39 projects worth US $35.8 million. 11 projects have already been successfully completed, 8 projects are ongoing, and 20 projects are in the pipeline. The project focus areas are determined jointly with national partners and mainly with the Ministry of Agriculture of Kazakhstan. The FAO Country Programming Framework (CPF) in Kazakhstan, which is currently updated in line with the UN Sustainable Development Cooperation Framework in Kazakhstan for 2021-2025, shapes FAO assistance in Kazakhstan.

Currently, there are ongoing projects on integrated land and pasture management, production of drought-resistant and salt-tolerant crops; formation and development of value-added agriculture in rural areas with the involvement of homestead plots and family farms; combating antimicrobial resistance and crop pests, including locusts, as well as on enhanced phytosanitary control, digitalization in agriculture, reduction of food waste and losses and other most urgent areas for the development of the country's agroindustry.

A project was launched to support the Ministry of Agriculture in preparation of a new National Plan for agro-industry development in 2022-2026. Additionally, a few projects have been started to develop agro-food trade, establish an international food hub in Kazakhstan (together with the Ministry of Trade and Integration of Kazakhstan), promote agricultural markets and agro-food export, and develop land relations and family farming.

In collaboration with the joint UNECE/FAO Forestry and Timber Section and international experts, the country has developed the draft "Master Plan for the Development of the Forestry Sector in the Republic of Kazakhstan until 2030," as well as a roadmap for its implementation.

Kyrgyzstan

FAO's assistance in Kyrgyzstan is shaped by the 2018-2022 FAO's CPF. FAO's portfolio in Kyrgyzstan consists of 28 regional and sub-regional, as well as 11 national projects in the field of aquaculture and fisheries, forest management, poultry farming, organic agriculture, and

locust control, including "Towards Sustainable Aquaculture and Fisheries Development in the Kyrgyz Republic in 2009-2020" (funded by the Finnish Ministry for Foreign Affairs, US $2.5 million); "Accelerating Progress towards the Economic Empowerment of Rural Women in the Kyrgyz Republic" (2014-2020, US $1.1 million).

The FAO-EU "Food and Nutrition Security Impact, Resilience, Sustainability and Transformation" supports development of a comprehensive and consistent agricultural and rural development framework and contributes to the preparation of a new National Food Security and Nutrition Program for 2018-2022.

Moreover, FAO in Kyrgyzstan together with (1) GCF prepared the project "Carbon Sequestration through Climate Investment in Forests and Rangelands in the Kyrgyz Republic" (US $50 million), to intervene in key hot spots of target areas with adapted forest and pasture investments and to clearly transform management of pasture and forest resources at the national and local levels to ecosystem-based sustainable natural resource management by enhancing an integrated and participatory approach, which is adaptive to climate change and responsive to needs of local communities; (2) GEF provided 10 hardware sets for development of e-agriculture in the country. Since April 2020, specialists of the State Design "Kyrgyzgiprozem" Institute on Land Management have been digitizing the Kyrgyzstan land use maps.

Tajikistan

FAO's assistance in Tajikistan is shaped by the 2019-2021 FAO's CPF. In 2020, FAO contributed US $2.83 million to Tajikistan, of which US $2.16 million was utilized.

Agriculture, organic agriculture, and food security. The project "Strengthening Institutions and Capacity of the Ministry of Agriculture & State Veterinary Inspection Service for Policy Formulation" (2016-2020, US $5.7 million) supported implementation of Tajikistan's Agrarian Reform Program and institutional development and capacity strengthening of the Ministry of Agriculture in relevant areas of policy-making, financial and policy analysis, disease surveillance and data management. Within the framework of the Program, the following pilot projects are implemented: "School Food and Nutrition Programs" and "Promoting Inclusive Economic Growth through Matching Grants for Families of Migrants". JICA and FAO have launched a new pilot project to support the Ministry of Agriculture of Tajikistan in potato seed replenishing. A National Investment Plan for Agriculture in Tajikistan for 2021-2030 is planned.

Turkmenistan

FAO interventions and resource mobilization for Turkmenistan envisages three priority areas: (1) agricultural production and food security, with a view to increasing the contribution of agriculture, forestry and fisheries to the country's economic growth; (2) sustainable natural resource management, climate change mitigation and adaptation; (3) increased resilience of rural livelihoods to agriculture and food security threats and shocks. FAO has no official representation in the country.

Turkmenistan officially endorsed a set of projects on reducing food loss and waste, improving fisheries and aquaculture management, and increasing fungal resistance of wheat.

Uzbekistan

Agricultural development and food security. A new four-year FAO project, "Smart Farming for the Next Generation" (US $3.4 million provided by South Korea), implemented in Uzbekistan and Vietnam, will contribute to the achievement of SDGs, including the eradication of poverty and hunger, and ensuring good health and well-being for everyone. The overall goal of the project is to initiate and promote smart and sustainable production, as well as post-harvest handling and marketing of vegetables grown in greenhouses.

FAO launched the Technical Cooperation Program "Support in Implementation of Inclusive Agricultural Policies" (US $100 thousand, end of 2022) aimed at improving rural livelihoods through inclusive policies in agriculture and rural women's empowerment.

GEF has approved to co-finance FAO's efforts in Uzbekistan striving to shift food systems and land use to a sustainable track and supporting land restoration. Specifically, improvements in the wheat production and value chain are foreseen, given that the country is the sixth biggest wheat consumer in the world and that appetite is growing.

FAO Regional Projects and Activities

(1) "Integrated Natural Resources Management in Drought-Prone and Salt-Affected Agricultural Production Landscapes in Central Asia and Turkey project" is the second phase of the Central Asian Countries Initiative on Land Management (CACILM-2) regional program (US $75 million, 2017-2022). In 2020, the following events were held: regional webinar on "Estimating the Impact of Land Management on Climate Change Mitigation with the Carbon Benefits Project (CBP) Tools" (25-29 May); two trainings – QGIS Basics, Watershed tool, Trends.Earth (15 June-1 July); 3rd Project Steering Committee meeting (24 January, Bishkek);

(2) Central Asian Desert Initiative (CADI). The 3rd CADI Steering Committee meeting was organized online (13 November). The agenda included reports and discussions on implementing CADI activities in the target countries in 2019-2020 and an outlook on the work plan in 2021. Capacity building in Uzbekistan has been implemented via the Farmers' Field Schools (FFS) concept developed by FAO. On two pilot sites in Uzbekistan, the FAO project team conducted a series of FFS sessions to improve nutritional security and increase the rural farmers' income living under harsh

climatic conditions of cold winter desert through enhanced capacity (December);

(3) Program to Improve National and Regional Locust Management in Caucasus and Central Asia to reduce occurrence and intensity of locust outbreaks in CCA, thus limiting threat or damage to crops and rangelands and safeguarding rural population food security and livelihoods, as well as minimizing impact of chemical control operations on human health and the environment. An Annual Technical Workshop on Locusts in Caucasus and Central Asia was held (24-26 November, online). The new "Project for Improvement of Locust Management (Phase 2)" was launched on the occasion of the first Project Steering Committee (1 December);

(4) "Developing Capacity for Strengthening Food Security and Nutrition in selected countries in the Caucasus and Central Asia". FAO analyzed the situation with food security and nutrition in Kyrgyzstan through a number of indicators of social and food systems and prepared infographics, which illustrates data interrelation over time, and also demonstrates their trends.

In order to define its future medium and long term priorities for Europe and Central Asia, FAO has requested a group of renowned experts to prepare a region-specific report outlining the trends, challenges, and opportunities for food, agriculture and rural development in the region up to 2025 and beyond. A virtual regional workshop was convened, where the research teams presented the draft report for review. The meeting underlined the importance of including the COVID-19 response in the report, not only under short-term, but also medium-term, action. Experts also emphasized the multiple dimensions of digitalization, its implications and opportunities for the region, as well as the need to promote agriculture, fisheries, and forestry to young people (27-28 August). The challenges and opportunities of digital agriculture was the topic of the second meeting of the Ministers of Agriculture of Central Asia, facilitated by FAO and Kazakhstan. The Central Asian countries expressed interest in developing and implementing comprehensive digital agricultural strategies to spur the growth of digital technologies (8 December).

Source: www.fao.org

6.13. International Law Commission

The International Law Committee (ILC) is a subsidiary body of UNGA, consisting of thirty four members of recognized competence in international law, who sit in their individual capacity and not as representatives of their Governments. The task of ILC is encouraging the progressive development of international law and its codification. It was established in 1947. The Commission has no representatives of the Central Asian states in its composition.

Due to the ongoing COVID-19 Pandemic, the General Assembly, on 12 August 2020, decided to postpone the seventy-second session of the ILC to 2021. Subsequently, in accordance with resolution 75/135 of 15 December 2020, the International Law Commission will hold its seventy-second session at the United Nations Office at Geneva from 26 April to 4 June and from 5 July to 6 August 2021 (11 weeks).

The 72nd Session of the Commission is to consider the following items: immunity of State officials from foreign criminal jurisdiction; provisional application of treaties; protection of the atmosphere; succession of States in respect of State responsibility; general principles of law; sea-level rise in relation to international law. Had the seventy-second session taken place in 2020, additional topics were on the agenda for the 2021 session – and may well still be so. These topics are: peremptory norms of general international law (jus cogens) and protection of the environment in relation to armed conflict.

Source: https://www.independentila.org/pil-current-items/2020/7/17/the-72nd-session-of-the-international-law-commission

6.14. International Court of Justice

The International Court of Justice (ICJ) is one of the six principal organs of the United Nations. It was established in 1945. It delivers judicial and advisory functions. No judges from Central Asia sit in the International Court. Cases submitted to the Court involve a wide variety of subject matters: territorial and maritime disputes; consular rights; human rights; environmental damage and conservation of living resources; international responsibility and compensation for harm; the immunities of States, their representatives and assets; interpretation and application of international treaties and conventions. In 2020, the Court's list of cases included only one case directly related to water – dispute over the status and use of the waters of the Silala (Chile v. Bolivia). For the nature of the case and proceedings in 2016-2020, see the ICJ report.

Source: ICJ report at the 75th Session of UNGA, 2020

Section 7

International Water Organizations and Initiatives

7.1. Asia Water Council

The Asia Water Council (AWC) is a global network focused in providing tangible solutions on Asian water challenges and facilitating multilateral discussions among stakeholders. It was established at the initiative of South Korea during the 7th World Water Forum in March 2015. As of December 2020, AWC is composed of 144 organizations from 27 countries. The AWC action tools include the application of high-tech tools in all areas of water management and nature conservation through IWRM, the reduction of risks through better water security, especially as concerns prevention of floods and droughts. AWC is the main organizer and sponsor of the Asia International Water Week (AIWW).

Activities in 2020

The 2nd Asia International Water Week/2-AIWW in Indonesia under the theme "Sufficient and Sustainable Water for All" has been postponed from October 2020 to November 2021. The AIWW program will include 24 thematic sessions, the Asia to World Statement Ceremony and Water Project Business Forum, as well as special sessions and an exhibition. The AWC Board of Council approved the composition and topics of the sessions (six themes with 4 sessions per each theme): (1) Security and sustainable growth (moderator – Australian Water Partnership/AWP); (2) IWRM planning/pilot projects to introduce smart technologies and build capacity (moderator – Qinghai University, China/K-Water); (3) Water management policy and technology in the context of climate change (moderator – IWHR/K-Water); (4) Water-Energy-Food-Ecosystem Nexus (moderator – IFAS/Daejeon University, Korea); (5) Water Security: responses to local, regional and global challenges (moderator – UNESCO/IWRA); (6) Asian Dynamic Water Center – power of knowledge and information (moderator – Global Institute for Water, Environment and Health/GIWEH).

Events. The following events were held: (1) AWC-ADB joint meeting (20-21 February, Manila); (2) meeting of representatives of the AWC Special Committees, which inter alia discussed the selection of 8 water projects to be funded in 2021-2022 (26 March, online); (3) AWC Bureau meeting (27 March, online); (4) 11th and 12th meetings of the Board of Council, where a series of online webinars was proposed for early 2021 (8 July and 16 December, online).

Source: GEF Agency of IFAS, http://www.asiawatercouncil.org

7.2. Geneva Water Hub

The Geneva Water Hub is a joint project of the Swiss Confederation (SDC, Global Program Water Division) and the University of Geneva. The Geneva Water Hub was established in 2014 to help prevent water conflicts at an early stage and to promote water as an instrument of peace and cooperation. The Platform for International Water Law (PIWL) was established by some members of the Department of Public International Law and International Organization of the Faculty of Law of the University of Geneva in 2009. Later, it became a part of the Geneva Water Hub. The Geneva Water Hub serves as the Secretariat of the Global High-Level Panel on Water and Peace.

Activities in 2020

Events. The following events were held: webinars (1) "Water, Sanitation, COVID-19, and Cooperation in the Middle East" (30 April) and "Reducing the Risks of Climate-Related Water Conflicts" (28 August) in collaboration with the Environmental Peacebuilding Association; (2) "Water under Fire" with UNICEF (28 August); (3) "Facing the Climate Emergency Effectively Leveraging Science, Governance and Diplomacy" with IUCN during the Stockholm World Water Week (24 August); (4) "International Law and Transboundary Water Cooperation" in collaboration with Diplo-Foundation with the participation of experts from the Secretariat of the UNECE Water Convention and SIC ICWC (3 December); conference on "Use of Water as a Weapon of War: the Role of International Law" in collaboration with the Institute of Peace and Development of the University of Côte d'Azur; online side-event on "Ten years after the proclamation of the right to water: challenges and perspectives in times of crisis" during the 45th session of the Human Rights Council in collaboration with the Permanent Mission of Togo to UN (23 September).

The Geneva Water Hub also contributed to the final event of the Geneva Peace Week and the participation in two sessions on "Transboundary Water Resources Management: Challenges and Opportunities" and the Intergenerational Dialogue on "The role of water in Environmental Peacebuilding" (2-6 November).

Publications. The Geneva Water Hub and its PIWL also contributed to several publications, including the report on "Witnessing the Environmental Impacts of War: Environmental Case Studies from Conflict Zones around the World", a special issue of the Review of European, Comparative & International Environmental Law (RECIEL) on "Water Protection and Armed Conflicts in International Law"; a paper on "The role of

international case law in implementing the obligation not to cause significant harm" in the review on "International Environmental Agreements: Politics, Law and Economics".

In collaboration with the GKU and SDC, the Geneva Water Hub developed a module on Hydropolitics and Hydrodiplomacy as part of the curriculum through the MSc in IWRM at GKU. The module focuses on (1) providing some ground definitions of key concepts such as hydropolitics, water cooperation or hydrodiplomacy; (2) addressing and deconstructing on-going narratives related to "water wars" or "water cooperation"; (3) setting the frame of existing international legal sources for the management of water resources; (4) providing different tools for a better understanding of conflicts and for managing water-related tensions (conflict mediation, negotiations skills); and (5) introducing additional perspective on the potential of water as an instrument for cooperation and peace.

Global Observatory on Water and Peace (GOWP)

Officially launched in 2019, the Global Observatory for Water and Peace (GOWP) is a platform open to all agencies and entities and coordinated by the Geneva Water Hub.

It is an inclusive network with its central node at the Geneva Water Hub that unites and aligns regional and local partners, credible and neutral institutions committed to the agenda of water, peace and security. The GOWP functions by strengthening the nexus, from global levels (federating the Geneva International) to local levels (through the GOWP network and regional partners). By bridging and promoting existing skills, GOWP will improve the limited capacity of international actors to act collectively and effectively at the political and diplomatic levels and the search for a global home of hydro-diplomacy. GOWP is a network of nodes (partners) of different setups, which reflect the capacity for analysis and strategic foresight on water and peace in their "specific context"; this reflection takes place in a dynamic creative exchange and contributes to create a discreet "global space" (Safe Space) to progress on key themes of their regional/societal context, of generic scope, or of global scope. Those partners are both regional, and societal, i.e. representing the perspectives of youth, women, media, local voices and other communities of interest.

Publications. One of the objectives of GOWP is to produce an annual analytic report with the objective of outlining gaps, challenges, lessons learned, existing or emerging solutions and potential relevant new topics to consider and producing hydropolitical analysis conducive to peace and cooperation.

In 2020, the partners to GOWP have been working on their separate contributions to the overall report, and in December, a virtual exchange took place to exchange on their respective areas of priorities of analysis. For Central Asia, a group of leading experts made their contribution. The overall report of GOWP is to be published during the first half of 2021. Moreover, under the aegis of the GOWP Strategic Foresight Discussion Notes are developed. These documents are informal think pieces prepared by staff and partners of the Geneva Water Hub with contributions from GOWP network and external partners to encourage forward-looking discussions and exchanges of ideas. The first of these notes focuses on "Hydrodiplomacy in Rapid Action: Early Insights from the Sardoba Dam Disaster in Central Asia".

Source: Geneva Water Hub

7.3. Global Water Partnership

The Global Water Partnership (GWP) is a global network of action including over 3,000 partners in 179 countries. GWP is comprised of 13 Regional Water Partnerships (RWPs) and 69 National Water Partnerships (NWPs), with the mission to advance governance and management of water resources for sustainable and equitable development.

Activities in 2020

River basins spanning two or more countries account for around 60% of global freshwater resources, with 2.8 billion people relying on shared waters. Transboundary water cooperation is therefore critical to GWP's mission to advance the governance and management of water resources for sustainable and equitable development.

Regional dialogues and knowledge-sharing. GWP experience shows that regional dialogues are effective in leading stakeholders towards basin-level cooperation on water management. In 2020, GWP worked with the Central American Commission for Environment and Development to organise a second regional dialogue. This resulted in the formation of a high-level panel with participation from government ministers from Costa Rica, Honduras, Nicaragua, and Panama. GWP has provided annual pan-African training events on water governance and international water law since 2015. In 2020, based on the results of survey of key stakeholders, it was decided to enhance the impact of these events and build further cooperation through adopting a more structured approach to knowledge dissemination and sharing in Africa. In addition to widening the reach of the training, the new approach will help to build a more ex-

tensive network of water professionals and decision-makers.

Caucasus and Central Asia. As part of the European Union Water Initiative Plus for the Eastern Partnership Programme (EUWI+)[69], GWP Armenia organized a public consultation campaign for providing information of River Basin Management Plan over the Sevan and Hrazdan basins: in 2019, on the main challenges facing water sharing, drinking water quality, pollution, and human health with more than 50 local stakeholders, and in June and July 2020. GWP Partners in Kazakhstan and Uzbekistan actively participated in the ongoing process of developing the draft Agreement between the Governments of two countries on joint management, use and protection of transboundary water bodies. GWP-Kazakhstan Chairman also as a member of the Special Working Group on the study and approval of the draft Agreement on the allocation of transboundary rivers resources between the Republic of Kazakhstan and the People's Republic of China took part in the meetings and discussions of the Kazakhstan-China Joint Commission on the Use and Protection of Transboundary Rivers.

Sharing transboundary water management knowledge. GWP has a well-established capacity-building programme in Africa, Asia, and Latin America, developed with a wide range of partners and targeted at practitioners and legislators involved in transboundary water management. At the global level and working with GEF and other key partners, GWP developed a massive open online course (MOOC) on "Governance for Transboundary Freshwater Security". The course opened at the end of August 2020 and over 1,880 learners from 145 countries have participated as of March 2021. MOOC was also featured at a pan-Asian online workshop on monitoring SDG indicator 6.5.2 in response to participants' request for capacity-building support.

Basin-level cooperation. In 2020, the riparian countries of the Drin River basin (Albania, Greece, Kosovo, Montenegro, and North Macedonia) jointly developed and signed a strategic action programme outlining more than 100 actions to overcome obstacles and promote sustainable water resource development. In Southern Africa, GWP helped mobilise €5 million from GEF for a new project on managing competing water uses and protecting ecosystems in the Buzi, Pungwe, and Save River basins, which are shared by Mozambique and Zimbabwe. GWP provided technical backing to the Economic Community of Central African States (ECCAS) to submit eight transboundary water projects for funding under Programme for Infrastructure Development in Africa (PIDA). This programme is backed by the African Union and aims to accelerate the development of key water infrastructure projects.

Source: GWP

7.4. International Commission on Irrigation and Drainage

The International Commission on Irrigation and Drainage (ICID) was established in 1950 as a scientific and technical organization with a view to develop scientific technologies in engineering, agriculture, irrigation and drainage, economy, ecology, and social sciences to increase food production, protect environment, improve water quality, improve land productivity, and manage floods and disasters. Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan are the members of ICID.

Activities in 2020

ICID has held its international activities online this year.

Events. Several webinars were organized: (1) jointly with WB Global Webinar on the Impact and Recovery from COVID-19 in the Irrigation and Drainage Sector (18 May); (2) Role of Safety Standards and Land Subsidence in Sustainable Development and Management of Flood Prone Areas (19 May); (3) Ensuring the Safety of Dams and Land Reclamation Network (10 September); (4) General Challenges of Irrigation Schemes Management Under Different Scales: With Special Consideration on Institutional and Organizational Aspects of System Management (21 January 2021); (5) Overcoming Water Challenges in Agriculture – Canadian Perspectives on #SOFA2020 (27 January 2021).

Council Meetings. The International Executive Council (IEC), the highest decision-making body of ICID, is vested with the management of the affairs of ICID. IEC meets every year to transact business of administrative and technical in nature. In preparation for the 71st meeting of the Council, the following events were organized: an online meeting of the European Regional Working Group (20 October), meeting of the Office-Bureau (17 November), and 41st meeting of the Permanent Finance Committee (26 November). At the 71st Council meeting, which gathered over 150 people, decisions were made based on the results of activities of ICID Working Groups and Permanent Committees, awards were given in the nominations "WatSave", "Technology", "Young Professional", "Farmer" and "Best Paper in the ICID Journal", World Heritage Irrigation Structures were recognized, the results of elections of new ICID office bearers were announced, and several events were rescheduled (7-8 December). Some of the meeting results are presented further:

[69] Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine

- The elections results: Dr. Ragab Ragab (UK) – new President for 2021-2023; three Vice-Presidents for 2020-2022 – Prof. Choi, Jin-Yong, Seoul National University (South Korea); Dato' Ir. Nor Hisham bin Mohd Ghazali, Malaysian National Committee on Irrigation & Drainage (MANCID), Director General, Department of Irrigation & Drainage, Ministry of Environment and Water; Eng. Rafat Nael Al-Intaki, Chief Engineer, Ministry of Water Resources of Iraq; Engr. Ashwin B. Pandya, incumbent Secretary General of ICID, re-elected for new term of 2021-2024; Vice-President Dr. Marco Arcieri (Italy) – Chairman of the Permanent Finance Committee;

- The number of ICID individual members was increased. They are: A. Kumar (India); A. Karva (India); A.E. Elshaikh (Sudan) and A. Urfels (Germany);

- The following groups will be established: (1) Land Drainage Working Group under the strategic theme "Schemes" to promote drainage development as part of IWRM; (2) Water-Food- Energy Nexus Working Group under the strategic theme "Basins" to share information, knowledge and experience, and develop links in the nexus approach towards new developments, methods, and approaches.

Source: I.G.Bondarik, ICID Honorary Vice-President

7.5. International Network of Basin Organizations

The International Network of Basin Organizations (INBO) was established in 1994 in Aix-les-Bains (France) to promote integrated water resources management at the level of national and transboundary basins of rivers, lakes and groundwater aquifers to link economic growth, social equity, water and environmental protection, and civil society participation. Basin organizations, governmental administrations in charge of water, and bi and multilateral cooperation organizations are the members of INBO. INBO member organizations belonging to the same geographic region created 8 regional networks of INBO.

Activities in 2020

Events. The following events were held: (1) online webinar "Water Information Systems, Governance and the Interests of Remote Sensing – for an Informed Water Resources Management at National and Basin Levels" (15 September, over 200 participants from 73 countries); (2) webinar "Cost of Climate Change Adaptation at Basin Level vs. Cost of Inaction" (13 October); (3) INBO World Liaison Bureau meeting (3 November); (4) annual 18th "Europe-INBO 2020" International Conference (9-10 November); (5) 5th AfriAlliance Innovation Brokerage Event: Climate proof IWRM (29 October); (6) webinar "Participation of Stakeholders, Civil Society and Youth in the management of the basins of rivers, lakes & aquifers" (10 December).

INBO actively participated in its partners' activities, including the first UNECE Global Workshop on Data and Information Exchange in Transboundary Basins (UNECE, December 2019) and the first virtual roundtable "Digital Transformation Challenges and Opportunities for West African River Basin Development Organizations" (Geneva Water Hub, July 2020).

Projects. A Memorandum of Understanding was signed with the Mekong River Commission in response to a request of support to reinforce their data access/exchange and water information system. Organizational and technical support was provided to the Organization for the Development of the Gambia River (OMVG, Guinea) for developing their data management capacities. Work was continued on the "100 water and climate projects for Africa" initiative launched in December 2017 with the support of the French Government, the World Bank and the United Nations General Secretariat. INBO continued sustaining the incubation platform for water and climate projects by the mobilization of new financial donors.

Publications. INBO published the new issue of "INBO Newsletter" (No.28, November 2020) with the key highlights of Network's activity.

The Eastern Europe, Caucasus, and Central Asia Network of Water Management Organizations (EECCA NWO)

EECCA NWO is one of the eighth regional networks of INBO. It was established in 2010 to exchange views, experiences, and information on various aspects of water-management activity. The Network is administered by SIC ICWC, with the support of the Government of Russian Federation and the UNECE, and Network's activities are coordinated with those of INBO.

Activities in 2020

EECCA NWO contributed to the development of the Network's website and the knowledge base on the CAWater-Info and supported the Atlas of Water and Environmental Organizations in EECCA (24 organizations were added); e-newsletter "Water management, irrigation and environment in EECCA countries" is prepared and disseminated weekly.

At the end of the year, the Network's members started contributing to the study on "Statements made by the Central Asian countries at the UN General As-

sembly in 1992-2020: Key highlights and priorities" and "Environment and Transboundary Cooperation at the Statements made by the EECCA countries in the UN General Assembly in 1992-2020". The collection and compilation of best practices on IWRM and transboundary water cooperation in EECCA has been started also. An online database of water, environment and sustainable development experts has been launched to facilitate their collaborative research and involvement in development programs around the world. Preparations has begun for the Network's videoconference "Transboundary Water Cooperation in the EECCA Countries: Lessons Learned and Future Directions" to be held in March 2021.

Source: EECCA NWO Secretariat

7.6. Inter-Islamic Network on Water Resources Development and Management

The Organization of Islamic Cooperation (OIC) was established upon a decision of the first high-level Islamic Conference, which took place in Rabat, Kingdom of Morocco on 25 September 1969. In March 1970, the first ever meeting of Islamic Conference of Foreign Ministers (ICFM) was held in Jeddah; it was decided to establish a permanent Secretariat in Jeddah headed by the organization's Secretary General. OIC consists of 57 members and 5 observers.

The Inter-Islamic Network on Water Resources Development and Management (INWRDAM) was established by the Standing Committee on Scientific and Technological Cooperation (COMSTECH) of OIC in 1987 (Islamabad, Pakistan). The headquarters of INWRDAM is located in Amman and hosted by the Hashemite Kingdom of Jordan. INWRDAM is a non-political and non-profit organization having international legal status. It is one of the technical bodies of COMSTECH and OIC focused on water resources development and management. Currently, only 19 OIC countries (out of 57) are members of INWRDAM: Bahrain, Bangladesh, Egypt, Iraq, Jordan, Lebanon, Malaysia, Mali, Niger, Oman, Pakistan, Saudi Arabia, Sudan, Syria, **Tajikistan**, Tunisia, Turkey, **Uzbekistan** and Yemen.

Activities in 2020

Events. A Symposium "*Water Crisis Knows No Borders*" was held with participation of official representatives from 14 OIC Member-States, OIC bodies and other international organizations. The participants discussed: (1) how to use the INWRDAM platform for a more productive dialogue focused on case studies from the Network Member-States; it was decided to develop a five-year vision for transboundary water resources management to be approved by the 11th meeting of the INWRDAM Governing Body; (2) the development of a Roadmap to improve resilience of local communities in vulnerable basins in INWRDAM Member-States and a five-year Plan of actions and partnership development areas to achieve the OIC water goals (9 February).

The *INWRDAM 11th Governing Body meeting* was held on 9-10 February. Activities of the Network for 2018-2019 and the Biennial Action Plan for 2020-2021 were on the agenda. Following the discussion of the Plan, the participants recommended to develop transboundary water cooperation, invite water centers/institutes from OIC Member-States to join INWRDAM, increase resilience to climate change, support publications on water-related issues in OIC countries, etc. As part of the Work Plan, INWRDAM will be leading an initiative on organization of the OIC Water Forum on a biennial basis.

Source: GEF Agency of IFAS, https://www.oic-oci.org

7.7. International Water Management Institute

International Water Management Institute (IWMI) is a research-for-development (R4D) organization, with headquarters in Colombo, Sri-Lanka, offices in 13 countries and a global network of scientists operating in more than 30 countries. IWMI is a Research Center of CGIAR, the global research partnership for a food-secure future. IWMI's Vision reflected in its Strategy 2019-2023 is "a water-secure world". IWMI leads the CGIAR Research Program on Water, Land and Ecosystems.

Activities in 2020

New appointments. After current IWMI Director General, Dr. Claudia Sadoff was appointed Team Convener and Managing Director, Research Delivery and Impact of the inaugural CGIAR Executive Management Team, Dr. Mark Smith, former IWMI's Deputy Director General, was appointed as IWMI's Director General.

His immediate priority will be working with partners to "build back better" by enhancing the resilience of water systems in the aftermath of the ongoing pandemic and contributing to CGIAR.

Global research projects: "Water and Land Management Trajectories" (2020-2021/WLE), "FutureDAMS" (2017-2021/Research Councils UK), "Water and Climate Adaptation Meta-Review" (2020/ACIAR), "Sustainable Groundwater" (2017-2020/WLE).

Research projects involving Central Asian countries: AGRUMIG to address labor mobility and changes in agriculture and the rural sector (2019-2022, Kyrgyzstan, Tajikistan/European Commission); "Assessment of Transboundary Water and Land Resources in the Amu Darya Basin" (2019-2020, Uzbekistan/ISTC); "Water-Energy-Food-Climate-Health nexus in Central Asia" (2017-2020, Tajikistan, Uzbekistan/USAID); "Ground Water Monitoring in the Ferghana Valley" (2019-2020, Uzbekistan/SDC); TA-9782 UZB: "Climate Adaptive Water Resources Management in the Aral Sea Basin" (2020, Uzbekistan/ADB); "Background Study on Water Management in Uzbekistan" (2019-2020, Uzbekistan/EBRD); "Water Resources and Agriculture" (2016-2020, Uzbekistan/USAID).

Awards. IWMI won: (1) the Water Prize of the Prince Albert II of Monaco Foundation for development of scientific solutions in support of some of the world's poorest populations; (2) the award for innovative work using remote sensing technology in recognition of the positive impact IWMI's South Asia Drought Monitoring System (SADMS) has had. Since IWMI launched SADMS in 2014, the system has guided national, state and district-level authorities in India and Sri Lanka to take timely action to prepare for drought.

Work with partners. In May 2020, when super cyclone Amphan hit India and Bangladesh, IWMI provided maps that enabled authorities in those countries to identify and evacuate populations and identify damaged infrastructure and farmland to plan a recovery response. The researchers have access to more than 600 satellite images and generate more than 20 maps based on satellite data before and after the cyclone.

Grants. Five organizations from India, Nepal, Pakistan, and Bangladesh were awarded grants from the SoLAR Innovation Fund established by SDC and IWMI to support technical, financial, and institutional innovation for upscaling of solar irrigation.

Source: IWMI Office in Uzbekistan, https://www.iwmi.cgiar.org/

7.8. International Water Resources Association and World Water Congress

The International Water Resources Association (IWRA) is a global knowledge network of water experts.

Since 1971, the Association has grown to become a preeminent key actor working internationally for the sustainable use and management of the world's water resources.

Activities in 2020

Events. The following events took place in 2020: (1) online conference supported by UNESCO-IHP "Addressing Groundwater Resilience under Climate Change" (28-30 October, 2,600 participants from 130 countries); (2) online General Assembly of the Association (24 September, 150 members from all over the world); (3) webinars on 11 different topics based on special issues of "Water International" magazine or dedicated to various water-related events, such as the World Water Day, water issues in COVID-19.

Working Groups. The structure and governance of the IWRA Working Groups were improved.

As a result, the Working Groups can be initiated and chaired by IWRA members, rather than being represented by a group of individual experts.

Two new Working Groups on Groundwater and Young Professionals were created.

Projects. IWRA, K-water and the Asia Water Council (AWC) agreed to initiate a new phase of collaboration with the "Smart Water Cities" project.

Publications. Policy Brief documents were published: 8 issues as part of the "Green Series" and 4 – "Blue Series". Eight issues of "Water International" were published.

Within the agreement with the UNESCO i-WSSM (International Centre for Water Security and Sustainable Management) on annual co-publishing of the Global Water Security Issues (GWSI) Paper Series, the paper for 2019 "Water Reuse within a Circular Economy Context" was published. Preparations have begun for a new issue on groundwater to be published in 2021.

Source: 2020 IWRA Activity Report

7.9. Stockholm International Water Institute and World Water Week

The Stockholm International Water Institute (SIWI) is a Swedish not-for-profit Foundation. The Stockholm International Water Institute's vision is a Water Wise World – a world that recognizes the value of water and ensures that it is inclusively shared and used sustainably, equitably, and efficiently for all. At SIWI, we believe that the best way to tackle water crises and help bring about lasting change – is to strengthen water governance among public and private actors alike. SIWI focuses on priority areas including transboundary water cooperation, international policy, WASH, and water governance and streamlines three cross cutting issues – gender equality, youth empowerment, and human rights-based approaches – throughout all programming.

SIWI hosts the world's premier annual water meeting and water dialogue platform, the World Water Week and we award the prestigious Stockholm Water Prize and the Stockholm Junior Water Prize.

As a trusted convenor, they are the host and driver of important initiatives such as the UNESCO Category II Center the International Centre for Water Cooperation (ICWC) and the Shared Waters Partnership (SWP), hosted by SIWI's Transboundary Water Cooperation Department.

World Water Week

The 2020 World Water Week was held online. During the week, there were 120 sessions focused exclusively on solutions to global water issues. Two areas in particular stood out – resilience to climate change impacts and digitalization.

Many sessions addressed strategies for coping with various future shocks – from climate change and ecosystem degradation to pandemic and food shortage.

The following key messages have been delivered: safety is a priority; collaboration is necessary for sustainability; disconnectedness is extremely dangerous; business solutions are needed; it's time for solutions; decision-makers play an important role in changing behavior; what we really value.

Activities in Central Asia and Afghanistan in 2020

SIWI's Shared Water Partnership program engaged in several key activities in Central Asia and Afghanistan supporting multi-track riparian dialogues, targeted capacity building, and networking opportunities to elevate regional water cooperation.

Events. The following events were held: (1) a water diplomacy workshop for government officials from Afghanistan focused on strengthening communication resilience against the backdrop of escalating disinformation and other information influence campaigns (February); (2) a closed webinar for its basin partners focused on enhancing inter-ministerial coordination for improved transboundary cooperation (June); (3) a focused session on water diplomacy within annual Central Asian Leadership Program on Environment for Sustainable Development (September).

New program. In partnership with SDC, the University of Corvinus Budapest, and CAREC, the "Water as a Driver of Sustainable Recovery: economic, institutional and strategic aspects of water resources management in Central Asia" initiative was launched within the framework of the Blue Peace Central Asia.

Source: SIWI, https://www.siwi.org

7.10. World Water Council

The World Water Council (WWC) is an international multi-stakeholder platform. It was established in 1996 on the initiative of renowned water specialists and international organizations, in response to an increasing concern about world water issues from the global community.

The World Water Council catalyzes collective action during and in between each World Water Forum – the world's largest event on water.

Organized every three years with a host country, the Forum provides a unique platform where the water community and key decision makers can collaborate and make long-term progress on global water challenges.

9th World Water Forum "Water Security for Peace and Development"

In late 2019, the First Announcement of the 9th World Water Forum was published and presented a Roadmap for the Forum, including its four core priorities: Water Security, Rural Development, Cooperation, and Means and Tools. In 2020, Senegal and the World Water Council have decided to postpone the 9th World Water Forum scheduled in Dakar, to March 21-26, 2022.

The 9th World Water Forum will be the first large-scale international water-related event to be organized in sub-Saharan Africa. The objective of this 9th Forum is to have strong political commitments made by leaders, with practical propositions and actions delivered. The Heads of State will constitute the major part of the political outcome of the Forum. The Heads of State Summit will be held on the first day of the Forum, four keystone roundtables (one for each priority) will take place during the Forum week, and a key event will bring together the synthesized outcomes related to each priority. Different stakeholders will be part of the Forum, including political level, private sector, civil society, academia, etc.

Other WWC Activities in 2020

A *virtual Board of Governors meeting* was held on 17 June. The meeting addressed emerging issues within the water community due to the spread of COVID-19. Participants reflected on three thematic topics which will guide their work and contribute to the 9th World Water Forum in Dakar: (1) the importance of sanitation in the fight against COVID-19; (2) challenges posed by the COVID-19 pandemic in financing access to water and sanitation; and (3) water and biodiversity. The most recent progress in the preparatory process of the Forum was reported as well.

Events. WWC representatives took part in a number of large meetings, including: a meeting of the OECD Water Governance Initiative (9-10 January, Paris); virtual session of the Civil Society Engagement Group C20 Summit "Urgent Collective Action for Water Security" (6 October); Annual Conference of the virtual International Association for Hydro-Environment Engineering and Research (IAHR) and the Chinese Hydraulic Engineering Society (CHES) (18 October); Cairo Water Week (18 October); Brazil Water Week (26 October); Global Water Leaders Forum (10 November), etc.

Publications. The Council published the "World Water Council Membership Guidelines". It presents the membership policy of WWC and establishes the principles of the membership as well as transparent procedures for the relationship between WWC and its members. This document is complementary to the By-Laws and Constitution of the Council. Six issues of "Water Policy" magazine and a special issue on "Water in the Himalayas: A Water Management Experience with Adaptation in Mind" were also published.

Source: https://www.worldwatercouncil.org/en

Section 8

Activities of International Partners in Central Asia

8.1. Asian Development Bank

The Asian Development Bank (ADB) has provided technical assistance support and made investments in the water sector in the Central Asia region since its first lending (to Kazakhstan) in 1998. Investments to date, totaling US $4.4 billion, include flood management, irrigation and drainage, clean water supply, sanitation, hydropower, institutional reforms, and knowledge and capacity building support. Regional technical assistance support for transboundary water resources management have been more bilaterally, such as the enhanced river basin management in the Chu-Talas (with Kazakhstan and the Kyrgyz Republic) and Pyanj River basin (for Afghanistan and Tajikistan). Acting nationally with investments and thinking regionally with technical assistance support place ADB as a leading development partner in the region.

Projects in Central Asia in 2020

ADB investments were impacted by COVID-19, which restricted field visits. Investment approvals in 2020 include **for Tajikistan**, the second additional financing for the "Water Resources Management in the Pyanj River Basin" project. The project aims to increase food security, water use efficiency and climate resilience. The project has supported establishing a river basin organization and strengthening its capacity for river basin management. The additional financing contributes for the construction of a sediment excluding basin, which will decrease future operation and maintenance cost by decreasing sediment inflow to the irrigation system.

Efforts continue to improve water supply and sanitation infrastructure and services (WSS) in Central Asia. ADB approved the **Second Activity under the Multisector Activities Support Facility**. This is by using a small expenditure financing facility modality to support the ADB's ongoing "Naryn Rural Water Supply and Sanitation Development Program" (Naryn Program) **for the Kyrgyz Republic**. It funds consulting services for (1) independent verification agent to validate the disbursement linked indicators; (2) for the capacity development of the Naryn Program's executing and implementing agencies to support the overall program implementation and to achieve the program results framework.

The **Project Readiness Financing (PRF) for urban services projects in Georgia, Pakistan, and Uzbekistan** will support early preparation of engineering designs and procurement documents. This is as part of advanced actions prior to project approval to ensure timely start up and completion of project activities. All projects will include water, sanitation and hygiene (WASH) components to address the spread of COVID-19. **In Uzbekistan**, the PRF is preparing three projects with water and sanitation components throughout the country for 2021-2022 approval. These include the "Tashkent Province Sewerage Project", the "Water Supply and Sanitation Sector Development Program", and the "Integrated Urban Development Project". The projects take a holistic approach to fill critical WSS infrastructure gaps while supporting policy reforms and strengthening institutional capacity for enhanced utility performance and services delivery.

ADB has supported the Central Asia Regional Economic **(CAREC)** Program for regional cooperation and integration. A partnership of 11 countries supported by six multilateral institutions,[70] it is working to promote development through cooperation, leading to accelerated growth and poverty reduction. In 2017, CAREC introduced agriculture and water as a key pillar under the CAREC 2030 strategy. In 2020, ADB approved a technical assistance (TA) to support the development of the CAREC water pillar, with an emphasis on economic aspects and sustainable financing of water resources management. The TA is preparing a scoping study with a focus on five Central Asian republics, which largely share the water resources in the Amu Darya and Syr Darya River basins.

Source: Asian Development Bank

8.2. Asian Infrastructure Investment Bank

The Asian Infrastructure Investment Bank (AIIB) is a multilateral development bank with a mission to improve social and economic outcomes in Asia. Headquartered in Beijing, AIIB began operations in January 2016 with 57 founding Members and by the end of 2020 have grown to 103 approved members worldwide.

Water and environment related activities in 2020

In October 2019, the AIIB initiated a Call for Public Consultations on its water sector strategy. The AIIB's

[70] Afghanistan, Azerbaijan, People's Republic of China, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan

Water Sector Strategy after public consultations was uploaded on May 2020.

In 2020, the AIIB invested US $30 million in the Lightsmith Climate Resilience Partners to support and introduce climate resilience technologies in AIIB members and US $30 million in the ADM Capital Elkhorn Emerging Asia Renewable Energy Fund to mobilize private capital and promote growth of renewable energy in AIIB's regional member countries.

Projects in Central Asia in 2020

In 2020, the AIIB has approved a US $385.1 million sovereign loan for the "Bukhara Region Water Supply and Sewerage" in Uzbekistan and a US $165.5 million loan for "The Uzbekistan: Bukhara Road Network Improvement Project (Phase 1)".

In 2020, the AIIB has approved co-financing of US $750 million to the "Kazakhstan COVID-19 Active Response and Expenditure Support Program", co-financing of US $100 million to the "Uzbekistan Healthcare Emergency Response Project", co-financing of US $50 million to the "Kyrgyz Emergency Support for Private and Financial Sector Project", and a US $200 million loan for the "National Bank for Foreign Economic Activity of the Republic of Uzbekistan COVID-19 Credit Line Project".

Source: https://www.aiib.org/en/index.html

8.3. European Bank for Reconstruction and Development

The European Bank for Reconstruction and Development (EBRD) was established in 1991. It invests in projects facilitating the transition to open market, as well as the development of business activity. The EBRD work in Central Asian countries on water issues is very broad, including water supply, wastewater treatment, RES, and increased climate resilience.

Projects in Central Asia in 2020

In Kazakhstan, EBRD focuses on balancing the role of state and market, development of local capital markets, green economy transition, and sustainable energy. To date, the cumulative EBRD investments in 280 projects in Kazakhstan amount to €8,022 million. Current portfolio of projects is €2,539 million.

Particularly, EBRD provided a €24.8 million loan for the construction of a 100 MW wind farm in Zhanatas, southern Kazakhstan and a €2.5 million loan for the rehabilitation of water utilities in the city of Shymkent within the "Shymkent Water II Project". Within the framework of the EBRD Green Cities Program, a Memorandum of Understanding was signed with the East Kazakhstan region, under which the cities of Ust-Kamenogorsk and Semey will benefit from support offered in preparing tailored Green City Action Plans to ensure sustainable investments in urban infrastructure.

In the Kyrgyz Republic, EBRD focuses on fostering sustainable growth; enabling SMEs to scale up; promoting the sustainability of public utilities; strengthening the financial sector; and supporting critical infrastructure. To date, the cumulative EBRD investments in 195 projects in the Kyrgyz Republic amount to €734 million. Current portfolio of projects is €162 million.

Funding was approved for a number of water projects: €4 million, including €1.6 million from EBRD and €2.4 million from the EU Investment Facility for Central Asia for the "Isfana Water Project"; up to €40 million to be co-financed from international or bilateral donors for the "Kyrgyz Water Resilience Framework". The "Kyrgyzstan Climate Resilience Water Supply Project" to be approved in early 2021 passed final review. The proposed project for €50 million will finance the rehabilitation of the irrigation water conveyance infrastructure in Jalalabad, Naryn and Osh regions.

In Tajikistan, EBRD focuses on all sectors, including energy, infrastructure, financial sector, corporate sector, and SMEs. To date, the cumulative EBRD investments in 139 projects in Tajikistan amount to €738 million. Current portfolio of projects is €467 million. The new Country Strategy for Tajikistan approved for the period 2020-25 will be based on the following three pillars: strengthening the competitiveness of businesses and improving the business environment; fostering regional integration, energy reform and infrastructure connectivity; supporting wider access to better infrastructure and business services for women, young people and underdeveloped regions.

A sovereign loan of up to €7.5 million was approved for the "Kulob Water and Wastewater Project". €150 million was allocated for road construction in eastern Tajikistan. Construction of a 44-km section of the M41 highway, the country's main transport corridor, will connect Tajikistan with Kyrgyzstan, Kazakhstan, and China.

In Turkmenistan, EBRD focuses on expanding private sector operations in the corporate and financial institutions sectors, targeted policy dialogue and fostering coordination among IFIs and donor organizations. To date, the cumulative EBRD investments in 85 projects in Turkmenistan amount to €291 million. Current portfolio of projects is €61 million.

In 2020, loans were mainly provided to the production and services sector, including agribusiness, for example, to support the expansion of greenhouse

facilities for growing strawberries (US $2,7 million) and tomatoes (US $2,5 million). EBRD approved a US $12.9 million loan to joint venture Mawy Kenar, a provider of environmental remediation services, for addressing the legacy of oil production activities in the Balkan region of Turkmenistan.

In Uzbekistan, the EBRD's Country Strategy for 2018-2023 identifies: enhancement of competitiveness by strengthening the role of the private sector's role in the economy; promotion of green energy and resource solutions across sectors; support of increased regional and international cooperation and integration. As of 31 January 2021, the cumulative EBRD investments in 93 projects in Uzbekistan amount to €2,083million. Current portfolio of projects is €1,136 million.

The Bank approved: US $156 million in sovereign financing to support the rehabilitation of 8 small-to-medium size hydropower plants (HPPs) within the framework of the 5-year "Uzbekistan Climate Resilience Framework"; US $70 million loan for the "Namangan Regional Water and Wastewater Project". The "Syr Darya Power Project" was approved with the provision of a senior loan of up to US $200 million for the construction and operation of 1.5 GW combined cycle gas-fired power plant. The Project is part of an ongoing modernization of the power generation sector in Uzbekistan aimed at increasing efficiency and reducing the environmental impact. It will lead to the closure of 1,170 MW of old and inefficient capacity at the existing Syrdarya TPP.

Source: https://www.ebrd.com

8.4. European Union

On 17 June 2019, the Council adopted conclusions on a new EU Strategy on Central Asia. The new-generation bilateral Enhanced Partnership and Cooperation Agreements (EPCAs) is a cornerstone of EU engagement. EU-Kazakhstan EPCA entered into force in 2020 (1 March). EU-Kyrgyzstan EPCA was initialed in 2019, and work is under way to prepare the text for signing. Negotiations on EU-Uzbekistan EPCA are nearing completion. EU is preparing to engage in EPCA negotiations with Tajikistan.

EU allocated over €1.1 billion to development cooperation with Central Asia in 2014-2020. In 2020 EU mobilized €134 million through the Team Europe Program. The provided assistance is to help mitigate immediate and long-term health, social and economic challenges caused by the COVID-19 pandemic. In May, EU announced a €8 million support program to boost sustainable energy in Central Asia. The program will complement the EU's 15 regional initiatives in environment, biodiversity, climate change, disaster risk reduction, water and sustainable energy, as well as +20 EU bilateral cooperation projects with Central Asian countries in these areas. In July, EU launched a comprehensive €3 million Central Asia COVID-19 Crisis Response Solidarity Program, with a primary focus on Kazakhstan and Turkmenistan.

EU Regional Environment Programs in Central Asia

EU is currently supporting two regional cooperation programs in Central Asia on environment-related issues: (1) Central Asian Water and Energy Program (**CAWEP**) implemented jointly by EU, WB, Switzerland and UK to promote water and energy security at the regional and national levels (see World Bank); (2) Regional coordination and support to improve the EU-CA Platform for Environment and Water Cooperation (see further).

"European Union – Central Asia Water, Environment and Climate Change Cooperation (WECOOP)"

The WECOOP project (third phase from October 2019 to October 2022) aims to enhance environment, climate change and water policies at national levels in Central Asia through approximation to EU standards and to promote investments in relevant sectors with the aim of contributing to measurable reductions in man-made pollution, including CO_2 emission. The project activities include support to the EU-CA Platform for Environment and Water Cooperation and its Working Group on Environment and Climate Change (WGECC), as well as implementation of the EU Green Deal's international dimension in Central Asia to advance climate action.

Activities in 2020

The 9th WGECC meeting was held on 12-13 February. The participants discussed successes of the EU-CA cooperation, as well as recent developments in EU and CA environment and climate policies since the 8th WGECC meeting and the 6th EU-CA High Level Conference. "The European Green Deal" was presented. The first online meeting of the WGECC Coordination Committee was organized on 15 June.

Support was provided in organization of National Policy Dialogue (NPD) meetings (together with UNECE and OECD). The 6th meeting of the Inter-agency Coordination Council of the National Water Policy Dialogue took place on 20 November; cooperation between Kazakhstan and its neighbors in the protection and use of transboundary water resources and priorities of the national water sector development were addressed during the meeting.

Forty-four Central Asian journalists participated in the contest on "Climate Change: The Planet's Future

is in Our Hands". An online Award Ceremony was held in August to recognize the participants and announce 3 winners.

An online Award Ceremony was held to recognize the participants and announce the winners of the "Eco-Talk" International Green Business School (15 December). The Evaluation Committee identified 4 winners. Overall, 37 young entrepreneurs took part in the Green Business School this year and presented 16 business projects.

Sources: https://ec.europa.eu, https://wecoop.eu, WECOOP Project

8.5. German Society for International Cooperation

As a globally active federal enterprise for international development cooperation, the German Society for International Cooperation/Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH/ supports the German Federal Government in implementation of its development policy goals. Since the beginning of the 1990s, GIZ has been implementing programs and projects in Central Asia.

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Regional Programs and Projects on Water, Environment, and Development

Completion of the Transboundary Water Management Program in Central Asia (2009-2020)

GIZ completed the Transboundary Water Management Program in Central Asia from 2009 until 31 August 2020 in the framework of the Berlin Process[71]. Overall, the German Federal Foreign Office spent €37 million to which €14 million EU co-financing were added by two grant agreements between 2011 and 2015 and one delegation agreement from 2016 to March 2020.

The GIZ Program worked on local, basin and regional level in Central Asia with its five partner countries Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan. Main partner institutions were the respective water management authorities. The Programme's main focus was on fostering regional institutional cooperation, strengthening transboundary river basin management, building capacities and implementing national pilot projects. The five partner countries were supported in analyzing the reform needs of the overall institutional and legal setting for transboundary water cooperation, with a focus on the Executive Committee of the International Fund for Saving the Aral Sea (EC IFAS and its sub-organizations). Transboundary river basin management was strengthened through: capacity building for improved data collection and management including reporting to the national level in order to strengthen informed decision making; development of basin-specific scenarios of climate change and its impacts to improve adaptation measures and disaster prevention; integrating all stakeholders in basin planning by providing for public participation, establishment of Basin Councils as consultative bodies for water management authorities; development of basin panning methodology for several Central Asian states; establishment of a transboundary coordination and cooperation mechanism. Together with its partners the Program implemented 37 pilot projects ranging from rehabilitation of headworks for better control of water distribution and reduction of water losses; rehabilitation of hydrological monitoring posts and equipment for reliable data on water flow and intake; construction of mini hydropower stations to cleaning of drainage canals to improve melioration.

Launch of the "Green Central Asia" Program (2020-2024)

In the context of German engagement on climate change and security within the UN and support to the new EU-Central Asia Strategy of June 2019, the German Foreign Office launched on 28 January 2020 the Initiative "Green Central Asia – Enhancing Environment, Climate and Water Resilience" with a ministerial conference in Berlin. In a joint declaration, the Central Asian foreign ministers expressed their readiness for collaboration and dialogue on climate, environment and security in the context of conflict prevention and strengthening transboundary cooperation. The Berlin Process was thus enlarged not only by topics for transboundary cooperation, but also geographically by including Afghanistan. Consequently, the GIZ was commissioned with the Program "Green Central Asia: Transboundary Dialogue on climate, environment and security in Central Asia and Afghanistan". The Program started on 1 April 2020 and will last until Mach 2024.

The aim of the Program is to improve access to information and risk analyses to enable participating countries to assess the impact of climate change more accurately and to take preventive measures. In close cooperation with the six partner counties, the Initiative will develop a joint action plan, which will serve as a road map for joint actions – including with

[71] The Berlin Process was an offer of the German Federal Foreign Office to the countries of Central Asia to support them in water management and to make water a subject of intensified transboundary cooperation. It supplemented the EU Strategy for a New Partnership with Central Asia which was adopted during the German EU Presidency in June 2007

international partners – for the years 2021 to 2024. The political dialogue will be accompanied by cooperating with media and by an awareness-raising on environment, climate and water resilience via social and other media.

Scientific support will be rendered by the Potsdam Institute for Climate Impact Research (PIK), the Helmholtz Centre Potsdam – German Research Centre for Geosciences (GFZ), the Martin Luther University Halle Wittenberg and the German-Kazakh University (GKU). The Program will cooperate with other international organizations active in the area of climate and water diplomacy; among them are UNECE, EU, the "Blue Peace" Initiative of the Swiss Foreign Ministry, IUCN and CAREC.

Other Regional Programs and Projects

Project "Ecosystem-based Adaptation to Climate Change in High Mountainous Regions of Central Asia" (2015-2020/BMU, IKI). Countries: Kazakhstan, Kyrgyzstan, Tajikistan. The objective of the project is the integration of ecosystem-based adaptation and other climate adaptation strategies into national policies.

"Program for Sustainable and Climate Sensitive Land Use for Economic Development in Central Asia" (2017-2020/BMZ). Countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan. The objective of the Program is to ensure that land users, government agencies and the private sector in Central Asia have adopted integrated, economically and ecologically sustainable forms of land use, taking climate change into account.

Project "Technology-Based Adaptation to Climate Change in Rural Areas of Tajikistan and Kyrgyzstan" (2019-2022/BMZ, DKTI). The objective is to ensure that the responsible authorities in Tajikistan and Kyrgyzstan have improved the plans for climate adaptation in rural regions with the aid of modern information technology and geodata management.

Project "Ecologically-oriented Regional Development in the Aral Sea region" (2020-2024/BMZ). Countries: Uzbekistan, Kazakhstan. The objective is to assist the governments of Uzbekistan and Kazakhstan to improve cross-border, ecologically sustainable and economic development of the Aral Sea region.

National Projects on Water, Environment, and Development

Project "Biodiversity Conservation and Poverty Reduction through Community-Based Management of Walnut Forests and Pastures" (2018-2020/BMZ) was implemented in Bazar-Korgon, a district of the Jalal-Abad region in Kyrgyzstan.

Project "Supporting Local Economy in Selected High-Mountain Regions of Tajikistan" (2016-2020/BMZ). The objective is to strengthen the competitiveness of micro, small and medium-sized enterprises (MSMEs), including that of smallholder farmers, in the catchment area.

The global project involving Tajikistan "Biodiversity and Ecosystem Services in Agrarian Landscapes" (2016-2021/BMU). The objective is to strengthen individual and institutional capacities and boost knowledge on increasing biodiversity and sustainable use of ecosystem services in agrarian landscapes.

Source: GIZ Transboundary Water Management in Central Asia Program, https://www.giz.de

8.6. Organization for Economic Cooperation and Development

The Organization for Economic Cooperation and Development (OECD) is a multidisciplinary intergovernmental organization comprising 37 member countries that provides a unique forum and the analytical capacity to assist governments to compare and exchange policy experiences, and to identify and promote good practices through policy decisions and recommendations.

OECD is working to help developed and developing countries meet the water challenge, with focus on economic and financial dimensions of water management and improving governance. In addition to analytical work, OECD works with selected regions and countries to facilitate the reform of water policies. OECD has enhanced its convening power and capacity to structure discussion among stakeholders on water issues, by setting up international initiatives including the Roundtable on Financing Water, the Water Governance Initiative, and the Network of Economic Regulators. In 2020, OECD was a key partner with ADB and the Asia-Pacific Water Forum for the 2020 edition of the Asian Water Development Outlook.

The OECD Council Recommendation on Water captures policy guidance developed by OECD and can inspire water policy reforms in countries around the globe. Non-member countries are welcome to adhere to the Recommendation with a view to create a momentum for water policy reforms that contribute to water security and sustainable growth. The Recommendation on Water includes high-level policy guidance on topics relevant for water resources management and the delivery of water services including managing water quantity, improving water

quality, managing water risks and disasters, ensuring good water governance and ensuring sustainable finance, investment and pricing for the water and water services.

OECD work in Eastern Europe, the Caucasus and Central Asia in 2020

In Central Asia, OECD supports partner-countries through its Task Force for the Implementation of the Environmental Action Program (EAP Task Force). At the Annual Meeting of the Action Task Force, 2021-2022 Program of Work with focus on emerging environmental aspects of the policy responses to the COVID-19 outbreak in EECCA countries was presented (13 October, online).

The OECD assists EECCA countries in adopting a more integrated approach to water management, applying robust economic and financial analyses and improving multi stakeholder participation. It also helps in identifying and removing some of the key obstacles to effective and efficient water management, while reflecting countries' level of socio-economic development. This work is part of the program of the European Union Water Initiative (EUWI), for which the OECD is a strategic partner, together with UNECE, and is aimed at improving river basin management and water governance frameworks. National Policy Dialogues are jointly facilitated by OECD and UNECE and fed by robust analytical work, often lead to practical implementation of policy advice. OECD focuses on the economic aspects of water resources management (policy coherence, managing water for growth and making the best use of economic instruments for water management), and on the financial sustainability of water supply and sanitation services (strategic and mid-term financial planning and financial support mechanisms to the sector). Meetings of the Steering Councils of the National IWRM Dialogues in Georgia (7th meeting, 5 March) and Moldova (6th meeting, 19 November) were held.

In Central Asia, recent work has included (1) analysis of the economics of water security in Tajikistan and Kyrgyzstan completed under the FinWater WEI II program with financial support from Finland, and (2) work on water security indicators in Kazakhstan completed with support from the government of Kazakhstan.

Recent publications from this regional program in 2020 include "Policy Perspectives for the Irrigation Sector Reform in Tajikistan", which presents key messages from studies conducted to strengthen the economic dimensions of irrigation sector reform in Tajikistan and "Towards Water Security in Belarus" which presents the results of collaboration on improving water security in Belarus, between the beneficiary country, OECD and its partners implementing EUWI.

Source: OECD

8.7. Organization for Security and Co-operation in Europe

The Organization for Security and Co-operation in Europe (OSCE) has a long history in supporting its Central Asian participating States in the area of regional water management, focusing on water governance and support for transboundary water management, training and capacity development, research and development of standards and legislation.

OSCE Organization for Security and Co-operation in Europe

OSCE Activities in 2020

The OSCE Program Office in Bishkek (POiB) in co-operation with the Public Council on the transition to Green Economy under the Parliament of the Kyrgyz Republic contributed with expert support to the development and adoption of the Law on water disposal and treatment facilities of the biosphere territory "Issyk-Kul". POiB organized a clean-up activity of the Issyk-Kul Lake coastal zone, contributing to the global environmental campaign "Cleaning the Planet from Garbage". The one-day event was conducted in Cholpon-Ata city with the participation of 15 professional divers and 30 representatives of the local hotels and resort facilities, environmental services as well as public organizations of the Issyk-Kul district. The divers extracted more than 500 meters of fishing nets and 3 m^3 of plastic and other litter from the lake (October). The clean-up campaigns in Issyk-Kul region are regularly conducted to raise the awareness on waste management and preservation of Issyk-Kul Lake.

The OSCE Program Office in Dushanbe (POiD) supported the Secretariat of ICWC with online video communication tools to maintain exchanges of information between the riparian states, allowing the organization of the seasonal water allocation meetings between Tajikistan and riparian states of the Amu Darya and Syr Darya. POiD supported the Inter-Basin Dialogue consultation meeting (March) within the "Coordination Unit Meeting on Implementation of the Water Reform Program" and organized a capacity-building workshop for young water professionals from Central Asia and Afghanistan, which strengthened their scientific reporting skills (October). POiD contributed to knowledge creation through conducting a survey on the energy potential within irrigation systems in Tajikistan's advanced Integrated Water Resources Management initiatives of the Ministry of Energy and Water Resources (MEWR) and the Agency of Land Reclamation and Irrigation (ALRI). POiD also supported the implementation of the National Water Strategy 2030 through an intervention on decentralized energy security in remote areas and contributed to knowledge creation in the rural sanitation sector by conducting a desk study and sur-

vey among experts and project managers on sanitation in rural Tajikistan.

The OSCE Programme Office in Nur-Sultan (POiN) in partnership with UNDP supported the co-operation between Kazakhstan and Kyrgyzstan to facilitate the activities of the Chu-Talas Water Commission by carrying out surface water sampling collection and analysis of water quality. Collaboration with the Russian Federation was further enhanced by supporting a study of the hydrological regime of the Zhaiyk (Ural) River basin and its main tributaries in Kazakhstan. Unfortunately, COVID-19 seriously hampered these activities due to lockdowns and the inability to conduct on-site visits. As part of its long-standing efforts to engage youth and promote environmental leadership, POiN in partnership with GKU supported an online training seminar on climate change mitigation and water management for young professionals and civil servants from Central Asia and Afghanistan. The Office in partnership with GKU also contributed to the publication of a manual on the main environmental challenges in Kazakhstan, where one of the chapters is dedicated to sustainable water governance.

The OSCE Centre in Ashgabat (CiA) organized a seminar on "The use of innovative technologies as a key to rational water management" (September 2020), building on the outcomes and recommendations of the regional water seminar conducted in 2019. The seminar attracted the main national actors of the water sector of Turkmenistan such as the State Committee on Water Economy, the Ministry of Agriculture and Environmental Protection, the Institute of Deserts, Flora and Fauna, as well as such international organizations as SIC ICSD. International experts from Morocco (ICARDA) and Netherlands (IHE Delft) presented the international perspective and advanced experience in institutional development of IWRM and demonstrated the scientific and technological education as a step to a holistic approach in water management, highlighting the value of water for food and for life through several case studies of actual research for development projects. In the outcome document of the seminar, international experts jointly provided a report including recommendations for the national beneficiaries on the implementation and adaptation of advanced technologies, given the country context.

The OSCE Project Co-ordinator in Uzbekistan (PCUz) continued its collaboration with the State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection in the monitoring of pollution in the Syr Darya River Basin and in the assessment of the transboundary impact of toxic wastes. With the aim to support the government of Uzbekistan in the implementation of efficient Disaster Risk Reduction mechanisms and with adequate safety precautions, the composition of various pollutants in water resources was monitored (settlements of Vuadil, Madaniyat and Baymak along the Shakhimardan, Mayluu-Suu, and Sumsar Rivers). PCUz continued its support to ICWC by publishing 130 copies of the 2019 Water Yearbook "Central Asia and Around the Globe", drafted and compiled by SIC ICWC. A documentary dedicated to the Aral Sea disaster and ways to address them was also developed and aired on national TV stations with the support of PCUz.

The Office of the Co-ordinator of OSCE Economic and Environmental Activities (OCEEA) contributed to the organization of the "Water Day" of the 11th Central Asia Leadership Programme organized by CAREC. The meeting brought together participants from all Central Asian countries and Afghanistan where OCEEA presented its work on integrating a gender perspective in water governance, raising awareness on the importance of inclusion of women in decision-making spaces and empowering women water professionals. In a dedicated session, the guidance document for water practitioners on "Gender Mainstreaming in Water Governance in Central Asia" was launched.

Source: OSCE

8.8. Swiss Confederation (SDC and SECO)

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

State Secretariat for Economic Affairs SECO

The Swiss Cooperation Strategy for Central Asia (2017-2021) features a special focus on water, infrastructure and climate change, aiming at (1) Supporting Central Asian States in their efforts to provide the necessary framework that allow a joint and equitable management of regional shared waters and (2) Enhancing equitable access to and use of well-managed water resources for households, agriculture and other economic sectors in a changing climate. The Strategy is implemented by the two operational arms of Switzerland's International Cooperation, the Swiss Agency for Development and Cooperation (SDC) under the Federal Department of Foreign Affairs and the Swiss State Secretariat for Economic Cooperation (SECO) under the Federal Department of Economic Affairs, Education and Research.

In the Kyrgyz Republic, Tajikistan and Uzbekistan, the Swiss programs focus on supporting the national water sector reforms, Water Supply and Sanitation and Disaster Risk Reduction/Climate Change Adaptation.

In the Kyrgyz Republic, Switzerland supports the promotion of IWRM through the National Water Resources Management Project in cooperation with WB. The project assists the Government of the Kyrgyz Re-

public to implement the Water Code adopted in 2005. In addition to the above mentioned key activity, the project includes a capacity building program that will increase the capacities to manage irrigation more efficiently. As part of the IWRM approach, Switzerland has also been supporting the urban water supply program funded by SECO. To date, the program has been implemented in 6 major cities of the Kyrgyz Republic, benefitting nearly half of population of the country residing in urban area.

In Tajikistan, Switzerland continued its support to the water sector reform in the Tajik Syr Darya Basin and continued its multiple activities in the water supply and sanitation sector. In addition, Switzerland supported the city of Khorog to put in place the institutions, knowledge base and systems required as a precursor to the resilient implementation of infrastructure investments in Khorog as a basis for sustainable economic development.

In Uzbekistan, Switzerland supported the Ministry of Water Resources in the development of the Water Sector Development Concept 2020-2030 (Water Concept) and the Road Map to implement its main elements in 2021-2023, which is to serve as a basis for the strategic and regulatory IWRM framework.

In addition to the works in these three focus countries, Switzerland is also active at the **transboundary and regional level**, including through its program on water and peace, the Blue Peace Central Asia initiative (BPCA), which aims at supporting the countries in reaching a mutual understanding and agreement in terms of regional water resources management. Through the BPCA Dialogue platform set up under this initiative, several exchanges between delegations of Central Asian countries have been organized and facilitated, in cooperation with different partners. The most prominent was the launch of the program on "Water as a Driver of Sustainable Recovery: Economic, Institutional and Strategic Aspects of Water Resources Management in Central Asia" together with the Corvinus University of Budapest, SIWI, CAREC and the countries of Central Asia. The program aims at developing cooperation between Central Asian and Afghanistan experts. The first meeting of the Program had a focus on the "Post-COVID-19 Recovery Strategies: Putting the Water Sector of Central Asia on an Economically and Financially Sustainable Path: Lessons, Problems, Opportunities". Representatives of EU and WB and participants from Central Asia and Afghanistan made keynote speeches (3 November, online). The series of meetings will continue in 2021. In addition, BPCA has continued the support to the Central Asia Youth for Water network (CAY4W), with the aim of encouraging the emergence of a strong and capacitated young voice for water in Central Asia. The network benefits from the support of GKU and the International Secretariat for Water. BPCA has supported the development of academic modules on water education in the sectors of water policy/diplomacy, WASH and water modelling.

Switzerland further contributes to the **Central Asia Water Energy Development Program (CAWEP)**, a multi-donor trust fund managed by the World Bank.

In 2020, Switzerland continued its support to the Chu-Talas river basins on the automation of water accounting, as well as on improving glacier monitoring in Central Asia. In particular, Switzerland has supported the improvement of water accountability in these basins. The project helped on establishment of the management information system for irrigation management at the levels of Raivodhoz and Oblvodhoz.

Source: Regional Water Advisor for Central Asia, Embassy of Switzerland in Kazakhstan

8.9. United States Agency for International Development

The United States Agency for International Development (USAID) works across the whole Central Asia region to transform water-sharing problems into cooperation that would lead to better and equitable water management.

USAID Activities in 2020

Kyrgyz Republic

USAID partners with the Kyrgyz Republic to strengthen democratic governance, accelerate economic growth and improve health and education. It aims to strengthen the Kyrgyz Republic's capacity to lead its own development and become a strong, resilient partner. Several projects were continued in agriculture, food security, economic growth, and trade, such as: "Farmer-To-Farmer" (October 2018-September 2023); "Agro Trade" (2020-2025); "Enterprise Competitiveness" (2018-2023); "Increasing Access to Credit" (2014-2022); "Smart Waters" (2015-2020).

Tajikistan

USAID announced a new five-year, US $12 million, USAID's Rural Water Supply activity. At least 30,000 people in rural and suburban communities will gain access to safe water. USAID's new activity will increase community engagement in the oversight and accountability of water service stations, improve access to finance, and promote public and private investment to establish cost-effective business models for

increased public and private investment in water infrastructure in rural and suburban areas.

Through Feed the Future programming, USAID announced its new five-year US $36 million food security activity – Feed the Future Tajikistan Agriculture and Land Governance – to reduce hunger, undernutrition, and poverty in Tajikistan.

USAID provides technical support to the Inter-Governmental Agency of the CASA-1000 project (500 kW power line) that will connect Kyrgyzstan and Tajikistan to Afghanistan and Pakistan. CASA-1000 will enable Tajikistan to sell electricity surplus in summer and mobilize more resources in the development of the country's energy sector. USAID representatives participated in an inaugural ceremony for the new 220-kilowatt Murghob solar power plant, which will be the largest solar power plant in Tajikistan and the highest solar power plant, by elevation, in the world.

Uzbekistan

USAID marked the successful completion of the USAID Agricultural Value Chain Program, which supported 510 organizations and businesses, including fruit and vegetable producers, processors, cold store owners, and exporters along the value chain. Through the program, USAID leveraged US $23 million in private sector investment in the agricultural sector. USAID announced the launch of the new US $18.9 million Agribusiness Development Project that will support private sector-led growth in agriculture and related sectors in Uzbekistan.

Regional Activities

As part of the completed USAID Smart Waters project, the following events were held: 8th meeting of the Regional Steering Committee for Water Coordination (22 January, Kazakhstan); a virtual event to celebrate the renovation of the Yomonjar irrigation system in Bukhara province (10 September, Uzbekistan). USAID handed over 14 units of automated water flow measuring equipment to the Turkmen State Committee on Water Management (29 September, Ashgabat). USAID launched new five-year regional projects: "Regional Water and Vulnerable Environment" (US $24.5 million) and "Power Central Asia" (US $38.9 million).

USAID published: "Export Guide for Central Asian Horticulture Exporters" to disseminate detailed information to potential purchasers around the world; "Directory of Central Asian Horticulture Exporters". Both publications will enable Central Asian horticulture exporters to improve competitiveness and diversify markets.

Source: www.usaid.gov; https://tj.usembassy.gov/; https://uz.usembassy.gov/

8.10. World Bank

THE WORLD BANK
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World Bank Activities in 2020

Central Asian Water and Energy Program (CAWEP)

The Central Asia Water and Energy Program (CAWEP) continued implementation of its phase III. CAWEP is a multi-donor trust fund with a total budget of US $12.6 million financed by EU, Switzerland and UK. The program development objective is to strengthen the enabling environment to promote water and energy security at regional level and in the beneficiary countries (five Central Asian countries and Afghanistan), aligning with the World Bank's regional engagement framework that aims at strengthening connectivity and increasing the economic value of water and energy resources in the region. The long-term vision of the program is to promote sustainable development and livelihood security within the region. The activities fall into three thematic pillars: (1) water security; (2) energy security; and (3) water-energy linkages. CAWEP-funded activities have strong links with the ongoing and pipeline World Bank investment operations and have contributed to the design of more than US $500 million worth of investments through analytical work and technical studies. The program finances three project preparation grants in Kazakhstan, Tajikistan and Uzbekistan. The program also informed the design of a major regional program RESILAND CA+ currently in the pipeline across four countries on landscape resilience.

Ongoing water activities focus on the following key issues: (1) improving management of sub-basins with transboundary significance; (2) modernizing irrigated agriculture to improve water productivity with a focus on increased awareness; (3) national water management by focusing on policy, advisory and technical support to benefit regional water security; (4) regional water management to strengthen the capacity of national hydrometeorological services to improve national hydrometeorological information services to key sectors including water, energy, disaster risk management, and agriculture; and (5) capacity building and pilot initiatives to improve cross-country cooperation and explore innovative solutions for water-related challenges. A new technical assistance was launched on resilience and safety of hydraulic infrastructure and groundwater management in Uzbekistan as a pilot to build capacity and explore opportunities for joint rehabilitation of existing shared water infrastructure.

CAWEP conducted a series of country-specific consultations to listen the views of senior officials in each country on water security challenges and priorities. Consultations commended in Tajikistan (March) and continued in the Kyrgyz Republic, Uzbekistan (August online) and Kazakhstan (October, November) after the break because of COVID-19. In 2021, consultations will continue with Afghanistan and Turkmenistan. A brochure Towards Water Secure Sustainable Economies (2019) was shared in advance and used as a starting point for discussion. Two of the action areas identified in the brochure – water supply & sanitation, and irrigation modernization – were agreed by government officials to be areas primarily for national action, and the third action area – investing in adaptation measures to build resilience to climate change (including through improved food security) – is a shared regional agenda that fits well into World Bank's Regional Engagement Framework for Central Asia, as well as aligning with the programmatic perspectives of key donors including the EU Green Deal and Swiss Cooperation Strategy for Central Asia. Three additional key action areas identified include: (1) reform of IFAS institutions and governance; (2) water data, accounting and forecasting; (3) cooperative operations and management of shared water infrastructure.

The focus of energy activities is to contribute to national and regional building blocks for energy production and trade. Ongoing analytical work explores new electricity production opportunities in the Kyrgyz Republic, Tajikistan and Uzbekistan and regional energy connectivity and market development potential. Other activities have a more national focus – but collectively contribute to regional power trade (e.g. technical studies for investments into Sebzor HPP, Kyrgyz renewable energy analytical work) and energy security through diversification into renewable energy, supporting investments and by strengthening national institutions.

The Central Asia Knowledge Network (CAKN) continues to enhance regional knowledge and professional capacity in the areas of water resource management, energy and climate change in the Central Asia region. CAKN supported several initiatives to support online learning and improve the academic and research potential on gender aspects in IWRM. Technical studies of integrated landscape restoration and catchment management are ongoing in the Kyrgyz Republic and Tajikistan to inform the governments on erosion and sedimentation processes for sustainable hydropower. A disruptive technology challenge was launched to identify cutting-edge environmental solutions to address land degradation and desertification challenges in the Aral Sea region (November). Out of 159 proposals from 28 countries, the panel of experts selected 4 proposals and 4 rising star awards in agriculture and land management, sustainable forestry, socio-economic development, and information and knowledge.

Afghanistan was included as a beneficiary country for the third phase of CAWEP. Afghanistan's strong interest to connect more closely with its Central Asian neighbors is supported through two CAWEP-financed activities. The first activity, under the Water-Energy Linkages Pillar, focuses on strengthening collaboration between Afghanistan and Tajikistan on hydromet and flood risk management. As a result of two meetings, Afghanistan and Tajikistan agreed on a roadmap for further cooperation on early warning system in the Pyanj River, joint assessments, climate change modeling, studies on glaciers, use of data from satellites and mountain radar stations, and technical capacity development. Draft Afghanistan Hydromet Atlas, similar to Central Asia Hydromet Atlas, is near completion and will be published in 2021. The second activity, under Energy Security Pillar, explores technical, operational, and legal requirements for Afghanistan's integration in the Central Asian power system and will facilitate a synchronization dialogue between Afghanistan and Central Asian countries.

Source: World Bank, "CAWEP"

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 first Kazakh University that entered the world's top 200 universities in 2020, taking 165th place in the global QS "World University Rankings". The University has 16 faculties. Experts for the water sector are trained at the Geography and Nature Management Faculty, Meteorology and Hydrology Department.

Major Events and Activities in 2020

Scientific projects and research at the Meteorology and Hydrology Department. The following research projects have been completed: (1) "Assessment of the Impact of Natural Factors and Economic Activity on Urban Waters (Almaty case study)" and (2) "Dynamics of the Surface Runoff of the Republic of Kazakhstan in the Context of Climate Change and the Scenario (Forecast) of its Change for the Period up to 2050". Research conducted under these projects addressed such areas as: climate change at global and regional levels; climate conditions and water resources in Kazakhstan; climate and air basin condition of Kazakhstan; impact of observed and expected climate change on river ecosystems; identification of patterns and consideration of the influence of urbanized and adjacent territories on the elements of hydrological processes occurring as a result of anthropogenic and natural changes in the hydrological cycle: Almaty case study.

Events

- annual Republican Student Subject Olympiad on "Hydrology" with the involvement of teams from Al-Farabi KazNU and L.V. Gumilev Eurasian National University;
- annual Republican Contest of Student Research Papers organized by the Ministry of Education and Science of the Republic of Kazakhstan (MES RK);
- discussion meeting "Youth and SDG 6 as accelerators of the Sustainable Development Goals: initiatives in Kazakhstan" organized by the Ban Ki-moon Institute for Sustainable Development at Al-Farabi KazNU (10 December).

Publications. The list of publications 2020 is available on journal.kaznu.kz, pps.kaznu.kz/ru/Main/ChairPublications/101/3/0/2020, cawater-info.net/training/kaznu-kz.htm

Source: KazNU, https://www.kaznu.kz/en

Kazakh National Agrarian Research University

The Kazakh National Agrarian Research University (KazNARU) was founded in 1929. The University includes in its structure the Research Institute of Water Problems and Land Reclamation, the Research Institute of Agricultural Innovation and Ecology, the Water, Land and Forest Resources Faculty, and the Farmers High School.

Major Events and Activities in 2020

Scientific projects and research of the Water Resources and Land Reclamation Department. Completed projects (1) "Transboundary River Basins of the Republic of Kazakhstan and the People's Republic of China: Scientific and Applied Base for Sustainable Water Supply of Population and Economy under Climate Change and Economic Activity for the Period until 2050"; "Improved Water Use Efficiency in Rice Irrigation Systems of Kazakhstan".

Publications. The articles in the publications recommended by the Committee for Control of Education and Science at the Ministry of Education and Science of Kazakhstan for 2018-2020 are available on https://www.kaznaiu.edu.kz/page/department/?name=su_resurstary_zhane_melioratciia&var=okytushyprofessorlar_kuramynyn_gylymi_basylymdary_369&lang=ru. The articles published in international scientific journals with the impact factor are available on https://www.kaznaiu.edu.kz/page/department/?name=su_resurstary_zhane_melioratciia&var=impakt_faktorly_zhurnaldar_371&lang=ru

Source: https://www.kaznaiu.edu.kz/

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". Within GKU, the Natural Resources Institute was established. GKU offers the Central Asia Youth for Water Network (CAY4W) and the Central Asian Journal of Water Research (CAJWR). The Natural Resources Institute was the first one in Central Asia that received the status of the UNESCO Chair for Water Resources Management in 2016.

Major Events and Activities in 2020

Natural Resources Institute

Scientific projects, research, competitions

- ESERA (Ecosystems, Society and Economics of the Region of Aral) project, as part of which the research was carried out to assess the phyto-fauna and

dynamics of saxaul distribution on the dried Aral Sea bed, the current state of socio-economic infrastructure and the impact of climate change on environmental and socio-economic indicators in the region;

- regional project "Gender Aspects of Water Resource Management in Central Asia and Afghanistan: Supporting Young Researchers Through Publication of Articles in the CAJWR" implemented under WB led Central Asia Energy – Water Development Program (CAEWDP) (October 2019-June 2020). On the CAJWR website, scientific articles and a collection of works of the project participants were published; 6 online conferences were organized;

- student research competition on sustainable management of natural resources in Central Asia and Afghanistan (July 2019-June 2020). The results of the study were presented at the regional Climate Conference, and an article was prepared for the CAJWR journal;

- a study tour "Renewable Energy Trip" was organized to explore the best practices in RES in three Central Asian states; students visited 12 sites and two round tables were organized (21-29 September);

- scientific internship under the project "Green Education and Science for Central Asia", in the process of which the food, energy, water and land use nexus on example of Shengeldy village, Almaty province and the climate data for decision-making on water resources at basin level – case study of the Balkhash-Alakol basin – were studied (July-December);

- the international project "Global Disruptive Tech Challenge 2021: Restoring Landscapes in the Aral Sea Region" was launched to identify and support disruptive technologies and innovative approaches to landscape restoration in the Aral Sea region and Central Asia (19 November).

Events

- Summer School on Aral 2020 in the Aral district of Kyzylorda province organized under the ESERA project with the support of IFAS and the "Barsakelmes" Nature Reserve (25-30 August);

- Online Scientific Conference "Silk Road of Knowledge" – a platform to build strong cooperation between all stakeholders in the field of climate change and environment (24-27 November);

- training seminar "Climate Change Adaptation and Mitigation in Central Asia: Climate Change, Water Security and Governance" organized for young civil servants of Central Asia and Afghanistan with the support of OSCE Program Office in Nur-Sultan and CAREC (21-22 September);

- a round table on "Energy saving and energy efficiency in the construction sector" (8 December);

- roundtable discussion on "Education policy on renewable energy and energy efficiency" as part of the Renewable Energy Trip 2020, offline and online (15 December);

- VII International Scientific Online Conference "Integration, Partnership and Innovation in Building Science and Education" (11-14 November).

CAY4W

As part of the Eco-Talk project, 3 practical webinars aimed at gradual improving and designing eco-business ideas of participants (25-29 May), 3-month online monitoring program and school-intensive (September-December), and a presentation of projects and awarding of winners (14-15 December) took place. Online national and regional student contests were held on SDGs (March-June). Regional Olympiad finalists took part in an intensive online school Eco-Talk 2020, as well as in the ESCAP online 4th North and Central Asian Multi-Stakeholder Forum on Implementation of SDGs.

Source: UNESCO Chair on IWRM at GKU, https://dku.kz/, http://www.academic-waters.org/en/

Nazarbayev University

Nazarbayev University (NU) was established in 2010. The University is comprised of 7 Schools, including the Graduate School of Public Policy (GSPP). One of priority fields of the University is water resources management.

Major Events and Activities in 2020

A group of GSPP specialists conducted the "Water Security Review in Central Asia".

GSPP events

- a virtual research seminar "The Aral Sea Basin: Water for Sustainable Development in Central Asia" in partnership with Lee Kuan Yew School of Public Policy and Institute of Water Policy (17 August);

- online International Conference "Sustainable Development Goals in Central Asia and Challenges of COVID-19" in partnership with the National University of Singapore's Lee Kuan Yew School of Public Policy and the Astana Civil Service Hub (15-16 October);

- online event "Earth Day workshop on Plastics and the Environment" dedicated to the 50th anniversary of the Earth Day (22 April). The workshop topics – "Ocean Plastics" and "Pacific Ocean Trash" – are directly related to water education.

Publications. NU won prestigious award in the "Publication Leader in Web of Science Core Collection in the last three years among universities of the Republic of Kazakhstan" nomination.

- S.Xenarios, A.Assubayeva, L.Xie, J.Sehring, D.Amirkhanov, A.Sultanov and S.Fazli "A Bibliometric Review of the Water Security Concept in Central Asia" in the "Environmental Research Letters" journal, Volume 16, Number 1 (IF:6.09);

- Economic, environmental, and pathogenic impact of point-of-use water heating in continental cli-

mate households by Nurzhan Maldenov, Igor Kolyagin, Dinara Dikhanbayeva, Enrico Marsili, Luis R. Rojas-Solorzano (Energy for Sustainable Development 59 (2020) 144-150);

- A. Makhatova, B. Mazhit, Y. Sarbassov, K. Meiramkulova, V.J. Inglezakis, S.G. Poulopoulos (2020) Effective photochemical treatment of a municipal solid waste landfill leachate. PLoS ONE 15(9): e0239433, https://doi.org/10.1371/journal. pone.0239433;

- A. Kuntubek, N. Kinayat, K. Meiramkulova, S.G. Poulopoulos, J.C. Bear, V.J. Inglezakis (2020) Catalytic Oxidation of Methylene Blue by Use of Natural Zeolite-Based Silver and Magnetite Nanocomposites. Processes 8(4): 471, https://doi.org/10.3390/pr8040471;

- A. Baimenov, D.A. Berillo, S.G. Poulopoulos, V.J. Inglezakis (2020) A review of cryogels synthesis, characterization, and applications on the removal of heavy metals from aqueous solutions. Advances in Colloid and Interface Science 276: 102088, https://doi.org/10.3390/pr8040471;

- S.G. Poulopoulos, G. Ulykbanova, C.J. Philippopoulos (2020) Photochemical mineralization of amoxicillin medicinal product by means of UV, hydrogen peroxide, titanium dioxide and iron, Environmental Technology, https://doi.org/10.1080/09593330.2020.1720300.

Source: Nazarbayev University, https://nu.edu.kz/en/

Taraz Regional University named after M.Kh. Dulati

The Taraz Regional University named after M.Kh. Dulati (TarRU) was established by the Order of the Kazakh President No.752 of 11 October 2019 and on the basis of the order of the Committee of State Property and Privatization of the Ministry of Finance of the Republic of Kazakhstan No.346 of 3 June 2020 on the merger of TarSU and TarSPI. Specialists for the water sector are prepared at the Water Management, Environment and Construction Faculty established in 1962. The Faculty has 8 departments, including for Land Reclamation and Agronomy; Water Resources; Ecology; Life Safety, as well as research and production units – Research Institute of Geoecology and Land Reclamation, Scientific Research Center "Senimdilik" and scientific student clubs "Hydropower Engineer", "Ecologist", "Land Reclamation", "Land Surveyor", "Januarlar Elemi", and "Globe".

Major Events and Activities in 2020

Scientific projects and research. The University in cooperation with the TOO "Kazakh Research Faculty of Water Management", RSE Zhambylvodkhoz, RSE Yuzhvodkhoz, RSE Shu-Talas Basin Inspection, RSE Kazyuzhgiprovodkhoz, and KazNIIVH undertakes the following research efforts: (1) "Development of Resource-Saving Irrigation Technology using Organic Ameliorants in the Adaptive Landscape Farming System"; (2) "Development of Horizontal and Vertical Drainage Operation Regime and Technology for Regulation of Irrigated Land Conditions"; (3) "Assessment of the Environmental Status of Zhambyl Province and Ways for Solution"; (4) "Justification of Technology and Organization of Construction and Sediment Control in Maintaining Canals in the Ili-Balkash Water Management Basin"; (5) "Development and Research of Multi-Product Hydrocyclone Pumping Units"; (6) "Research on Water Supply Problems in the Absence of Reliable Sources and Development of Artificial Underground Reservoirs".

Events

- International Scientific and Practical Conference "Current Problems of Ecology and Nature Management" (14 February);

- International Scientific and Practical Conference "Agro-Industrial Complex in the context of the Fourth Industrial Revolution and Environmental Problems related to the Process of Land Reclamation" (11 April).

Source: TarRU, https://tarsu.kz/ru/

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, including the Higher School of Agricultural Sciences, where training is conducted on Water Resources and Water Use (6B08610) and Water Supply, Sewage and Water Protection (6B07330). SKSU launched the Dissertation Council for awarding the Doctor of Philosophy (PhD) degree in Safety of Life and Environmental Protection.

Source: http://ukgu.kz/en, http://ap.ukgu.kz/en

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 Integrated Water Resources Use and Protection and Hydraulic Engineering. The Faculty consists of 9 departments, including Water Resources and Engineering Disciplines Department (WREDD).

Major Events and Activities in 2020

Scientific projects and research. WREDD undertook the research efforts on: (1) "Full-scale adoption of in-

novative hydraulic design of water intake facility on the Zhetykupruk River for water supply to diversion HPP"; (2) "Adoption of innovative design of hydraulic structures in the project of improvement of the right and left banks of the Ak-Bura River in Osh".

Events. The Department's lecturers and graduate students made presentations on: (1) "Designs of Hydraulic Structures for the Diversion HPP on the It-Agar River in Toktogul District, Jalal-Abad Province" at the Conference of the Architecture, Design and Construction Faculty "Theory and Practice of Architecture and Design in Mountainous Kyrgyzstan"; (2) "Hydraulic and channel processes during water diversion from rivers into the systems of diversion HPPs" at the round table of the Ministry of Education and Science of Russia "Development of scientific and technical potential of the Kyrgyz-Russian Slavic University through the development of cooperation with the leading Russian universities and scientific organizations". (19 November).

Publications

- research materials

1. G.I. Loginov, K.A. Orozaliev, S. Aitbek uulu, B.B. Kurmshiev, Project of bank improvement within the Ak-Buura river section from A. Navoi Street to S. Vakhapov Street in Osh city, the Kyrgyz Republic. Collected papers "Improvement of hydraulic calculation methods for culverts and wastewater treatment facilities". SSTU Journal named after Yu. Gagarin. V. 1, No.1 (45) Saratov 2020. pp. 18-25;

2. O.V. Atamanova, G.S. Adjigulova, Laboratory research of turning structures for high-velocity channels. In the collection: Modern problems and prospects of construction, heat and gas supply and energy supply development. Proceedings of the X National Conference. Saratov, 2020. pp. 50-53;

3. G.S. Adjigulova, N.P. Lavrov, O.V. Atamanova, Turning structures for high-velocity channels. Improvement of Hydraulic Calculation Methods for Diversion and Purification Structures. 2020. V. 1. No.1 (45). pp. 5-8;

4. O.V. Atamanova, G.S. Adjigulova, N.P. Lavrov, Functional features of network structures in high-velocity channels in mountain-piedmont zone. Improvement of Hydraulic Calculation Methods for Diversion and Purification Structures. 2020. V. 1. No.1 (45). pp. 9-14.

- educational materials

1. G.P. Frolova, N.V. Yakovleva, Manual. Methodological recommendations for practical exercises on the "Geology" discipline, "Construction" section. KRSU 2020. – 192 p;

2. G.I. Loginov, Textbook for practical exercises in the "Pumps and pumping stations" discipline/ Kyrgyz-Russian Slavic University. – Bishkek, 2020. – 55 p.

Source: WREDD, https://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 1993. Training of personnel for the water sector is conducted at the Hydromelioration, Ecology and Land Management Faculty (HELMF).

Events. HELMF lecturers and students participated at the: (1) 11th Central Asian Leadership Program on Environment for Sustainable Development (14-18 September); (2) Regional Scientific and Practical Online Conference "Silk Road of Knowledge" organized by GKU (24-27 November).

An excursion to the KNAU Water Museum was held for students of the "Orok" school to study interactive stands, the process of express analysis of drinking water, etc. (10 February).

Source: http://knau.kg/ru/

American University of Central Asia

The American University of Central Asia (AUCA) founded in 1993 is an international, multi-disciplinary learning community. Its curriculum includes the Preparatory Program (New Generation Academy), 15 undergraduate majors and 10 graduate degree programs. In September 2020, the new Environmental Sustainability and Climate Science Department was opened to train specialists in this specialization. AUCA consists of the Technical School of Innovation, which offers seven fields of specialization, including Ecology and Energy Efficiency, the Tian Shan Policy Center, and the Center for Environment and Development.

Major Events and Activities in 2020

Scientific projects and research. The regional project under the PEER program "Integrated water resources management (IWRM) and strategic environmental assessment (SEA) of Kabul and Amu Darya Rivers" has been completed. The project results were reflected in the book "Water Resource Management in Central Asia and Afghanistan: Current and Future Environment and Water Problems" edited by Dr. J.E. Kulenbekov and B.D. Asanov, which is to be published by Springer Nature in 2021. The ongoing projects are (1) "Assessment of Water and Land Resources of Small Transboundary Bodies in the Amu Darya River Basin by Means of Remote Sensing" (regional) that studies the climate change impact on water resources in the Amu Darya River basin – Surkhandarya (Uzbekistan) and Karatag (Tajikistan); (2) "Air Quality Monitoring in Bishkek"; (3) "Green Economy Learning at Tertiary-level Education in Kyrgyz Republic" that is to develop new courses on green economy, adapt existing courses on green modeling and green job evaluation, and conduct a series of trainings for university teachers.

Events. AUCA hosted the online seminar dedicated to the Desertification and Drought Day (17 June).

Source: www.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. TAU prepares water specialists at the Hydromelioration Faculty including the departments of land reclamation, land rehabilitation and protection, operation of irrigation and drainage systems, hydraulic engineering, land management, structural mechanics and hydraulics.

Major Events and Activities in 2020

Scientific projects and research. The Hydromelioration Faculty carries out research on the following topics: "Development of modern technology and techniques for water filtration, soil conservation and economically profitable irrigation of crops", "Impact of land reform on the effective use of irrigated land", "Assessment of technical condition of hydraulic structures".

Events

- meeting of the Council of Rectors from the leading 28 Agrarian Universities from 10 CIS countries on "Organization of education under the coronavirus pandemic" (21 May);
- meeting of the Steering Committee attended by 15 Universities to discuss joint training on the base of agriculture and water management faculties (13 August);
- workshop "Development of educational standards and curricula based on the international educational standards" under the project "Improvement of Agricultural Curricula based on the International Educational Standards" (17-18 September).

Source: http://www.tajagroun.tj/ru/

9.1.4. Turkmenistan

Turkmen Agricultural University named after S.A. Niyazov

The Turkmen Agricultural University of S.A. Niyazov was founded in 1930. The University consists of 8 faculties, including the Land Reclamation and Hydraulic Engineering Faculty, which trains specialists in Hydromelioration and Land Construction and Cadastre.

The Botanical Garden, Scientific and Production Center for Livestock Husbandry and Veterinary Medicine, Makhtumguly Scientific and Production Experimental Center, Research-Production Center of Akhalteke Horse Breeding, and Agrosenagat secondary vocational schools in Ashgabat, Mary and Lebap velayats[72] are in the structure of the University. The training centers of the German company Claas and the John Deere (USA) are functioning at the University.

Major Events and Activities in 2020

Scientific projects and research. TAU post-graduates and students conducted research on growing sugar beet, corn, vegetables and cucurbits using irrigation water-saving methods in the agricultural polygon in Gokdepe etrap[73], Akhal velayat. The results were published as "Recommendations on design of drip irrigation systems for crops, vineyards, orchards and forest plantations".

Events. Practical exercises were held for students of the Turkmen State Agricultural University at the "Turkmensuvylymtaslama" Institute[74] (2 July), as well as the online training on water saving irrigation (17 September).

The University organized an exhibition to mark the 25th anniversary of Turkmenistan's neutrality.

Source: http://tohu.edu.tm/

Turkmen Agricultural Institute

The Turkmen Agricultural Institute (TAI) was established in 2010 at the Ministry of Agriculture and Environment 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.

Major Events and Activities in 2020

Main events and activities. TAI held the contest of scientific works "Science – Beginning of Development", the video conference[75] "Integrated Natural Resource Management and Sustainable Land Management" (10 February); workshop sessions[76] on "Implementing Innovation and Digital Methods in Agriculture" (13-21 January 2021) and a seminar "Agriculture Monitoring using Satellites" (10-12 February 2021).

Source: http://tohi.edu.tm/ru/index.php

[72] Province
[73] District
[74] UNDP/GEF project "Energy Efficiency and Renewable Energy for Sustainable Water Management in Turkmenistan"
[75] FAO/GEF project "Integrated Natural Resources Management in Drought-prone and Salt-affected Agricultural Production Systems in Central Asia and Turkey"
[76] "New & Innovative Courses for Precision Agriculture" Erasmus+ project

9.1.5. Uzbekistan

Tashkent Institute of Irrigation and Agricultural Mechanization Engineers

The Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME) began its work in 1923. Nowadays, the Institute is comprised of seven faculties, 36 departments, the Center for Advanced Training and Retraining of Staff, International House Tashkent Lyceum, Innovation and Research Cluster on Water Resource Management, UNESCO Chair on Water Diplomacy, Water Management and Environmental Protection, "Eco GIS" Center, Scientific Training Center in Urta Chirchik district, Tashkent province, State Unitary Enterprise "Regional Center for Retraining and Advanced Training of Farm Managers and Staff". TIIAME has 2 branches – in Bukhara[77] and Karshi. There are also colleges, such as the Beshkent Agricultural College, Pakhtaabad Agricultural College, and Kumkurgan Agro-Industrial College.

TIIAME was ranked 201+ in the overall global universities ranking "University Impact Ranking-2020" by the Times Higher Education (THE) in the areas "Clean water and sanitation", "Life on land" (22 April). Currently, TIIAME is the only HEI in the history of Uzbekistan recognized by two major international rating agencies THE and Quacquarelli Symonds (QS). For the first time in the country, TIIAME graduates were awarded a digital bachelor's degree with QR code.

Major Events and Activities in 2020

Scientific projects and research. The Institute's teaching staff, master and doctoral students carry out research: at the Kokand HPP, Big Fergana Canal and Chartak reservoir; in the experimental fields in the Republic of Karakalpakstan and Khorezm province; in the fields of Tashkent and Syrdarya provinces. 29 international projects have been implemented.

Meetings were held as part of the following the projects (1) Erasmus + "NICOPA: New and Innovative Courses for Precision Agriculture" (10 August); (2) Erasmus+ "DSinGIS: Doctoral studies in Geoinformatics Science", which will provide equipment for the Joint Research Center of Geoinformatics[78] to be established at TIIAME (11 August); (3) "Development of New Technologies to Monitor and Control Water Resource Use to Combat Salinization and Improve Land Productivity and Food Security in the Aral Sea Region" under the "Research Partnership in Science and Technology for Sustainable Development/SATREPS program"[79] (27 August); (4) New Master's Degree Curricula for Sustainable Bioeconomy in Uzbekistan (BioEcUz) (10 October).

Events

- Conference "The Future of the Aral Sea through the Eyes of Youth" (14 February, Karshi branch); International Scientific Conference "Construction Mechanics, Hydraulics and Water Resources Engineering" (CONMECHYDRO 2020) (23-25 April); XIX Scientific-Practical Conference of young scientists, masters and gifted students "Modern Problems of Agriculture and Water Management" (14-15 May); Online webinar "Uzbek-German cooperation projects in the field of water resources management" (26 June); XXIII International Scientific Conference "Formation of Living Environment" (FORM-2020) (24-25 September); 1st International Conference on Energy, Civil and Agricultural Engineering 2020 (14-16 October); 7th International Scientific Conference "Integration, Partnership and Innovation in Construction Science and Education" (IPICSE 2020) (11-20 November); International Scientific Conference dedicated to the 10th anniversary of the Consortium of Agricultural Universities for Development in Central Asia and the Caucasus (CASCADE) (10-11 December).

- World Water Day events: poster exhibition "Water is Life!" and discussions on "Climate Change Impact on Water Resource Management in Uzbekistan (13 March); intellectual game "Innovative ways of water use in the context of climate change" (16 March); video contest "Water and Climate" (17 March); contest of the best innovative technologies in the field of agriculture and a seminar "Water and Climate Change" (18 March).

- International schools: summer school "Basics of water resource management: integration of theory, practice and science" for master students at GKU and TIIAME, students of CA and Afghanistan (17-28 August); winter school "Tashkent water security lectures" organized together with German partners (10-11 December).

The following Centers have been opened: Professional Development Center as part of the "English as a Medium Instruction" project supported by the British Council (10 February); Innovative Scientific and Practical Research Center in cooperation with JSCB Turonbank (19 November); Integrated Water Resource Management Laboratory (SRIB) within the USAID-funded SMART Waters project by CAREC/Ministry of Water Management of Uzbekistan (10 December); cluster of digital technologies for sustainable management of natural resources (30 December); polygon of modern water-saving technologies and a lysimetric station at a TIIAME Research training facility jointly with UNDP "Sustainable Management of Water Resources in Rural Areas in Uzbekistan" project (18 March 2021).

Capacity building. (1) "Summer Field School 2020" for the students of "Environmental Safety in Water Management". As part of the School "Trails Building Work Shop" and "International Planning and Design" projects were implemented; (2) guest lectures by foreign experts: "Sustainable Soil Management and Digital Agriculture' (14 February, Eurasian Center for Food Se-

[77] The Bukhara branch celebrates its 10th anniversary in 2020
[78] http://www.dsingis.eu/
[79] Japanese government program to promote collaborative international research aimed at bilateral cooperation between the Japan Science and Technology Agency (JST), JICA, and the host country

curity at Lomonosov Moscow State University), "Water-saving irrigation technologies and efficiency of water use in agriculture" (26 February, Institute of Water Problems, Hydropower and Ecology of the Academy of Sciences of the Republic of Tajikistan); "Hydrological modeling" (27 February, IWMI), "History of Irrigation and Reclamation in Spain" (28 February, University of Lleida in Barcelona, Spain) were held.

The Center for Advanced Training and Retraining of Staff at TIIAME held: the workshop "Irrigation Methods and Techniques" (13 February); advanced training courses for water managers of the Republic of Kyrgyzstan (10 March-10 April); the online training seminar "Sustainability assessment of the water-energy-food nexus in the case of irrigated agriculture: A systematic review" (6 July).

Cooperation. A Memorandum of Cooperation was signed between the Ministry of Innovation of RUz and TIIAME. Meetings and negotiations on future cooperation were held with representatives of CLAAS and Lindsay (Germany) and Irriport (Germany); with Mr. Brian Farrell, Head of International Projects at Mississippi State University, with discussion of the joint master's programs (USA), Mr. Johannes Holzner, Professor at the Weinstein-Trizdorf University of Applied Sciences (Germany), and Mr. N.S. Yakovchik, Director of the Institute for Retraining and Professional Development of the Belarusian State Technological University.

Participation in the events. Videoconference "Implementation of joint training programs to train engineers" (29 January); World Energy Congress (World Sustainable Energy Days) (WSED) 2020 (4-6 March, Wels, Austria); International Conference on Sustainable Futures: Environmental, Technological, Social and Economic Matters (ICSF-2020) (20-22 May); VIII International Conference Arch-Eco (22 May); meeting organized by WB "Exchange of views with representatives on improving water security and adapting to climate change in the framework of the Water and Energy Program in Central Asia" (August); practical seminar on agriculture digitalization with John Deere in the foreign cluster "Silverleafe" in Pakhtakor district, Jizzak province (15 October); online dialogue "Automated land use design systems and international experience" (23 October); research seminar "Sustainable Entrepreneurship: Basics, Tasks, Trends" (29 October).

Participation in exhibitions and contests. TIIAME staff, doctoral students, undergraduates, and students participated in the exhibition "Modern Laboratory Equipment and Developments by Gifted Students" (6 February); Republican Youth Contest within the framework of the "Uzbekistan Youth against Climate Change" project, and "Hydro Leaders" team of the Hydromelioration Faculty won the 1st place (27 July); science fair (16-18 September); C.A.T Science Accelerator 2.0 program competition with the Defuse-it project, which aims at developing an irrigation water treatment device with an intelligent control system; International Week of innovative ideas InnoWeek 2020 (3-8 November).

Publications. The article of Mr. U. Umurzakov, TIIAME rector, "Towards innovations – make progress" was published in the newspaper "Narodnoe slovo" No.227 (798) (29 October). In the QS's magazine QS-GEN (Global Education News) the following articles were published: "TIIAME – the only Uzbek institution represented in QS EECA rankings" in the 1st issue and "Making history TIIAME in 2022" in the 2nd issue.

Based on the research efforts of TIIAME, in 2020, 74 monographs, 39 textbooks, and 119 teaching aids were published. Additionally, 561 articles in the national scientific journals and more than 845 articles in foreign journals, including 512 articles in journals included into the "Scopus" and "Web of Science", were published.

Awards. TIIAME staff members were awarded the badge "Excellent water professionals of the Republic of Uzbekistan", order "Glory of Labor", medal "Turan Birimdigi" of the Kyrgyz branch of the "Yangi Ovoz" Union of Central Asia Writers and Historians.

Source: TIIAME Administration, http://tiiame.uz/

National University of Uzbekistan named after Mirzo Ulugbek

The National University of Uzbekistan (NUUz) was officially established on the 12th of May 1918. The University has in its structure 15 faculties, including Geography and Natural Resources Faculty and Geology and Geoinformation Systems Faculty. Specialists for the water sector are trained at the Land Hydrology Department: bachelors are trained in hydrometeorology and hydrology, and master's students get further education in hydrometeorology, hydrology, and climate change and climate risk assessment. There are also PhD and DSc programs on "Land hydrology. Water resources. Hydrochemistry".

Major Events and Activities in 2020

Scientific projects and research of the Land Hydrology Department:

Fundamental project "Studying River hydrological regimes and water formation patterns in Uzbekistan and adjacent territories in the context of climate change" and applied project "Development of technology for better efficiency and operational reliability of variable-regime irrigation canals". As a result, two monographs were prepared: (1) "Water formation patterns in mountain rivers in the context of climate change"; (2) "Ensuring the operational reliability of irrigation canals and technologies for their improved efficiency".

The academic staff of the Department is engaged in the following international projects: "Cryospheric Climate Services for improved Adaptation" (CICADA); "Developing Climate Resilience of Farming Communities in the Drought Prone Parts of Uzbekistan" (UNDP); Climate Adaptation and Mitigation Program for Aral Sea Basin (CAMP4ASB); Central Asia Research and Adaptation Water Network: CARAWAN.

Within the framework of Uzbek-Indian cooperation 2021-2023, the tender for the project "Assessment of Dam and Climate Change Impacts on Water Scarcity and Drought in Arid and Semi-Arid River Basins in India and Uzbekistan" was won.

The department employee B.E. Adenbaev defended his doctoral dissertation (DSc) in 11.00.03 "Land hydrology. Water resources. Hydrochemistry".

Events. International Scientific and Technical Conferences: (1) "Current Problems of Geology and Geoinformation Systems" (29 April); (2) "Integrated management and reclamation of saline soils for food security: new approaches and innovative solutions" (12-16 October).

Source: Land Hydrology Department, Geography and Natural Resources Faculty, National University of Uzbekistan named after Mirzo Ulugbek

Samarkand State University

The Samarkand State University (SamSU) was founded in 1927. There are 18 faculties at the University. The Geography and Ecology Faculty has 4 departments, including Hydrometeorology and Ecology and Life Safety Departments.

Major Events and Activities in 2020

The University launched the Agro-Biotechnology and Food Security Faculty, which focuses on the crop development and teaching modern agronomists in handling land and water rationally. Close cooperation with local agricultural cooperatives and agro-industrial clusters is developed to ensure effective integration of education and production.

Research projects. (1) "Study, assessment and mapping of desertification process in mountain geosystems on the base of reference experimental plots (the Gubdintau Ridge case study)"; (2) "Analysis of possibilities of non-conventional energy generation on the base of natural resources (wind, water and solar radiation) in the Mirzachul Oasis".

Publications. Scientific Bulletin of SamSU. See http://www.samdu.uz/ru/ilmiy-jurnal

Source: http://www.samdu.uz/ru

Karakalpak State University named after Berdakh

The Karakalpak State University named after Berdakh (Berdakh KSU) was founded in 1974. The University is comprised of 15 faculties, including the faculties of Biology and Geography and Natural Resources.

Major Events and Activities in 2020

Publications. Scientific journals: E-journal "Science and Education in Karakalpakstan", Bulletin of the University.

Source: Berdakh KSU

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 2020

SIC ICWC experts

- prepared video lectures on water diplomacy and information exchange in CA for the Massive Open Online Course "Governance for Transboundary Freshwater Security" organized by GWP (January). In October, the International Water Law Academy, established at the Wuhan University of China under the leadership of Prof. P. Wouters, joined the course as a partner in the implementation of the third module. Dr.Ziganshina became the member of the Academy and participated in the session "Does the World Need More International Water Law?" organized by GWP and the Wuhan International Water Law Academy (27 October).
- held the following events:
  - lectures and practical classes at TIIAME for (1) students of Hydromelioration faculty on the topic "Hydraulics (Hydrostatics and Hydrodynamics)" (January-June); (2) master's students of the Ecology and Water Resource Management Department on the topic "International and National Water Relations and Law" (January-March); (3) master's students of the Hydraulics and Hydroinformatics Department on the topic "Hydraulics and Hydrology Engineering" (October-December);
  - guest lecture "Transboundary Water Systems and Water Security: good and bad lessons from Central Asia" for masters of the Nazarbayev University (22 October);

- participated as members of the State Certification/Examination Commission in evaluation of master's theses on IWRM (5A450207) and Water Quality Management (5A450208) (19 June, TIIAME via videoconferencing).

Within the framework of cooperation with GKU, Dr. Ziganshina made presentations at the following events: Conference "Gender and Transboundary Water Resource Management in Central Asia" (12 June) and the Regional Scientific and Practical Online Conference "Silk Road of Knowledge" with the financial support of the Ministry of Foreign Affairs of the Federal Republic of Germany (25-27 November).

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: Undergraduate School of Arts and Sciences (SAS); Graduate School of Development (GSD) including the Mountain Societies Research Institute (MSRI) and its Knowledge Hub; School of Professional and Continuing Education (SPCE). UCA have formed the Green Community Club – an initiative to promote awareness of ecological issues and encourage participation in environmentally sustainable practices.

Major Events and Activities in 2020

MSRI held:

- regional conference "The Art of Neighborhoods: Border Dynamics, Natural Resources, and Mobility in Central Asia" (5 February, Bishkek);
- a seminar for identification of environment-related development priorities for Kyrgyzstan (10 March, Bishkek);
- exhibition "Fragile Water", which presented works prepared as part of the "Kyrgyz Mountains Environmental Education and Citizen Science" project (22 March, Bishkek).

GSD Publications. P. Khakimov, Climate Change in Afghanistan, Kyrgyzstan, and Tajikistan: Trends and Adaptation Policies Conducive to Innovation, Report No.55, March 2020, p.56.

M. Kulikov et al. Climate Impact on Local Communities in the Isfara River Basin/ Research Report No.5, 2020, p.49.

R.C. Sidle. Dark Clouds over the Silk Road: Challenges Facing Mountain Environments in Central Asia, Research Report No.8, January 2020.

9.3. Professional Development Courses and Trainings

9.3.1. Professional Development Courses and Trainings in 2020[80]

CAMP4ASB training seminars: training for specialists of the hydrometeorological services of Central Asia (20-24 January), online Conference "Training based on Modern Tools for Data Processing, Hydrological and Climate Forecasting" (18 June); meeting on capacity building program on hydrological reservoir forecasting to assess hydropower potential in the CA region (2 July); Webinar "Promoting Political Dialogue and Capacity Building for Central Asian Countries for the 26th Session of the Conference of the Parties to UNFCCC (30 September); scientific and technical seminar "Crop Yield Monitoring and Forecasting Systems in Central Asia" (7 July); webinars with the participation of representatives of IPCC (25-26 November).

UNESE and UNESCO webinars on SDG indicator 6.5.2: supporting countries in preparing national reports for the 2nd reporting exercise (12 May-June).

MASHAV seminars: MASHAV International Agricultural Training Center – "Water Resources Management. Design of Urban and Agricultural Water Supply Systems. Irrigation and Filtration of Irrigation Water" (21 May).

ICARDA seminars**:** "Digital Discussion Forum: Big Data Solutions to COVID-19 & Food Security Impacts", (9-30 June).

ISEPEI Project series of webinars "Bridging ICTs and the Environment" (22-28 July).

Xylem Analytics Australia series of webinars on water: "Water Quality Monitoring Sensors and Systems, Weather Monitoring and Data Loggers" (1 and 28 July, 28 August); "Data Loggers and Controllers, Telemetry Solutions and Signal Converters"; "Water Sampling Solutions"; "Flow Monitoring Solutions"; "Water Level Monitoring Solutions".

NASA Applied Remote Sensing Program Trainings (ARSET): ARSET webinars "Satellite Remote Sensing for Agriculture" (14, 21 and 28 April, 5 May); ARSET training "Groundwater Monitoring using Observations from NASA's Gravity Recovery and Climate Experiment (GRACE) Missions" (25 June); introductory training "Understanding Phenology with Remote Sensing" (30 June, 7 and 14 July); ARSET webinar "Using Earth Observations to Monitor Water Budgets for River Basin Management" (21 and 28 July, 4 August).

[80] Due to the COVID-19 pandemic, events were held in the online format

ADB Water and Deltares seminar series: Collaborating on Innovative and Sustainable Solutions for Integrated Water Management: "Resilient City Toolbox for Urban Resilience Planning" (11 August); "Understanding Disease Transmission and Health Risks through Water Systems" (25 August); "Dynamic Adaptive Policy Pathways and Climate Adaptation" (8 September); "Yellow River – A Hydrological Basin Approach" (22 September); "Future of Hydrological Forecasting" (6 October).

ADB, IHE Delft and IWMI webinar "Improved Decision-Making for Water Security Using Water Accounting" (18-19 November).

NEWAVE project e-Lecture Series "Water Governance – Theoretical Perspectives" as part of the EU Research and Innovation program Horizon 2020 (17 November-17 December).

Webinars by the World Bank and the Eurasian Center for Food Security/Agrarian Center of the Lomonosov Moscow State University: "Food Security and the Food Policy Implications of the COVID-19 Crisis" (24 November); "Food Policy Research and Capacity Building in the Eurasian Region" with the International Food Policy Research Institute/IFPRI (2 December).

Capacity Building Courses for Kyrgyz Water Specialists at TIIAME (Tashkent) within the USAID/CAREC Smart Waters project (10-22 March).

The Geneva Water Center and DiploFoundation distance learning course "International Water Law and the Law of Transboundary Aquifers", 4th edition (5 October-14 December). The Geneva Water Center developed the module "Hydropolitics and Water Diplomacy" in cooperation with GKU and SDC, which is an elective course of the GKU master's program on IWRM.

9.3.2. Professional Development Courses and Trainings in 2021[81]

11 December 2020-28 February – "Introduction to Groundwater Governance" GGRETA course;

19 January – Webinar "Impact of Climate Change on Governance and Security of the Republic of Tajikistan";

21 January – ICID Webinar "General Challenges of Irrigation Schemes Management under Different Scales: with Special Consideration on Institutional and Organizational Aspects of System Management";

25-29 January, Tashkent – Winter school "Capacity Building of NGOs, Development of Cooperation and Partnerships with Government Agencies, Advocacy and Assessment of Local Community Needs" in the framework of the EU-supported "Innovative Uzbekistan" project;

28 January – IWMI-USAID webinar "Remote Sensing for Irrigation Water Management";

1-5 February – IWMI/SDC series of webinars "Solar Irrigation for Agricultural Resilience";

1 February-18 April – GGRETA course "Introduction to Groundwater Modelling";

2, 16 February; 2, 16 March – ADB/IWMI series of webinars "Science and Innovation for a Water-Secure Future for All";

9, 16, 23 February – ARSET trainings "Mapping and Monitoring Lakes and Reservoirs with Satellite Observations";

19 February – seminar "Learning from historic irrigation and drainage structures" by the Irrigation and Water Forum, UK's national section of ICID;

25 February – Water Resource Management in Israel;

4, 11, 18 and 25 March – MASHAV International Webinars "Implementing Pressure Irrigation Systems for Intensive Agriculture";

23 March – webinar "Webinar on Irrigation and Drainage in the Republic of Uzbekistan: state-of-the-art and future plans";

12 April-11 May – GGRETA course "Groundwater Quality in Transboundary Aquifers";

5 May – seminar "Drought Management and Mitigation in Central Asia";

6 May – webinar "Jobs for Young People in the Land Sector";

17-20 May – seminar "Methodological Recommendations for Calculating Greenhouse Gas Emissions and Reporting under the Paris Agreement for Central Asian Countries";

16, 23 and 30 June – ARSET series of webinars – "Using Google Earth Engine for Land Monitoring Applications" https://appliedsciences.nasa.gov/joinmission/training/english/arset-using-google-earthengine-land-monitoring-applications;

17 June-4 September – series of webinars on climate security https://climatesecurity.cgiar.org/?tab=news_event;

13 July – webinar "Towards the 9th World Water Forum";

14, 16 and 21 September – ARSET series of webinars – "Monitoring Coastal and Estuarine Water Quality: Transitioning from MODIS to VIIRS" https://appliedsciences.nasa.gov/join-mission/training/english/arset-monitoring-coastal-and-estuarine-water-quality-transitioning;

27 September-22 November – distance learning course "Integrated and Adaptive Water Resources Planning, Management and Governance" https://www.mcgill.ca/osas/cpd/water-management-online-course;

11 October-19 December – distance learning course "International Water Law and the Law of Transboundary Aquifers" https://www.unige.ch/formcont/cours/water-law.

[81] Due to the COVID-19 pandemic, events will be held in the online format

Section 10

Science and Innovations

10.1. Innovations in 2020

Innovations in Agriculture

The global agriculture is emerging from stagnation. Investors have begun paying attention to this traditionally conservative sector after the successfully started technological innovation and in the context of food demand forecasts for 2050, when population is expected to grow to 9.6 billion. Among the key innovations are:

- **Sensors.** For example, humidity and soil sensors in crop growing, temperature and motion sensors in livestock farming, telematics to monitor agricultural equipment, sensors controlling fertilizer application and crop conditions;

- **New GM crops.** Gene engineering helped to speed up transformation of sunshine and carbon dioxide by crops into sugar and carbonhydrate and improve productivity of maize, soybean and wheat almost twofold. Despite the protests of GMO opponents, the governments of China and some European countries has eased restrictions on GMO-based food;

- **Synthetic food** created in labs helps to solve the problem of land availability in agriculture. For instance, the biggest meat producers has already shown their interest in lab-grown meat;

- **Robotics technology.** Farms already use robotic milking units, drones and special harvesters. In the future, multitude of farm micro-robots will plow fields, treat soil, weed, irrigate and harvest virtually without the need for human interference;

- **Urban/hydroponic farms** made of new types of polymer film save water and offer conditions for healthy plant growing. Organization of greenhouses in urban areas helps substantially reduce transportation costs. A number of American and European companies have been already producing tomatoes, watermelons, melons and strawberries in such farms;

- **New microbial strains.** With the help of gene engineering technology, scientists develop various microbial strains that enable higher productivity of crops and their resistance to droughts, diseases and pests. New modified types of nitrogen-fixing bacteria pool nitrogen from the atmosphere and make it available for plants in form of fertilizers. Some cotton growers use a microbial treatment of cotton seeds and get 10% surplus to crop yields;

- **Blockchain.** This technology is being used to track food throughout the supply chain, from production, transportation to storage, enabling reduced costs of logistics and faster delivery (including, cross-border one) of perishable produce;

- **RNA interference.** The new technology of inserting ribonucleic acid (RNA) in plant leaves inhibits gene expression for a specified period of time and controls plant behavior. For instance, it can program a plant for protection against drought and pests during its growth. The resulting produce is not gene modified since the technology uses own plant genes;

- **Satellite imagery** provides more data on weather conditions and allows making more accurate analysis on cropped area. It also will enable producing cropland maps without map maker;

- **Uber-based farm.** The technology enables every customer to buy organic vegetables and fruits at their cost directly from producer through an Internet portal. Potential customers calculate their annual needs for agricultural products through an online calculator, order products and the on-line farm finds the closest farmer, who makes customized production. The client may trace the crop production and storage processes via the system.

Source: http://ekois.net/top-10-samyh-peredovyh-tehnologij-kotorye-sdelayut-agropromyshlennyj-kompleks-neuznavaemym/#more-33531

Some of new innovative solutions are described below.

The Edete Precision Technologies (Israel) has patented the mechanical pollination technology. It starts from mechanical harvest of pollen to be stored in a refrigerator during a year. This solves the problem of desynchronization of different crop varieties. Next season, this pollen is distributed with a tractor-pulled mast equipped with about a dozen small cannons that fire precise shots of pollen. This pollinator can work day and night at any temperature and provides 100% pollination of all open flowers. This technology shows promising results on fruit trees.

A **modular robotic platform** that employs the latest information communications technology to examine crops and soils, analyze gathered information and provide clear, actionable information to farmers to support crop management is developed by Yanmar as part of the SMASH Project. One Yanmar's role was also to develop control systems for the multipurpose robotic arm for mobile manipulation (including precision spraying), sensor integration for positioning technologies, and autonomous navigation and software development for the control of the system's mobile base (in collaboration with other partners).

The Small Robot Company (GB) is to launch the world's first autonomous farm robot fleet. One robot, the weed scanning robot, will provide farmers with an individual plant view of fields, capable of detecting broad-leaved weeds in wheat fields and mapping their exact location. The technology also allows weeds to be categorized, in accordance to their environmental benefit, with beneficial weed species identified and not destroyed. Using the mapping data, the second weeding robot will identify these weeds and kill them using electrically charged pulses. The third robot will plant crops autonomously. Its no-till robotics system will help prevent soil erosion and run off, reducing cultivation emissions by up to 90%.

Sananbio, one of largest indoor farming technology providers, launched its **unmanned vertical farming system** Uplift, which automates seeding, transplanting, harvesting, and plant transporting. Uplift can produce 6-8 tons of fresh leafy greens every day in a farm of 5,000 sqm. Uplift's productivity is 6 times that of a 6-layered indoor farm. The increased yield means lowered costs. The water circulation system was upgraded so that 60% of the water can be absorbed by plants and the remaining 40% recycled. Uplift uses PlantKeeper, a proprietary indoor farming management system, to control and monitor environmental factors so farm operators can be updated with real-time growing conditions throughout the farm.

The Israeli Netafim company has developed a drip irrigation system for growing rice to replace the flooded paddies and make rice cultivation more sustainable. The company has just finished a pilot scheme using its technology on 1,000 hectares of rice fields in locations from Europe to southern Asia. The system allows achieving the same yield as under flooding.

The team of researchers from the Leibniz Institute of Plant Genetics and Crop Plant Research (Germany) and the Oxford University (GB) analyzed the **potential for engineering drought-resistant plants** via introduction of Crassulacean acid metabolism (CAM). The team found that vacuolar storage capacity in a leaf is a major factor that limits water-use efficiency during CAM and that the environmental conditions shape the occurrence of different phases of the CAM cycle. The mathematical modeling identified an alternative CAM cycle that involves mitochondrial isocitrate dehydrogenase as a potential contributor to initial carbon fixation at night. The results revealed not only that the water-saving potential of CAM photosynthesis strongly depends on the environment, with the daytime environment more important than that at night, but also that alternative metabolic modes, distinct from those of the naturally occurring CAM cycle, may be beneficial under certain conditions such as during shorter days with less extreme temperatures. This timely work provides valuable insights that will help us prepare for the challenges of growing food crops in increasingly hot and dry temperate environments.

Researchers at the University of Washington have developed a **tiny wireless steerable camera that can also ride aboard an insect**, giving everyone a chance to see an Ant-Man view of the world. This technology can be applied for hard-to-navigate spaces.

Water Treatment and Desalination

A **new type of metal-organic frameworks (MOF)** dubbed PSP-MIL-53 to trap salt and impurities in brackish water and seawater can ease the fresh water shortage, say researchers from the Monash University in Australia. Within 30 minutes, the MOF is able to reduce the total dissolved solids (TDS) in the water from 2,233 parts per million (ppm) to under 500 ppm. That's well below the threshold of 600 ppm that WHO recommends for safe drinking water. The material is able to produce as much as almost 140 l of fresh water per kg of MOF per day. MOF can be quickly and easily cleaned by placing it in sunlight in as little as four minutes. This new technology is faster-acting than other techniques, simpler and requires only sunlight as a source of energy.

A team of the National University of Singapore has developed a sponge-like **hydrogel** capable of desalinating up to 1000 l a day. The zinc-based material absorbs at least 400% of its own weight. The desorption process from the hydrogel, occurring at 55°C (lowest), is triggered by natural sunlight thereby ensuing an external energy-less water harvesting approach. The hydrogel exhibits excellent stability even after 1000 absorption/desorption cycles.

Alternative Energy

Researchers at Linköping University (Sweden) have developed a **molecule that absorbs energy from sunlight and stores it in chemical bonds**. A possible long-term use of the molecule is to capture solar energy efficiently and store it for later consumption. The molecule belongs to a group known as "molecular photoswitches". These are always available in two different forms, isomers, that differ in their chemical structures. One possible area of application for photoswitches is molecular electronics, in which the two forms of the molecule have different electrical conductivities. Most chemical reactions start in a condition where a molecule has high energy and subsequently passes to one with a low energy. Here, the researchers do the opposite – a molecule that has low energy becomes one with high energy.

British company Gravitricity has developed a **system to store excess electricity by using the power of gravity**. The system is based on a vertical shaft up to 1,500 meters deep with weight configurations ranging from 500 to 5,000 tons. The Gravitricity system can be set up to create a peak power between 1 and 20 MW, with an output time of 15 minutes to eight hours. The system is designed to last at least 50 years without cycle limits or degradation. The company claims it has an efficiency of 80 to 90%, with costs below that of a comparable lithium battery system.

Scientists from the University of Twente and the South China Normal University developed a device that can generate **electricity from falling water droplets**. Engineers from the Universities directed charges into the insulating layer of a capacitor using a new electrowetting method, a modification of the ability of liquids to come into contact with a solid surface under the influence of an electric current. An electric current is generated from the action of the droplet when the induced opposing charges are redistributed on the capacitor. The developers have made significant progress - the efficiency of the device was almost 12%, and its efficiency did not deteriorate after 100 days of operation.

Researchers from Rice University (USA) have built a simple new **solar-powered device that can create hydrogen for fuel by splitting water**. The system is made up of a perovskite solar cell, hooked up to electrodes made of a catalyst that electrolyzes the water.

When sunlight hits the solar cell, it produces electricity that powers the catalyst, which then splits the water into oxygen and hydrogen. These bubble up to the surface where they can be collected for use. The sunlight-to-hydrogen efficiency sits at around 6.7%. The solar cell and the electrodes are all in one unit – the solar cell components are encased inside a polymer shell that protects them from water damage while still letting sunlight through. The electrodes sit on the outside where they can split the water. The device can basically be dropped into some water with direct sunlight and left to run for long periods of time, producing hydrogen as needed.

Researchers from University of Illinois develop **multilayered solar panels** with the potential to be 1.5 times more efficient than traditional silicon panels. The team has been working to layer the semiconductor material gallium arsenide phosphide onto silicon because the two materials complement each other. Both materials absorb visible light strongly, but gallium arsenide phosphide does so while generating less waste heat. In contrast, silicon excels at converting energy from the infrared part of the solar spectrum. Tandem solar cells work as a team and take advantage of the best properties of both materials to make a single, more efficient device.

Australian researchers have developed a **highly efficient solar absorbing film** that absorbs sunlight with minimal heat loss and rapidly heats up to 83°C in an open environment. The graphene metamaterial film has great potential for use in solar thermal energy harvesting and conversion, thermophotovoltaics (directly converting heat to electricity), solar seawater desalination, wastewater treatment, light emitters and photodetectors.

The **Air-gen device**, created by American engineers, connects electrodes to the protein nanowires in such a way that electrical current is generated from the water vapor naturally present in the atmosphere. The new technology is said to be non-polluting, renewable, low-cost and can generate power in areas with extremely low humidity. The Air-gen device requires a thin film of protein nanowires less than 10 microns thick. The bottom of the film rests on an electrode, while a smaller electrode that covers only part of the nanowire film sits on top. The film adsorbs water vapor from the atmosphere. A combination of the electrical conductivity and surface chemistry of the protein nanowires, coupled with the fine pores between the nanowires within the film, establishes the conditions that generate an electrical current between the two electrodes. The current generation of Air-gen devices can power small electronics.

Kiwi start-up EMROD has developed **the world's first wireless power transmission**. The technology works by utilizing electromagnetic waves to safely and efficiently transmit energy wirelessly over vast distances. This technology can make the transmission process well faster and cheaper.

The **gravitation water vortex power plant** is a type of micro hydro vortex turbine system which is capable of converting energy in a moving fluid to rotational energy using a low hydraulic head of 0.7-3 m. The micro hydropower plants do not affect the environment and can operate 24 hours a day. The plant operating with a head of 1.5 m and a flow of 1.5 m^3/s can produce 15 kWh. With the higher head and flow, the vortex turbine is capable of generating up to 200 kWh. Multiple micro hydropower plants can be installed along one river with no effect on flow and fauna. At present, the performance of gravitation micro hydropower is tested in Malaysia.

Teams across the United States and Australia have used the strategy, called photochemical upconversion, to change invisible infrared light into "more energetic, visible light" so that it can be used to generate electricity. This is the first time light of this type has been able to be captured, and while the efficiency of the technology needs more work before commercialization is possible, it bodes well for the future of solar power.

10.2. Central Asia Expert Platform on Water Security, Sustainable Development, and Future Studies

In 2020, work on the formation of the Expert Platform on Water Security, Sustainable Development and Future Studies (EP)[82] was continued. The Uzbek ministries and departments have positively responded on the establishment of EP, the Concept Note was approved, the Action Program on Platform development was drafted together with the heads of national teams from CA countries and the priority topics of joint work were identified.

The first meeting of Platform's members with participation of national team leaders from Central Asian countries and SIC ICWC was held on 9 July in a videoconference format to discuss the progress on formation of the Platform and set tasks for the near future. The issues related to Platform development were raised during different events: conference "Green Central Asia" (28 January, Berlin), workshops "Water Diplomacy: A tool for climate action?" as part of the Stockholm Water Week (24 August) and "Introduction of green technologies and innovation in the Aral Sea region within the framework of the new EU strategy for Central Asia: cooperation between Uzbekistan and the European Union" (22 October). The EP website was created (http://www.cawater-info.net/expert-platform/index.htm)

[82] See Water Yearbook 2019 for the idea of establishment, objective and tasks of EP, http://www.cawater-info.net/yearbook/index_e.htm

As part of the UNECE Project "Support to the Network of Russian speaking water management organizations from Eastern Europe, Caucasus and Central Asia" and with inputs from national experts, activities[83] were started on (1) development of a database of experts on water, environment and sustainable development and its activation on the Internet for open use and filling; (2) preparation of a collection of best practices on transboundary water cooperation; (3) analytical studies on "Statements made by the Central Asian countries at the UN General Assembly in 1992-2020: Key highlights and priorities" and "Environment and transboundary cooperation in the statements made by the EECCA countries at the UN General Assembly in 1992-2020".

The aspects of EP development are also included in the work program under the theme 4.7. "Regional mechanisms for the low-carbon, climate-resilient transformation of the energy-water-land nexus in Central Asia" (German Government, International Climate Initiative 2020, partners – OECD, EBRD, UNECE, SIC ICWC). Start of works is planned for autumn 2021.

10.3. Leading research institutes of EECCA countries

Belarus. Republican Unitary Enterprise "Central Research Institute for Complex Use of Water Resources" (CRICUWR)

RUE CRICUWR was established in 1961. It is subordinated to the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus (since 1994) and is the back-up organization of the Ministry for development of river basin management plans, inventory of national surface water bodies, schemes and projects of water protection zones and coastal strips of waterways and reservoirs, zones of sanitary protection of surface and groundwater intakes. It performs the functions of the head organization for maintaining the State Water Cadaster (SWC), provides information services to the economic sectors with data on water bodies, water resources, regime, quality, water use and wastewater discharge; exchanges data with neighboring states (on transboundary watercourses) and prepares information materials on water resources and their use for international organizations.

The Institute carries out fundamental and applied research in the area of sustainable water use and water protection, makes inventory of watercourses and lakes using WEB- and GIS technology, studies and makes assessments of watercourses and lakes in the context of climate change; maintains a hydromorphological observation network for rivers and lakes; takes active part in international research cooperation water projects.

Activities in 2020

More than 7,000 large watercourses and lakes, including the Pripyat, Neman, Dnepr and Western Dvina basins, were mapped as part of the 2016-2020 State Program "Environmental conservation and sustainable nature use".

As part of the European Union Water Initiative Plus for Eastern Partnership Countries Plus (EUWI+), Components 2 and 3: (1) a Pripyat River Basin Management Plan was drafted, (2) detailed inventory of springs in the Pripyat basin has been made, with following publication of "Springs of Belarus" and the contest (5 June-15 July) for best survey on small motherland's springs; (3) publications – "Economic tools of water resources and infrastructure management in Belarus: related materials on the EUWI+ Project" and "Implementation of water-related SDGs in the Republic of Belarus" have been launched.

The report on the scope of the Strategic Environmental Assessment (SEA) of the draft Water Resources Management Strategy in the context of climate change until 2030 was prepared. Public consultations were held on 13 March to 2 April and their outcomes were taken into account in the formation of the SEA report.

Representatives of CRICUWR took part in (1) negotiating with the Polish colleagues an Agreement between Belarus and Poland on transboundary water cooperation. The Agreement was signed later on 7 February in Poland; (2) a work meeting (10 September) to discuss implementation of the Water Program of the Clean Baltic Coalition in Belarus for the period of 2021-2023. The proposed interventions include water and wastewater management, water protection and conservation in agriculture, fishery and aquaculture; (2) a meeting (16 October) of the Pripyat Basin Council. The draft Basin management plan and the prospective irrigation development in Gomel province for agriculture adaptation were discussed.

Mass media. Representatives of CRICUWR took part in a broadcast of the First national channel of the Belarus radio and discussed the topical issues on how to save national water resources (10 September, https://www.youtube.com/watch?v=kiA2m41NhNI).

Publications for 2020 are available on http://www.cricuwr.by/static/files/publication2020.pdf

In 2021, RUE CRICUWR will celebrate its 60th anniversary. A number of events are planned in this context, including within the framework of the World Water Day on 22 March and VI International water forum on Belarus' springs.

Source: http://www.cricuwr.by

[83] See Project results on the EP website http://www.cawater-info.net/expert-platform/index.htm

Russia. Russian Research Institute for Integrated Water Management and Protection (RosNIIVKh)

RosNIIVKh was founded in 1969. It consists of the lead institute (FSBI "RosNIIVKh", Yekaterinburg) and branches: Eastern ("VostokNIIVKh", Chita), Far Eastern ("DalNIIVKh", Vladivostok), Kamsky ("KamNIIVKh", Perm), and Bashkir ("BashNIIVKh", Ufa). The Institute includes the Expert Center for the expertise of safety declarations, the branch departments for water management and water technologies (of the Ural State Technological University) and for land and environmental law (of the Ural State Legal Academy), the dissertation committee on geoecology. The Water Museum – opened in 2009 – presents the information on watercourses and lakes, on water development in the Russian Federation, on protection and rational use of water resources.

Activities in 2020

The work was done in the following areas: (1) the Federal Water Resources Agency's research agenda for 2020-2024; (2) proposals on improvement of water monitoring in part of observations over bottom, banks, status and use of water buffer zones; (3) development of guidelines and methodologies for restoration of surface water, research on protection and restoration of water resources and reversion of accumulated environmental damage; (4) updating of methodological recommendations on drafting river basin master plans; (5) revision of a methodology for determination of admissible impact on water resources.

A representative of the Institute was involved in the work of the Federal priority project "Rehabilitation of the Volga River" under the guidance of the Russian Institute for Water Problems. The results of this work were included in the publication "Concept of mitigation of non-point pollution along the Volga River" (V. Polyanin et al., M: Studiya F1, 2020, in Russian).

Capacity building. The Center for Water Professional Development was established at RosNIIVKh to build capacities of the Federal Water Resources Agency and its branches. The Center's curricula includes: safety of hydrotechnical constructions, integrated water resources management, water use regulation, environmental rehabilitation of water sites, etc.

Regional and international cooperation. RosNIIVKh is a member of the European Water Association (EWA), EECCA NWO and the European Center for River Restoration (ECRR). Newsletters[84] ECRRNEWS-1/2020 and ECRRNEWS-2/2020 were published in February and November, respectively.

Institute's representatives took part in (1) a Kuban Basin Water Authority's meeting on the use of percolation lakes to supply the city of Sochi with water (11 August); IV Russian Water Congress (30 September-2 October); XI meeting of the water management working group of the Russian-Chinese Joint Commission on rational use and protection of transboundary water (23 October); a roundtable on drastic solutions on watering the Republic of Kalmykia (December).

Publications. The research-to-practice journal "Water sector of Russia: problems, technologies, management" has been published since 1999. 8 papers of the RosNIIVKh's researchers were included in the Journal. For wider information coverage and more productive academic dialogue, the geography of the editorial board was extended by including scholars from Kazakhstan, Armenia, Uzbekistan, Pakistan, Austria, Great Britain, Italy, Australia and Canada.

Source: https://wrm.ru/frontend/

Tajikistan. State Enterprise "Tajik Research Institute of Water Engineering and Amelioration" (SE "TajikNIIGiM")

SE "TajikNIIGiM" was established in 1978 as a branch of VNIIGIM named after A.N. Kostyakov. The Institute was transformed into SPA "TajikNIIGiM" in 1994 and got the status of state institution in 2007. Since March 2014, the Institute has been functioning under the auspices of the Ministry of Energy and Water Resources of Tajikistan.

The Institute works on reclamation of irrigated land, improvement of operation of irrigation systems; development and implementation of IWRM principles, water-saving technologies for different soil and climatic conditions, and economic mechanisms of water use; training of water and agricultural specialists. The Institutes is also engaged in the development of a unified water development policy (strategy, concept, program) at national and regional levels.

Activities in 2020

SE "TajikNIIGiM" takes part in the EU Project "Central Asian Dialogue to promote intersectoral Water-Energy-Food Financing", Phase II (2020-2023). The first national consultative meeting was held in Tajikistan in the framework of the Project on 15 September. During the meeting of the project's Regional Steering Committee, it was decided to test the Nexus approach through the implementation of 3 small-scale demonstration projects, including in Tajikistan on technical and financial evaluation of pumping stations (Tajikistan) to identify workable solutions to improve stations' performance while taking into account the interests of other sectors of the WEF Nexus.

The Institute's representatives had a meeting with the group of the Central Asian Climate Information Plat-

[84] Joint publication of the Iberian Center for River Restoration (CIREF) and RUE RosNIIVKh as the national centers for river restoration and members of ECRR

form/CACIP (ICARDA). The group showed its readiness to disseminate the Institute's achievements via CACIP (February). The staff of SE "TajikNIIGiM" had a training in operation and functionalities of CACIP (19 October).

The Institute jointly with the Ministry of Energy and Water Resources organized the Republican Research-to-Practice Conference "Water accounting, generation, distribution and use as the main factor of sustainable development in Tajikistan" (21 October).

Source: https://niigim.tj/

Ukraine. Institute of Water Problems and Land Reclamation (IWPLR)

The Institute was founded in 1929 as the Institute of Hydraulic Engineering and Land Reclamation and was renamed to IWPLR in 2011. It works in the system of the National Academy of Agrarian Sciences of Ukraine. There is a postgraduate study at the Institute on agronomy and construction and civil engineering.

Activities in 2020

The Institute carried out comprehensive monitoring to identify the causes of shallowing Shatsky Lakes and developed a set of measures for sustainable watering of the lakes; took part in the development of the conceptual framework for drought management in Ukraine and in the working group on drafting the Strategy for soil zero-degradation.

Researchers of the Institute have been awarded for the development and application of innovation technologies, namely the new technology of water production for rural settlements and agricultural enterprises.

The Director of IWPLR had meetings with (1) the Chairman of Odessa provincial authority to discuss the project "Reconstruction of Lower Dniester irrigation systems in Ukraine", which was included in the list of priority public investment projects, as well as the prospects and capacities of the Danube-Dniester irrigation system; (2) Ambassador of Uzbekistan in Ukraine. The parties discussed the potentials of bilateral water cooperation and reached an agreement to establish dialogue between the Institute and relevant institutions in Uzbekistan in order to develop institutional cooperation and disseminate advanced Ukrainian water technologies in Uzbekistan.

Capacity building. Within the framework of the EU4Business Initiative (EBRD/EU/Valeur-Tech), the Institute: (1) developed training courses on "Irrigation management under drip irrigation and sprinkling", "Organic farming in balanced crop rotation"; (2) held theoretical and practical training in "Irrigation management under drip irrigation and sprinkling" (16-17 March), training in "Organic crop growing in crop rotation focused on technical tomato" (26-28 August), and a webinar "Smart and resilient agriculture" (4 September).

A workshop "Modern technologies and facilities of potato irrigation" (12 March) and a training under FAO Farmer School on field protective forest belts and criteria for their optimization (14 September) were also organized.

Events. Representatives of IWPLR took part in a number of events in 2020, including: International water forum "Yaremche 2020" (28-30 January); meeting of the working group on water security and access to drinking water (13 May); III International research-to-practice conference "Climate change and agriculture: challenges for agrarian science and education" (16 June); Interdepartmental discussion on a need to rehabilitate irrigation and drainage systems in Ukraine and establish irrigation water user unions (9 July); roundtable on irrigation rehabilitation in the risk farming areas (17 July); V International agrotechnology summit (3-4 December); etc.

Source: http://igim.org.ua/

10.4. International Research Institutes Working on Water Issues in Central Asia

In this section, we will present foreign research institutions working on water issues in CA.

The Corvinus Centre for Central Asia Research was established by Corvinus University of Budapest in November 2016. The Center intends to work closely with Central Asian partners to conduct research on key issues of political and economic transformation, making full use of the unique experience of Hungary and other Central-European countries in this area.

The Center places special emphasis on supporting EU decision makers in the development of an effective and realistic Central Asia policy in the political, security and economic fields. It intends actively to cooperate with research institutes in other EU countries to form a network that produces high-quality, comprehensive applied research on Central Asia.

On 3 November 2020, the Centre launched the two-year research program focusing on "Water as a driver of sustainable recovery: economic, institutional and strategic aspects of water resources management in Central Asia".

The Program is implemented by the Centre and supported by the Blue Peace Central Asia initiative (BPCA) of SDC, SIWI, and CAREC.

Source: www.cccar.hu/; www.uni-corvinus.hu/main-page/research/research-centres/corvinus-centre-for-central-asia-research/?lang=en

Section 11

Key Water Developments in the World

11.1. Africa

Construction of the Grand Ethiopian Renaissance Dam on the Nile River in Ethiopia. Successive negotiation rounds between Ethiopia, Sudan and Egypt about the filling and operation of the Grand Ethiopian Renaissance Dam (GERD) have ended in stalemate. After yet another, US-mediated, round failed in February 2020, the African Union (AU) took up the matter. On 26 June 2020, an AU communiqué stated that "90 % of the issues of the Tripartite Negotiations between Egypt, Ethiopia and Sudan [had] already been resolved". A few weeks later, however, Ethiopia announced that the "first-year filling" (estimated at 4.9 billion m^3) of the dam had been reached. It is unclear whether this filling had been the result of heavy rainfalls or had been deliberately sped up in order to allow the testing of the turbines. Egypt and Sudan had separately written in June to the UN Security Council that such a move, in the absence of binding rules for filling and operating the GERD, would risk threatening international security. Negotiations officially resumed on 21 November 2020, but failed to produce an agreement. The main points of disagreement remained the speed at which the reservoir would be filled, the annual replenishment plan and the settlement of future disputes. Importantly, Egypt and Sudan insist on a legally binding agreement, while Ethiopia seeks a less stringent accord.

Source:
www.europarl.europa.eu/meetdocs/2014_2019/plmrep/DELEGATIONS/DMAS/DV/2021/04-22/EPRS-Briefing-659412-New-Ethiopian-dam-Nile-controversy-V2_EN.pdf

Developments with the Inga III project on the Congo. In January 2020, the Spanish construction group ACS announced its exit from the project. Apart from a withdrawal by the Spanish company ACS, two other factors could call the project into question. The first one is the new Congolese President Félix Tshisekedi's desire to revert the project to a previous plan of building a smaller dam to produce 4.8GW, saying it might reach 11GW at a later stage. The second factor has to do with a possible withdrawal of South Africa, which is committed to purchase 2.5 GW of the electricity generated by Inga III. Without its guarantee to purchase Inga III's power, the project may not be bankable or feasible. However, for South Africa to buy electricity from Inga III is risky and may be more expensive than most other sources available to South Africa.

Locust plague. In 2020, the worst invasion of desert locusts was experienced in Ethiopia and Somalia for 25 years and in Kenya for 70 years. An adult desert locust can eat its own bodyweight, or about 2g, in vegetation every day. Swarms can swell to 70 billion insects and can destroy 136,000 tonnes of crops in a single day. Even a more modest gathering of 40 million desert locusts can eat as much in a day as 35,000 people. UN experts are concerned the infestation could push up to 25 million East Africans into hunger.

Excessive rains in spring and autumn 2020 led to massive flooding and landslides in Central and Eastern Africa. The floods were a natural disaster in Rwanda, Kenya, Somalia, Burundi, Ethiopia, Uganda, Democratic Republic of Congo, Djibouti and Tanzania, affecting at least 700,000 people. They caused more than 430 deaths. Water levels of the largest tropical lake in the world – Lake Victoria, which receives most of its water directly from rainfall, not from rivers, and loses most by evaporation – have just reached the highest point ever in the 120 year record, displacing thousands and flooding infrastructure. Climate change is expected to have increased the probability of this event and so the rapid lake level rise.

The Great Green Wall is a project led by the African Union to combat desertification in the Sahel region. Rough-

A woman from the Turkana tribe walks through a swarm of desert locusts at Lorengippi village near the town of Lodwar, Turkana county, Kenya. July2, 2020 (Credit: REUTERS / Baz Ratner)

ly 15% underway, the project has already brought life back to degraded landscapes at an unprecedented scale than initially expected. In order to hold back expansion of the Sahara, it is planned to plant a wall of trees stretching on 8,000 km. Since 2007, millions of trees have been planted to restore 100 million ha of currently degraded land. Nigeria, Senegal, Burkina Faso and Ethiopia are more successful in this endeavor than others. More than 17 million trees have been produced and planted and about 30,000 ha of lands have been restored in Burkina Faso. In Nigeria, 709 km of windbreaks have been created, 2,801 ha have been reforested and about 8 million trees have been planted. Senegal and Ethiopia made similar progress.

Several new hydropower projects were started in 2020. Africa has an installed hydropower capacity of over 37 GW and the highest untapped potential across the world. The continent has so far only utilized around 11% of its capacity, with 906 MW placed into operation in 2019 (2020 IHA Hydropower Status Report). An electricity demand is expected to triple by 2040. A number of projects across the continent received funding in 2020, including: 143 MW Bumbuna Hydro II in Sierra Leone; 200 MW Sendje in Equatorial Guinea; 205 MW Sahofika in Madagascar; 15 MW Kaptis in Kenya; and, eight small renewable energy projects, including hydro with capacity ranging from 1-10 MW. The **Neckartal Dam** – the largest dam in the southern African country of **Namibia** – has officially been inaugurated. With the storage volume of 857 Mm^3, the infrastructure is part of the first phase of the Neckartal Irrigation Scheme. The project will guarantee the area's agricultural development, especially for cultivating products such as lucerne, grapes and dates. Construction of the Polihali Dam in Lethostho, an important part of the Lethostho Highlands Water Project (LHWP) Phase II, was restarted. Phase II will increase the current supply rate of 780 million m^3 incrementally to more than 1.27 billion m^3 per annum for the Gauteng region of South Africa. At the same time, it will increase the quantity of electricity generated at the "Muela hydropower station". See also The 2020 Hydropower Development: Global Trends.

Multiconsult has been tasked with conducting a pre-feasibility study for floating solar PV potential on three main dam reservoirs - Kamburu, Kiambere and Turkwell – for more flexible and sustainable energy system in Kenya.

Source: https://www.nsenergybusiness.com/features/hydropower-africa/

The Government of Egypt announced on conversion of 5 million feddans to drip and sprinkler irrigation. Egypt suffers from significant water shortages, due to the combined effects of climate change, pollution and a growing population with increasing water demands. A new mega-dam upstream on the Nile River in Ethiopia also makes the country's access to river water – which it heavily depends on – less certain. The Government's new irrigation initiative, launched in January, is part of a wider 20-year water management plan that started in 2017. The responsibility for paying for, overseeing and maintaining the switch to more modern irrigation systems falls to the farmers. But to help, the government is offering loans and access to subsidized fertilizers, pesticides and seeds.

The Neckartal hydropower project in Namibia (Credit: Webuild)

11.2. Asia

The **AIIB "Water Sector Strategy"** was approved in May 2020. NGOs hoped that this new document will be more environmentally and socially minded, as well as more strategic and forward-looking, than other sectoral strategies that the AIIB has adopted. The document does not discuss at any length the rights, needs and participation of local communities and indigenous people, who supposedly are the primary beneficiaries. The Strategy acknowledges importance of water for "economic growth, food security and trade", but failing to do the same for "healthy environment and resilient ecosystems". The document calls for "harnessing water's productive potential and mitigating its destructive force", which reflects a refined technocratic approach to development that has been long abandoned by most international institutions as unsustainable. The Strategy neither contains specific criteria for selection and design of projects nor sets forth clear intended objectives for AIIB involvement in a given sub-sector (e.g. "water supply" or "water treatment"). Equally worrisome the Strategy does not spell out water-specific safeguard mechanisms.

Afghanistan

According to the National Statistics and Information Authority, the population of the country is 32.9 million people; its territory covers 653 square kilometers.

In November 2020, the Geneva Conference on Afghanistan took place. Donors reaffirmed their commitments to Afghanistan for 2021-2024. Particularly, Japan will allocate US $720 million; UK – US $227 million, France – about US $104 million, Canada – about US $207 million. The U.S. pledges US $600 million in Afghan aid, but half depends on peace talks. EU is ready to allocate €1.2 billion (US $1.43 billion) within 4 years. India announced to build the Shahtoot dam, which will provide safe drinking water to Kabul residents.

Natural disasters and humanitarian assistance. In 2020, Afghanistan received from donors US $564.5 million (50 percent of required aid) for coordinated response, in addition to US $96 million left from 2019. These funds were used to provide life-saving assistance to 11.75 million people nationwide. Denmark contributed US $3 million to help Afghan farmers affected by natural disasters. Assistance is expected to be provided to 129,000 farmers. The Afghanistan Humanitarian Fund has contributed US $9.5 million to a FAO-led project that aims to boost the resilience of farmers affected by conflict and natural disasters in 16 of Afghanistan's most food insecure provinces. The Republic of Korea and FAO will provide emergency assistance to around 1,600 vulnerable and severely drought and flood-affected farming families. The German Federal Ministry for Economic Cooperation and Development has committed to invest €240 million to create jobs, fight hunger and poverty, strengthen Afghan institutions, and build and maintain infrastructure.

Dams. Work on the Palto Dam in Sharana, the capital of south eastern Paktika province, kicked off. The dam would be completed in three years at a cost of 17.5 million afghanis. The 30 metres high Palto Dam would irrigate 2,500 hectares of land in the province. Work on the second phase of the Kajaki dam was launched in southern Helmand province. With the completion of the second phase, the dam's power-generating capacity would increase from 52 to 102 MW. Electricity from the dam would be supplied to neighboring Uruzgan and Kandahar provinces, as well as Helmand. The project is executed and financed by a Turkish company.

The Afghan Minister of Agriculture, Irrigation & Livestock (MAIL) said that it plans to establish commercial farming programs by offering thousands of acres of land to farmers who intend to raise cash crops. The Agriculture Ministry says that the new program will help farmers to eventually increase their crops "tenfold". Afghanistan, despite having fertile lands and excellent fruit always imports fruits from other countries because of the lack of facilities. Farmers said that the establishment of commercial farmland would help to reduce imports and increase domestic production. MAIL said that the government has begun implementing around 430 projects in Baghlan province to manage agricultural products. Officials said that the projects include dozens of refrigeration systems, vegetable stocks, raisins storages, and other accessories aimed to improve the agricultural earnings of Baghlan farmers. The projects could provide job opportunities for 4,200 of the Baghlan residents during the implementation of these projects.

ADB Operations in Afghanistan

Since 1966, ADB has committed almost US $5.39 billion in grants and provided US $120.4 million in technical assistance to Afghanistan. These amounts include ADB-administered co-financing. Cumulative lending totals US $977.1 million.

Agriculture, water resources, and rural development. ADB has confirmed an additional US $18.3 million in funding for the "Panj-Amu River Basin Sector" project that is aimed at enhancing agricultural productivity in northeast Afghanistan. These new funds will be used to bolster disaster and climate risk resilience in watersheds in additional three provinces; improvements in water management and expansion of networks are also planned in six different provinces. The increased financing is directed to expand forestry and rangeland protection programs, revegetation and reforestation programs, and to improve water availability to households for irrigation purposes.

In 2020, Afghanistan received a total of US $240 million grant co-financing from IFAD and WB for the "Arghandab Integrated Water Resources Development" project.

Energy. In 2020, US $118 million grant was provided from the Afghanistan Reconstruction Trust Fund (ARTF) for the Energy Supply Improvement Investment Program – Tranche 7. In 2020, commitments from ADB's own funds

amounted to US $10 million for the Mazar gas-fired power project in Afghanistan. The project is the first private sector gas-fired plant in Afghanistan to be funded by development finance institutions. The project cost a total $89 million, will use indigenous gas and is expected to generate 404 gigawatt-hours of power annually.

ADB approved a $110 million grant to boost power supply and strengthen Afghanistan's energy sector by improving its sustainability and promoting cross-border energy supplies from main Central Asian Suppliers. The project will facilitate the Afghan system's synchronous operation with the Uzbek system and the Central Asia Power System (CAPS). The project will help address Afghanistan's power deficit by immediately increasing power import capacity by 900 MW. The project is financed from ADB's Special Funds resources and is part of an overall US $1.2 billion Energy Supply Improvement Investment Program (2015-2024).

Future Directions

In September 2020, ADB approved the Country Operations Business Plan, 2021-2023 for Afghanistan, which is consistent with national development strategies and reflects the government's priority areas. Under the plan, ADB will continue to assist with pandemic recovery while focusing on agriculture, natural resources, rural development, energy, and transport along with capacity building, institutional development, and sector reform.

In line with the Country Partnership Strategy, 2017-2021 for Afghanistan, ADB will work to expand access to economic opportunities, markets, and services; build stronger institutions and human capital through better governance and skills development; and increase environmental sustainability and resilience to climate change and disasters. It is formulating a new country partnership strategy for 2021-2025.

Source:
https://www.adb.org/sites/default/files/publication/27747/afg-2020.pdf

WB Operations in Afghanistan

Since April 2002, the International Development Association (IDA) has committed over US $5.1 billion for development and emergency reconstruction projects, and 8 budget support operations in Afghanistan. This support comprises over US $4.7 billion in grants and US $436.4 million in no-interest loans known as "credits". As of 30 August 2020, the Bank has 11 active IDA-only projects (US $840 million) and 17 projects jointly funded with ARTF, with net commitment value of over US $1.4 billion from IDA.

Ongoing operations

Agriculture and water management, and land management. National Horticulture and Livestock project (US $190 million – grant; US $12.5 million re-allocated to GoIRA COVID-19 response; US $28.2 million – Afghan Farmers' Contribution): the work program has been adjusted to facilitate priority activities that can be completed by the project closing date on December 31, 2020. The project covers 291 districts in all 34 provinces, and, so far, has reached over 580,000 farmers/beneficiaries, including around 242,000 women. Overall, over 80% of the targeted clients were satisfied with the agricultural services; almost 55 percent of farmers have adopted elements of the horticulture technology packages; about 83,000 producers were provided with improved postproduction facilities, tools, and market access. 1,353 small water-harvesting structures were constructed; over 2,000 raisin drying houses were successfully established; more than 150,000 kitchen gardening plots were established; 25,000 backyard and 3,000 small-scale poultry production units were created for 28,000 women. Work for construction of 25 dairy collection centers has been completed.

Irrigation Restoration and Development project (IDA Grant – US $97.8 million/ARTF Grant – US $118.4 million/Government of Afghanistan – US $3.5 million): progress has been made in all areas of the project. In the irrigation component, 200 irrigation schemes have been rehabilitated, covering 284,000 ha of irrigation command area and 521,300 farmers. A total of 25.68 kilometers (out of 58.26 kilometers end target) of critical river basin erosion protection in various parts of the country have been completed so far. In the small dam component, a prefeasibility review of 22 small dams resulted in a feasibility study being conducted on the six best ranked dams in the northern river basin (which is not on international rivers). Minor repair works for Qargha dam in Kabul have been completed, while Darunta dam in Jalalabad is in progress. Dam safety guidelines for Afghanistan have been developed and completed under the project. Dam Safety Inspection reports have been prepared for 10 existing dams in various parts of the country. In the Hydromet component, installation of 127 hydrological stations and 56 snow and meteorological stations was completed in 5 river basins of the country. Hydrogeological maps have been prepared for the Preliminary National Ground Water Potential Map and National Data Availability/Well Depth-Water Level/Water Quality Maps. The project will be completed as scheduled on December 31, 2020. The current project focus is to complete the 56 ongoing contracts by the project closing date. The National Water Affairs Regulation Authority is working to prepare the project exit strategy and work plan to complete the ongoing contracts.

Afghanistan Land Administration System Project (IDA Grant – US $25 million/ARTF Grant – US $10 million): the project's objective is to support the development of the Afghanistan land administration system and provide the population in selected areas with improved land registration services, including issuance of titles and occupancy certificates (OCs). The project also focuses on women's economic empowerment through policy development to enhance female ownership and inheritance of land and other family assets.

Afghanistan Strategic Grain Reserve project (IDA Grant – US $20.3 million; US $9.7 million – JSDF[85]). The project is designed to establish a strategic wheat reserve to be available to Afghan households to meet their needs following any unforeseen emergency that affects access to wheat for their consumption, and to improve the efficiency of grain storage management. It was mutually agreed to close the project on 31 August 2020 (ahead of the original closing date of 1 July 2022), as the project did not witness any substantive implementation progress, neither on the construction and rehabilitation of the grain silos, which was delayed because of procurement-related issues, nor on the establishment of the state-owned corporation.

Energy. CASA-1000 (IDA Grant/Credit – US $526.5 million): Afghanistan is expected to receive 300 MW of electricity import from Tajikistan and the Kyrgyz Republic through the lines from Sangtuda substation, and Tajikistan to Chimtala substation in Kabul via Pul-e-Khumri. Of the total project financing, Afghanistan has received US $316.5 million in the form of an IDA grant. The grant will support construction of about 560 km of an overhead HVDC transmission line from Sangtuda converter station in Tajikistan to Nowshera converter station in Pakistan. In addition, Afghanistan has received a US $40 million grant from the ARTF for the CASA Community Support Program. The last procurement of the HVDC transmission line from the Afghanistan border to Nowshera in Pakistan was signed on 20 May 2020.

Herat Electrification project (IDA Grant – US $60 million) The project aims to support DABS[86] to provide new or improved electricity services to over 230,000 people and 1,600 institutions and businesses in selected areas in Herat province. As a remarkable accomplishment during the COVID-19 pandemic, the project successfully supplied and installed solar back-up systems for 10 hospitals designated for COVID-19 patients in Herat province.

Naghlu Hydropower Rehabilitation project (US $83 million): two additional turbine type pumps required to completely drain both galleries were installed (August); a bathymetric survey of the section of the Naghlu reservoir near the face of the dam was conducted (April). DABS also performed an internal interim sediment assessment. Sediment samples were delivered to GSG laboratory in India and the result of the interim sediment assessment was provided in June. The Darunta HPP will be renovated, and the closing date of the project will be extended.

Gender. Strengthening Women's Economic Project (US $2.7 million by JSDF); Women's Economic Empowerment National Priority Program (US $5 million).

Source: World Bank Group in Afghanistan: Country Update; https://documents1.worldbank.org/curated/en/733171601494842102/pdf/The-World-Bank-Group-in-Afghanistan-Country-Update.pdf

Due to COVID-19, WB: (1) approved a US $400 million grant to help Afghanistan sustain the pace of key economic and public finance reforms, and support the country to manage current risks and uncertainties compounded by the COVID-19 crisis to improve business regulation and encourage private investment, expand social inclusion and support civil service reforms, increase resilience to natural disasters, improve tax administration and public financial management, and safeguard fiscal sustainability; (2) approved a US $100 million grant to assist in stabilization of the financial sector and support micro, small and medium-sized enterprises in the country's effort to recover from COVID-19.

FAO Operations in Afghanistan

The Country Programming Framework (CPF 2017-2021) sets out 4 strategic pillars of expertise to guide FAO partnership with and support to the Government of Islamic Republic of Afghanistan: (1) Better governance through improved capacity for policy planning, land reform, decentralization, and management of common natural resources; (2) Fostering expansion of irrigation and field water management; (3) Intensive agriculture for surplus commercialization, value chains development, and job creation; (4) Supporting vulnerable farmers for improved food & nutrition security, resilience, and emergency response to natural and man-made disasters and climate change.

FAO and the Ministry of Energy and Water (MEW) jointly organized a nine-day training workshop on bathymetric survey and HEC-RAS (hydrological module) dam break analysis (**14-23 January, Kabul**). The workshop served as a platform for the stakeholders to discuss and brainstorm the major challenges faced by water sector, in particular by the Dam Safety Unit of MEW.

The Government of the Kingdom of Sweden and FAO have joined hands to provide agriculture assistance to 84,000 vulnerable and food insecure smallholder farmers in 3 most food insecure provinces of Afghanistan, namely Daikundi, Ghor and Uruzgan. Under this project, the vulnerable smallholder farmers in the most food-insecure areas will receive improved and certified wheat seeds and training on improved agriculture practices, which will enable them to rebuild their agricultural livelihoods and enhance their resilience to future shocks.

FAO in close collaboration with MAIL supported the development of Afghanistan's Agro-Climatic Zoning Atlas (under the FAO project "Strengthening Afghanistan Institutions' Capacity for the Assessment of Agriculture Production and Scenario Development"). The development of this Atlas has enabled the experts to understand the possible climatic change scenarios for the country for the next 100 years using four Representative Concentration Pathways (RCP) characterizing a range of possible future climate distortions for the periods of 2011-2040, 2041-2069 and 2070-2099. The job training on Provincial

[85] Japan Social Development Fund
[86] Afghanistan Power Company

Agroecological Zoning & GIS/RS was held for Provincial and District Agriculture, Irrigation and Livestock Offices of Nangarhar, Kunar and Laghman provinces.

Under a GEF funded project in Afghanistan, FAO in collaboration with MAIL supported the rural communities in Kunar province by providing more than 50 000 walnut saplings for reforestation. This effort aimed to raise the awareness of the communities about sustainable forest management, rehabilitation and restoration of degraded forest areas, increasing biomass and promoting biodiversity conservation, reducing soil erosion, enhancing carbon sequestration, and reducing GHG emission.

GEF approves over US $78 million to support FAO-led projects. 16 countries, including Afghanistan, will benefit from projects designed to conserve biodiversity, enhance ecosystem services, combat land degradation, and preserve natural resources on land and water. In December 2020, GEF approved the grant for the 5-year project "Institutionalizing Transboundary Water Management between Tajikistan and Afghanistan for the Panj River Sub Basin" for US $7.9 million. The aim of the project is to establish new operational mechanisms and foster effective transboundary water management between Tajikistan and Afghanistan to manage nexus trade-offs in the Panj River basin. The project has 4 components: (1) Jointly agreed Transboundary Diagnostic Analysis considering climate change, environmental flows, and development related nexus trade-offs; (2) Transboundary water management strategy and action program and underpinning institutional arrangement for the Panj River basin; (3) Demonstration projects to pilot interventions for improved transboundary water management; (4) Enhanced capacity of key stakeholders, reinforced participatory processes, mainstreamed gender equality focus, and effective project progress monitoring.

Source:
http://www.fao.org/countryprofiles/index/en/?iso3=AFG

USAID Operations in Afghanistan

Agriculture and water management. USAID is working with MAIL to increase the productivity and income of Afghan farmers; create value chains connecting farmers, processors, and wholesalers; and increase opportunities for exporting Afghan goods to international markets. In 2020, the following projects were continued: Strengthening Watershed and Irrigation Management (2016-2021); Promoting Value Chains (2017-2020); Grain Research and Innovation (2017-2022); On-Farm Water Management.

Source: https://www.usaid.gov/afghanistan/agriculture

Economic growth. The following projects were continued: Women in the Economy (2015-2020); Afghanistan Investment Climate Reform Program (2015-2022); Multi-Dimensional Economic Legal Reform Assistance Program (2018-2023).

Source: https://www.usaid.gov/afghanistan/economic-growth

Energy. USAID will finance four energy projects in Afghanistan. DABS has signed four US $160 million agreements with private power producers. After the completion of the projects, Afghanistan will have 110 MW of electricity.

Infrastructure. Rural Water, Sanitation and Hygiene Project (2016-2020) to support the Afghan Government and civil society in improving access to safe drinking water and community sanitation facilities, and improving hygiene practices in households, schools, and health centers.

Kabul Managed Aquifer Recharge (2015-2020) project to pilot-test managed aquifer recharge and aquifer storage and recovery technologies as one solution to addressing the rapidly diminishing domestic water supply for Kabul City.

U.S. Geological Survey (USGS) Water Supply Data Monitoring and Analysis (January 2018 – December 2022). USGS, through support from USAID, is building the capacity of the Ministry of Energy and Water (MEW) in order to improve management of the Kabul River Basin through increasing water-data availability and analysis.

Power Transmission Expansion and Connectivity (2011-2023). USAID is funding the construction of a 500 km transmission line connecting the two networks, as well as improvements to the existing southeastern grid. Once the project is completed, DABS will be capable of providing affordable power to about 2 million Afghans who have never had power or who are underserved.

USAID Engineering Support Program (2016-2020) provides architectural, engineering, and construction management services for infrastructure projects related to energy, transportation, drinking water, sanitation, health, education, and agriculture.

Source: https://www.usaid.gov/afghanistan/infrastructure

China

The Fifth Plenumof the 19th Central Committee of the Communist Party of China, held in late October, issued a guide to action – **Proposals for Formulating the 14th Five Year Plan** (2021-2025) for national economic and social development and the long-range objectives through the year 2035. It also provided interpretation on the meaning of "green development" and offers a view into what China's leadership is thinking about climate action. Proposals stipulate that by 2035 "China's carbon emissions will gradually decline in a state of stabilisation after peaking, and there will be fundamental ecological and environmental improvements". Even though the Proposals only briefly and qualitatively touch upon climate change, they nevertheless lay an important political foundation for key 14th FYP climate and energy targets. Particular attention will be paid to binding targets on carbon intensity, the proportion of non-fossil fuels in the primary energy mix, and coal power capacity.

Source: https://chinadialogue.net/en/energy/chinas-14th-five-year-plan-climate-and-energy/

At the Twin Sessions – National People's Congress (NPC) and Chinese People's Political Consultative Conference (CPPCC) – held in May 2020, 11 NPC members made a **joint proposal to strengthen biodiversity conservation**. In June 2020, a few weeks after China ended its nationwide lockdown, the central government published a comprehensive 15-year strategy (2021-2035) aiming to achieve 26% forest cover, put 60% of wetlands under protection, designate 18% of China's land areas as national parks and "thoroughly protect the habitats of endangered species." By the end of 2019, roughly a quarter of China's landmass had already been designated under so-called "ecological redlines", a celebrated model of spatial planning to align developmental needs with ecological considerations. The draft measures for managing ecological redlines, published in November, determine certain human activities that, subject to regulation, will continue to happen there, including subsistence farming, herding, and fishing by indigenous people, and heavily regulated mining and infrastructure building.

The outbreak of Covid-19 has essentially torpedoed China's ambitious 2020 biodiversity agenda. China had been scheduled to preside over crucial United Nations talks in Kunming in October, to reach a new global deal for biodiversity protection post-2020. The whole negotiation process is now postponed to 2021.

On 3 March 2020, the General Office of the Chinese Communist Party's Central Committee and the State Council jointly released a Guideline on Building a Modern Environmental Governance System. It is a part of China's long-term strategy of establishing an 'Ecological Civilisation'. With the Guideline's target of putting in place a sound environmental governance system by 2025, the top policy-makers put ever greater emphasis on fundamentally transforming China's environmental governance system at all levels. To this end, the Guideline specifies the responsibilities of government agencies, corporate entities, civil society and the public, and emphasizes the joint efforts to be made by all actors.

2020 overall trends of Chinese Belt and Road Initiative (BRI) investments: Chinese overseas investments into countries of the BRI were about US$47 billion in 2020, about 54% less than in 2019; Several countries, such as Vietnam, saw an increase in BRI investments in 2020 compared to 2019; Countries of the Belt and Road Initiative (BRI) were less affected by the slow-down of Chinese overseas investments compared to non-BRI countries: Chinese investments in non-BRI countries dropped by 70% compared to 2019 to about US$17 billion in 2020; BRI investments accelerated in the logistics sector, and slowed in all other sectors; Renewable energy investments (solar, wind, hydro) for the first time were the majority of Chinese overseas energy investments – increasing their share from 38% in 2019 to 57% in 2020; SOEs are the dominant partner for investments in the BRI – with only Alibaba as a non-SOE being a major investment partner in 2020; China's BRI investments in 2020 declined faster than global FDI flows, which were expected to decline by 16% into emerging economies.

Global Civil Society Call on Chinese Authorities. On April 29, 2020, the Rivers without Boundaries along with other 260 civil society groups across the world called on the Chinese government to ensure that COVID-19 related financial relief for struggling Belt and Road projects flows only to high quality investments satisfying specific criteria, and avoid bailing out projects already mired in environmental, social, biodiversity, climate, or financial risks prior to the onset of COVID-19. In February 2020, China's Ministry of Commerce and the China Development Bank (CDB) jointly issued a notice creating a mechanism for directing finance to Belt and Road projects that have been impacted by the COVID-19 pandemic. Crucially, the notice states that projects that are "high quality", "legally compliant", and have "controllable risks" can qualify to receive COVID-19 related financial relief. In the statement, civil society groups set out ten specific principles that if present could help to ensure that projects are "high quality". Environmentalists also highlighted 60 Chinese sponsored projects in the mining, pulp and paper, hydropower, infrastructure, fossil fuel, and other sectors which do not meet these criteria. Six out of 60 listed projects are located in Russia. The RwB also supported inclusion on the list of a dam on Rufiji River in Tanzania that destroys the largest UNESCO World heritage wildlife reserve in Africa and several other similar outrageous cases. Full Statement and annotated list of risky projects available here.

China more than doubled its construction of new wind and solar power plants in 2020 from a year earlier. China, the world's biggest greenhouse gas emitter, added 71.67 GW of wind power capacity last year, the most ever and nearly triple 2019's levels, according to data released by the National Energy Administration (NEA). China's 2020 figure is ahead of the 60.4 GW of new wind capacity added globally in 2019, according to data from the Global Wind Energy Council. New solar power capacity also rebounded in 2020 to 48.2 GW after falling for two straight years. By the end of 2020, China had 281.5 GW of wind generation capacity, and 253.4 GW of solar generation capacity. However, China continued to build new thermal power capacity in 2020, according to the data, with 56.37 GW the highest level since 2015. Studies have shown that China completed 11 GW of new coal-fired power capacity in the first half of 2020, and had an additional 53 GW in its planned project pipeline, 90% of the global total.

Vast River Diversion Plan Afoot In Western China. China's premier, Li Keqiang, has called for options to be examined for the hugely ambitious western section of the South-to-North Water Diversion project. The idea of diverting water from China's wet south to its dry north was first proposed in 1952. Today, the project consists of an eastern, a central and several potential western routes. The central one, completed in 2014, takes water on a 15-day journey from Hubei province more than 1,400 kilometres north to Beijing and Tianjin. The eastern one began transferring water from Jiangsu to Shandong and Tianjin in 2013. The even more challenging western route, which would link the Yangtze and Yellow rivers across the Tibetan plateau, has never left the drawing board due to

concerns about its environmental and social impacts. Talk of it has now resurfaced amid an economic slowdown in China.

Source: https://chinadialogue.net/en/nature/11762-vast-river-diversion-plan-afoot-in-western-china-2/

China experienced intense floods starting in June. The floods affected more than 35 million people, and left at least 278 dead or missing. The cost of the floods has been estimated at $32 billion. Some of the most affected areas were around the densely populated Yangtze river basin, including the provinces of Sichuan and Guizhou, and the city of Chongqing, where more than 30 million people live. This year's floods are consistent with projections that, as the planet warms, a greater proportion of China's rain would fall as more concentrated downpours. A 2016 study found that China is the country with the highest risk of floods in the world – a situation that will worsen if carbon emissions continue to rise unchecked.

Source: Counting the cost 2020: A year of climate breakdown, Christian Aid, December 2020

Chinese paddlefish, native to the Yangtze River, declared extinct by scientists. One of the world's biggest freshwater fish species, growing up to 7 metres long, is believed to have died out between 2005 and 2010. The last confirmed sighting of the fish was in 2003. Dam-building, overfishing, busy water traffic and pollution have taken a toll, with the fish population disappearing.

Source:
https://www.scmp.com/news/china/society/article/3044520/chinese-paddlefish-native-yangtze-river-declared-extinct?module=perpetual_scroll&pgtype=article&campaign=3044520

Other Asian Countries

India faces serious water risks. 21 major cities (including New Delhi, Bengaluru, Chennai and Hyderabad) are expected to run out of water by the end of 2020 & 80% of groundwater has been withdrawn – yet, it still lacks efficient water management polices. More than 50% of the population today has no access to safe drinking water and about 2 lakh people die every year due to lack of access to safe water. It is predicted that at least 40% of the Indian population will have no access to drinking water by the year 2030. The Central Water Commission states that a maximum of 3,000 billion cubic meters of water a year is needed, and what India receives is 1,000 billion cubic meters in excess – i.e, 4,000 billion cubic meters of rain per year. This reveals that water is in abundance. Only 8% of this water is captured, with the rest of the water being runoff. In this context, the Times of India launched an initiative, the Times Water Summit 2020 under the banner of "Make India Water Positive" for stronger and unified water infrastructure by bringing key stakeholders of the ecosystem – the people, the policymakers, the corporates, and the agricultural community – all under one roof. It aims to create awareness and action to support the country's water infrastructure and propagate policy-level interventions.

In September, tens of thousands of farmers from different states of India left their homes and took to the streets to protest against the farm reforms passed by Narendra Modi. The reforms have left many farmers in a difficult situation. Some fear their long ongoing struggles will worsen and others fear the reforms will only add to the disturbing rash of farmer suicides across the country. For its own part, Prime Minister Modi's government stated that the reforms will benefit farmers. It further says the reforms will allow farmers to market their produce and boost production through private investment.

Pakistan signed on May 14 a 442 billion Pakistan rupees contract for a joint venture with the Chinese state-run China Power and Frontier Works Organisation (FWO), the commercial arm of the Pakistan military despite India's repeated objections for the Diamer-Bhasha Dam project is on the Indus river between the Kohistan district in Khyber Pakhtunkhwa and the Diamer district in Gilgit Baltistan, Pakistan administered Kashmir. The project involves the construction of an RCC dam (Roller Compact Concrete) to a height of 272 metres that will result in a reservoir of eight million acre feet and potential for generation of over 4,500 MW of electricity. It has been mentioned that the reservoir could flood 100 kilometers of the Karakoram Highway and a total of 31,000 persons living in the area will be displaced, and the reservoir will also submerge tens and thousands of rock carvings and other artifacts dating back to 6th millennium in this earthquake prone region. It is said by experts that never before in the history of the world has an RCC dam of this size ever been built, or attempted, in such "unforgiving" conditions.

In Bangkok the tap water turns salty. It is reported that seawater is infiltrating the Chao Phraya river, a source of much of central Thailand's water, as it dries. The river's flow is too weak to prevent saltwater from moving upstream and that is affecting drinking water in many parts of Bangkok. Outside the capital, the country's severe drought is harming farm production. The Thai government told rice farmers not to plant their winter crops, to prevent further water draws that would have been needed for irrigation. Rather than divert the water for farming, the plan is to use it to counteract the saltwater intrusion plaguing the city.

In Indonesia, environmental groups are urging officials in Jakarta to invest in the city's natural resources to help reduce future flood damages. Activists say protecting groundwater, planting trees, and focusing on long-term prevention can help avert more flooding disasters. Jakarta experienced record-breaking rainfall this month, which has displaced 175,000 people and killed more than five dozen.

Similar to what happened in 2019, 2020's **monsoon season has been abnormally rainy in Asia**. Scientists note that as the planet warms, the total monsoon rain will increase, though some areas will receive less rainfall due to changes in wind patterns. This means that heavy rainfall events such as those seen in Pakistan this year will likely become more frequent. Heavy rains during the monsoon caused 410 deaths in **Pakistan**. The cost of the damage cau-

sed by the floods and landslides has been estimated at more than $1.5 billion. In **India** in the second consecutive year between June and October, there were at least 2,067 deaths and damages amounting to $10 billion. The city of Hyderabad, where almost 10 million people live, saw a record rainfall of 29.8cm in 24 hours – almost 6 cm more than the previous record. Extreme rains in July in the island of Kyushu, in **Japan** caused 82 fatalities and had an estimated cost of more than $8.5 billion. In some parts of the island, rainfall exceeded 410 mm in 24 hours. The 2020 monsoon season brought massive floods across Southeast Asia, with Vietnam one of the most affected countries. In just two months, October and November, the country was hit by at least nine tropical storms and typhoons. The most destructive of them was Typhoon Molave. The Philippines were hit by two of the most damaging tropical cyclones of 2020: Typhoon Goni and Typhoon Vamco.

Source: Counting the cost 2020: A year of climate breakdown, Christian Aid, December 2020

Mongolia markets its Blue Horse programme as adaptation to climate change and is securing climate funding on that basis. The Mongolian government has set its sights on a major expansion of heavy industry in the Gobi desert. Supported by development banks, corporations and Chinese demand, over the coming years southern Mongolia will become home to at least 20 mega projects, including eight coal mines, four coal processing plants, two coal power plants and a copper smelter. All this heavy industry demands a lot of water. A report analysing the gap in supply and demand, sponsored by the World Bank, was published in January 2021. It predicts that by 2040 demand for water in the south Gobi region may increase by two-and-a-half times, which will exceed supply by more than 20 million cubic metres annually (about 8,000 Olympic swimming pools). To this end, the World Bank has praised Mongolia's "Vision 2050" development programme. This is where the Blue Horse programme comes in: a nationwide masterplan for water infrastructure development. The programme involves building at least 33 multipurpose dams and hydropower reservoirs on 12-13 rivers. Mongolia has only 13-15 perennial rivers, with renewable freshwater annual resources of about 30 cubic kilometres. This is a small amount to support these megaprojects as well as wetlands and river ecosystems. The Blue Horse programme largely consists of projects designed during Soviet-Mongolian cooperation era in the 1970-80s. These were abandoned after the dissolution of the Soviet Union. The Blue Horse is promoted as acting on climate change. In early 2020, 265 civil society organizations from 70 countries called on the Chinese government and its policy banks to ensure that Covid-19 financial relief along the Belt and Road is provided only to investments that satisfy specific criteria. Among the 60 most dangerous projects was the Blue Horse, along with Erdeneburen Hydro.

Source: www.thethirdpole.net/en/energy/analysis-blue-horse-mongolia-water-infrastructure/

Large River Basins in South Asia

Mekong River Basin

Water levels in the lower Mekong have perked up after last year's severe drought. But rainfall is not the only variable that influences river flows. Chinese dams have been the source of much consternation among the four downstream countries of Cambodia, Laos, Thailand, and Vietnam. When water levels in Thailand dropped suddenly by more than a meter in the first days of 2021, it was because China cut dam releases in half for electric grid maintenance. Experts said to watch for rising tensions over water use in the basin, which is already beset by sand mining, saltwater encroachment, land subsidence, and a dam-building spree in countries besides China. The basin took a step toward defusing the conflict last October, when China agreed to share data year-round on water levels and dam releases via an online information sharing platform. Independent reports based on satellite monitoring are being produced, as well. The Mekong Dam Monitor, a project of the Stimson Center, a think tank, and Eyes on Earth, a remote sensing firm, debuted last December.

Source: https://www.circleofblue.org/2021/world/four-international-water-stories-to-watch-in-2021/?mc_cid=0b99180665&mc_eid=db7dc5ba26

In February, the Thai cabinet cancelled a rapids blasting project on the Mekong after two decades of resistance and advocacy by grassroots communities and civil society networks supported by International Rivers. This means that a highly biodiverse 600 km area of the Mekong, which is critical to the livelihoods of thousands of local and traditional peoples, will be protected from destruction. The Cambodian government also recently announced that it has suspended all dam building on the mainstream of the Mekong River for at least 10 years, assuring that at least this part of the Mekong River will continue to flow freely.

In June 2020, a draft Mekong basin development strategy (BDS) to respond to critical environmental and social pressures from ongoing and planned developments and climate change in the Mekong River Basin received a greenlight. This will pave the way for a final consideration and approval by the MRC's higher governance body, the Council of ministers, and for the MRC and all relevant actors to begin implementation timely next year. The BDS sets five strategic priorities to respond to demanding challenges facing the basin; these include maintaining the ecological function of the Mekong River Basin, enabling inclusive access and utilization of the basin's water and related resources, improving optimal and sustainable development of water and related sectors, strengthening resilience against disasters, and boosting cooperation among all basin countries and stakeholders. Among key outputs to be delivered in the next ten years by all relevant actors in their cooperation are maintenance of acceptable flows and water quality that cover tackling plastic waste, putting in place a basin-wide sediment management plan, and ensuring there are effective fish passes. They will be extended to include improved flood and drought forecasting and communication with the public, and cooperation and coordination mechanisms for data and information sharing on water infrastructure and related water emergencies.

Source: www.mrcmekong.org/news-and-events/news/bds-20200612/

Developments on the Xayaburi Dam. Although the Mekong River Commission led prior consultation process over the construction of the Xayaburi Dam in Laos ended without agreement in 2011, the Commission made strong technical assessment and provided a set of recommendations. Despite significant opposition from Cambodia (harm to fisheries) and Vietnam (harm to sediment transport, flow regimes) and NGOs (anti-dam, harm to livelihoods), Laos proceeded with the construction of the Xayabury project. Government officials and stakeholders' visit to the construction site of the the Xayaburi Dam in early 2020 showed that the Lao government and developer made significant investments in the fish pass and sediment transport related mitigation measures to address the recommendations provided in a Commission's technical review report. Also the Mekong River Commission is partnering with the Lao government and the developers of the dam to monitor its transboundary environmental impacts through Joint Environmental Monitoring Program, with view of collecting, generating and sharing reliable and scientific data and information on site-specific issues regarding hydrology and hydraulics, sediment, water quality, aquatic ecology and fish and fisheries.

Cooperation under the Lancang-Mekong Cooperation Mechanism in 2020. China launched the Lancang-Mekong Cooperation Mechanism in 2015. All six riparian countries (Cambodia, China, Laos, Myanmar, Thailand, and Vietnam) participate in this mechanism. Since then, regular meetings are organized, joint working groups have been established, different thematic centers have been opened and strategies and action plans have been drafted to build trust and accelerate cooperation. A timeline of important events, milestones, achievements and regional events can be consulted here.[87] The following events were held in 2020:

Date	Activities, Meetings and Milestones
20.02.2020	5th Lancang-Mekong Cooperation Foreign Minister's Meeting in Vientiane, Laos *Documents:* Joint Press Communiqué of the 5th LMC Foreign Minister's Meeting
26.03.2020	3rd Lancang-Mekong Cooperation Week Activity on Water resources (Online)
April-August, 2020 (On-going)	Ongoing Discussion on Regional Drought (Online) *Documents:* EoE Report, Stimson Report, MRC Report, Regional Responses (1, 2), Tsinghua Report, China Daily Article
21.05.2020	Online Meeting Regarding Information Sharing Platform/Water resources Management; Record of the Video Meeting of JWG on Lancang-Mekong Water Resources Cooperation in 2020
24.08.2020	3rd Mekong-Lancang Cooperation (MLC) Leaders' Meeting – "Enhancing Partnership for Shared Prosperity". China Commits to Year-Round Information Sharing with Lancang-Mekong Riparians *Documents:* Vientiane Declaration
24.09.2020	2nd Virtual Meeting of the Joint Working Group on Lancang-Mekong Water Resources Cooperation
01.12.2020	China launches the LMC Water Resources Cooperation Information Sharing Platform

Brahmaputra and Indus River Basins

Tensions spiked between China and India in December 2020 after the Chinese government announced plans to build a dam across one of the major waterways flowing from Tibet. If built, the dam would be the biggest hydropower project in the country, a 60-gigawatt facility that would aid China in reaching carbon neutrality by 2060. The dam's exact location is still unknown, but Chinese officials in Beijing suggested it could be close to where the Yarlung Tsangpo flows into India, an area called "The Great Bend." The river is called the Brahmaputra in downstream India and Bangladesh. On the other side of the border, Indian officials are concerned a new dam could lead to increased flash floods downstream, water scarcity, and the possibility of weaponized water. The project also prompted Indian officials to announce that they are considering a dam on their side of the river, to mitigate the effects of the Chinese dam. The possibility of two dams raised questions about ecological stability. The dam also could inflame a border dispute that has been stewing between India and China for nearly seven decades. Over the last year, the two

[87] Devlaeminck D. Timeline of the Lancang-Mekong Cooperation Mechanism. February 2021. www.academia.edu/36426349/Timeline_of_the_Lancang_Mekong_Cooperation_LMC_Mechanism_Last_Updated_February_2021_

countries have clashed over the 2,100-mile segment of border in the Himalayan region that is imprecisely drawn. The area has seen violent altercations recently, including one in June where 20 Indian soldiers were killed and in September when China claimed Indian troops fired shots at Chinese soldiers. This mutual mistrust, along with the fact that the two countries do not have a water-sharing treaty, has laid groundwork for the current conflict. The countries did sign a 2002 agreement to share hydrological data, yet the border dispute has cut relations in that field as well. The Chinese embassy in New Delhi has since assured India that the new dam is still in its early stages, and its downstream impacts will be thoroughly tested.

Source: www.circleofblue.org/2020/world/hotspots-h2o-tensions-rise-as-india-china-clash-over-proposed-chinese-dam/

National Geographic published in 2020 a detailed report on the status and a possible future of the Indus River region. Unlike the Brahmaputra, which is mostly fed by the summer monsoon, most water in the Indus comes from the snows and glaciers of the Himalaya, the Karakoram, and the Hindu Kush. Most of the glaciers are now shrinking. At first, that will increase the flow in the Indus. But if temperatures rise as predicted, and the glaciers continue to melt back, the Indus will reach "peak water" by 2050. After that, the flow will decline. Humans already use 95 percent of the Indus, and the population of the basin is growing fast. An international group of scientists analyzed glacial water towers worldwide. According to them, the Indus is the most critical, given the region's "high baseline water stress and limited government effectiveness". Pakistan will suffer most. Local experts advocate a radical overhaul of the system. Both Pakistan and India have ancient water-harvesting traditions, adapted to the rhythms of the river and the rains, that have been neglected since British times. Instead the two countries have focused on huge engineering projects – on dams and canals. Both have plans for new dams in the Indus Basin. Local activists are campaigning for a law that would grant personhood-and rights-to the Indus. They propose checks on hydro projects, pollution controls, and a fund to restore the river.

Source: www.waterpolitics.com/2020/06/16/looming-water-crisis-for-270-million-south-asians/

11.3. America

In August, California's Death Valley National Park recorded one of the highest temperatures ever reliably recorded on Earth – 130F. In addition, California has suffered its biggest ever wildfire season in 2020, including five of the six largest fires ever recorded in the state.

The 2020 Atlantic hurricane season was record-breaking, with 30 named storms. It caused at least 400 fatalities and a combined cost of $41 billion. Hurricane Eta alone, killed 153 people in Central America, most of them in Honduras and Guatemala. In the US, Hurricanes Laura and Sally caused the most damage. While the number of tropical cyclones around the world has remained largely constant globally over the last century, in the Atlantic basin there has been an increase in the number of named storms since 1980. At least nine of the season's tropical storms experienced "rapid intensification", a phenomenon by which tropical cyclones acquire high wind speeds in a short period of time and which is becoming more common due to global warming.

Source: Counting the cost 2020: A year of climate breakdown, Christian Aid, December 2020

Every year Brazil's Ministry of Mines and Energy publishes a **"Decennial Plan for Energy Expansion"**, which includes the "large" dams (since 2004 defined in Brazil as having at least 30 MW installed capacity) to be completed within the ten-year time horizon. The number of Amazonian dams listed has steadily declined in the last few plans. The most recent plan, which is for 2020-2029, lists only three dams: Tabajara (in Rondônia), Bem Querer (in Roraima), and Castanheiras (in Mato Grosso). The 2020-2029 plan contains an ominous paragraph (p. 264) making clear that unnamed dams could be built depending on the "treatment" of conservation units (protected areas for biodiversity) and Indigenous Lands. In other words, more and more-damaging dams could be built if regulations are changed, as is proposed in bills currently moving through committees in Brazil's National Congress. This process has accelerated enormously since Jair Bolsonaro became president in January 2019. Several proposed laws would effectively eliminate environmental licensing. There is also a proposed law introduced by President Bolsonaro that would open Indigenous lands for exploitation by non-indigenous people – hydroelectric development is one of the uses specifically mentioned, development which could be carried out without requiring consent of the Indigenous groups impacted.

Source: https://news.mongabay.com/2020/10/brazils-amazon-dam-plans-ominous-warnings-of-future-destruction-commentary/

In Brazil, senior military experts predict that climate change will put the country's energy and water security at risk. The experts warned that deforestation in the Amazon region could alter rainfall patterns in Brazil, affecting hydropower plants and water supplies for major urban areas. About 63 percent of Brazil's electricity comes from hydropower and water-related sources, according to last year's government data. Brazil's armed forces are responsible for monitoring the Amazon where deforestation is surging, and the military report said that troops could be stretched thin as they also respond to humanitarian crises spurred by climate change.

Source: www.circleofblue.org/2020/world/whats-up-with-water-december-7-2020/

In the United States, water temperatures in the Great Lakes continue to rise. In Lake Michigan, the average surface temperature is 74 degrees Fahrenheit, which is 11 degrees above historical averages. Certain spots in Lake Erie and Lake Michigan exceed 80 degrees. Warming lake waters are most damaging when combined with other factors. In warm water, nutrients such as nitrogen and phosphorus result in algal blooms that kill fish, poison drinking water, and prohibit water recreation. Warming can also be lethal to fish because warmer waters hold less oxygen. A study published in the journal Science found that more than 400 freshwater and saltwater species would not be able to reproduce in their current ranges if the climate warms by 7 to 9 degrees Fahrenheit. But if the temperature rise is kept to 3 degrees, then only six dozen or so species would be pushed out of their range.

Source: www.circleofblue.org/2020/wef/whats-up-with-water-july-13-2020/

In 2020, the entire Colorado state was in some level of drought. The dry, hot spring gave way to a dry, hot summer. The water year ended with almost every part of the state in a precipitation deficit. The southwest corner of the state was hit the hardest, with precipitation levels below 30% of normal in April, May, August and September. Statewide, reservoir levels were at 49% of capacity. The total inflow into Lake Powell for the 2020 water year was just 55% of average. The low inflow to Lake Powell puts Colorado and the three other states in the upper basin of the Colorado River at risk in the future. Under the 100-year-old Colorado River Compact, the upper-basin states (Colorado, New Mexico, Utah and Wyoming) must be able to release 7.5 million acre-feet of water from Lake Powell to the lower-basin states (Arizona, California and Nevada) every year. Failing to meet this obligation would trigger mandatory water cuts in the upper basin. Climatologists warn that the trend seen throughout the basin where high temperatures and low soil moisture wiped out healthy snowpack levels is likely to become more normal in the future.

Source: https://aspenjournalism.org/weak-2020-water-year-comes-to-a-close/

US and Mexico sign agreement for Rio Grande water delivery by Mexico in October. The International Boundary and Water Commission, United States and Mexico, has signed Minute No.325, "Measures to End the Current Rio Grande Water Delivery Cycle without a Shortfall, to Provide Humanitarian Support for the Municipal Water Supply for Mexican Communities, and to Establish Mechanisms for Future Cooperation to Improve the Predictability and Reliability of Rio Grande Water Deliveries to Users in the United States and Mexico." The agreement ensures Mexico will meet the October 24, 2020 deadline to deliver Rio Grande water to the United States. In accordance with the 1944 Water Treaty, the United States is entitled to a portion of the water arriving in the Rio Grande from six Mexican tributaries for a total of at least 1,750,000 acrefeet (2,158.6 million cubic meters) over five years. The current five-year cycle ends on October 24, 2020. Mexico will deliver the final pending amount of approximately 105,000 acre-feet (130 mcm) by transferring water from Mexican ownership to U.S. ownership at Amistad and Falcon International Reservoirs on the Rio Grande. Minute No.325 also establishes work groups to analyze and develop water management tools to provide for increased reliability and predictability in Rio Grande water deliveries to users in the United States and Mexico. Moreover, it includes a provision for U.S. humanitarian support to Mexico, if needed, to guarantee municipal water supplies for Mexican communities along the Rio Grande downstream from Amistad Dam.

Source: www.ibwc.gov/Files/Press_Release_102220.pdf

At the same time, on September 17, 2020, in Monterrey around 100 farmers protested outside Conagua's offices **demanding equal distribution of water of the Rio Grande**. The participants claimed that Conagua has reduced the amount of water that they should receive to comply with the water agreement with the United States.

Source: www.waterpolitics.com/2020/10/12/water-conflicts-in-international-rivers/

Between August and November, **several fires destroyed large swathes of forests across South America**. The fires affected areas rich in unique wildlife such as the Amazon rainforest, the Pantanal wetlands, the Parana delta, and the Gran Chaco forest. Regions in Brazil, Paraguay, Argentina and Bolivia were forced to declare a state of emergency due to the intensity of the fires. The impact of the fires was extremely high. In Bolivia, the government said that 2.7 million acres have burnt this year. In the Pantanal, the estimate is that the fire affected 22% of the wetlands, equivalent to 8.1 million acres. Another 490,000 acres were burnt in the Parana River delta, in Argentina. And the Amazon forest experienced more fires this year, than in 2019, when it made global headlines.

Source: Counting the cost 2020: A year of climate breakdown, Christian Aid, December 2020

11.4. Australia and Oceania

Record high temperatures and severe drought fuelled months of devastating bushfires across Australia at the start of 2020. Starting in late 2019, and affecting more than 18 million hectares, the Australian bushfires made headlines around the world. The fires destroyed thousands of buildings, killed more than a billion wild animals and caused at least 34 deaths. The smoke from the fires travelled long distances and affected millions of people, covering the skies of cities like Sydney, Melbourne and Canberra. The cost of smoke-related health issues alone has been estimated at $1.4 billion and insured losses were estimated at $3.6 billion, although other estimates have put the total costs as high as US$70 billion. Engineering experts are

sounding the alarm about what this might mean for drinking water supplies and infrastructure. Power outages associated with the fires can compromise the water treatment process and introduce unwanted pollutants. In the longer-term, the fires increase the risk of surface water contamination. Heavy rains can flush ash, sediment, and debris into reservoirs and rivers. Water treatment equipment is often not designed to handle such a large influx of small particles.

After two years of drought ends, Southeastern Australia turns green. As the 2019-2020 summer brought record heat to Australia, New South Wales appeared to be heading into its third year of severe drought. From January 2017 through October 2019, the southeast Australian state experienced its lowest amount of rainfall in nearly a century. During that time, farmlands were parched, lakes dried up, and millions of fish died. After more than 34 consecutive months of dry conditions, steady and occasionally heavy rain finally arrived in New South Wales. From January to May 2020, southeastern Australia received above-average rainfall and even broke records in Victoria. The wet start to 2020 has alleviated short-term water deficiencies in eastern Australia and helped provide a better start to the winter farming season. However, the rainfall has not yet compensated for the effects of the long-term drought, which is still evident in the Murray-Darling Basin. It will take several significant rainfall events to erase the long-term rain deficiencies across the region.

Source: https://scitechdaily.com/after-two-years-of-drought-ends-southeastern-australia-turns-green/

Central Sydney, Australia is now entirely powered by renewable energy. By using locally sourced clean energy from wind and solar farms in New South Wales, the region will now see CO_2 emissions reduced by around 20,000 tonnes each year. The move will save an estimated €308,000 per annum over the next decade. The City of Sydney is one of Sydney's central boroughs, and includes the central business district (CBD) and many inner-city residential areas too. The City is home to around 250,000 people who will benefit from green energy. All the City's operations, including street lights, swimming pools, council buildings, and even the historic Sydney Town Hall, will run off entirely renewable sources. This is the biggest green energy deal in Australia's history, with a value of over €37m overall.

Source: www.euronews.com/green/2020/07/01/city-of-sydney-now-runs-on-100-renewable-energy

Drought-hit New Zealand. Since the beginning of 2020, Auckland has received significantly less rainfall than normal. This has had a big impact on water supply. On 15th April 2020, the total volume of water stored in dams dropped below 50 per cent for the first time in more than 25 years. In this context a number of water restrictions were adjusted for residential water users. Work was also underway to bring back to service two former water sources – the Hays Creek Dam in Papakura and a bore in Pukekohe. New Zealand has deployed soldiers to help prevent drought-stricken North Island towns from running dry. The situation has become so dire that there were cases of water theft.

Severe Tropical Cyclone Harold was a very powerful tropical cyclone which caused widespread destruction in the Solomon Islands, Vanuatu, Fiji, and Tonga during April 2020. It was the first Category 5 tropical cyclone in 2020.

Palau is the first country in the world to change its immigration policies so that they benefit the climate. Visitors are now required to sign an environmental pledge upon arrival, which asks them to act in an "ecologically and culturally responsible way". Located in the Micronesia region in the western Pacific, Palau is regarded as one of the top marine tourism destinations in the world with its outstanding natural beauty and pristine seas. The pledge is one of a number of incentives to make Palau the first carbon neutral tourist destination in the world.

Source: www.euronews.com/travel/2020/12/16/visitors-to-palau-are-now-required-to-sign-an-eco-pledge-on-arrival

11.5. Europe

11.5.1. Western and Southern Europe

In 2020, **Europe was hit by several windstorms** (or extra-tropical cyclones). The two with the highest costs were Ciara and Alex, whose combined damage amounts to more than $5.9 billion. Windstorm Ciara hit the United Kingdom and Ireland in early February and continued moving eastwards over the following weeks. It caused 14 fatalities in eight countries and had an estimated cost of $2.7 billion. In October, floods caused by windstorm Alex in Southeast France and Northwest Italy killed 16 people and destroyed infrastructure valued at $3.2 billion. The Italian region of Piedmont experienced its highest rainfall since 1958, with one station recording 630 mm of rain in 24 hours.

Source: Counting the cost 2020: A year of climate breakdown, Christian Aid, December 2020

At the same time, the **dry spell** that's scorching parts of the **European Union's eastern wing** was devastating harvests and exacerbating what's expected to be the region's deepest economic downturn since at least the fall of communism. In parts of Romania and Poland, the drought is the worst in a century. In the Czech Republic it's the worst in five. It's raising questions of how to ensure food security.

Source: www.bloomberg.com/news/articles/2020-05-20/100-year-drought-hits-poor-eu-region-already-reeling-from-virus

Almost 83% of Europe's bathing waters met the European Union's most stringent 'excellent' water quality standards in 2020. The annual Bathing Water report

from the European Environment Agency (EEA) shows the results of the monitoring of 22,276 bathing sites across Europe. The share of "excellent" coastal and inland swimming sites has stabilised in recent years at around 85%. In 2020 excellent bathing waters were reduced to 82.8% across Europe. The minimum "sufficient" water quality standards were met at 93% of the sites monitored in 2020. In five countries – Cyprus, Austria, Greece, Malta and Croatia – 95 % or more bathing waters were of excellent quality. The UK was the poorest performer with only 17.2 percent of its waters meeting the excellent standard.

On World Water Day a European Coalition of Drinking Water Suppliers adopted a European River Memorandum (ERM). The suppliers call for transparency in discharges, strict entry requirements for chemicals and the implementation of the polluter pays principle. In the Memorandum they set out minimum quality standards for a sustainable drinking water supply for 188 million citizens living in the river catchment areas of the Rhine, Danube, Elbe, Meuse, Scheldt and Ruhr. The memorandum wants to assist and guide decision makers in authorities and political bodies with regard to the continuing necessity to improve the quality of water used to produce drinking water.

The European Commission presented the **results of the fitness check on water legislation** early in 2020. The water legislation fitness check is a comprehensive policy evaluation of the Water Framework Directive (WFD) and its so-called daughter directives – the Environmental Quality Standards Directive (EQSD), the Groundwater Directive (GWD) and the Floods Directive (FD). It assesses whether the directives are fit for purpose by examining their performance against their effectiveness, efficiency, coherence, relevance and EU added value. It concluded that even though the legislation is broadly fit for purpose, it could still be improved. The European Commissioner for the Environment confirmed that the WFD will not be revised.

The Drinking Water Directive (DWD) was adopted by the European Parliament in December 2020 and became law soon after. The directive reflects the WHO recommendations and establishes an EU wide Framework for hygienic requirement for materials that are in contact with drinking water. The adopted legislation will enable European water services to continue providing safe and affordable drinking water to consumers although the impacts of some elements have still to be clarified at national level.

The EU adopted **the Water Reuse Regulation** with new minimum requirements defined and will mean that reclaimed water can be used in agriculture and for irrigation while protecting human and environmental health. Water reuse means reduced pressure on the drinking water resources that are usually used for irrigation. The adoption of this regulation that will apply from June 2023 facilitates the transition of the water sector to the circular economy.

Source: EurEau Annual Report 2020

The Rivers without Boundaries International Coalition provided in 2020 recommendations "On Hydropower and Infrastructure for Water Transport Impacts on Freshwater Bodies, Ecosystems and Species" as its submission on Draft Delegated Act (DA) on Sustainable-finance and EU classification-system-for-green-investments. The text of draft DA dilutes and weakens recommendations made to European commission by special Technical Expert Group. The RwB raises six important points: 1) EC does not follow the TEG's advice that "Construction of new hydropower should not lead to increase fragmentation of rivers" is a fundamental requirement; 2) the draft DA abandons the TEG's recommendation that "construction of small hydropower <10 MW should be avoided"; 3) on the infrastructure for water transport, the draft DA unacceptably expanded the scope advised by TEG, which proposed only infrastructure that is needed to ensure the day-to-day delivery of a transport service. The TEG specifically excluded the canalization and fragmentation of rivers; 4) regarding the operation of existing hydropower plants and infrastructure for water transport the DA should refer consistently to the Water Framework Directive; 5) dam decommissioning and removal of other barriers in natural streams must be explicitly included as activity in its own right into the draft DA; 6) requirements should be strengthened with full consideration for legal protection of endangered and migratory species.

Source: www.transrivers.org/2020/3212/

Montenegrin Government takes tough line on harmful hydropower plants. Small hydropower plants boomed under Montenegro's once-ruling Democratic Party of Socialists. Now the new government is promising a halt, responding to the complaints of local residents and environmental activists. They already terminated concession contracts for several hydro plants, stressing that investors already filed lawsuits against the state. The Government said they will have to pay compensation to investors, accusing former authorities of making spontaneous hydropower construction planning. It has proposed to review all concession agreements and introduce a ban on such plants in the future. Of 85 small hydropower plants for which authorities have signed concession contracts, 42 are privately owned, of which 24 are already in use and 18 are under construction. Civic activists say that most of the small hydropower plants in Montenegro do not meet EU standards. Moreover, activists say the state saw little benefit from such power plants but the damage to the environment was considerable. There have been a number of protests in the country over hydropower plants in recent years, most recently on the Bukovica river in the central Savnik municipality where local residents are manning protests in shifts and blocking excavators.

Source:
https://balkaninsight.com/2021/02/09/montenegrin-government-takes-tough-line-on-harmful-hydropower-plants/

Despite the recently finished MOSE flood barrier San Marco square flooded again the 9th of December. This time due to a failing procedure. According the weather forecasts the sea level would only rise 125 centimetres, but at its peak the sea rose 145 centimetres. The system is activated at 130 centimetres, so

the national government did not act. The result was disastrous. Venice was flooded again. The decision to activate the MOSE flood barrier must be made 48 hours before the high water arrives. This is partly because of shipping. The water-filled caissons of the barrier are designed to be raised within 30 minutes. The Municipality of Venice cannot manage the defence system. That responsibility rests with the national government in Rome. According to Mayor Brugnaro it would be better to transfer the responsibility, because these decisions should be made quickly. It is easier to judge the situation locally. The construction of the MOSE barrier took a total of 17 years, and its construction led to multiple scandals. It has costed about 6 billion euros. The costs ultimately turned out to be more than four billion euros higher than the 1.6 billion euros initially budgeted.

Romania: New wetland connected to Danube to improve water availability. The Project of connecting the Garla Mare wetland to the river Danube is initiated by the Living Danube Partnership. The Natura 2000 site is an area of marsh covering about 700 hectares formed in a former side branch of the Danube River. Historically, it was modified for fish farming. The natural marsh was isolated from the river and divided by dykes. The project will restore a more natural flow regime across the marsh. The flood storage capacity will be improved for a volume of water up to 5,197 million m^3 and enlarging the capacity of a supply channel. At a number of locations breaches in dykes will be opened and at certain points the dykes will be reinforced to protect the surrounding area against flood peaks.

Rhine River Basin

The states in the Rhine catchment have been cooperating in the International Commission for the Protection of the Rhine (ICPR) for 70 years. In 2001, the states adopted the "Rhine 2020" programme. Some achievements in the implementation of the "Rhine 2020" programme include better flood management, removed obstacles for migratory fish, improved water quality and species diversity. Despite considerable success, not all objectives have been fully achieved. The "Rhine 2040" programme adopted on 13 February 2020 is intended to reconcile the various uses with the protection of the ecosystem. It includes new, ambitious targets for different fields of action: Adapt to climate change, Cope with low water, Complete fish passability, Contain micropollutants, Reactivate further floodplains, Reduce flood risk. The "Rhine 2040" programme follows the overall concepts of the solidarity principle as well as a sustainable and climate-resilient water management.

Source:
www.iksr.org/fileadmin/user_upload/DKDM/Dokumente/Pressemitteilungen/EN/press_En_RMC_2020.pdf

The International Commission for the Protection of the Rhine (ICPR) has published the Rhine Atlas 2020 and the draft 2nd International Flood Risk Management Plan Rhine in December 2020. The Rhine Atlas shows the flood-prone areas along the Rhine from the Alps to the North Sea. Citizens from the Swiss Alps to the Rhine delta in the Netherlands can use the map service to find out whether they live in an area classified as at risk of flooding. Three scenarios (frequent, medium and extreme floods) are available. In addition, links are provided to the national map services, which contain more detailed information. The Flood Risk Management Plan describes the measures to be taken by the states in the Rhine river basin from 2022 to 2027 to reduce flood risks. Interested parties can comment on the draft version until June 2021.

Nova Innovation has secured £1.2 m investment from the Welsh government for the Enlli tidal energy project in north Wales, UK. The Enlli tidal energy project involves the installation of five of Nova's 100 kW tidal turbines between Ynys Enlli and the Llŷn Peninsula mainland. The project is expected to generate electricity from the natural ebb and flow of the tide between the two regions. It is anticipated to support The Island in the Currents in shifting away from diesel generation and become a blue energy island.

Source: www.nsenergybusiness.com/news/welsh-government-invests-in-nova-innovation/

11.5.2. Eastern Europe and Caucasus

Armenia

Water resources. Relevant amendments and additions have been made to the Land and Water codes and related laws in order to develop more efficient mechanism of agricultural land use and strengthen requirements to unions of water users. It is planned to develop a platform for better accounting of water resources, enhancing monitoring of water releases and raising awareness of the general public.

The Ministry of Environment has developed a project for management of bio-resources in Lake Sevan. €5 million was allocated for restoration of the lake ecosystem balance. EU supported the second public consultation on the River Basin Management Plan for Lake Sevan (11 June-17 July). The aim of the consultation was to contribute to the program of measures for Lake Sevan and Hrazdan river basin districts.

As part of the Irrigation System Modernization Program[88], (1) construction of gravity irrigation systems

[88] The Program consists of 4 components: replacement of mechanical irrigation by gravity irrigation; replacement of old conduits by new ones; modernization of on-farm networks; and, institutional improvement

in Tsitsernakaberde and Artashat on 712 ha has been completed and helped to save more than 1.8 MkWh; (2) construction of 21.6-km irrigation system was planned with the financial support of EBRD to improve watering of 3,200 ha in 13 settlements, and rehabilitation of 80 km of irrigation systems in Ararat province was started.

Energy. The Armenian Government approved the Strategic Program for Energy Sector Development until 2040 and the related plan of activities. The maximum utilization of the RES potential, energy saving, extension of the life of the second power unit of the Armenian NPP, full implementation of the North-South Energy Transit Corridor Program, and gradual liberalization of the Armenian energy market are among the focus areas of the Strategic Program.

An agreement was reached with IFC[89], EBRD and EU on the investment of about $50 million in the Masrik-1 solar project. Upon completion, the project is to generate up to 120 MkWh. This would allow reducing annual CO_2 emissions by 40,000 tons.

As part of Masdar's investment program, it is planned to build a 200 MW Aig-1 photovoltaic power plant.

Green financing. UNICEF and the Austrian Development Agency (ADA) launched a three-year project entitled "Adolescents for Climate Action in Communities" (until 2022). It is planned to reach and engage 28,000 adolescent boys and girls from 496 schools in 52 consolidated communities in Armenia not only to improve their knowledge on climate change but also empower them to act as climate agents in their communities through their schools.

CGF has approved $660,000 for its first grant program to advance green financing in Armenia. The grant will be used to attract best international and local experts and consultants in a bid to analyze the current state of green financing in Armenia and to survey international best practices. The processes will also include surveys of the experience of the beneficiary financial institutions and the implemented projects. The project fulfillment will enable developing a comprehensive roadmap.

The "EU Green Agriculture Initiative" project was officially launched on 4 March. The project will support the development of sustainable, inclusive, innovative and market-based agribusiness particularly in the northern provinces of Armenia – Shirak, Lori and Tavush. The project has a budget of € 11.7 million and will be implemented over the course of three years.

Azerbaijan

Water resources. In April, the President of Azerbaijan formed a Special commission for water resources in order to ensure their efficient use and improve water management and coordination of activities in the water sector.

A Plan of measures of rational water use for 2020-2022 was adopted by Presidential Decree. According to this Plan, the Government is to approve the water management balance on annual basis and the rules of water charging and ensure accounting of water use.

Water supply and sanitation. For 2020, 443 sub-artesian wells were planned to be drilled to better watering of 10.707 thousand ha of agricultural land. 235 wells were drilled, and 45 are used by water consumers. In order to improve irrigation of cropland and homestead plots and meet demand for drinking water, more than 378 sub-artesian wells were drilled in 316 settlements in 29 districts, with the population of over 892 thousand. Water supply and sanitation projects have been completed in 31 cities and districts.

The "Azərsu" company (national water operator) started laying water supply lines in Baku suburbs, including Binagad and Surakhan districts, Sabunchi, Zabrat, and Balakhany settlements in Sabunchi district.

Energy. The State Agency for Renewables was established at the Ministry of Energy. As informed by the Ministry, power production in 2020 decreased by 1.1% (to 25.8 billion kWh) as compared to 2019. In 2020, hydropower plants produced 1.07 billion kWh (31.4% drop), and 343.5 MkWh were produced from renewables (wind – 96.1 MkWh, solar – 46.9 MkWh, solid wastes – 200.6 MkWh).

An agreement was reached with the French company "Qairo" for implementation of joint alternative energy projects. Investments will be made in 100 to 500-600 MW projects.

The Ministry of Energy signed contracts with ACWA Power (Saudi Arabia) for construction of 240-MW wind station and Masdar (UAE) for 200-MW solar station. The projects totaling $400 million will be implemented in two years.

Environment. A large-scale digital map of environmental risks in Azerbaijan was generated. The map shows the sources of natural phenomena that pose environmental risk (mudflow, landslides, floods), the demographic and anthropogenic load, surface water and groundwater pollution, level variations in the Caspian Sea, soil salinization, climatic risks (drought, heavy frost, heat, hot dry wind, etc.), urban development and earthquakes. As mapped, 37.2% of the country territory is at very low risk; 19.8%, at low risk; 23.9%, at moderate risk; 12.4%, at high risk; and, 6.8%, at very high risk. The map can be useful for infrastructure projects, construction, residential planning, and insurance.

International cooperation. On 1 January, Azerbaijan assumed the Chairmanship of the Energy Charter Conference for 2020 with Parviz Shahbazov, the country's Minister of Energy taking over as Chair. Rotating on an annual basis, the Conference is the highest decision-making body of the Energy Charter process.

[89] International Finance Corporation

Water experts from Azerbaijan and the European Environment Agency started holding online capacity development training for managing EcoPortal[90].

Belarus

Water resources. Within the framework of the UNECE pilot application on strategic environmental assessment for the draft national 2030 Strategy of Water Resources Management in the context of Climate Change", a group of Belarusian experts jointly with international experts has developed the draft Strategy of Water Resources Management.

The second meeting of the Pripyat Basin Council was held on 16 October in the city of Mozyr. During the meeting, where the draft Pripyat RBMP was presented, the Council assessed the possibility of surface irrigation in Kalinkovitch and Khoinik districts for adaptation of agriculture, considered the water-regulation actions along the Ubort River in Gomel province, analyzed the effectiveness of collection and treatment of wastewater runoff formed in Mozyr, and discussed measures for prevention of pollution of the Pripyat River and the Council's work plan for 2021.

Water supply and sanitation. Agreements were signed between the Ministry of Housing, NDEP[91] and E5P[92] on mobilization of grant funds for the Belarus Water Framework Program, Phase 3. The activities will facilitate critical water and wastewater management improvements in the participating cities, such as Kletsk, Lyuban, Fanipol, Baranovichi, Bereza, Zhlobin, and Shklov (implementation period – 2020-2024).

In 2020, about 120 iron removal stations were put into operation and conditions of artesian wells were checked in Minsk province.

Energy. Under the State Energy Efficiency Program for 2016-2020, by the third quarter of 2020 280.5 MW of renewables-based plants were put into operation in Belarus. By 1 July 2020, the total installed capacity of RES-based plants reached 418 MW; this is five times more than in 2014 (88 MW). The largest share in RES is taken by solar plants with the total capacity of 159 MW (38%), followed by wind plants – 109.1 MW (26%) and hydropower – 96.1 MW (23%). The share of biogas plants was 9.2% (38.6 MW) and that of biomass power plants – 3.7% (15.5 MW).

Climate change. The Long-term Low Greenhouse Gas Emission Development Strategy of the Republic of Belarus until 2050 is in the process of drafting. The Strategy with include measures for the reduction of generation of thermal and electric energy, improvement of energy efficiency, and relevant actions for industrial, transport, building and housing sectors. Emissions of polluting substances into the atmosphere have decreased by 2.2% since 2015 in Belarus.

In 2020, all environmental monitoring clubs and other institutions involved in the educational project "Green Schools" got special equipment, such as snow gauges, weather stations, pH-meters, conductivity meters, gas detectors and rainfall collectors. Besides, an online platform for data collection and processing – eco-school.by – was launched.

SDGs. The Interdepartmental Expert Group on Environmental Dimension of SDGs had a meeting on 12 November to discuss the general trends of SDG indicators development in Belarus, the results of monitoring, key aspects and priorities for the achievement of SDG environmental indicators in 2021-2025.

International cooperation. The Governments of Belarus and Poland signed a cooperation agreement on transboundary water protection and use in Białowieża, Poland on 7 February.

VI meeting of the Interstate Environmental Council of the CIS member states was held in Minsk on 27 August. The participants exchanged on ways they lessen environmental pollution and improve the environmental situation, use modern IT in environmental sector and discussed the draft plan of joint actions of the CIS Electric Power Council and the Interstate Environmental Council and other issues.

Belarus and China signed an agricultural cooperation agreement on the project of an international cooperation industrial park (Caofeidian zone) under the One Belt, One Road Initiative.

Georgia

Water supply and sanitation. ADB has approved $150 million in loans to improve water supply and sanitation services in Georgia and help the government craft an integrated approach to the sector's development.

A loan agreement worth €130 million was signed with KfW[93] for reconstruction and modernization of public utilities in Bagdadi, Vani, Samtredia and Kazbegi.

The Algeti reservoir served for industrial and drinking purposes of dozens of villages in Marneul and Tetritskaroy districts is to be modernized. The cost of the project, which will improve irrigation water supply for thousands of hectares in the Kvemo Kartli region, is estimated at $300 thousand.

Energy. On 12 February, the EU4Energy High-Level Policy Talks event took place in Tbilisi to discuss develop-

[90] A platform containing water datasets, indicators, dynamic maps and reports. The platform allows national water agencies to exchange and share data and information
[91] Northern Dimension Environmental Partnership
[92] The Eastern Europe Energy Efficiency and Environmental Partnership
[93] German government-owned development bank

ments in the country's National Energy and Climate Plan. The focus of the discussion was the design of the Climate Action Plan and the preparation of the nationally determined contributions in accordance with the Paris Agreement.

Georgia successfully adopted the Law on Energy Efficiency and the Law on Energy Performance of Buildings. The new legal acts will allow the country to make energy savings of 14% by 2025 and help to transit to a green economy.

The selection of an investor for the project of construction of the first 5-MW solar power plant in the village of Udabno will begin at the end of 2020. The plant will produce 7 MkWh a year. The project cost is estimated at $4 million.

Repair operations have been completed in the tunnel of the largest hydropower plant in Georgia – Inguri.

COVID-19 recovery. Georgia has agreed the anti-crisis program with IMF. The Programs provides for the support of tourism, agriculture (taking care for village and farmers), education, and the construction and development sector that employs more than 120,000 thousand people.

International cooperation. As part of the EU-funded project "European Union Water Initiative Plus for Eastern Partnership Countries" (EUWI+), experts from Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine gathered in the Georgian capital Tbilisi on 26-27 February to discuss the river basin management plans in the Caucasus region.

UN and Georgia have signed the Sustainable Development Cooperation Framework 2021-2025. The document sets the vision on such outcome areas as effective, transparent and accountable institutions, equal and inclusive access to quality services, inclusive economy and human capital development, human security and resilience, environment and climate change.

Georgia's carbon dioxide emissions amount to over 17 million tons per year (over 2 tons per capita), which is around 0.03% of global greenhouse gas (GHG) emissions. Georgia's Low-Emission Development Strategy is expected to be finalized by August 2021. EU and UNDP will help Georgia to create a low-emission future.

Moldova

Water resources. The third meeting of Steering Committee of the GEF Project "Enabling transboundary cooperation and integrated water resources management in the Dniester River Basin" was held on 15 April. The participants discussed the transboundary diagnostic report, the legal status of the Strategic Action Plan and how to adopt it, and the proposal on cooperation with UNIDO in order to optimize the "Start up Eco-Dniester".

As part of the EUWI+ Project, the Steering Committee of the National Policy Dialogue on integrated water resources management met at its sixth meeting and considered progress made by Moldova on modernization of the national water policy in part of access to water supply and sanitation and improvement of border cooperation (19 November, Chisinau).

The Ministry of Agriculture, Regional Development and Environment organized a work meeting to address the issues related to excessive pollution of rivers by untreated wastewater, the illegal construction in river zones and required actions for river restoration.

The Government of Moldova has approved: (1) Provision on the use of groundwater for drip irrigation of horticultural crops. For better monitoring of groundwater, 63 automatic monitoring sensors were installed in a number of zones; (2) Program of land reclamation for sustainable soil management for 2021-2025 and the related Action Plan.

Water supply and sanitation. The new rules for design and construction of small water supply and sanitation systems have been approved.

An additional grant agreement for €10 million has been signed with KfW for the project "Improvement of the water infrastructure in Central Moldova". It would ensure the reorganization of water operators in Straseni and Calarasi districts.

In order to improve energy efficiency of water supply by 30%, 26 submerged pumps and 2 pressure buildup stations were installed in 10 settlements all over the country.

Climate change. UNDP with financial support from Sweden will implement a grant program "Sustainable and resilient communities through women empowerment" ($2.4 million) in the regions of Moldova. 30 communities will be assisted in identifying, formulating, planning, and implementing initiatives to reduce environment degradation and increase resistance to climate change at local level.

The Ministry of Agriculture, Regional Development and Environment and the Academy of Public Administration signed a Memorandum of Understanding aimed at developing a green economy and environmental management system on the 5th of June.

The Republic of Moldova has started the process of updating its low-emission development strategy by 2030. The strategy will be modified based on the updated, more ambitious greenhouse gas (GHG) reduction targets set in the country's nationally determined contributions as per the Paris Agreement.

The consultations on adoption of the more robust climate change monitoring, verification and reporting system (MRV) and a new law that would gra-

dually abolish the use of so-called "F-gases" were held on 17 December among the representatives of public institutions, civil society, academia, business and environmental journalists.

In July, the Minister of Agriculture of Moldova presented a project on the establishment of a National Commission for Climate Change to achieve better coordination of mitigation actions.

International cooperation. Experts from Moldova and Ukraine discussed formation of a transboundary union on the Dniester River.

EU supported the second public consultation on Danube–Prut and Black Sea River Basin Management Plan in Moldova. The aim of the consultation is to support the country's water management authorities in the development and implementation of river basin management plans, following the EU Water Framework Directive principles.

Russia

Water resources. As a result of drought in Crimea, 7 reservoirs have dried up and one of the longest rivers in the peninsula – Suuk-Su – has gone low.

From 12 to 18 July, the federal state-owned institution "Water Research and Information Center" and the non-profit fund "Bez Rek kak Bez Rouk" (meaning *One can't do without rivers*) carried out a research expedition in the Volga upper reaches (extended to 370 km in the Tver region) in order to assess microplastics content in river water and identify potential pollution sources.

The Federal project on the improvement of Siberian and Ural rivers "Digital Ob-Irtysh Basin" was presented at the All-Russian Water Congress. It is expected that as early as in 2021 first automatic water monitoring stations will be installed in the Uskat River Basin as part of the pilot project "Digital Uskat".

An innovative blended material technology for repair and rehabilitation of metallic water conduits at HPPs was developed by researchers of the "Vedeneev VNIIG", the largest scientific center in Russia. This technology will ensure reliable operation of water conduits and extend their service life.

Agriculture. As part of the sectoral program "Land Improvement System in Russia" and the federal project "Agroindustry output export", agricultural producers received federal subsidies for reclamation work.

An 'innovative agricultural valley' is created at the Crimea Federal University for training highly skilled personnel. This 'innovative valley' will include a modern biotechnology cluster, a cyber-agronomy center and a production cluster.

The Farmer School federal education project has been launched. The aim was to teach all who wish in how to start and do successful agricultural business.

To facilitate digitization of the Russian agricultural sector and provide assistance to farmers in managing agricultural inputs and farming business as a whole, a digital agrosystem started to be developed. This system will have a single interface, algorithms for analysis and processing of big data, mobile applications from Digital Agro, a system of autonomous agricultural equipment control – Cognitive Agro Pilot – on the base of AI and a digital platform "Agrosignal" for collection of telemetry data.

Federal Programs and Projects in 2020

As part of the Federal Special Program "Water Development in the Russian Federation in 2012-2020", the share of low-safety hydraulic structures decreased to 49.1% as a result of reconstruction, and the modernized and new gauging stations and laboratories of the Federal Hydrometeorological and Environmental Monitoring Service's observation network accounted for 41.3% of the total needs. 71 hydraulic structures has been rehabilitated and 94 modernized gauging stations and laboratories have been re-opened. Within the framework of the Federal Program "Protection of Lake Baikal and the Social and Economic Development of Lake Baikal Nature Territory in 2012-2020", the State environmental monitoring covered 78% of Lake Baikal nature territory and provided highly reliable, timely and full data through reporting of authorized state bodies; the length of engineering protection structures accounted for 2.46% of the total extension of lake shores to be protected.

A number of federal sub-projects were implemented as part of the **National "Ecology" Project** in 2020. Those included (1) "Clean water": construction or reconstruction of 171 water supply and production structures (100 ones in 2020); (2) "Environmental improvement of the Volga": cleaning of river reaches stretching to 17.38 km in Astrakhan and Volgograd regions, cleaning and dredging of Gandura and Kirov fish-pass channels (66.26 km), cleaning of water conveyance and discharge canals of spawning grounds in eastern delta of the Volga River (118.636 km), a system of hydraulic structures to provide additional watering of the Volga-Akhtubinsk floodplain, control and supervision activities aimed at detecting and suppressing unauthorized discharges of polluted wastewater into the Volga River and its tributaries, information and analytical support of the federal project; etc. (3) "Preservation of unique water bodies": actions on restoration and environmental rehabilitation of water bodies, on environmental improvement of lakes and reservoirs, on cleaning of banks from garbage and wood scrap. The cleaned bank extension totaled 42,150 km.

Source: The Russian Federation National Environmental Report for 2020

Latest developments in legislation. A number of legal documents were adopted in 2020. Those included, among others: orders of the RF's Ministry of Agriculture on the approval of the Procedure for certification of irrigation and drainage systems and detached hydrotechnical constructions (No.182 of 9 April) and on the approval of the Rules for operation of irrigation and drainage systems and detached hydrotechnical constructions (No.438 of 31 July); governmental decrees on the approval of the criteria for referencing the sites that have a negative environmental impact to categories I, II, III and IV (No.2398 of 31 December) and the approval of the procedure and terms of work of the liaison officer on agroindustry to promote the agroindustrial interests of the Russian Federation abroad (No. 1210 of 12 August).

Energy. The "green" energy sector created from scratch in Russia has already mobilized additional investments in the amount of 177 billion rubles. A decision has been made to extend the renewable energy support program with certain adjustments until 2035.

International cooperation. Active cooperation continued in the format of BRICS. A number of topical issues and promising areas of cooperation were discussed on the margins of a meeting of environment ministers and the meetings of the Working Group on Environment. Emphasis was placed on the content of the Environmentally Friendly Technologies Platform (BEST Platform) aimed at developing environmental PPPs (July). At the initiative of Russia, a new vector of development under the umbrella program "BRICS Clean Rivers" was set, with the focus on plastic litter in the aquatic environment.

Transboundary water cooperation. Kazakhstan and Russia discussed sharing of transboundary rivers and approved a common roadmap for active research cooperation in large river basins, such as the Zhaiyk (Ural), the Irtysh and others. The Programs of Russian-Kazakhstan cooperation for preservation and restoration of ecosystems in the transboundary Ural River and Irtysh River basins were signed for 2021-2024.

The following meetings were held in 2020: XVI meeting of the Joint Coordination Commission and the Joint Working Group of Experts on Russian-Chinese monitoring of transboundary water quality. The results of joint work in 2020 and the program of measures for the next year were discussed at the meeting; XXIII meeting of the Joint Russian-Estonian Commission for Protection and Rational Use of Transboundary Waters, during which the current issues of cooperation were addressed; 3rd meeting of the Russian-Mongolian Working Group for package treatment of the issues related to planned hydrotechnical construction in the Selenga catchment in Mongolia (25 December). The final protocol of the 58th session of the Joint Finnish-Russian Commission on the Utilization of Frontiers Water was signed in November 2020.

COVID-19 recovery. In the midst of lockdown, many community organizations has put forward the green recovery principles, i.e. such economic revival plan that would rely on sustainable renewables development, improved life quality and health rather than on increased mining of hydrocarbon fuel.

On 2 June 2020, the Russian Government launched the Plan of Economic Recovery that focused on small business through reduced tax burden and repayment holidays and on mobilization of new investments. Earlier, non-governmental organizations applied to the Chairman of the Governmental Commission for Economic Resilience A. Belousov with the statement that the proposed Plan should be based on principles that ensure climate and environmental protection and transition to carbon neutral development path. After publication of the document, Greenpeace claimed that the Plan of Economic Recovery did not take into account climate change and the global trend to low-carbon development, neither contained concrete measures for green economic development and reduced anthropogenic load on the natural environment. Given the recent Norilsk tragedy, where 20,000 ton of oil products spilled over water and soil, the constant public protests in coal mining regions, and the global course towards green energy, the Government should revise measures for economic recovery by paying much more attention to environmental protection. The recently established platform "Green deal for Russia" will help to accumulate all community proposals and submit them to the Government in more effective manner.

Though coal burning is the main cause of climate change, posing a threat to human health, the adopted (on 9 June) Energy Strategy of the Russian Federation for the period until 2035 makes provisions for the support and development of the coal industry.

Ukraine

Water resources. In 2020, several Basin Councils held their meetings: (1) the Preazovia rivers. Development of RBMP in 2020 and hydromorphological monitoring of surface water were discussed among other issues during the meeting; (2) the Pripyat River. The Council's members listened to the progress on development of the Program of subbasin surface water monitoring and discussed the main problems of small rivers and implementation of projects and programs for the improvement of the environmental status of water resources; (3) the Seversky Donets and lower Don. The agenda included the development of Don RBMP – the strategic document on the key goal of the EU Water Frawework Directive, namely the achievement of "good" environmental status of water; (4) the Southern Buh River. The problems that would hamper the achievement of "good" status of river water in the nearest future were analyzed. Additionally, cleaning of the tributaries of small rivers and raising the level of

the Alexandrov reservoir to the design mark of 20.7 m as one of the ways to solve the problem of water shortage in the lower reaches were discussed.

As part of the EUWI+, Ukrainian and European experts demonstrated the progress on drafting RBMP for the Dnepr – the largest river basin in Ukraine – on 18 October. They also discussed the key water and environmental problems in the basin, the results of relevant public consultations, and draft sections of the Dnepr RBMP.

The Cabinet of Ministers approved the Plan for implementation of Irrigation and Drainage Strategy 2030 in October 2020.

Latest developments in legislation. A number of legal acts were adopted in 2020, including: the law on amending the Land Code of Ukraine and other legal acts related to land use planning, the law on agricultural cooperation that governs legal relations in establishment, functioning and termination of agricultural cooperatives in Ukraine, the law on national infrastructure of geospatial data that sets free access for citizens and economic entities to available information, the draft law for the development of a single information system – State Agricultural Registry – and improvement and extension of state support to agricultural producers, and the decree on transferring agricultural land to communal ownership of communities.

Energy. The European largest onshore wind power project (792.5 MW) is to be built in the vicinity of Zaporozhe. The project, with the total investments of €1.2 billion, will be completed in 2022.

Hydropower Unit 6 of the Kyiv Pumped-Storage Power Plant (PSPP) was back in operation after reconstruction activities implemented with financial support from EIB and EBRD. Thanks to the newly installed turbine and generator, the total capacity of the unit increased from 41.5 MW to 46.8 MW (an increase of 13%) and its service life was extended by 40 years.

International cooperation. The State Water Resources Agency and UNICEF has signed a Memorandum of Understanding to achieve good environmental status of water resources and ensure access to clean water.

A working meeting was held online as part of work on the Agreement between Ukraine and Hungary on frontier water management. The authorized representatives of both states have discussed the implementation of the Concept for rehabilitation of the Verke and Sipa canals for watering of the joint Beregovskaya system.

The XVIII International Exhibition AQUA Ukraine-2020 was organized on 10 to 12 November in Kiev. The Exhibition is held every year and usually is comprised of different events for wider circle of experts.

COVID-19 recovery. The Economic Stimulus Program to overcome the consequences of the COVID-19 pandemic was approved, but with the condition that it would be further finalized. One point of the Program proposes to keep within reasonable national targets on CO_2 emission reduction (27 May, meeting of the Government). The law that cuts spending on energy efficient and environmental measures by nearly 96% and, at the same time, increases financing for the coal industry under the guise of anti-COVID-19 measures was went into effect on 18 April. The Ukrainian office of 350.org launched a petition for a Green Deal for Ukraine.

11.6. Middle East

Turkey's Ilisu Dam starts generating electricity at full capacity. The Ilisu Dam, located on the Tigris River in the southeastern province of Mardin, is expected to contribute 2.8 billion Turkish liras (366 million U.S. dollars) a year to the country's economy. With a total installed power of 1,200 megawatts, the dam will produce an average of 4,120 GWh of energy annually. Turkey was facing a serious drought and water shortage in 2020 due to insufficient rainfalls, and dams in many parts of the country are drying up at an alarming rate. The construction of Ilisu, the second-largest dam in the country in terms of filling volume, started in 2006, but following several setbacks, the first turbine only became operational in May 2020. Meanwhile, construction of the dam had disastrous social, cultural and ecological impacts on the 12,000 years old town Hasankeyf which is one of the most magnificent cultural and natural heritage sites at our planet.

Source: www.xinhuanet.com/english/2020-12/24/c_139616723.htm

Iraq will face severe water shortages if agreements are not forged with neighboring Turkey over Ankara's irrigation and dam projects that have decreased river inflows to Iraq's parched plains. Descending from the mountains of southeast Turkey and coursing through Syria and then Iraq before emptying out in the Persian Gulf, the Tigris and Euphrates rivers are Iraq's main water source and essential for agriculture. But tensions have mounted over the years as Turkey pressed ahead with dam projects. Measurements of inflows from the border with Turkey in northern Iraq were 50% below average in 2020 in addition to a reduction in annual rainfall by 50% compared to last year. The Ilisu Dam on the Tigris, part of a Turkish megaproject, is at the heart of the dispute. The dam is to be one of 22 power dams in southeastern Turkey.

Negotiations over water allocations resumed when Ankara began to make progress on plans to fill the Illisu reservoir last year but have since stalled.

Source: www.waterpolitics.com/2020/07/18/iraq-faces-severe-shortages-as-river-flows-drop/

Kurdistan to be dammed? According to the UNDP, the water discharge of the Tigris-Euphrates Rivers is set to decrease by 50% between 2009 and 2025. To tackle the issues of climate change, upstream dam construction and mismanagement, the strategic goal of the Kurdistan Regional Government (KRG) is to construct a large number of dams across its territory, with the aim of storing water for irrigation and hydropower and achieving water self-sufficiency. An astonishingly 245 dams have been proposed by the KRG since 2014, on top of 17 large and moderate existing dams. Documenting the KRG's dam construction practices, Save the Tigris has published the report "Damming the Kurdistan Region of Iraq: Structural gaps in the KRG dam construction policies", to share information on the development of dam infrastructure in the Kurdistan Region and provide an alternative view on the generally supposed social and economic benefits of dams, and shed a light on the high costs for humans and environment. The Kurdistan Region contains many examples of dam failure. There is little or no debate inside the KRG about the destructive impacts of its proposed dams. Detailed information of dams is often missing due to lack of transparency on behalf of authorities and the public is not involved in the process of dam development. This publication aims to fill that gap, by providing an analysis of planned dams and the political economy of dam construction. The publication concludes with a list of possible alternatives to dam construction for policymakers.

Source: www.transrivers.org/2020/3120/

The World Bank said it had canceled $244 million in undisbursed funds for the Bisri Dam project in Lebanon. In a statement, the World Bank said it had notified the Lebanese government about its decision, which takes effect immediately. It said it has also repeatedly underscored the need for "an open, transparent and inclusive consultative process." The World Bank committed $474 million to fund the project, of which $244 million have not yet been disbursed. Initially approved by Lebanon's government in 2015 at a total cost of $617 million, the dam had long sparked criticism from environmental activists, who also claimed that many cheaper and less destructive ways to supply water to Beirut have not been assessed by dam proponents. Concerns about large infrastructure projects have spiked since the massive port explosion in Beirut on August 4 that killed more than 190 people. The World Bank began raising concerns about the slow pace of the project to build the large dam in the Bisri Valley only in January 2020. The Bank said the Lebanese government had failed to address questions about an ecological compensation plan and arrangements for operations and management of the dam.

Source: www.transrivers.org/2020/3151/

Water levels in Iran's southern dams rising after years. Deluge in the past few days in southern and southeastern Iran has inflicted damages on cities, villages and roads and endangered lives. But at the same time it has helped fill dams that saw little water in years. There are 30 dams in Sistan-Baluchestan Province, with a capacity of around 2 billion cubic meters, of which 64% is full now.

Source:
https://theiranproject.com/blog/2020/01/15/water-levels-in-irans-southern-dams-rising-after-years/

Water scarcity in occupied Palestinian territories continues to put health and agriculture at risk as conflict over water supplies between Jordan, Israel, and Palestinians flares. Palestinians depend on Israeli-controlled underground water sources and rain, and in order to solve scarcity, the Palestinian Authority says the territories need control. Water has been an ongoing conflict between Israel and Palestine for more than fifty years. In 1967, Israeli officials outlawed the construction of Palestinian water infrastructure in key parts of the territories of Gaza and the West Bank without a permit from the Israeli army, which has become incredibly difficult to receive. This ruling limited the installation of new water wells and pumps, and the reconstruction of existing operations. The ruling also denies Palestinians access to the Jordan River, fresh water springs, and any control of the collection of rain water. This also affects farming. According to the director general of the Palestinian Hydrology Group, Palestinian irrigated areas have dwindled from 27 percent on the West Bank to 3.4 percent. He predicts that within a decade there will be no more irrigated lands due to water scarcity. Palestinian farmers and villagers also struggle with water scarcity due to the destruction of water pipelines by the Israeli army. Water talks between Israel, Jordan, and the Palestinian Authority have largely stalled in the last few years as tensions over future Israeli annexation of both the West Bank and the Jordan Valley ramp up.

Source: www.circleofblue.org/2020/wef/hotspots-h2o-water-scarcity-in-palestinian-territories-puts-farming-at-risk/

Section 12

Thematic Reviews

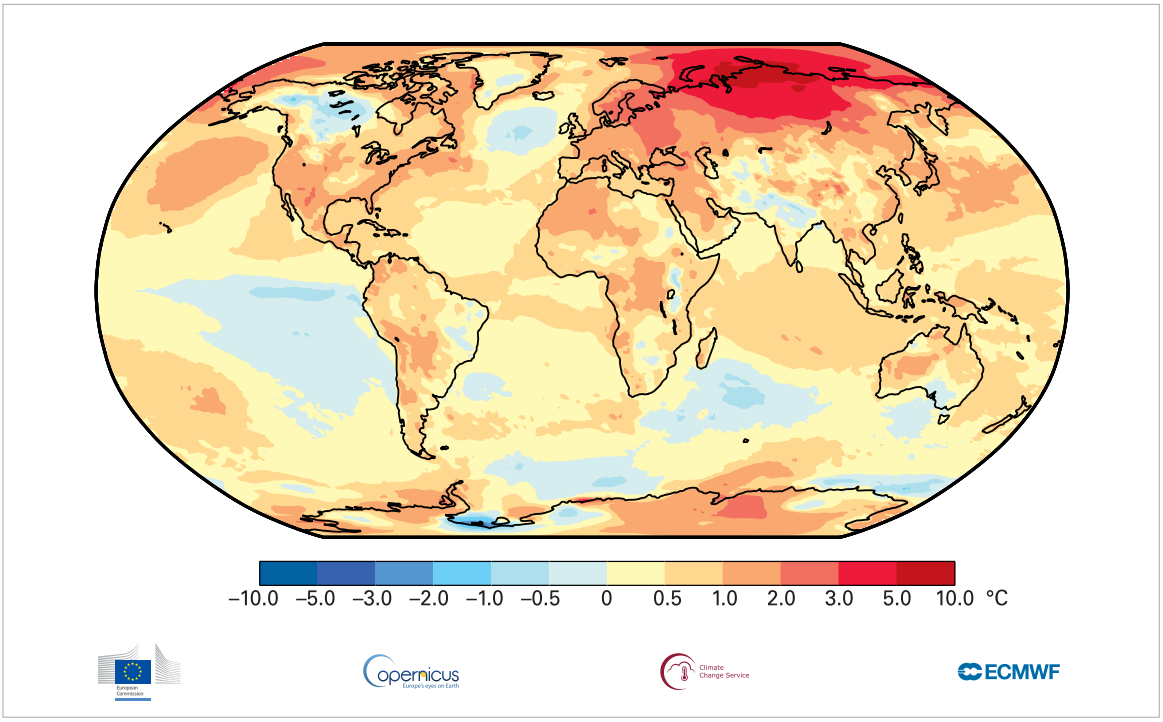
12.1. Climate Change

Extreme weather combined with COVID-19 in a double blow for millions of people in 2020. However, the pandemic-related economic slowdown failed to put a brake on climate change drivers and accelerating impacts, according to a new report compiled by WMO and an extensive network of partners.

State of the Climate Indicators in 2020

Temperature. 2020 was one of the three warmest years on record, despite a cooling La Niña event. The global average temperature was about 1.2°C above the pre-industrial (1850-1900) level. The six years since 2015 have been the warmest on record. 2011-2020 was the warmest decade on record.

Temperature anomalies relative to the 1981-2010 long-term average from the ERA5 reanalysis for 2020



Source: Copernicus Climate Change Service, European Centre for Medium-Range Weather Forecasts (ECMWF)

Greenhouse gases. Concentrations of the major greenhouse gases continued to increase in 2019 and 2020. Globally averaged mole fractions of carbon dioxide (CO_2) have already exceeded 410 parts per million (ppm), and if the CO_2 concentration follows the same pattern as in previous years, it could reach or exceed 414 ppm in 2021, according to the report. The economic slowdown temporarily depressed new greenhouse gas emissions, according to UNEP, but had no discernible impact on atmospheric concentrations.

Oceans. The ocean absorbs around 23% of the annual emissions of anthropogenic CO_2 into the atmosphere and acts as a buffer against climate change. The ocean also absorbs more than 90% of the excess heat from human activities. 2019 saw the highest ocean heat content on record, and this trend likely continued in 2020. Over 80% of the ocean area experienced at least one marine heatwave in 2020. The percentage of the ocean that experienced "strong" marine heat waves (45%) was greater than that which experienced "moderate" marine heat waves (28%).

Cryosphere. The 2020 Arctic sea-ice extent minimum after the summer melt was 3.74 million km^2, marking only the second time on record that it shrank to less than 4 million km^2. Record low sea-ice extents were observed in the months of July and October. Record high temperatures north of the Arctic Circle in Siberia triggered an acceleration of sea-ice melt in the East Siberian and Laptev Seas, which saw a prolonged marine heatwave. The Antarctic sea-ice extent remained close to the long-term average.

The Antarctic ice sheet has exhibited a strong mass loss trend since the late 1990s. This trend accelerated around 2005, and currently, Antarctica loses approximately 175 to 225 Gt per year, due to the increasing flow rates of major glaciers in West Antarctica and the Antarctic Peninsula. A loss of 200 Gt of ice per year corresponds to about twice the annual discharge of the river Rhine in Europe.

Floods and droughts. Heavy rain and extensive flooding occurred over large parts of Africa and Asia in 2020. Heavy rain and flooding affected much of the Sahel and the Greater Horn of Africa, triggering a desert locust outbreak.

The Indian subcontinent and neighboring areas, China, the Republic of Korea and Japan, and parts of South-East Asia also received abnormally high rainfall at various times of the year.

Severe drought affected many parts of the interior of South America in 2020, with the worst-affected areas being northern Argentina, Paraguay and the western border areas of Brazil. The estimated agricultural losses were near US $3 billion in Brazil, with addi-

tional losses in Argentina, Uruguay and Paraguay. Long-term drought continued to persist in parts of southern Africa, particularly the Northern and Eastern Cape Provinces of South Africa.

Heat and fire. In a large region of the Siberian Arctic, temperatures in 2020 were more than 3°C above average, with a record temperature of 38°C in the town of Verkhoyansk. This was accompanied by prolonged and widespread wildfires.

In the USA, the largest fires ever recorded occurred in late summer and autumn. Widespread drought contributed to the fires, and July to September were the hottest and driest on record for the southwest. Death Valley in California reached 54.4°C on 16 August, the highest known temperature in the world in at least the last 80 years.

In the Caribbean, major heatwaves occurred in April and September. Cuba saw a new national temperature record of 39.7°C on 12 April. Further extreme heat in September saw national or territorial records set for Dominica, Grenada and Puerto Rico.

Australia broke heat records in early 2020, including the highest observed temperature in an Australian metropolitan area, in western Sydney, when Penrith reached 48.9°C.

The summer was very hot in parts of East Asia. Hamamatsu (41.1°C) equaled Japan's national record on 17 August.

Europe experienced drought and heatwaves during summer 2020, although these were generally not as intense as in 2018 and 2019. In the eastern Mediterranean with all-time records set in Jerusalem (42.7°C) and Eilat (48.9°C) on 4 September, following a late July heatwave in the Middle East in which Kuwait Airport reached 52.1°C and Baghdad 51.8°C.

Tropical Cyclones. With 30 named storms, the 2020 North Atlantic hurricane season had its largest number of named storms on record. There were a record 12 landfalls in the United States of America, breaking the previous record of nine. *Hurricane Laura* reached category 4 intensity and made landfall on 27 August in western Louisiana, leading to extensive damage and US$ 19 billion in economic losses. Laura was also associated with extensive flood damage in Haiti and the Dominican Republic in its developing phase. The last storm of the season, *Iota*, was also the most intense, reaching category 5 before landfall in Central America. *Cyclone Amphan*, which made landfall on 20 May near the India-Bangladesh border, was the costliest tropical cyclone on record for the North Indian Ocean, with reported economic losses in India of approximately US$14 billion. The strongest tropical cyclone of the season was *Typhoon Goni (Rolly)*. It crossed the northern Philippines with a 10-minute mean wind speed of 220 km/h (or higher) at its initial landfall, making it one of the most intense landfalls on record (1 November). Tropical *Cyclone Harold* had significant impacts in the northern islands of Vanuatu on 6 April, affecting about 65% of the population and also resulting in damage in Fiji, Tonga and the Solomon Islands. *Storm Alex* in early October brought extreme winds to western France, whilst heavy rain extended across a wide area. Other major severe storms included a hailstorm in Calgary (Canada) on 13 June, with insured losses exceeding US $1 billion and a hailstorm in Tripoli (Libya) on 27 October, with hailstones as large as 20 cm, accompanied by unusually cold conditions.

Lessons and opportunities for enhancing climate action

According to the International Monetary Fund, while the current global recession caused by the COVID-19 pandemic may make it challenging to enact the policies needed for mitigation, it also presents opportunities to set the economy on a greener path by boosting investment in green and resilient public infrastructure, thus supporting GDP and employment during the recovery phase.

Adaptation policies aimed at enhancing resilience to a changing climate, such as investing in disaster-proof infrastructure and early warning systems, risk sharing through financial markets, and the development of social safety nets, can limit the impact of weather-related shocks and help the economy recover faster.

Source: WMO, https://library.wmo.int/index.php?lvl=notice_display&id=21880#.YOsdsegzbIX

Climate Change Agreement

On 12 December 2015, a historic climate agreement was signed in Paris, uniting all countries of the world in the desire to reduce greenhouse gas emissions, switch to clean energy sources and adapt to the effects of climate change. How did these 5 years go for the post-Soviet countries? "The approved commitments and plans of no country in the EECCA region are considering reducing greenhouse gas emissions by 2030," says the new CAN EECCA report "Climate Policy Analysis of Eastern Europe, Caucasus and Central Asia". The report includes data for Azerbaijan, Georgia, Kyrgyzstan, Armenia, Belarus, Kazakhstan, Moldova, Tajikistan, Uzbekistan, Russia and Ukraine.

In the countries of Central Asia, when planning climate policy, considerable attention is paid to climate change adaptation. Problems begin at the implementation level, because in general adaptation projects are either not linked by one systematic approach, or are very vague, without an action plan.

This year Kyrgyzstan and Tajikistan have officially announced the revision of their contributions to the Paris Agreement. Moldova made its second contribution to the UNFCCC in March, and Ukraine and Georgia will soon approve the updated NDCs. So far, these contributions either do not imply a reduction in green-

house gas emissions, or provide a very small percentage of reduction, which does not contribute to the implementation of the Paris Agreement goals.

Report is available on https://infoclimate.org/eng/analysis-of-climate-policies-of-the-countries-of-eastern-europe-caucasus-and-central-asia/

The 26th Conference of the Parties (COP26) to UNFCCC. The COP26 UN Climate Change Conference, hosted by the UK in partnership with Italy, will take place from 31 October to 12 November 2021 in the Scottish Event Campus (SEC) in Glasgow, UK. In light of the worldwide effects of COVID-19, the Conference was rescheduled initially slated for November 2020. Rescheduling the conference ensures that all parties can focus on the issues to be discussed at this vital conference and allows more time for the necessary preparations to take place.

Reports on Climate Change

A new ICRC report[94], When Rain Turns to Dust, explores how countries enduring conflict are disproportionately affected by climate change and climate variability.

Here are seven things you need to know.

1. Of the 25 countries deemed most vulnerable to climate change, 14 are mired in conflict

The Notre Dame Global Adaptation Initiative Index looks at a country's vulnerability to climate change and other global challenges, set against its ability to improve resilience. Yemen, Mali, Afghanistan, Democratic Republic of the Congo and Somalia, all of which are dealing with conflict, are among the lowest ranked. This is not to say that there is a direct correlation between climate change and conflict. Rather, it suggests that countries enduring conflict are less able to cope with climate change, precisely because their ability to adapt is weakened by conflict.

People living in conflict zones are therefore among the most vulnerable to the climate crisis and most neglected by climate action.

2. Climate change does not directly cause conflict, but...

Scientists generally agree that climate change does not directly cause armed conflict, but that it may indirectly increase the risk of conflict by exacerbating existing social, economic and environmental factors. For example, when cattle herders and agricultural farmers are pushed to share diminishing resources due to a changing climate, this can stir tensions in places that lack strong governance and inclusive institutions.

3. Insecurity limits people's ability to cope with climate shocks

The following case study from Mali, which has seen years of conflict, illustrates this point. In early 2019, grazing land became scarce south of Gao, due to floods. Pastoralists were worried about travelling with their livestock for fear of being attacked by armed groups or bandits. Instead, they often gathered in areas close to water sources, creating tensions with farmers and fishermen. Insecurity prevented them from reaching livestock markets further afield, where they could have hoped for better prices. State officials – and potential state support – were absent because of the violence. Violence also considerably limited humanitarian access. In short, impoverished herders watched their only assets wither and were left struggling to feed their families.

4. Adapting to climate change can be relatively simple, but it tends to be complicated

In certain circumstances, a change in the crops being cultivated might be sufficient. But adapting to climate change may also require major social, cultural or economic changes. A whole agricultural system might need to change, or diseases new to a geographical area might need to be dealt with. Concerted efforts to adapt tend to be limited in times of war. In a conflict situation, authorities and institutions are not only weak, but also preoccupied with security priorities.

5. The natural environment is frequently a casualty of conflict

Too often, the natural environment is directly attacked or damaged by warfare. Attacks can lead to water, soil and land contamination, or release pollutants into the air. Explosive remnants of war can contaminate soil and water sources, and harm wildlife. Such environmental degradation reduces people's resilience and ability to adapt to climate change.

The indirect effects of conflict can also result in further environmental degradation, for example: authorities are less able to manage and protect the environment; large-scale displacement places strain on resources; natural resources can be exploited to sustain war economies. In Fao, south of Basra, Iraq, people blame their water and farming problems on the felling of date palms for military purposes during the Iran-Iraq war.

Conflict can also contribute to climate change. For example, the destruction of large areas of forest, or damage to infrastructure such as oil installations or big industrial facilities, can have detrimental climate consequences, including the release of large volumes of greenhouse gases into the air.

[94] International Committee of the Red Cross

6. International humanitarian law (IHL) provides protection to the natural environment

As early as 1977, states afforded the natural environment protection against widespread, long-term and severe damage through Additional Protocol I to the Geneva Conventions.

Greater respect for the rules of war can reduce the harm and risks that conflict-affected communities are exposed to as a result of climate change.

For example, climate change can drive water scarcity and reduce the availability of arable land. By prohibiting attacks on objects indispensable to the survival of the civilian population, such as agricultural areas and drinking water, IHL protects these resources from additional conflict-related violence.

7. Humanitarian action must adapt

The climate crisis is altering the nature and severity of humanitarian crises. Humanitarian organizations are already struggling to respond and will not be able to meet exponentially growing needs resulting from unmitigated climate change.

Major efforts – in the form of significant systemic and structural changes, political will, good governance, investment, technical knowledge, a shift in mindsets – are needed to limit climate change.

Humanitarian organizations must collaborate to strengthen climate action. While people in conflict zones are among the most vulnerable to climate change, there is a gap in funding for climate action between stable and fragile countries. A greater share of climate finance needs to be allocated to places affected by conflict to help communities adapt to climate change.

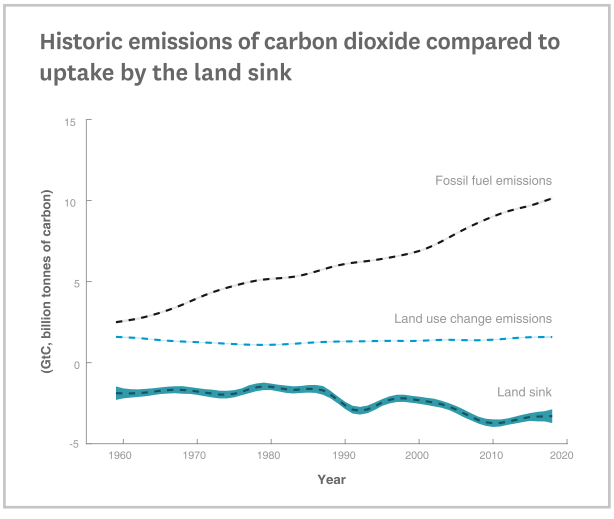
Source:
https://www.icrc.org/sites/default/files/topic/file_plus_list/rain_turns_to_dust_climate_change_conflict.pdf

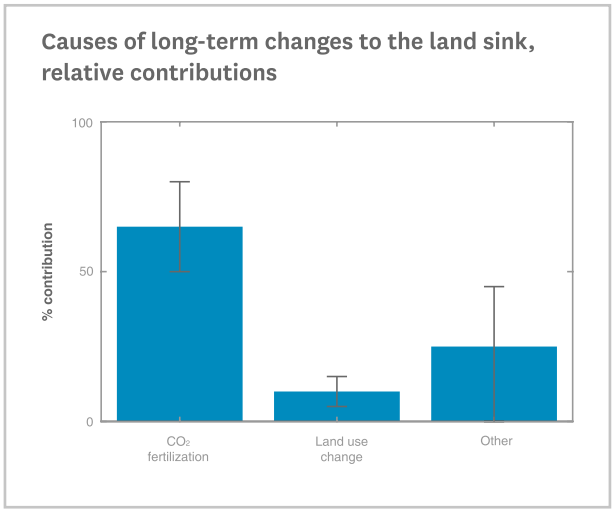
The 10 New Insights in Climate Science 2020 (full report) intends to take up the latest and most essential scientific findings in climatology.

1. Improved models strengthen support for ambitious emission cuts to meet Paris Agreement: (1) Earth's temperature response to doubling the levels of carbon dioxide in the atmosphere is now better understood. While previous IPCC assessments have used an estimated range of 1.5-4.5°C, recent research now suggests a narrower range of 2.3-4.5°C; (2) This means that moderate emissions reduction scenarios are less likely to meet the Paris temperature targets than previously anticipated; (3) Improved regional scale models provide better information about heavy rainfall events and hot and cold extremes, offering new opportunities for water resource management; (4) Regional climate predictions can now be made up to a decade ahead with higher skill than previously thought possible.

2. Emissions from thawing permafrost likely to be worse than expected: (1) Emissions of greenhouse gases from permafrost will be larger than earlier projections because of abrupt thaw processes, which are not yet included in global climate models; (2) These abrupt thaw effects could as much as double the emissions from permafrost thaw under moderate and high emissions scenarios; (3) Emissions from permafrost thaw could be yet higher due to effects on plant root activity, which increases soil respiration.

3. Deforestation is degrading the tropical carbon sink: (1) Land ecosystems currently draw down 30% of human CO_2 emissions due to a CO_2 fertilization effect on plants; (2) Deforestation of the world's tropical forests are causing these to level off as a carbon sink but this is balanced by greater recent carbon uptake in the Northern Hemisphere; (3) Global plant biomass uptake of carbon due to CO_2 fertilization may be limited in the future by nitrogen and phosphorus; (4) CO_2 emissions from land-use changes continue to be high in the 21st century and remain a large threat to the land sink.





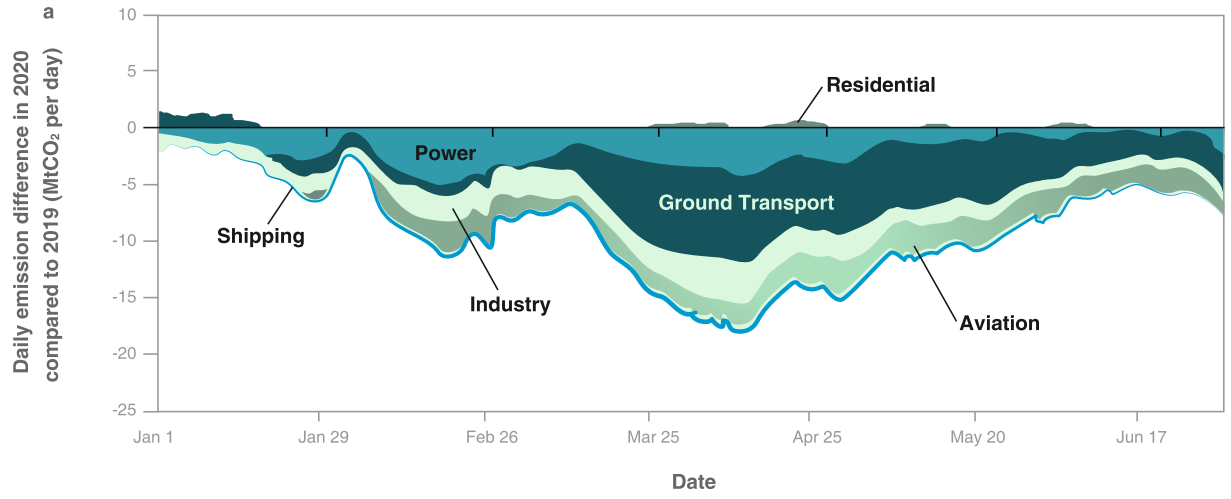
4. Climate change will severely exacerbate the water crisis: (1) Crises of water quality and quantity are intimately linked with climate change and increasing extremes; (2) New empirical studies show that climate change is already causing extreme precipitation events (floods and droughts), and these extreme set-

tings in turn lead to water crises; (3) The impact of these water crises is highly unequal, which is caused by and exacerbates gender, income, and sociopolitical inequality; (4) Climate change coupled with socioeconomic drivers can impact access to water of good quality; (5) Water-related climate extreme events are contributing to the migration and displacement of millions of people; migration is being treated as an adaptation strategy within the international policy community.

5. Climate change can profoundly affect our mental health: (1) Climate change can directly and indirectly adversely affect mental health over short and longer time scales. Growing evidence suggests the overall burden of mental health impacts of climate variability is high and will increase with additional climate change; (2) Cascading and compounding risks are contributing to anxiety and distress; (3) The mental health consequences of climate variability and change can affect anyone but disproportionately affects those suffering from health inequities; (4) The promotion and conservation of blue and green spaces within urban planning policies as well as the protection of ecosystems and biodiversity in natural environments have health co-benefits and provide resilience.

6. Governments are not yet seizing the opportunity for a green recovery from COVID-19: (1)Temporary COVID-19 lockdowns resulted in a large and unprecedented global reduction in GHG emissions and visible improvements in urban air quality; (2) The substantial drops in GHG emissions during COVID-19-induced lockdowns are unlikely to have any significant long-term impact on global emission trajectories; (3) Governments all over the world have committed to mobilizing more than US $12 trillion for COVID-19 pandemic recovery. As a comparison, annual investments needed for a Paris-compatible emissions pathway are estimated to be US $1.4 trillion; (4) Stimulus packages allocated by leading economies for agriculture, industry, waste, energy, and transport, amounting to US $3.7 trillion, have the potential to reduce emissions from these sectors significantly but governments do not seem to be seizing this opportunity; (5) Governments' economic stimulus packages will shape GHG emissions trajectories for decades to come – for better or worse. If invested in climate-compatible activities, they could be a turning point for climate protection.

Effect of restrictions to control COVID-19 on global CO_2 emissions in 2020, per sector. Adapted from Liu and coauthors, 2020



7. COVID-19 and climate change demonstrate the need for a new social contract: (1) COVID-19 and climate change exemplify transboundary risks that erode human well-being and economic security, particularly affecting the most vulnerable; (2) The pandemic has spotlighted inadequacies of both governments and international institutions to cope with transboundary risks; (3) Accelerating climate risks require innovative approaches to governance; (4) Some communities and governments have demonstrated that COVID-19 risks can be addressed with innovative local, national, and international responses, and stronger global responses are needed; (5) NGOs, community groups, youth movements, and many other social actors have shown that transboundary responses to global risks of climate change are also possible and there is mounting pressure on governments to act decisively. A new social compact would strengthen the prospects for a humane and just world with a stable climate.

8. Economic stimulus focused primarily on growth would jeopardize the Paris Agreement: (1) A growing number of studies highlight the economic benefits of strategies that stay well below 2°C or even 1.5°C; (2) The costs of renewable energy, battery-electric vehicles, and other low-carbon solutions have fallen dramatically; (3) A COVID-19 recovery strategy based on growth first and sustainability second is likely to fail the Paris Agreement; (4) Investments are needed for a system transition but all must contribute to net energy or CO_2 savings in line with the Paris Agreement.

9. Electrification in cities is pivotal for just sustainability transitions: (1) Urban electrification is a powerful pathway to an equitable energy transition; (2) Over a billion people who currently lack access to electricity will benefit from stronger electrification efforts; (3) Reductions in local air pollution and improvements to health and quality of life are tangible co-benefits of urban electrification; (4) An actor-oriented, equity-based approach to the transition will maximize the benefits and mitigate the risks of urban electrification, such as generating a new electrical divide.

10. Going to court to defend human rights can be an essential climate action: (1) Rights-based litigation is emerging as a tool to address climate change; (2) Through such climate litigation, legal understandings of who or what is a rightsholder are expanding to include future, unborn generations, and elements of nature, as well as who can represent them in court; (3) Climate litigation shows cross-fertilization between outcomes in different courts and tribunals, such as national case law influencing responses of international tribunals; (4) Climate-related court cases address harm to people also across national boundaries; (5) Courts come in as "lawmakers" to address climate change, given the absence of adequate climate action in other contexts.

Source: https://10nics2020.futureearth.org/

State and Trends in Adaptation Report. On 18 December, the Global Center on Adaptation presented its report "Building Forward Better from Covid-19: Accelerating Action on Climate Adaptation", the first in a series that will assess progress on climate adaptation and provide guidance and recommendations on best practice in adapting to the effects of a changing climate and building resilience to climate shocks. The report highlights the many successful adaptation initiatives with the potential to be scaled up and replicated. It also flags key policy, skills and finance gaps that must be addressed if adaptation is to be effective and reach those who need it the most.

Climate-change impacts continue to grow in magnitude and frequency. Yet recent progress on adaptation has slowed because of the COVID-19 pandemic. The following policy recommendations are designed not only to accelerate adaptation and resilience action, but to help the world win back the momentum lost due to COVID. The recommendations are aimed at strengthening:

1. Understanding: To ensure that the risks are fully understood and reflected in the decisions that public and private actors make;

2. Planning: To improve policy and investment decisions and how we implement solutions;

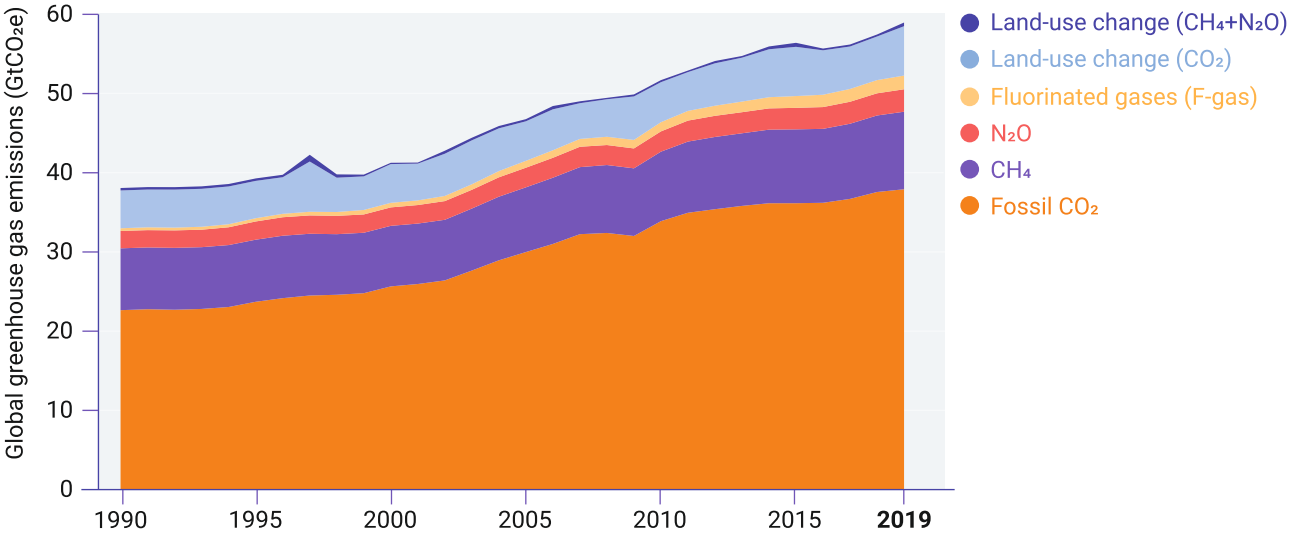
3. Finance: To mobilize the funds and resources necessary to accelerate adaptation.

The Report is available on https://gca.org/wp-content/uploads/2021/03/GCA-State-and-Trends-Report-2020-Online-3.pdf

UNEP issued the 11th edition of the UN Environment Emissions Gap Report (1 December). It assesses the latest scientific studies on current and estimated future GHG emissions and compares these with the emission levels permissible for the world to progress on a least-cost pathway to achieve the goals of the Paris Agreement. It includes the following key conclusions:

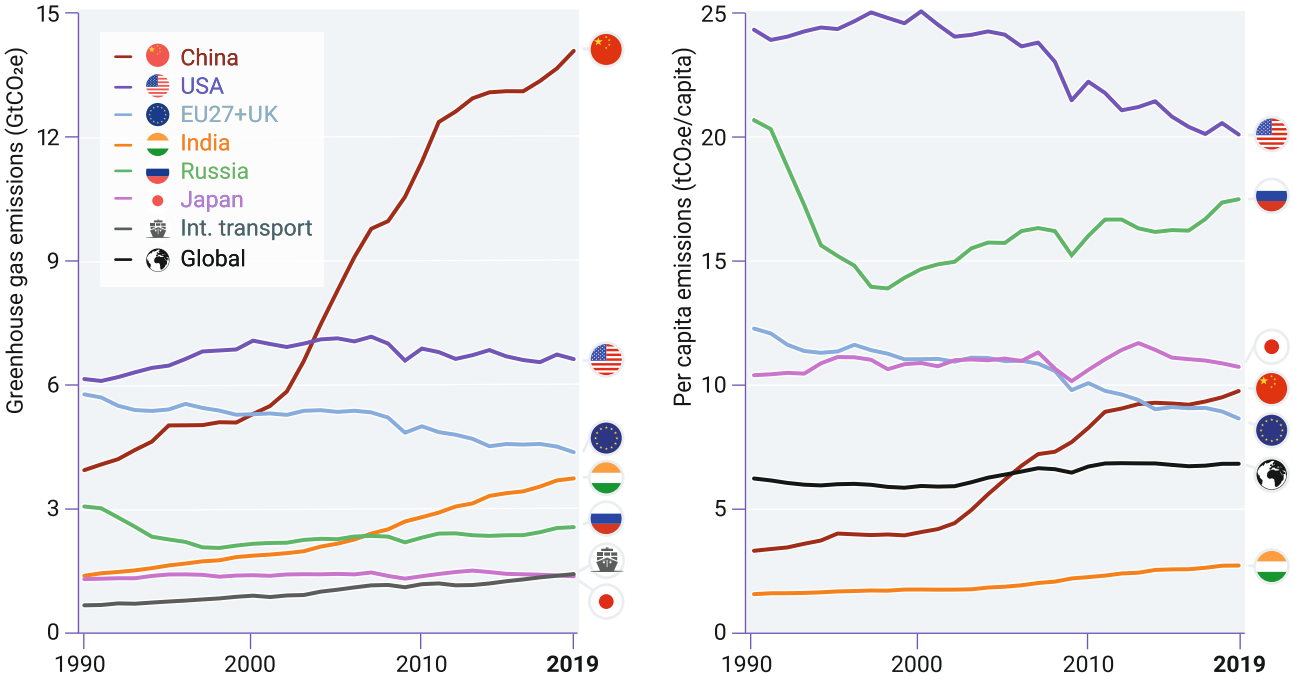
1. Global GHG emissions continued to grow for the third consecutive year in 2019, reaching a record high of 52.4 $GtCO_2e$ (range: ±5.2) without land-use change (LUC) emissions and 59.1 $GtCO_2e$ (range: ±5.9) when including LUC.

Global GHG emissions from all sources



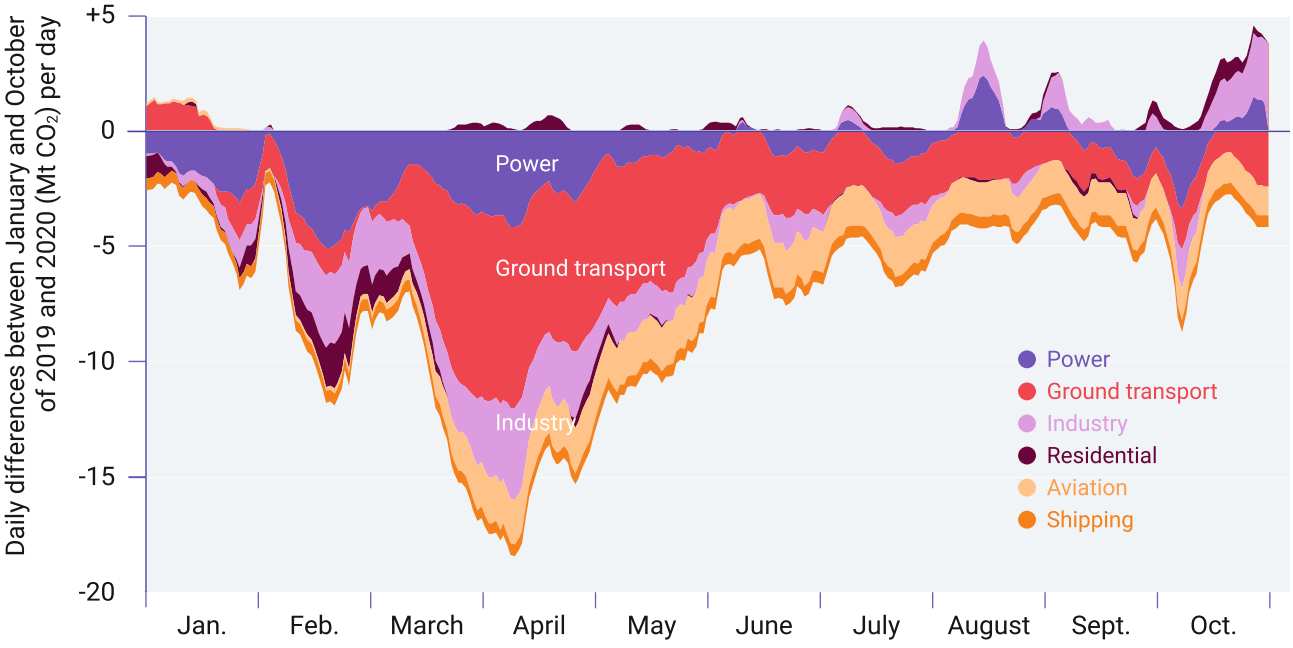
2. CO_2 emissions could decrease by about 7% in 2020 (range: 2-12%) compared with 2019 emission levels due to COVID-19, with a smaller drop expected in GHG emissions as non-CO_2 is likely to be less affected. However, atmospheric concentrations of GHGs continue to rise.

Absolute GHG emissions of the top six emitters (excluding LUC emissions) and international transport (left) and per capita emissions of the top six emitters and the global average (right)



3. The COVID-19 crisis offers only a short-term reduction in global emissions and will not contribute significantly to emissions reductions by 2030 unless countries pursue an economic recovery that incorporates strong decarbonization.

Reduction in emissions in 2020 relative to 2019 levels due to COVID-19 lockdowns



4. The growing number of countries that are committing to net-zero emissions goals by around mid-century is the most significant and encouraging climate policy development of 2020. To remain feasible and credible, it is imperative that these commitments are urgently translated into strong near-term policies and action, and are reflected in the NDCs.

5. Collectively, G20 members are projected to overachieve their modest 2020 Cancun Pledges, but they are not on track to achieve their NDC commitments. Nine G20 members are on track to achieve their 2030 NDC commitments, five members are not on track, and for two members there is a lack of sufficient information to determine this.

6. The emissions gap has not been narrowed compared with 2019 and is, as yet, unaffected by COVID-19. By 2030, annual emissions need to be 15 $GtCO_2e$ (ran-

ge: 12-19 $GtCO_2e$) lower than current unconditional NDCs imply for a 2°C goal, and 32 $GtCO_2e$ (range: 29-36 $GtCO_2e$) lower for the 1.5°C goal. Collectively, current policies fall short 3 $GtCO_2e$ of meeting the level associated with full implementation of the unconditional NDCs.

7. Current NDCs remain seriously inadequate to achieve the climate goals of the Paris Agreement and would lead to a temperature increase of at least 3°C by the end of the century. Recently announced net-zero emissions goals could reduce this by about 0.5°C, provided that short-term NDCs and corresponding policies are made consistent with the net-zero goals.

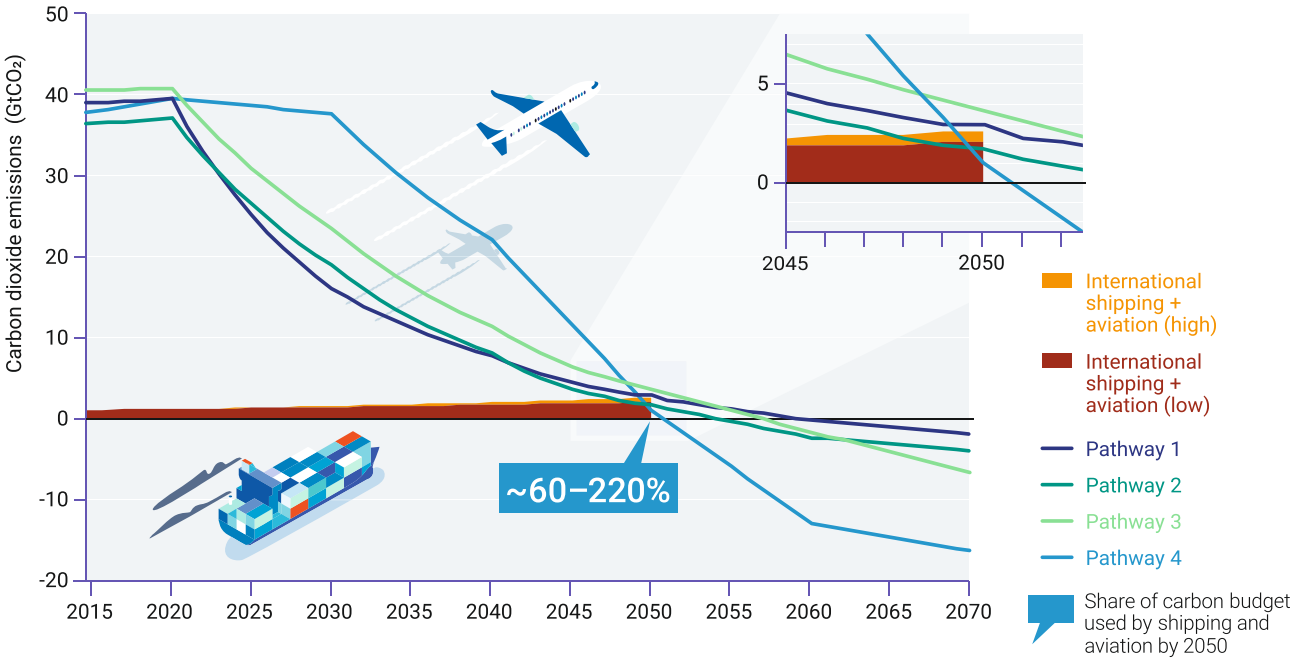
8. COVID-19-related fiscal spending by governments is of unprecedented scale, currently amounting to roughly US $12 trillion globally, or 12% of global GDP in 2020. For G20 members, fiscal spending amounts to around 15% of GDP on average for 2020.

9. So far, the opening for using fiscal rescue and recovery measures to stimulate the economy while simultaneously accelerating a low-carbon transition has largely been missed. It is not too late to seize future opportunities, without which achieving the Paris Agreement goals is likely to slip further out of reach.

10. Early COVID-19 fiscal rescue and recovery measures provide valuable insight for policymakers designing measures for the immediate future.

11. Domestic and international shipping and aviation currently account for around 5% of global CO_2 emissions and are projected to increase significantly. International emissions from shipping and aviation are not covered under the NDCs and, based on current trends, are projected to consume between 60 and 220% of allowable CO_2 emissions by 2050 under IPCC illustrative 1.5°C scenarios.

Global CO_2 emissions pathways limiting global warming to 1.5°C and CO_2 emissions from international shipping and aviation



12. Current policy frameworks to address emissions are weak and additional policies are required to bridge the gap between the current trajectories of shipping and aviation and GHG emissions pathways consistent with the Paris Agreement temperature goals. Changes in technology, operations, fuel use and demand all need to be driven by new policies.

13. Lifestyle changes are a prerequisite for sustaining reductions in GHG emissions and for bridging the emissions gap. Around two thirds of global emissions are linked to the private household activities according to consumption-based accounting. Reducing emissions through lifestyle changes requires changing both broader systemic conditions and individual actions.

14. Equity is central to addressing lifestyles. The emissions of the richest 1% of the global population account for more than twice the combined share of the poorest 50%.

The Report is available on
https://www.unep.org/emissions-gap-report-2020

The **4th Yearbook of Global Climate Action** 2020 was issued. It presents the current range and state of global climate action by non-Party stakeholders (cities, regions, businesses, investors, and civil society), examines the impacts of the COVID-19 pandemic and opportunities for a green resilient recovery. It also explores the key elements of the Climate Action Pathways, and delivers key messages and reflections from the Champions on the future of the Marrakech Partnership for Global Climate Action.

The Report is available on
https://unfccc.int/sites/default/files/resource/2020_Yearbook_final_0.pdf

Major and Significant Events

UNSC organized an Arria formula meeting on the theme of "Climate and security risks: the latest data. What can the United Nations do to prevent climate-related conflicts and how can we climate-proof United Nations in-country activities?" (22 April) and a ministerial-level open debate on "Climate and Security" in an open videoconference (24 July) (see Security Council).

In December, UN held a virtual Climate Ambition Summit 2020. Some 70 Heads of State, along with regional and city leaders, and heads of major businesses, have delivered a raft of new measures, policies and plans, aimed at making a big dent in greenhouse gas emissions, and ensuring that the warming of the planet is limited to 1.5°C. The UK announced that it would cut emissions by 68%, compared to 1990 levels, within the next five years, and the European Union bloc committed to a 55% cut over the same time. At least 24 countries announced new commitments, strategies or plans to reach carbon neutrality, and a number of states set out how they are going even further, with ambitious dates to reach net zero: Finland by 2035, Austria by 2040 and Sweden by 2045. Pakistan announced that its scrapping plans for new coal power plants, India will soon more than double its renewable energy target, and China committed to increasing the share of non-fossil fuel in primary energy consumption to around 25% by 2030.

Global trends in climate change litigation in 2020. At the end of May 2020, the Climate Change Laws of the World database featured 374 court cases in 36 countries (excluding the US) and 8 regional or international jurisdictions, as well as 1,872 climate laws and policies in 198 jurisdictions. The Sabin Center's database for the United States featured 1,213 climate lawsuits in the US up to the end of May 2020.

The UNEP Global Climate Litigation Report: 2020 Status Review provides an overview of the current state of climate change litigation globally, as well as an assessment of global climate change litigation trends. It finds that a rapid increase in climate litigation has occurred around the world. In 2017, 884 cases were brought in 24 countries; as of 2020, cases had nearly doubled, with at least 1,550 climate change cases filed in 38 countries (39 including the European Union courts). While climate litigation continues to be concentrated in high-income countries, the report's authors expect the trend to further grow in the global south – the report lists recent cases from Colombia, India, Pakistan, Peru, the Philippines and South Africa.

The Report is available on
https://wedocs.unep.org/bitstream/handle/20.500.11822/34818/GCLR.pdf?sequence=1&isAllowed=y

Country Review

European Court of Human Rights. The European Court of Human Rights has told the governments of 33 industrialized countries to promptly respond to a climate lawsuit lodged by six youth campaigners in September. The plaintiffs range from age 8 to 21 and come from Lisbon and Leiria in Portugal. The case states climate change poses a rising threat to the six young people's lives and their physical and mental well-being. It invokes human rights arguments – including the right to life, a home and to family – as well as claiming discrimination.

France. France's top administrative court gave the government a three-month deadline to show it is taking action to meet its commitments on reducing greenhouse gas emissions.

Republic of Ireland. In July, Friends of the Irish Environment won a landmark case against the Irish government for failing to take sufficient action to address the climate and ecological crisis. The Supreme Court of Ireland ruled that the Irish government's 2017 National Mitigation Plan was inadequate, specifying that it did not provide enough detail on how it would reduce greenhouse gas emissions.

United Kingdom. In December, three British citizens, Marina Tricks, Adetola Onamade, Jerry Amokwandoh, and the climate litigation charity, Plan B, announced that they were taking legal action against the UK government for failing to take sufficient action to address the climate and ecological crisis. The plaintiffs announced that they will allege that the government's ongoing funding of fossil fuels both in the UK and other countries constitute a violation of their rights to life and to family life, as well as violating the Paris Agreement and the UK Climate Change Act of 2008.

USA. As of February, the U.S. had the most pending cases with over 1,000 in the court system. In September 2020, the city of Charleston, South Carolina made history Wednesday when it became the first in the U.S. South to sue the fossil fuel industry for damages caused by the climate crisis. The city sued 24 oil and pipeline companies, including major players like ExxonMobil, Chevron, BP and Royal Dutch Shell. The lawsuit contends that the companies knew that their products were heating the global climate but denied the fact in public. It further seeks to charge them for the costs of protecting Charleston from increased flooding and extreme weather events.

Juliana v. United States climate change lawsuit. The first case of its kind, Juliana v. the United States continued in 2020. 21 American teenagers aged from 9 to 20 filed a lawsuit against the US Government. Their complaint asserts that, through the government's affirmative actions that cause climate change, it has

Number of cases identified by jurisdiction, 1986 to May 2020

Argentina	1	Australia	98	Austria	2
Belgium	1	Brazil	6	Canada	22
Chile	2	Colombia	2	Czech Republic	1
Ecuador	1	Estonia	1	European Union	57
France	11	Germany	6	International Court of Justice	1
India	9	Indonesia	1	Inter-American Court and Commission on Human Rights	3
Ireland	4	Japan	3	Kenya	1
Luxemburg	1	Mexico	1	Netherlands	2
New Zealand	18	Nigeria	1	Norway	1
OECD	6	Pakistan	4	Peru	1
Philippines	2	Poland	3	South Korea	1
South Africa	4	Spain	13	Sweden	1
Switzerland	2	Uganda	1	Ukraine	2
UN Committee on the Rights of the Child	1	UN Human Rights Committee	2	UN Framework Convention on Climate Change	10
United Kingdom	62	UN Special Rapporteurs	2	United States	1,213

Source: Setzer J and Byrnes R (2020) Global trends in climate change litigation: 2020 snapshot. London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, Sabin Center for Climate Change Law; https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2020/07/Global-trends-in-climate-change-litigation_2020-snapshot.pdf

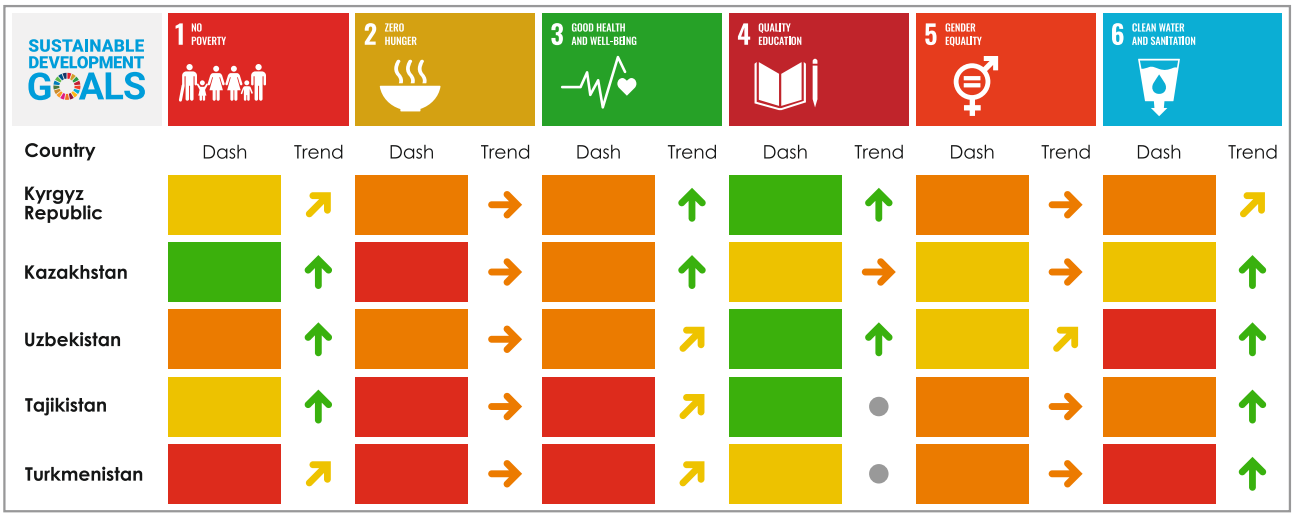
violated the youngest generation's constitutional rights to life, liberty, and property, as well as failed to protect essential public trust resource[95]. On **17 January 2020**, the Ninth Circuit reversed the lower court in the Juliana case, ruling that the plaintiffs do not have standing to pursue their claims because they cannot show that the court has the power to grant the specific remedy plaintiffs seek for the harms they have suffered. On **2 March 2020**, attorneys for the plaintiffs filed a petition for rehearing en banc with the Ninth Circuit Court of Appeals. This petition requests that the full Ninth Circuit Court of Appeals convene a new panel of 11 circuit court judges to review January's sharply divided opinion.

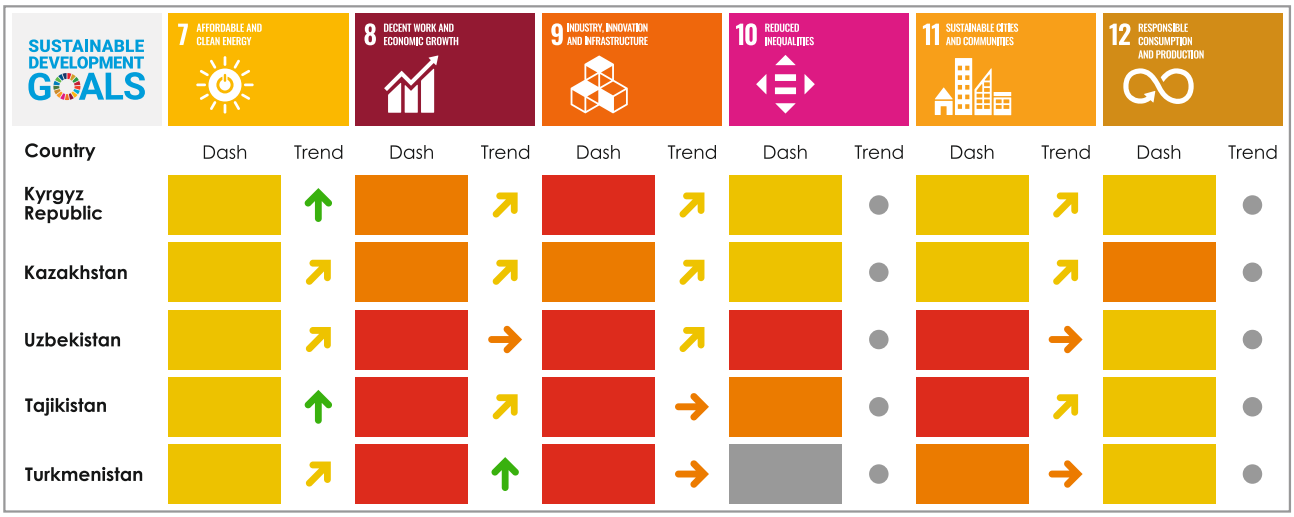
12.2. Sustainable Development Goals: Tracking the 2020 Progress in Central Asia

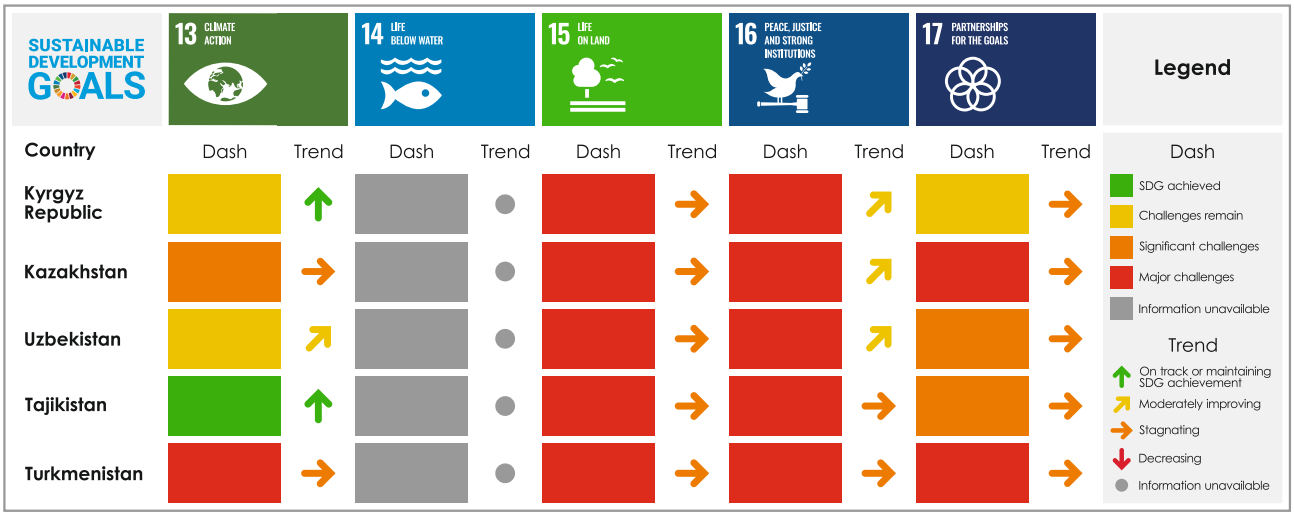
In this section we present an overview of progress towards the SDGs in Central Asian countries. Information is drawn from The Sustainable Development Goals Report 2020 – a global assessment of countries' progress towards achieving the SDGs. It is a complement to the official SDG indicators and the voluntary national reviews. The report presents a global overview of progress towards the SDGs before the pandemic started, but it also looks at some of the devastating initial impacts of COVID-19 on specific Goals and targets. The report was prepared by the UN Department of Economic and Social Affairs in collaboration with over 200 experts from more than 40 international agencies, using the latest available data and estimates.

[95] https://www.ourchildrenstrust.org/juliana-v-us

Country	2020 SDG Index Score	2020 SDG Index Rank	Spillover Score (0-100)
Kyrgyz Republic	73.01	52	96.05
Kazakhstan	71.06	65	93.99
Uzbekistan	71.02	66	98.08
Tajikistan	69.43	78	97.54
Turkmenistan	63.03	114	90.44



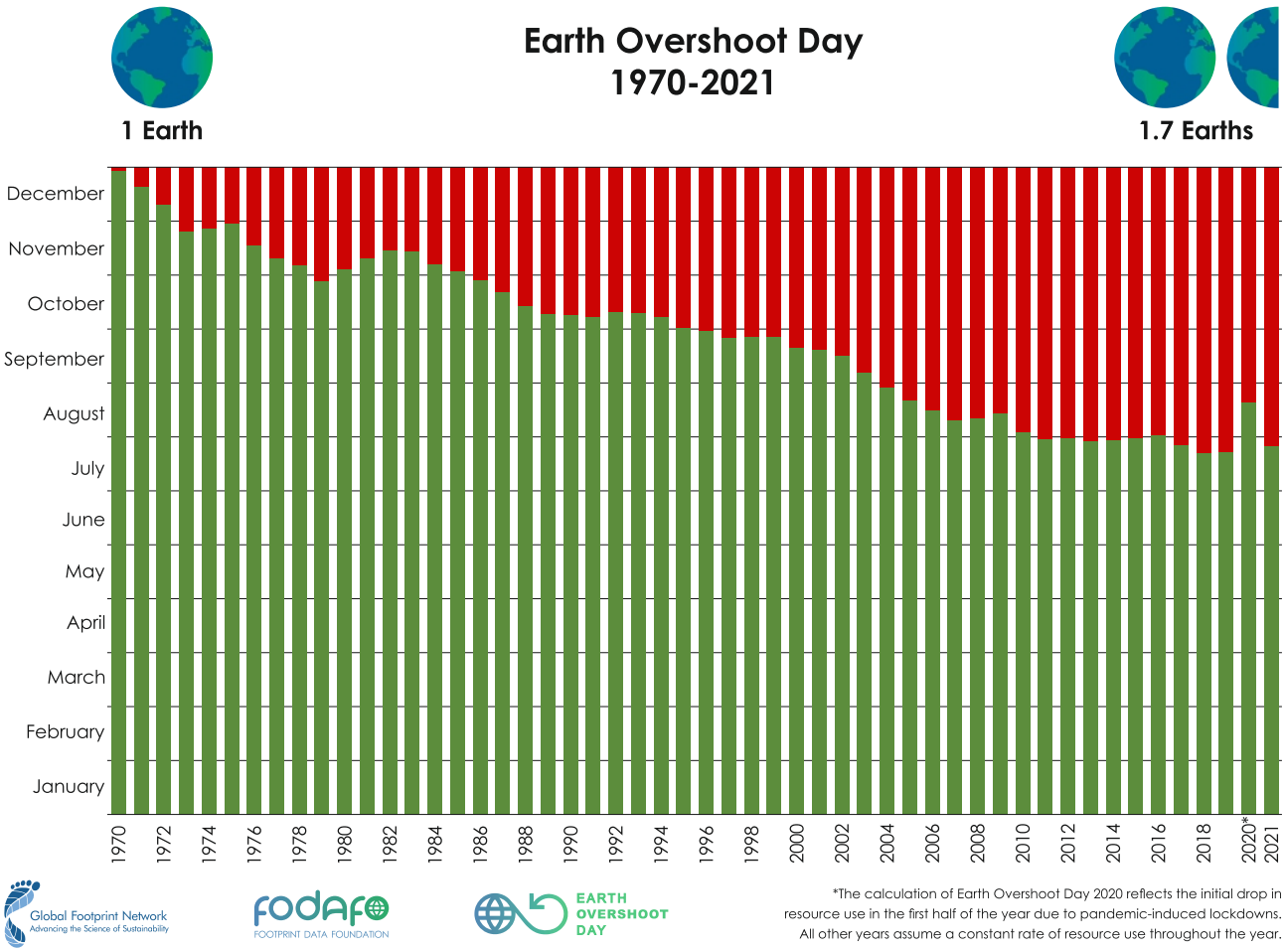




12.3. Earth Overshoot Day 2020

In 2020, the calculated Overshoot Day fell on August 22 (more than three weeks later than 2019) due to coronavirus induced lockdowns around the world. Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year. The earlier the eco-debt day comes, the more mankind owes to the planet and future generations, and vice versa, the closer to the end of the year the date shifts, the less debt is.

According to GFN, the world population is using as much as 1.7 planets a year, a figure that is thought to increase to 2 planets by 2030. Yet, we only have one planet. It is needed to shift the Earth overshoot to December 31. The World Wildlife Fund stresses that to shift the Earth overshoot to December 31 it is needed firstly to reduce carbon dioxide emissions. Cutting CO_2 emissions by 50% would move the date to October. This will pay our "loan" to the planet and future generations for 3 months.



Source: National Footprint and Biocapacity Accounts 2021 Edition; data.footprintnetwork.org

12.4. The 2020 Hydropower Development: Global Trends

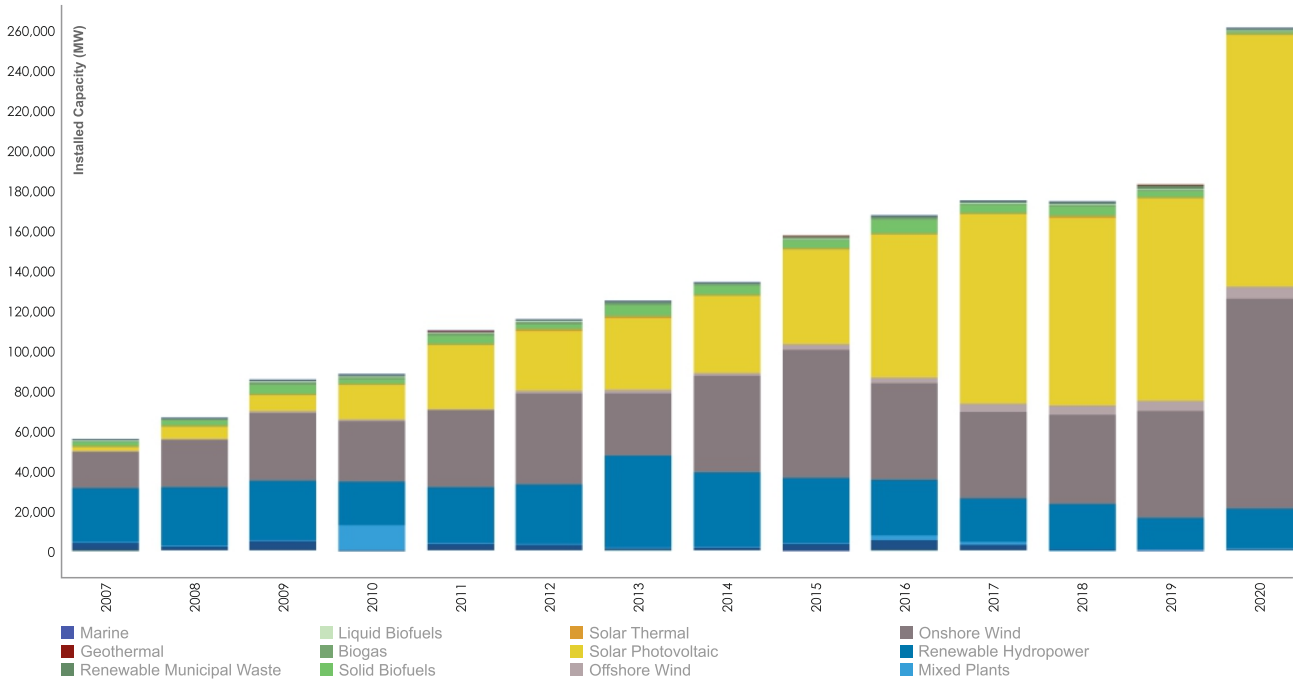
Policy brief compiled by Eugene Simonov, Rivers without Boundaries Coalition.

This section provides a review of hydropower development in 2020 and rich statistics on hydropower in the 21 century. It notes a modest role of hydropower in renewable energy (RE) revolution, global decline in annual hydropower expansion for the last 7 years. Section contains a brief account of relative advantages and disadvantages of hydropower as a part of "sustainable development". It further assesses national policy environment for current hydropower development in dam-developing countries, exploring violations of internationally recognized ESG standards and safeguards. The report further explores sustainability at project level and contains overview of risks and potential damages for 90% of large hydro put online in 2020. Report has special part on pumped storage technology, possessing promising characteristics, which now faces uncertain future due to higher costs of construction and demonstrated lack of environmental safeguards.

Hydro has a modest role in renewable energy revolution

According to IRENA, in 2020 RE generation capacity increased by 261 GW (+10.3%) and amounted to 2,799 GW. Solar accounted for 714 GW with an increase of 127 GW (+22%) and wind energy reached 733 GW with 111 GW (+18%), continued to dominate RE capacity expansion, jointly accounting for 91% of all net RE additions in 2020. Hydropower capacity has increased by 20-21 GW (+2%), making global conventional hydropower reach 1,211 GW (not counting 121 GW of pure pumped-storage hydropower, which does not produce energy). Addition in hydropower in 2020 amounted to less than 8% of all increase in RE.

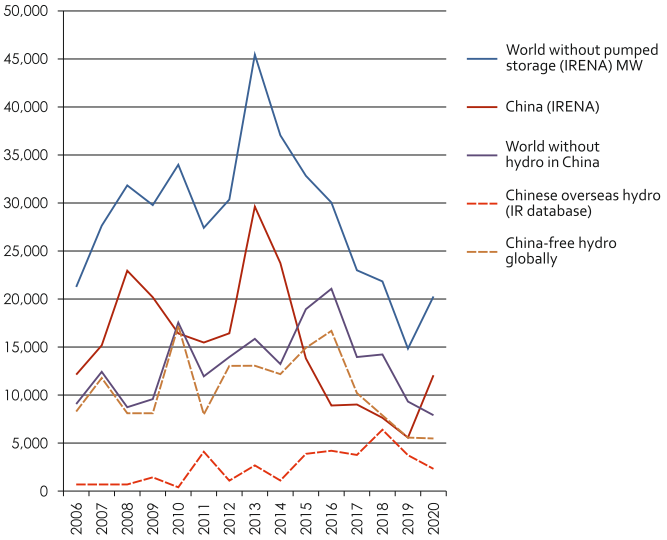
Figure 1: 2006-2020 Global annual additions of RE capacity (IRENA)

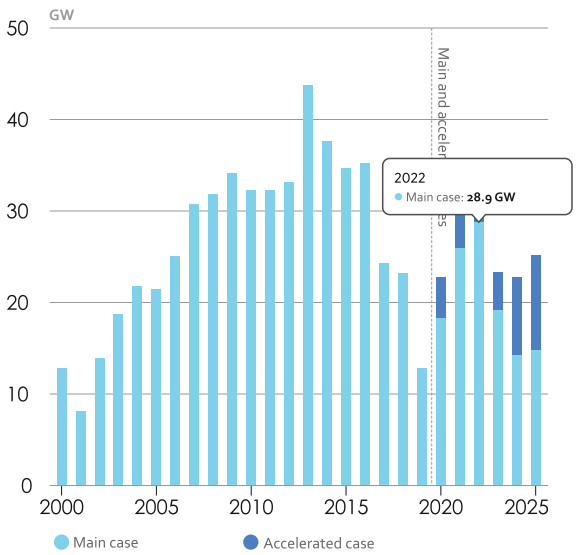


Global hydropower expansion dynamics

We traced annual expansion of hydropower showing its relative decline during last 7 years. Figure 2 omits "pure" pumped storage plants, which are energy storage facilities and do not generate electricity. China has been the absolute champion responsible roughly for half of new hydropower globally and till 2019 displayed the sharpest decline in new hydro. Some increase in 2020-23 is due to completion of several megadams in China (Figure 3). At least till 2018 there was also an increase in capacity built with Chinese assistance in other coun-

Figures 2 and 3. Annual globally installed hydropower (International renewable energy Agency (IRENA) – left, International Energy Agency (IEA) predictions – right)

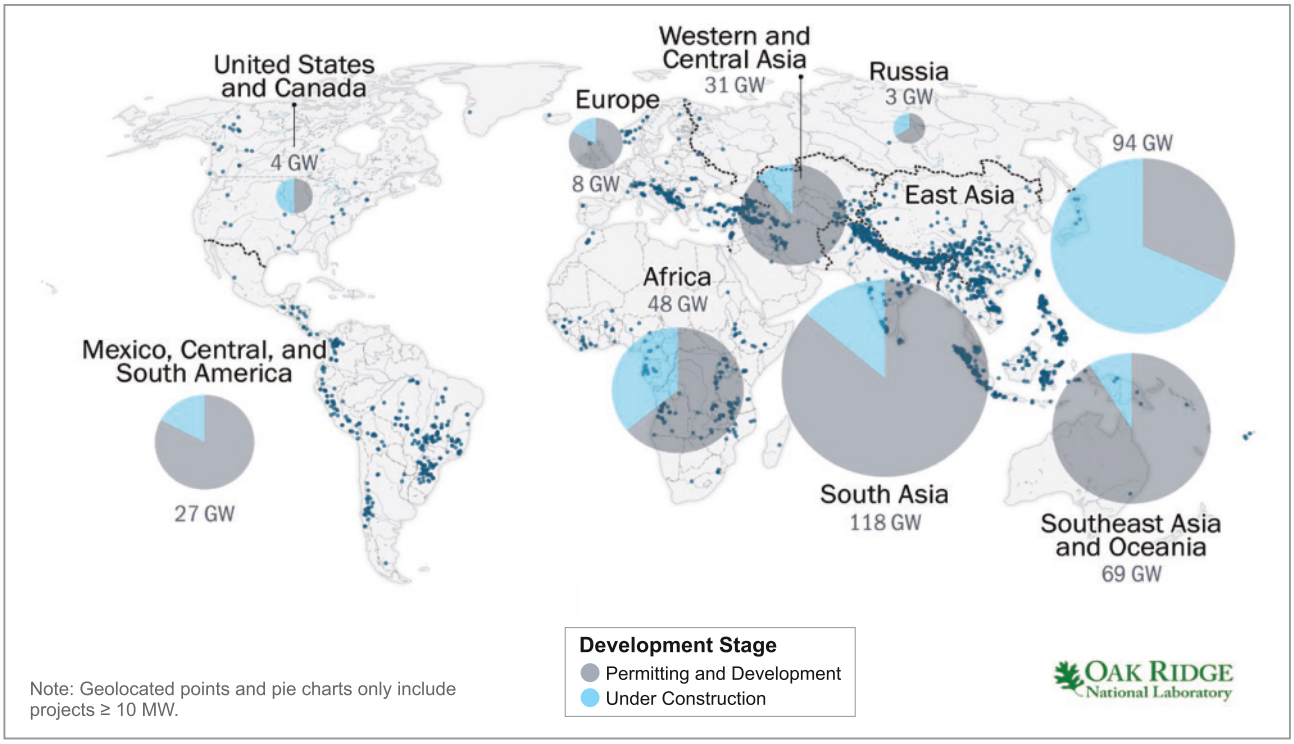




tries. Thus, in 2018-2020 more than 70% of hydropower capacity added globally was installed thanks to Chinese companies and financiers.

From 240 countries reporting on progress in RE to IRENA in 2020: only 46 countries added some hydropower capacity in 2020. (cf. *International Hydropower association (IHA) lists only 35 such countries, US Department of Energy (DoE) lists projects under construction in 66 countries as of December 2019*); 77 countries reported not having any hydropower (definitely not "energy for all"); 117 countries did not add any new capacity either through greenfield projects or upgrades; in 7 of those capacity decreased. Several countries deliberately removed from plans or restricted new projects (e.g. Bulgaria, Bosnia, Montenegro, etc.). All in all only 25-30 % of countries are developing new hydropower. The pace of greenfield hydropower development (comprising 4-7% of annual additions in new RE capacity) leaves it little chances to make any significant contribution to "the renewable energy revolution".

Figure 4. Map of "global hydropower pipeline"



Source: US DoE, 2021 Hydropower Market Report

According to the US DoE, the global development pipeline by the end of 2019 included 4,545 hydropower projects with total capacities of 414 GW. South Asia and Southeast Asia and Oceania have by far the largest number of projects – more than 600 each – but their average capacity is significantly lower than for the projects in East Asia. In total, at the end of 2019, 117 GW of hydropower were under construction in 616 projects across 66 countries. China accounted for 55% of hydropower capacity under construction (64 GW). Additionally, there were 297 GW of hydropower in different phases of scoping, permitting, and development.

US DoE claims that if all hydropower and pumped storage hydropower (PSH) investment projects in the global pipeline at the end of 2019 are completed, they represent an estimated expenditure of $1.1 trillion (of those, PSH projects required 270 billion). This total includes investment in new plants as well as expansions (e.g. addition of new turbine-generator units to existing plants) and refurbishments and upgrades (R&U) of existing units. It also includes both projects already under construction and those in the planning and permitting stages.

More than 90% of global expenditures are directed toward development of new plants. Tracked capital investment needs in plant expansions and R&U at the end of 2019 totalled $42 and $31 billion, respectively. If annual global expenditures for hydropower construction stay at $15-20 billion annually, then fulfilment of existing expansion plans will take 40-50 years. If alternatively we optimistically extrapolate into the future the development pace observed in 2015-2020, then 400+GW may be installed in 20 years. However, it would take 2-5 years to develop similar capacity using wind and solar projects at significantly lower costs.

The future of hydropower expansion is subject to **high uncertainty due to many critical factors** such as:

- increasing costs per kW installed capacity;
- increasing LCOE (price per KWh) in most countries of the world as opposed to rapidly decreasing LCOE of alternatives;
- much greater cost and time of project construction than for most other RE;

- high likelihood of time/cost overruns;

- acute conflict between hydropower projects and local communities, whose living environmental conditions and resources those projects degrade;

- decreasing availability of suitable sites at rivers located near electricity consumption centers;

- increasing risk of underperformance and catastrophic events due to climate change;

- huge negative impacts on biodiversity and ecosystem functions at planetary scale;

- increasing competition for water resources between all sectors of economy and overarching need to preserve key ecosystem services, that forces to prioritize water-use types, which have no practical alternatives (while hydropower has plenty of viable alternatives virtually everywhere);

- ageing dams around the world with mounting legacy problems and increasing risks of dam failures force responsible governments and companies to prioritize refurbishment and upgrades (and expansion) of existing facilities to greenfield development;

- already high proportion of hydropower in RE fleet in many developing countries makes their energy systems unbalanced and vulnerable to many problems listed above, forcing those states to expand other RE sources to make energy systems more reliable.

At the same time hydropower still has several **important selling points:**

- ability to provide manoeuvring capacity and other essential services to national energy systems and increasing recognition of their value by energy markets;

- still somewhat lower LCOE compared to most RE sources in some regions and low recurrent costs due to low water prices, lack of lasting compensation mechanisms for environmental and social impacts and, often, disregard to accumulating technical problems;

- corruption-prone model of dam development attractive for officials in countries with defunct governance systems;

- potential for multi-purpose use of reservoirs promises benefits additional to electricity generation, which is often not fulfilled once the dam is built;

- high symbolic value of dams making them focus of national development policies;

- inertia and self-preservation efforts of large construction and equipment-manufacturing industry focused on new hydropower development;

- inertia of multilateral and bilateral development finance institutions which prefer to support "large-scale" investment projects;

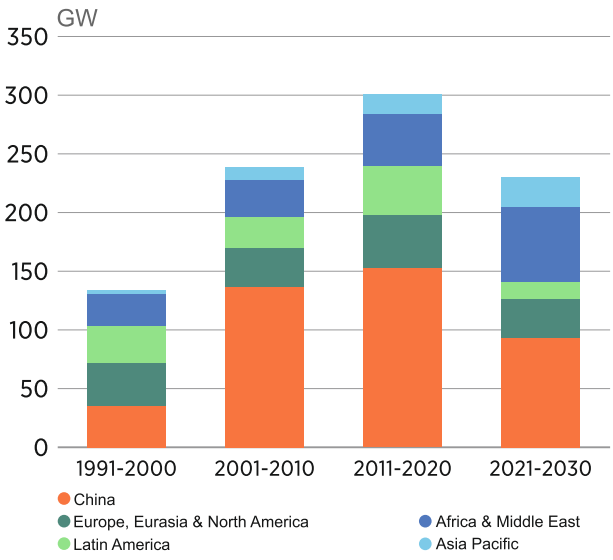
- longevity of projects: once built, a large dam may last for 60-120 years;

- highly questionable, but officially widely recognized "low-emissions" status of hydropower, which is partly due to poor accounting of climate-related trade-offs with disruption in ecosystem services and decline in biodiversity and, partly, due to disregard to time-bound climate targets when spreading emissions occurring at initial stages over the full-lifetime of the project.

Hydropower still has a huge appeal for variety of influential decision-makers and institutions and has a potential to persist in development agenda, especially in the context of strengthened authoritarian regimes and constrained access to decision-making both for expert community as well as civil society organizations and affected communities.

However even major proponents of hydropower development known for overoptimistic forecasts fully recognize that hydropower development globally has passed its peak and faces decline (Figure 5).

Figure 5. Hydropower statistics by regions and forecast till 2030 by the IEA



Snapshot on hydropower installed in 2020 and trends behind it

Our analysis for 2020 is based on two annual reports: "Renewable Capacity Statistics 2021"[96] by IRENA and "Status of Hydropower Report" by the International Hydropower Association (IHA). We reviewed data on the countries adding more than 100 MW, according to at least one of two reports (Table 1). For either IRENA or IHA version our review covers 90% of capacity installed in 2020.

[96] https://www.irena.org/publications/2021/March/Renewable-Capacity-Statistics-2021

Table 1. Countries installed more than 100 MW hydropower in 2020 ("Hydropower Champions")

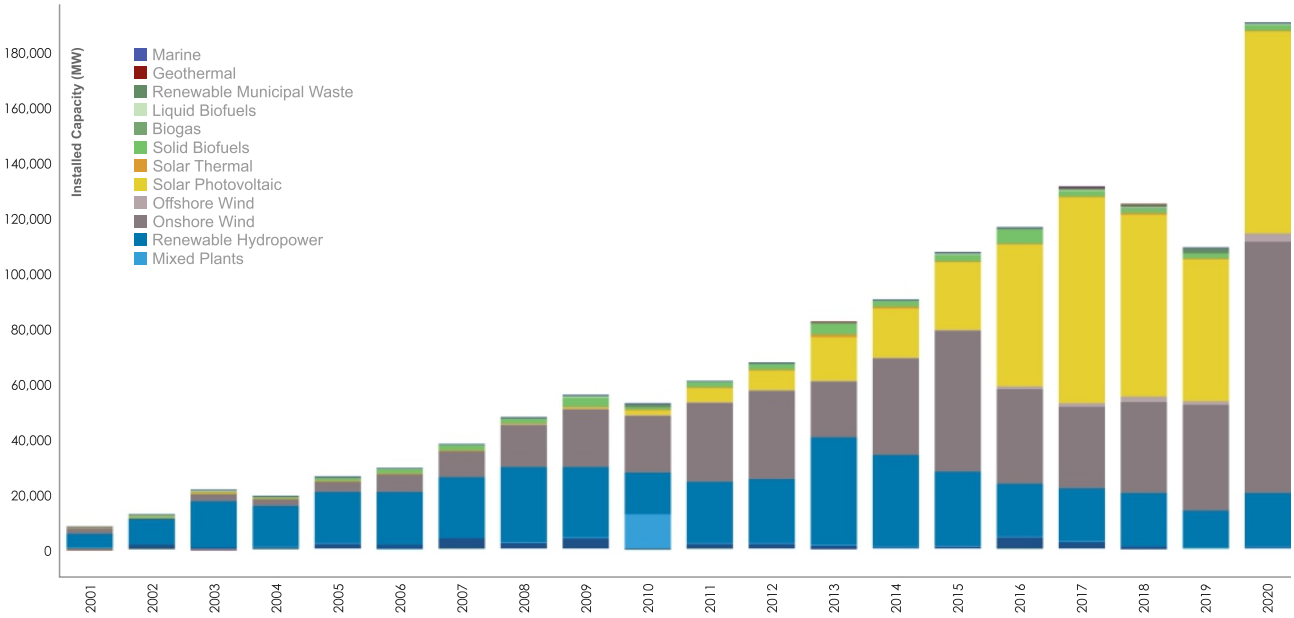
Place	Country	MW Hydro installed		MW PSH	Capacity added by specific power plants
		IRENA	IHA		
1	China*	12,080	12,550	1,200	6,800/10,000 Wudongde, 1,200/1,800 Jixi PSH, 3 GW hydro in Yunnan province, etc.
2	Turkey	2,500	2,500	0	1,200 Ilisu ,429 Cetin, 500 Lower Kalekoy, 120 Alpaslan II
3A	Lao DPR**	1,300	176	0	260 Don Sahong, 450? Three Nam Ou dams
3B	Colombia*	684	24	0	Not specified (likely the IHA data correct)
4	India**	478	478	0	300 MW Kameng, 99 Singoli Bhatwari
4A	Austria	550	0	0	Of those 333 MW as mixed pumped-storage
5	Angola**	333	401	0	400/2,070 Lauca completed
6	Russia*	20	380	0	346 Zaramagskaya, 23 upgraded Irkutsk Hydro
7	Norway*	200	324	0	78 Nedre Otta, 77 Leikanger and 48 Osterbo
8	Canada**	5	275		270 Lower Churchhill, 1st phase of Muskrats Falls Project (IHA)
9	Ethiopia**	254	254		254 Genale Dawa 3
10	Indonesia**	234	236		120 Poso Peaker
11	Chile*	251	205		250 Alto-Maipo dam
12	Brazil*	175	213		Not specified
13	Guinea**	0	225		225/450 Souapiti
14	Albania	123	197		197 Moglice
15	Georgia**	178	178		178 Shuakhevi
16	Honduras	108	108		104 Patuca III
17	Pakistan**	102	102		102 Gulpur
18	Nepal**	121	74		60MW Upper Trishuli 3A and 14MW Kulekhani III
19	USA*	155	24		36 Red Rock Hydroelectric Project
	TOTAL	19,853	18,924		

Notes: "A" marks difference between IRENA and IHA data. X/Y means that X MW was added to a project with Y full planned capacity.

Legend: * marks the countries shifting from overreliance on hydropower; ** marks the countries maximizing hydropower development; Grey filling – the countries that have recently experienced major economic or political problems due to high reliance on hydropower

Even among the leading countries hydropower is no longer the preferred type of RE expansion. Hydropower in 2020 contributed only 10% to the RE cumulative additions in all those 21 countries-champions (see Figure 6).

Figure 6. The 21 countries "hydro-champions" in 2020 installed much more solar and wind energy than hydropower (IRENA)



However, real trends differ from country to country. In the table above, we used grey filling to highlight those countries, which had recently experienced major economic or political problems due to high reliance on hydropower (e.g. Georgia and Nepal have extreme seasonal deficit in energy generation forcing them to import energy from neighbours). We asterisked those countries, which despite large hydropower installation are explicitly seeking to move away from overreliance on hydropower (Brazil and Colombia being most recent examples).

A double asterisk is used to mark the countries, which pursue the opposite policy of maximizing hydropower development, despite best available evidence on related problems (e.g. Laos strangled by debts related to hydropower construction or Ethiopia risking political isolation due to its neighbours feeling threatened by development on transboundary rivers).

Those divergent trends, likely, will continue in future reinforced by external influences from larger countries and transnational corporations. The countries, which currently have the longest "hydropower pipelines", are not necessarily those having best technical or financial capacity to build hydro. Two thirds of the top 20 countries planning hydropower (Table 2) heavily rely on foreign hydropower firms, which open possibilities for increase in projects implemented overseas by Chinese, Turkish, Norwegian, Iranian, US, Russian and EU companies.

However, those development opportunities are met with growing restraint by international and domestic investors, a trend illustrated below (Fig.7) by data on Belt and Road Initiative finance.

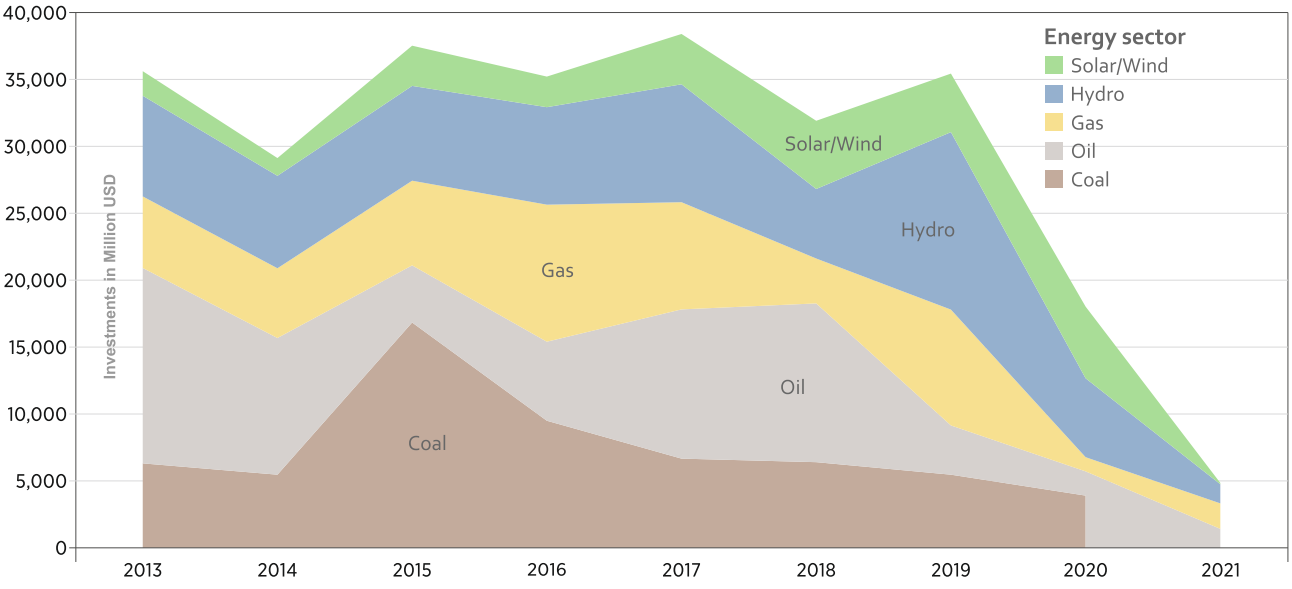
One of reasons for growing restraint in financing hydropower is rapid increase in cost of finance for hydropower, while it is falling for wind and solar.

Table 2. Top-20 "hydropower-planning" countries as of January 1, 2020

Country	Hydropower Proposed (MW)
China	92,937
India	41,995
Nepal	30,361
Pakistan	28,860
Myanmar	25,782
Indonesia	24,227
Bhutan	19,244
Ethiopia	12,419
Brazil	10,234
Turkey	8,534
Lebanon	8,100
Iran	7,997
Laos	7,796
Philippines	6,640
Argentina	5,722
Tanzania	4,541
Angola	4,418
Peru	4,137
Nigeria	3,762
Zimbabwe	3,653

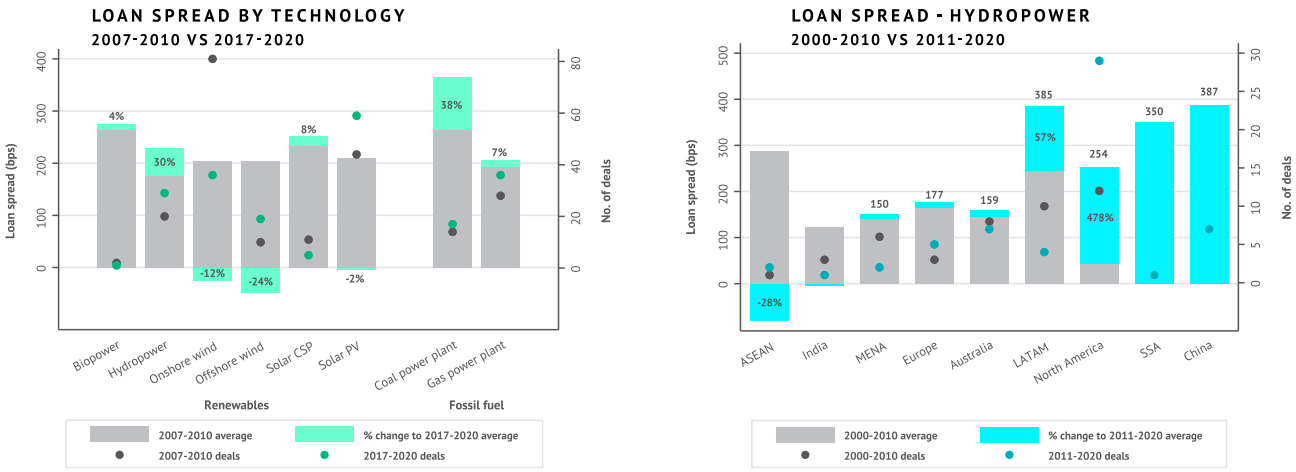
Source: US DOE, 2021 Hydropower Market Report

Figure 7. This chart from the China Belt and Road Initiative Investment Report published in July 2021 by Dr. Ch. Nedpoil Wang (GRBIC) China's overseas investments in large hydropower are in sharp decrease



A study published in April 2021 by Oxford Sustainable Finance Programme showed that over decade the financing costs for coal-fired power plants have increased on average by 38% and for hydropower by 30%, while for wind power and solar PV it was falling. The study also attempts comparison across regions, indicating dramatic rise in costs of hydropower loan servicing in Latin America and relative decrease in ASEAN countries.

Figure 8. Loan spread graphs show changes in cost of finance in energy sector



Source: Significant fall in cost of financing renewable energy projects. Oxford University

Oxford scientists examine financing costs by analysing syndicated bank loan spreads taken from LPC DealScan, which includes loan information on 12,072 loan deals between 2000 and 2020, involving 5,033 borrowers across 118 countries in the energy and electric utilities sectors as identified by The Refinitiv Business Classification (TRBC). Since the report primarily explores how the cost of debt for fossil fuels and renewables have changed internationally over the past 20 years it provides quite impartial assessment for hydro, since it is marginal to the author's interests and value judgements focused on fossil fuels.

Increasing attempts of hydropower industry to present hydropower as "green energy" are aiming at reducing cost of finance by granting to dam projects access to "climate finance" and "green bonds" markets. In 2020, the International Hydropower Association succeeded in issuing hydropower standard for "Climate Bond Initiative", which may give their members access to cheaper money to refinance hydropower projects.

Persistent problems in hydropower development in champion countries

Unfortunately, modest development of greenfield hydropower in 2020 again came at the cost of destruction of irreplaceable natural areas and suffering of local communities in countries where those dams have been built. It also often exacerbated transboundary tensions, fuelled corruption and economic crisis. Using the River without Boundaries database we examined for which countries championing in 2020 we can present recent evidence of persistent generic problems in hydropower development policies and practices.

For all generic problems we marked by "1" serious threat/problem/impact inside a given country for which we have sufficient evidence within the last decade. Only in case of "transboundary waters conflict" we counted number of neighbours with which this country has a conflict/serious issue related to hydropower impacts[97]. We have evidence on serious unresolved conflicts with local communities, irreversible impacts on biodiversity, damming free-flowing rivers, economic problems caused by hydropower projects for more than 80% of championing countries. Significant transboundary impacts and conflicts are present in 14 countries out of 21 involved 32 additional countries.

China, as usual, heads the rating due to the scale of hydropower construction and 17 major basins shared with neighbours. Laos occupies the second place due to tremendous flaws in its aggressive hydropower expansion policies. India scores high due to its active promotion of domestic hydropower notwithstanding associated damage and acute transboundary water issues. Almost no information is available about Angola, which defines its low ranking. Norway has low ranking due to unique conditions for hydro on its naturally cascading rivers and high domestic governance standards. If we were also taking into account problems/impacts of overseas hydro supported by Norwegian firms and financiers, the scoring would be different.

This simple scoring exercise demonstrates that most of current hydropower development happens in countries not possessing at policy level sufficient safeguards and is associated with very high risks and potential damages. It clearly testifies to the fact that most of hydropower development in the world is unsustainable and proceeds at the expense of key sustainable development objectives.

[97] NB: We registered as transboundary both impacts excerpted by the country on its neighbors and impacts caused to this country by other riparian countries

Table 3. Hydropower related problems in 2020 hydropower champion countries

Country	Conflict with Local Cultures	Biodiversity loss	Free flowing rivers dammed	Transboundary waters tensions (countries involved)	Corrupt governance	Major economic problems	Total score
China	1	1	1	6	1	1	11
Lao DPR	1	1	1	4	1	1	9
India	1	1	1	3	1	1	8
Turkey	1	1	1	3		1	7
Ethiopia	1	1	1	4			7
Pakistan	1	1	1	2	1	1	7
Russia	1	1	1	2		1	6
Canada	1	1	1	1	1	1	6
Nepal	1	1	1	1	1	1	6
Brazil	1	1	1	1	1	1	6
Colombia	1	1	1		1	1	5
Indonesia	1	1	1		1	1	5
Georgia	1	1	1	1	1	1	5
Honduras	1	1	1		1	1	5
Guinea	1	1	1	1		1	5
USA	1	1	1	2		1	5
Albania	1	1	1			1	4
Austria	1	1	1				3
Chile	1		1		1		3
Angola				1	1	1	3
Norway			1				1
TOTAL	19	18	18	32	13	17	
%	90.5	85.7	85.7		61.9	81.0	

2020 hydropower expansion in selected countries and its costs

EURASIA

China

Almost two thirds of globally installed hydropower (12.5GW) was added in China, where hydropower capacity reached 370 GW, wind power - 280 GW and photovoltaic – 250 GW. In 2020 most of increase accounts for completion of a giant 10 GW Wudongde Dam and greater addition is expected in 2021-23 due to completion of the 16 GW Baihetan dam on upper Yangtze River (Jinshajiang). As a result of 50 years of dam building and poorly coordinated development the ecosystem of the Yangtze River is in crisis and many of its 250 fish species face decline and extinction. The giant Chinese paddlefish was recognized as extinct due to dam construction and overfishing. In 2020 China adopted a special law on conservation of Yangtze River, but hydropower companies lobbied to remove prohibition on new dam building, present in early drafts.

Responding to the UNESCO inquiry on hydropower plans near "Three Parallel Rivers of Yunnan" protected area, China confirmed that damming plans for Lancang (Mekong) and Jinsha (Yangtze) rivers will proceed "as planned", which means further encroachment into fragile mountainous areas and retention of greater water volume in reservoirs with detrimental effects for downstream ecosystems. In late 2020 China also revealed a plan to develop 60 GW hydropower dam in Tibet on Yarlung Tsangpo (Brahmaputra) River right before it leaves for India and Bangladesh. Such plans create extreme tensions between countries and may destroy traditional lifestyle of indigenous minorities.

In 2020 China installed 48 GW of photovoltaics and 73 GW of wind capacity. The annual increase from wind power generation exceeded that from hydropower despite extreme floods on major rivers of the country. Already having the greatest hydropower fleet China, obviously, could substitute new hydropower construction by less destructive alternatives, but it still plans building new dams on transboundary watercourses to strengthen its strategic advantage over downstream neighbors.

Turkey

With 2.5GW added capacity, Turkey holds the second place in hydropower installation in 2020, largely due to putting in full operation the infamous Ilisu Dam on the Tigris River. The project blocks the Tigris River, destroying important biodiversity and displacing up to 50,000 people, the majority of whom

are ethnic Kurds. It submerged the ancient town of Hasankeyf, one of the world's oldest continuously inhabited settlements and threatens water security of Iraq as well as the Mesopotamia Marshes World Heritage. Turkey repeatedly creates artificial water scarcity to pressure and intimidate its downstream neighbours in Syria, Iraqi Kurdistan and Southern Iraq. In Syria this led to dysfunction of hydropower plant on the Euphrates.

Lao DPR

Laos put on line phase II dams of the Ou River cascade, the Nam Ou #1, 3 and 4 dams. The cascade has been developed under a Build-Operate-Transfer (BOT) arrangement, and PowerChina will operate the dams for 25 years before handing them back to the Laos State Electricity Corporation (EDL). The construction of the dams has been controversial for the loss of biodiversity and sources of food in the river basin. Resettlement is also an ongoing, difficult process, even according to Lao media reports. Hydropower cascade on the Ou River together with Luang Prabang Hydro being built on the main stem of Mekong also may negatively affect the Luang Prabang World Heritage city at the confluence of those two dammed rivers.

Altogether, the country installed in 2020 anywhere from 0.5 to 1.3 GW in the Mekong River basin, which unique ecosystem it purposefully destroys in an attempt to become the "battery of Southeast Asia". However, instead of a triumph, the country in 2020 faced prospects of a debt-default and declining demand for its energy from irritated riparian neighbours. In 2020 Laos was forced to cede the EDL into concession to a China Southern Grid Co. This demonstrates that over-development of hydropower mega-projects may lead to partial loss of sovereignty by smaller states.

India

In January 2021 Minster of Energy of India declared that the reason for delay in hydropower construction is civil society movements sabotaging development of the country.

India, according to both IRENA and IHA, installed 480 MW or less than 3% of 20 GW it hopes to add by 2030. However, India's own official statistics shows addition only of 399 MW. The largest new facilities put on-line were the 300 MW Kameng HEP in Arunachal Pradesh, a project associated with significant corruption, fraud and massive cost/time overruns. Another addition – the 99 MW Singoli Bhatwari Hydro – comes with questionable environmental clearance and is also facing a tunnel leakage issue. This project was massively damaged in the June 2013 Uttarakhand disaster, which, unfortunately, has not served a lesson to responsible agencies. In 2020 – early 2021 many people were killed in several accidents, greatest of them being a new catastrophic landslide in Uttarakhand, affecting many dams under construction in an area which scientist long before declared off-limits of large infrastructure development. The IHA reports that the Government also granted approval to proceed with the giant Dibang project (2,880 MW), which is predicted to cause major destruction of biodiversity and violation of human rights.

Responding to a "Covid-19 vigil" initiated by the Prime Minister of India, who encouraged households to switch their lights on and off, hydropower producers had to ramp down and up within seconds to support the unprecedented 31 GW shift in electricity demand. Fortunately this reckless authoritarian experiment has not caused any major failures, but it has not been effective in preventing spread of COVID either.

Indonesia

With a pledge to reach 23% of RE share by 2030 the Indonesian government has clearly disadvantageous focus on hydropower, which creates many new conflicts with biodiversity conservation objectives and well-being of local communities. Among 236 MW added in 2020 the largest project is 120 MW "Poso Peaker Hydro" on the island of Sulawesi, where the company belonging to the family of the former Vice-President Joseph Kalla is degrading the unique ancient lake Poso – a cradle of freshwater biodiversity and depriving local communities of their traditional fisheries and cultural monuments. On the island of Sumatra the government vehemently supports construction of a Batang-Toru Hydro by Zhefu Holdings and Power China-Sinohydro, which may wipe-out newly-discovered ape species – Tapanuli orangutan from the only known habitat.

Pakistan

In 2020 Pakistani military construction company started cooperation with Chinese SOEs and consortium of western consultants-enablers to develop the Diamer Basha Dam, which is the largest and likely the most controversial project in the transboundary Indus River basin. A 100 MW Gulpur Project was completed on the Poonch River, which was once considered the most ecologically sensitive river in the Azad Jammu & Kashmir, which makes a dam siting in a Masheer national park completely not justifiable. Nevertheless the IFC, ADB and other international players heavily invested in this private-public partnership project and claimed that resulting design helps to achieve "net biodiversity gain in critical habitat" (based on condition "if everything goes as prescribed"). This bad precedent provided excuse for further sacrifice of similar "critical habitat" in the Kunhar River near Balakot City, where in 2020 loan were granted by the ADB and AIIB to finance construction of a 300 MW hydropower plant.

Nepal

Nepal likely has the largest ratio of stalled hydropower projects per unit GDP. It was hit hard by COVID-19 lockdown, because it depends heavily on Chinese and Indian labor and technology to build hydro. Hydropower construction severely affects indigenous people of the mountains and charismatic wildlife, including freshwater Gangetic dolphins. The country is trapped by hydropower lobby that effectively prevents diversification in solar and other RE badly needed by local economy.

Georgia

Georgia added a 178MW Shuakhevi Hydro, developed by Norwegian "Clean Energy Invest" and Indian "Tata-Power". Actually this plant was completed in 2017, but collapsed right after the start of operations due to malfunction of the plant's derivation tunnels, which pass through local villages. At least three other projects collapsed or failed during the last decade.

Poorly planned projects stalled by popular wrath dot the landscape, but the government moves on marketing new river stretches to new foreign developers. The latest massive protest campaign against the Namakhvani dam cascade built by the same Norwegian company and Turkish firm ENKA on Rioni River has resulted in halt in construction in March 2021 and 30000-strong anti-government manifestations in the city of Kutaisi located downstream from the planned dam. This construction also has potential conflict with a World heritage property downstream.

Austria

According to IRENA, Austria installed 550 MW, from those 333 MW came in mixed hydro/pumped storage facilities. In 2020 WWF-Austria and other groups protested against illegal construction of the Tumpen-Habichen Power Plant built on the free flowing Ötztaler Ache River, which started in secrecy under cover of Corona virus curfews, while legal complaints were still pending.

Albania

Norwegian Statcraft completed the 197 MW Moglice project as a part of a cascade on one of the last free-flowing rivers of Europe. The European Commission urged the country to diversify its power portfolio, saying its dependence on hydropower could have severe consequences for the power supply during times of drought. After the Energy Community sent a legal inquiry on the HPP Pocem project awarded to a Turkish Company without a tender, the Albanian Government withdrew permits for all hydropower projects on the free-flowing Vjosa River and said it plans to integrate the area into the Vjosa national park.

AFRICA

Guinea

Guinea installed 225 MW at the Souapiti Hydropower Project located on the Konkoure River, with a total installed capacity of 450 MW. This project was constructed by China International Water & Electric Corporation (CWE – subsidiary of China Tree Gorges Group) and is expected to cost about $2 billion. According to a report by the Human Rights Watch the dam's reservoir will ultimately displace an estimated 16,000 people from 101 villages and hamlets. It will flood 253 square kilometers of land, including an estimated 42 square kilometers of crops and more than 550,000 crop-bearing trees. Displaced populations will have less favorable land than they have been farming for generations and dozens of already displaced residents interviewed by the Human Rights Watch say that they are already struggling to find adequate food for their families. Meanwhile, a failure to expand capacity of the transmission line connecting Souapiti and Kaléta with Conakry has left large amounts of new generation stranded and Electricité de Guinée in returning loans to Chinese banks.

Ethiopia

In Africa Ethiopia is a champion in building hydropower that destroys key natural assets and community livelihoods on transboundary rivers. It connected to the grid 254 MW Genale Dawa III, financed by Chinese banks and assisted by Chinese contractors (somehow the IHA reported it twice in 2019 and 2020). The dam will entail significant impacts on Somalia, severely restricting flows into Somalia's Juba River. The Juba is one of only two perennial rivers in Somalia, and it accounts for most of the country's agricultural production. The Genale Dawa III is expected to reduce the Juba's flows by between a quarter and a third, with major consequences for Somalia's food security.

The Grand Renaissance Dam (6,000 MW) on the Nile completed the first stage of filling its reservoir in July 2020 with 4.9 billion cubic meters of storage and threatens both Egypt and Sudan, who actively develop international coalition to press Ethiopia to commit to a legally binding agreement on the amount of water retained in the reservoir and schedule of downstream flows.

In Kenya a Lake Turkana was put on the "World Heritage in Danger" List due to destructive impacts from a dam built by Ethiopia on Omo River and in 2021 UNESCO still requests in vain Ethiopia and Kenya to jointly present a Strategic Environmental Assessment and develop safeguards against further degradation.

THE AMERICAS

Colombia

The country is best known for the 2.4 GW Hidroituango project, which was developed on the free-flowing Cauca River with rampant violations of human rights and multiple murders of local activists. Construction was stalled in 2018 by a giant landslide, creating threat of dam failure, which caused displacement of 12,000 people from downstream settlements. The IHA Report notes that the Inter-American Development Bank in 2020 approved an extra US$900 million to salvage/finish the Ituango project, while Export Development Canada publicly stated they regret participation in financing this dam. Following this incident Colombia revised its energy development program to avoid overreliance on hydropower, thus we doubt accuracy of the IRENA report of 680 MW of new hydro. However, in 2021 placement of wind farms proceeds with violations of indigenous peoples' rights similar to those in case of the Ituango project.

Chile

Chile by January 2021 connected to grid the 251 MW Alto-Maipo dam built by US AES Corporation with many violations of community rights, which may jeopardize Santiago's drinking water to benefit a mining tycoon. In July 2020 the Independent Consultation and Investigation Mechanism concluded in its report on the Alto-Maipo Hydroelectric Project that the Inter-American Development Bank (IDB) breached its policies, since the company implementing the project failed to: carry out any assessment of gender-differentiated impacts, despite the large number of workers brought into the Maipo River Valley; evaluate the impacts of the project on recreational uses of the river; and assess the impact of the project on cattle drivers, among other issues. A similar judgement from the IFC's CAO mechanisms is expected on July 6, 2021. Both come too late to serve justice to communities affected by this ill-designed project.

Canada

The Lower Churchill Dam, the 1st phase of the Muskrats Falls Project in Labrador entered textbooks on environmental risks long before its first turbine was connected to grid. The project that is billions over

budget and years behind schedule, at a final forecast will cost more than $13 billion. Local Inuit people resisted the flooding by the 834 MW dam arguing it will contaminate the area with methylmercury. The company continued with the project and flooded the 41-sq-km reservoir. The Innu Nation of Labrador announced on October 6th 2020, that it is seeking $4 billion in damages from Hydro-Quebec over this mega-dam. The suit, filed in the Supreme Court of Newfoundland & Labrador, seeks compensation for the theft of ancestral Innu land in 1967 to build the Churchill Falls hydroelectric project. Another prominent case in Canada is "Site C" hydropower construction progressing on the Peace River in British Columbia that will greatly increase disruption of flows to the Wood Buffalo World Heritage site and lands of indigenous people. After a request from the World Heritage Committee the Government of Canada completed a strategic environmental assessment, which confirmed detrimental effects, but failed to undertake decisive steps to prevent damage.

Honduras

Honduras and Sinohydro Co. have put in operation the 106 MW Patuca III Hydro, which for a decade has been of outmost concern due to its potential impact on Rio Platano World Heritage site that was recognized as "Heritage in Danger". In early 2020 Honduras reported that the Patuca III HPP has been completed to 97% and the reservoir was filled at 81.3%. In 2021 the World Heritage Center noted with serious concern and regret that construction of the Patuca III HPP is now essentially completed without a proper assessment of the current and potential impacts of the project on the World Heritage property. It requests that a strategic environmental assessment to be urgently expedited to assist putting in place the necessary measures to mitigate adverse impacts on the property.

Besides that, Honduras is widely known as a country where hydropower builders employ assassins to get rid of local activists. The story of indigenous Lenca leader, Berta Caceres assassination has become widely known globally, but it has not stopped the local practices. Twelve indigenous and environmental activists were killed in 2020. The last victim Cerros Escalante, shot on March 22 2021, led a local group called "Communities United," was active in hamlets near the Rio Ulúa and opposed the El Tornillito hydroelectric dam.

United States

The only sizeable new plant we could discern in the USA was the 36 MW Red Rock Hydroelectric Project mounted on pre-existing dam. So, likely, the rest from 157 MW reported by IRENA came from upgrades and expansion of existing hydro. Statistics shows that hydro makes about 0.4% (by capacity) in new electricity project pipeline at the end 2020, and proposed pumped storage makes less than 2% of storage projects in the pipeline, with 98% occupied by batteries.

The projects listed above together make up 90% of global hydropower installation in 2020[98]. Hardly 10% of projects put on-line do not have notable flaws, which make them inherently unsustainable and dangerous. Exactly the same trend was observed about projects completed in 2019 in the review presented in the Rivers for Recovery Report. Thus we see perpetuation of unsustainable pattern of destructive hydropower development without effective attempts by the industry to stop it.

Welcome the pumped storage…

As for the pumped storage hydro (PSH), much hyped as a remedy for grid stability and flexibility, which also usually has less destructive footprint, only 1,633 MW were put in operation in 2020, despite all hopes trumpeted by hydropower industry and personally by former Australia PM Malcolm Turnbull. In practice this means that most countries balance uneven output of 'variable renewables" by other means ranging from building batteries to smart use of large grids (See Hydropower Market Report with such analysis for the US hydro and PSH).

A map published by the US DoE shows the global PSH pipeline as traced by US Oak Ridge Labs (Figure 9). The global development pipeline by the end of 2019 included 284 PSH projects with total capacities of 226 GW. At the end of 2019, according to the US DoE, 13 countries were constructing 50 PSH projects with total capacity of 53 GW. Additionally, there were 173 GW of PSH in different phases of scoping, permitting, and development.

Almost everyone agrees that in principle the PSH is the most promising of all hydropower technologies. Researchers from the Australian National University developed geographic information system algorithms to catalogue potential closed-loop[99] PSH sites around the world. In 2019, they published a global atlas of the 616,000 locations identified in their analysis, with a combined energy storage capacity of approximately 23 million GWh (http://re100.eng.anu.edu.au/global/). Although only a small portion of the identified sites would ultimately be viable once more detailed geological and environmental studies are conducted, the authors estimate that developing as few as 1% of the identified energy storage capacity would be enough to fulfill the storage requirements of a global grid with 100% renewables. However, something is preventing the PHS from developing at pace corresponding with needs of RE development. An average 2.3 GW was developed annually since 2005 without any increase (Figure 10).

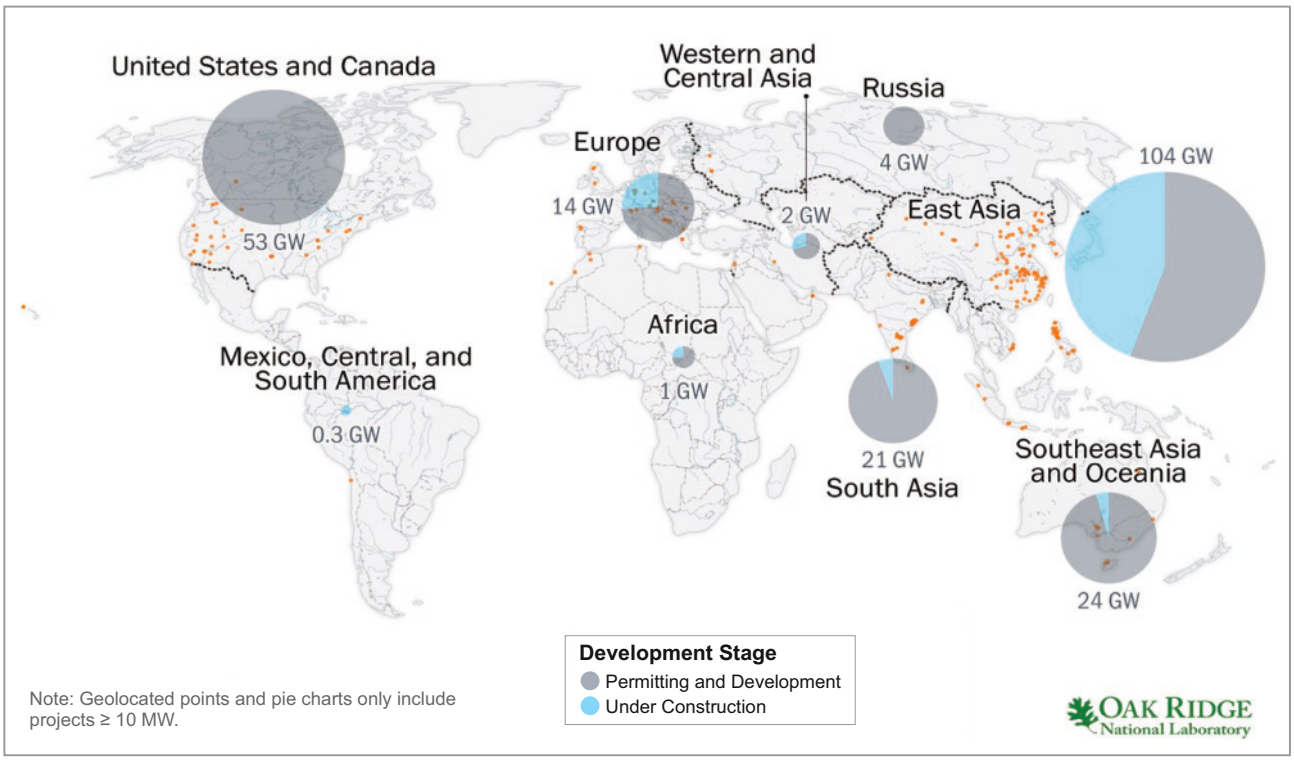
China accounted for 87% of PSH planned capacity with 46 GW under construction. Only 1.2 GW were installed in 2020 as three turbines at the Jixi Pumped Storage in 2020. China's 13th year plan is ending with completion of less than 40% of planned 35 GW expansion of PSH fleet. China PSH pricing mechanism released in April 2021 suggested all pumped storage plants in China to adopt a two-part tariff mechanism based on capacity and energy tariff after 2023.

Other 300 MW was installed in northern Israel at Gilboa PSH and, according to IRENA, 115 MW were added in the United States.

[98] Disclaimer: By not mentioning smaller contributions to hydropower installation, we by no means imply that smaller hydropower does not cause environmental harm. It is equally harmful and to rivers where dams are built and similarly impinges on rights of communities living on those rivers

[99] "Closed-loop PHS" presumes that neither upper nor lower reservoir is developed by alteration of natural stream or lake

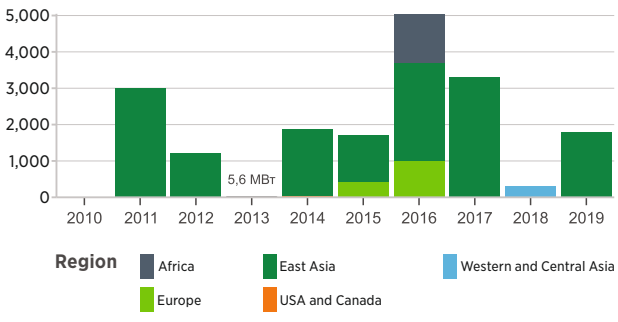
Figure 9. Map of global PSH pipelines



Source: US DoE, 2021 Hydropower Market Report

As for environmental and social impacts, relatively few concerns have been voiced in relation to the PSH projects. Decades ago Russia proposed a 1 GW PSH in Tver Region which would negatively affect the Tsentralno-Lesnoy Strict Nature Reserve, but that proposal long ago faded away without a trace. Australian PM Turnbull authorized an irresponsible scheme of 2 GW PHS development called Snowy-2, based on existing hydro inside the most iconic Kosciusko National Park of Australia, which was planned and pushed through EIA without credible mitigation measures. Now this unfortunate development will serve as repellent for investors into this otherwise benign technology. Project pipeline advertised by investors includes new large PSH projects presenting high unassessed potential threats, such as "Battery of the Nation" Scheme encircling Tasmania Wilderness World Heritage Site in Australia and several dams proposed on indigenous lands upstream of Grand Canyon World Heritage in the USA.

Figure 10. PSH installation over last decade has been uneven



Source: US DoE, 2021 Hydropower Market Report

Less than 2 GW of PSH added globally in 2020 may signify that this technology is still less attractive than battery and grid-based solutions to boost energy system flexibility. Given fresh experience with the irresponsible Snowy-2 project civil society and environmental organisations, would be less eager to speak in support of this technology. To regain popular support the pumped hydro proponents need to adopt the strictest environmental and social standards, especially for site-selection planning process, and demonstrate in practice that this technology enables RE revolution without destruction of nature and does not present just another unsustainable business as usual.

Conclusion

This report demonstrates that most of current hydropower development happens in countries not possessing at policy level sufficient safeguards and is associated with very high risks and a potential damage, which is vividly exemplified by 90% of large hydro, put online in 2020. Financial viability of hydropower projects has been rapidly decreasing due to increasing construction and energy production costs as well as increase in cost of capital. Climate resilience of existing hydropower fleet happened to be lower than expected with many countries suffering from overreliance on hydropower in times of droughts and large floods. The industry is still trying to overcome difficulties by exploiting "climate" theme in an attempt to capture cheaper climate finance and has made some progress with support of the "Climate Bond Initiative".

Pumped storage hydropower technology, despite its promising characteristics, faces uncertain future due to higher costs of construction and lack of environmental safeguards displayed by its flagship project "Snowy-2" in Australia. However, closed-loop pum-

ped storage built outside of sensitive natural areas still has a chance of revival, given vast choice of potential locations available on each continent. It is unlikely to regain credibility unless its environmental and social impacts are subjected to analysis and public discussions from early stages of project identification.

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12.5. Sardoba Dam Collapse

General Information

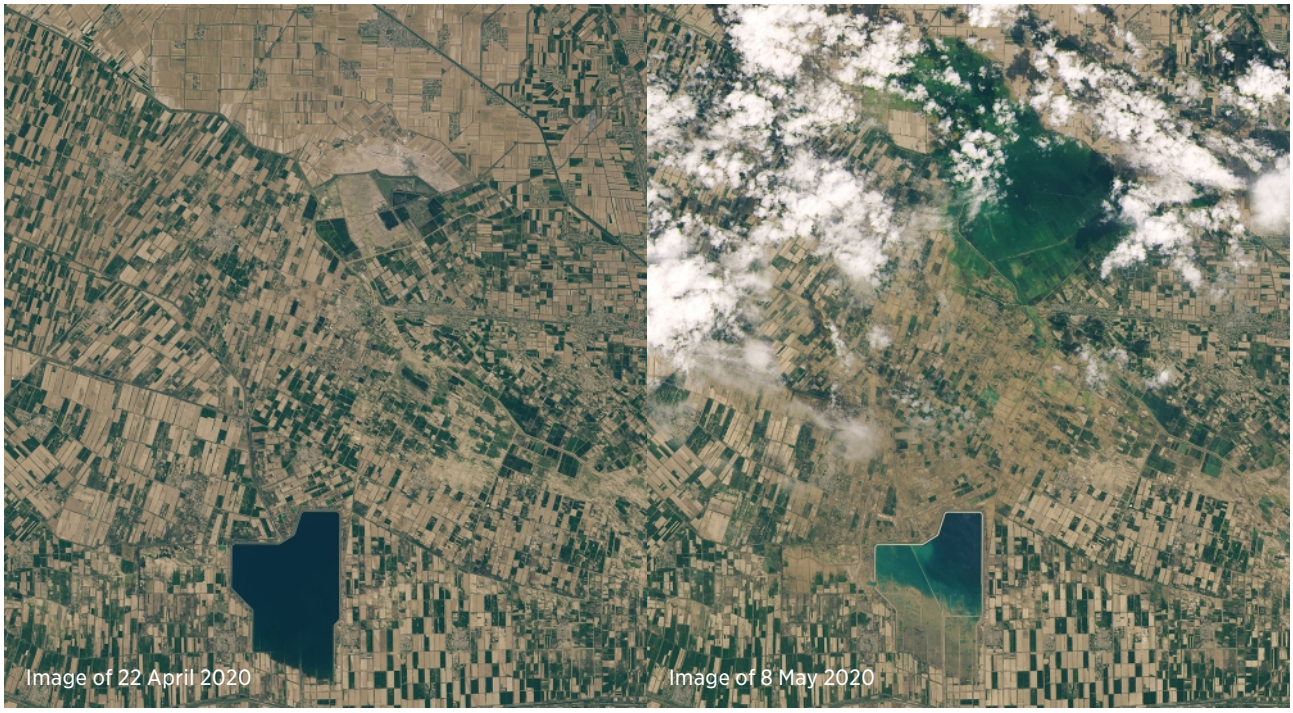
The Sardoba is a reservoir built to supply irrigation water to six districts in Syrdarya and Djizzak provinces of Uzbekistan. The total capacity is 974 mcm, including the useful capacity of 922 mcm. The reservoir's perimeter is 42 km; the dam's length is 28 km, and, the area is 6,800 ha. The reservoir is 28.8 meters deep. The maximum dam height is 33 meters, with the maximum water level of 30 meters.

Construction of the reservoir in the territory of Sardoba, Mirzaabad and Khavast districts began in 2010 following the Governmental Decree and was completed in 2017. By January 2017, the total cost of construction reached 1.3 trillion soums ($404.4 million). The customer of the facility was the State unitary enterprise "Sirdaryosuvkurilishinvest" of the then Ministry of Agriculture and Water Resources. The Project designed by OOO "UzGip" was implemented by State unitary enterprise "Uztemiryulkurilishmontazh" of the Uzbekistan railways company.

Based on satellite imagery, accumulation of water started in winter 2013/2014 and by 30 April the reservoir was almost filled, with the water volume exceeding the maximum design values. Constriction of a small 10.7 MW hydropower plant at the reservoir was started in April 2020. The plant designed for generation of 41.1 MkWh is to be completed by the end of 2022.

Dam burst and flooding

On the 1st of May, the dam burst. The poured water was turned to the Abay Canal in the Akaltyn district and then into the Arnasay lake system in Djizzak province. The gates were also opened so that water could flow into the irrigation canal network. As a result of inflow of 180 m^3/s, the Central Golodnostepskiy Collector, given its flow capacity of 120 m^3/s, was overfilled with water, with the resulting flooding. The water surface area of the reservoir halved, while the water volume decreased by more than 70%.



The flooded area based on Sentinel-2B imagery of 04.05.2020, 06:27 GMT. The red line shows the zone of flooding. The red tag indicates to the dam burst point. The blue lines indicate to settlements in the flooding zone.

Source: A.M. Konstantinova, Ye.A. Lupyan. Analysis of the consequences of the Sardoba dam burst on 1 May 2020 (in Russian) // Current issues of remote sensing – 2020 – V. 17, No. 3. – pp. 261-266.

Effects and emergency relief in Uzbekistan[100]

The flood critically damaged settlements and crops in the Sardoba, Akaltyn and Mirzaabad districts. Buildings, roads, and communications were flooded. More than 90 thousand people had to be evacuated from 23 villages in the three districts; 56 people were hospitalized; 4 people died.

Shavkat Mirziyoyev at the Sardoba reservoir.
Source: Press-service of the President of Uzbekistan

As reported by the Ministry of Emergency Situations of Uzbekistan, 32,381 hectares were damaged by flooding in the above districts. 23 settlements, 4,711 domestic buildings and 277 non-residential buildings, as well as 30,718 hectares of cropland were affected. Preliminary figure of damage from flooding was more than $4.3 million.

Source: https://kun.uz

Source: https://uz.sputniknews.ru

A special governmental commission was formed for emergency relief. A territory over 2 Mm^2 was disinfected in 12,485 dwelling buildings, 748 shops, 304 administrative buildings, 31 markets and 540 roads. In order to improve the environmental situation, 6,086 t of wastes and 13,620 t of floodwater were removed from the affected area. Flood damaged roads and electric and gas networks were repaired.

Leading international experts from France, Turkey and Russia were invited to make an external expertise of this technogenic catastrophe.

[100] Source: https://www.gazeta.uz, https://kun.uz, https://nuz.uz, http://www.prokuratura.uz

The law enforcement agencies have opened a criminal case on the Sardoba dam against 17 persons, including the client (GUP "Syrdaryo Kurilishinvest"), the designer (OOO "Uzgip"), the main contractor (UP "Uztemiryolkurilishmontaj"), contractors (Rezaksoi Suv Kurilish, Omad Dubl, Sariosiyo kurilish, Trans Servis Complex, Topalang Sherobod), and officials of the Uzbek Ministry of Water Management and the Operations Administration.

As the Prosecutor General's Office reported, the dam burst was caused by mistakes and defects in project design, construction and operation. Proceedings were initiated for a number of articles, including stealing, breach of water use, abuse of authority, neglect of official duty, forgery in public office, and violation of safety rules during construction. The Supreme Court of Uzbekistan started holding hearings in private on 21 December 2020 and passed a sentence upon 17 persons on 10 May 2021.

Effects and emergency relief in Kazakhstan[101]

In the Kazakh territory, 5 settlements (Zhanaturmys, Zhenis, Firdousi, Dostyk, and Orgebas) that were home to 6,211 people have been flooded in the Makhtaaral district. 1,030 residential buildings, 3 schools, 5 kindergartens, 4 health-care buildings, 10 trade points, roads, a bridge and 5,695 ha of agricultural land were flooded. The damage from flooding amounted to 31.7 billion tenge. There were no human losses.

The flooding area was mapped, and ambulance and rescue services were set in motion. In total, 1,635 persons, 297 machines, 17 boats and 220 motor pipes were deployed in rescue operations.


Source: https://kursiv.kz

Additional forces were deployed from Almaty, Kyzylorda, Zhambyl provinces and Shymkent. 223 specialists, 62 units of equipment, 100 units of water pumping equipment were sent from Uzbekistan for help. 30,606 people and 15,171 heads of domestic animals were evacuated from flooded and endangered settlements.

A total of 11,798,000 l of water have been pumped out to safe areas. 931 dead domestic animals (mainly from the territory of Uzbekistan) were extracted from water. An area of 2.8 Mm^2 was decontaminated.

Since a state of emergency was declared, the Government of Kazakhstan allocated 552 million tenge to 5,524 residents of 5 settlements affected by the accident, with each resident getting 100,000 tenge.

Additionally, the Fund of Alisher Usmanov transferred $1000 to each of 5,318 personal accounts of families living in 5 affected villages and 8 evacuated settlements (Myrzakent, Zhailybaev, Nurlytan, Shugyla, Zhantaksai, Nurlyzhol, Arayly, Akzhol).

Cooperation between Uzbekistan and Kazakhstan

Immediately after the accident, it was reported that Kazakhstan was preparing a note for the Uzbek Foreign Ministry and would demand compensation for damage. But on 5 May, the Kazakh Foreign Ministry claimed that sending of the note to Uzbekistan was no longer in question, and the parties jointly planned recovery. Uzbekistan quickly provided more than 150 units of equipment and more than 200 specialists to help eliminate consequences of the accident in the territory of Kazakhstan. Kyrgyzstan and Tajikistan also provided their help. In the course of the year, Kazakhstan and Uzbekistan closely coordinated the recovery operations: regular contacts were maintained between the heads of state and governments of the two countries. Environment Minister Mirzagaliev of Kazakhstan and Water Minister Khamraev of Uzbekistan met several times. The parties negotiated a draft Agreement on joint management and use of transboundary waters (see more details in Meetings of the Working Group on Water Management), signed a Roadmap on water cooperation between Kazakhstan and Uzbekistan and agreed to jointly conduct a technical audit of the Sardoba reservoir with national and international experts.

[101] Based on the report of the mayor of Turkestan province at the Kazakh Senate's session on "Water security of Kazakhstan: current challenges and possibilities of their solution" (6 November) https://nomad.su/?a=3-202011090031

Prime-Ministers of Uzbekistan and Kazakhstan lay the foundation of a new neighborhood in Myrzakent village, Turkestan province in Kazakhstan, 10 May
Source: https://primeminister.kz

Cooperation between Kazakhstan and Uzbekistan in elimination of consequences of the Sardoba dam collapse was highly apprized from international experts. As the Global Observatory for Water and Peace notes:

> *"In spite of the COVID-19 crisis, and despite a history of water mismanagement and regional tensions in the Syr Darya river basin, both countries managed not only to cooperate over the immediate recovery, but also to strengthen good neighborly relations, taking further steps towards joint management of the shared basin. They thus effectively turned water from a potential source of conflict into an opportunity for cooperation and peace. A first important milestone was reached on July 2, 2020 with the signing of a joint roadmap for transboundary water management. The Sardoba dam disaster could become a watershed in reshaping the transboundary water dynamics in Central Asia, which are central to the COVID-19 response and recovery. Indeed, strengthened regional water cooperation could become a driver of sustainable socio-economic recovery in a profoundly changed world economy, fostering peace and security."*[102]

Expert Opinion of Prof. V.A. Dukhovniy: Omissions and Lessons

The history of hydrotechnical construction in Uzbekistan is a continuous line of improvement of water development and management in the Amu Darya and Syr Darya basins.

The hydrotechnical construction in Uzbekistan has been always advanced both in the Soviet Union and all over the world – starting from Farkhad HPP put into operation in 1948 and almost parallel commissioning of the Bozsu cascade of small HPPs on the Chirchik River followed by construction of such large structures as Kattagurgan, Tuyabuguz, and Takhiatash hydroschemes, Pachkamar reservoir.

The Uzbek Ministry of Water Resources launched such unique large structures as the Tuyamuyun hydroscheme, with its 8 billion m^3 reservoir on the Amu Darya River, the Andizhan reservoir with a unique buttress dam, and, eventually, the Talimarjan reservoir with

[102] Global Observatory for Water and Peace. Strategic Foresight Discussion Note. Hydrodiplomacy in Rapid Action: Early Insights from the Sardoba Dam Disaster in Central Asia. 9 September 2020. Online: www.genevawaterhub.org/sites/default/files/atoms/files/central_asia_sardoba_dam_disaster_rapid_hydrodiplomacy_-_finalsept_2020.pdf

more than 1 billion m^3 hydraulic fill dam. All those structures have been operating successfully and reliably for a long time, without causing any concerns.

Thus, it is particularly bitter to see the accident that took place on the Sardoba reservoir on 1 May 2020 and caused huge economic damage to the whole Central branch of the South Golodnostepskiy Canal. The exemplary irrigation system built in the sixties virtually has been destroyed. The troubled waters have destroyed more than dozen kilometers of main and inter-farm canals and collecting drains that maintained irrigated land. Investigative authorities carried out the instructions of the President that all guilty persons should be held to accountable, and design and construction flaws were thoroughly investigated. It is also important to openly study engineering and water-management causes that led to the accident so that to learn lessons for the future.

Design and construction of the Sardoba reservoir represent a chain of ill-thought and insufficiently economically sound decisions.

1. Since the Toktogul hydroscheme had been converted to energy generation mode and water delivery in summer had decreased on average by 4.5 km^3, it became necessary to buy energy from Kyrgyzstan to ensure water releases or, at least, to compensate a portion of this undersupply of water through additional storage in river's middle reaches.

By the 1998 Agreement concluded between the riparian countries of the Syr Darya river basin, water and energy were delivered to Kazakhstan and Uzbekistan in summer, while in winter the downstream countries supplied energy to Kyrgyzstan and a small portion to Tajikistan.

In 2001, the Agreement stopped to be effective. Uzbekistan decided to build reservoirs to accumulate winter flow. Those plans included the Sardoba reservoir as well. From today's perspective, this decision was rather wrong in terms of comparative costs for construction of compensating reservoirs. However, that time this line of conduct was chosen to overcome flow-regulation pressure from the side of upstream countries.

2. The cost of water in the Sardoba reservoir is estimated at 45 cents per 1 km^3 (construction costs of $404.4 million per useful volume of 922 Mm^3).[103] By recalculating for electricity supplied simultaneously with water by the Naryn hydropower cascade, the cost of electricity at the current value will be 0.12 x 0.45 = 0.057 dollars per kWh, which is 40% more expensive than the price of electricity supplied to external consumers by "Kyrgyzenergo" (4 cents/1 km^3).

Certainly, it would have been necessary to negotiate annually the conditions of energy sale and water supply, but this would have saved Uzbekistan from unnecessary capital investments and the emergency situation. Moreover, construction of the Sardoba reservoir per se caused significant damage to irrigated agriculture in the Syrdarya province, because 6,500 ha of irrigated land were withdrawn and another 8,000 ha was submerged in the Mekhnatabad district. But no one, of course, could have assumed the scale of destruction and the cost of recovery after the accident.

3. Fairly, location of the reservoir at the tail of the Central branch of South Golodnostepskiy Canal was quite unfavorable, first, due to geological conditions. The reservoir is located in the periphery of alluvial cone of watercourses flowing from the Turkestan ridge and the alluvial sediments bed at different depths under modern sediments of steppe landscape at the boundary of Sardoba depression. Due to such complex geomorphology, there are interbedded gypsum-bearing soils in the site of the reservoir. Moreover, such soils have different degrees of solubility: from dense lime horizons to slowly dissolving gypsum "chimneys" that during the period of less than one year dissolve and create a good basis for intrusion of water. The same phenomena were observed during construction of a reservoir in an experimental farm of the Central Asian Irrigation Research Institute (SANIIRI) – the state farm "1a" named by G. Gulyam. However, in addition to gypsum, subsiding loess soil that nosed in this zone from neighboring farms posed a risk in the bed of reservoir dams. Therefore, a very detailed survey of soils in the basement was needed before location of the reservoir with the head of 30 m. But even in case of detailed study conducted in advance, no one could exclude a possibility of seepage under dam embankment or subsidence of the dam itself in such complex soils. Hence, this required drainage of a dam, a piezometrical network, laboratory monitoring of soil density, consolidation tests of the soil in the basement, and thorough monitoring by skilled operations staff. Besides, the burst on the left side of the dam, which was not the highest point of the dam – could occur if this site was in the subsiding basement and the status of the dam was not monitored regularly. But most probably this was due to seepage in the basement or failure to observe the required soil density in the dam embankment.

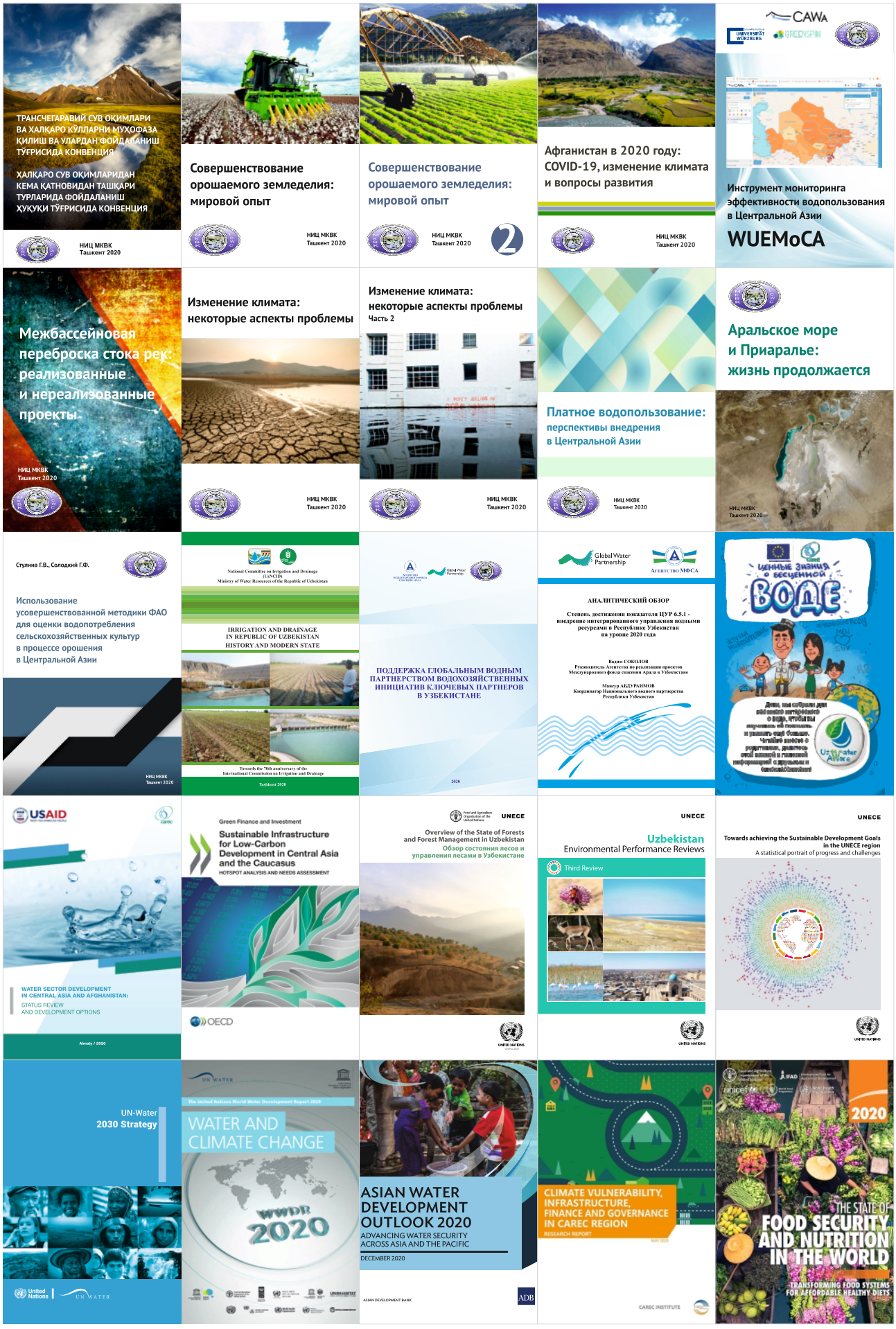
4. It is unclear why so many companies were involved in construction and operation? Why the national railway company took part in the construction, given that hydrotechnical and railway construction requirements are different? Finally, why operation of the reservoir was not developed by the Ministry of Water Management and again was transferred to the railroad company?

As we can see, there were many risk factors, which had to be taken into account by designers, expertise, builders and operators in the selected site. Hence, this leads to a conclusion that the national water sector requires serious capacity building efforts.

[103] Given the efforts for rehabilitation of the Sardoba dam and the possibly changed volume of the reservoir as a result of reconstruction, the cost will change

Section 13

Publications in 2020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Zoï Environment Network

Central Asia climate information products 2020: Women, food and climate change in Central Asia; Climate change in Central Asia. Illustrated summary; Climate change in Tajikistan and Uzbekistan. Illustrated summaries; Illustrated Russian-Tajik glossary on hydrometeorology and climate change.
URL: https://zoinet.org/product/ca-climate-2020/

OECD

Sustainable Infrastructure for Low-Carbon Development in Central Asia and the Caucasus: Hotspot Analysis and Needs Assessment. URL: https://www.oecd-ilibrary.org/environment/sustainable-infrastructure-for-low-carbon-development-in-central-asia-and-the-caucasus_d1aa6ae9-en

UN Economic Commission for Europe

Third Environmental Performance Review of Uzbekistan. The report examines the progress made by the country in the management of its environment since it was reviewed for the second time in 2009-2010.
URL: https://uzbekistan.un.org/index.php/en/96936-3rd-environmental-performance-review-uzbekistan

Frequently Asked Questions on the 1992 Water Convention.
URL: https://unece.org/environment-policy/publications/frequently-asked-questions-1992-water-convention

Overview of the State of Forests and Forest Management. UNECE/FAO. The overview describes policies and institutions of forest sector in the Caucasus and Central Asia and major challenges the sector faces as well as policy responses in place or planned.

Armenia – https://unece.org/forests/publications/overview-state-forests-and-forest-management-armenia

Azerbaijan – https://unece.org/forests/publications/overview-state-forests-and-forest-managementazerbaijan

Kazakhstan – https://unece.org/forests/publications/overview-state-forests-and-forest-management-kazakhstan

Kyrgyzstan – https://unece.org/forests/publications/overview-state-forests-and-forest-management-kyrgyzstan

Tajikistan – https://unece.org/forests/publications/overview-state-forests-and-forest-management-tajikistan

Turkmenistan – https://unece.org/forests/publications/overview-state-forests-and-forest-management-turkmenistan

Uzbekistan – https://unece.org/forests/publications/overview-state-forests-and-forest-management-uzbekistan

Towards Achieving the Sustainable Development Goals in the UNECE Region. This report reviews the situation and trends in progress towards SDGs through the lens of 49 selected indicators under each of the 17 SDGs. URL: https://unece.org/statistics/publications/towards-achieving-sustainable-development-goals-unece-region.

Towards Sustainable Renewable Energy Investment and Deployment: Trade-Offs and Opportunities with Water Resources and the Environment. URL: https://unece.org/environment-policy/publications/towards-sustainable-renewable-energy-investment-and-deployment

Asian Development Bank

Asian Water Development Outlook 2020: Advancing Water Security across Asia and the Pacific. The Asian Water Development Outlook (AWDO) assesses national water security across the Asia and the Pacific, with a focus on five key dimensions: rural, economic, urban, environmental, and water-related disaster.
URL: https://www.adb.org/publications/asian-water-development-outlook-2020

Using Artificial Intelligence for Smart Water Management Systems. This brief introduces the principles of artificial intelligence for water utilities embarking on this digital transformation to improve their water distribution operation in general, and to address unaccounted-for-water problems in particular.
URL: https://www.adb.org/sites/default/files/publication/614891/artificial-intelligence-smart-water-management-systems.pdf

UN-Water

UN World Water Development Report 2020. The Report focuses on the challenges, opportunities and potential responses to climate change, in terms of adaptation, mitigation and improved resilience that can be addressed through improving water management.
URL: www.unwater.org/publications/world-water-development-report-2020/

UN-Water 2030 Strategy. The Strategy represents a collective way forward to address the water and sanitation challenges over a ten-year period.
URL: www.unwater.org/publications/un-water-2030-strategy/

UN-Water Analytical Brief on Unconventional Water Resources.
URL: www.unwater.org/publications/un-water-analytical-brief-on-unconventional-water-resources/

FAO

The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. The report complements the usual assessment of food security and nutrition with projections of what the world may look like in 2030, if trends of the last decade continue.
URL: https://www.fao.org/publications/card/en/c/CA9692EN

Biodiversity for Food and Agriculture and Ecosystem Services. Thematic study for the state of the world's biodiversity for food and agriculture.
URL: www.fao.org/documents/card/en/c/cb0649en

CAREC

Regional Climate Cooperation-Challenges and Perspectives. The policy brief informs about existing players, thematic directions, and platforms on regional climate change interventions, as well as provides possible solutions to effective cooperation within CAREC. URL: www.carecinstitute.org/wp-content/uploads/2021/01/CI-policy-brief-climate-cooperation-24-Dec-2020.pdf

Climate Vulnerability, Infrastructure, Finance and Governance in CAREC. The research examines adaptation and mitigation strategies of CAREC countries in the context of COP21, the 2030 Agenda and Sendai Framework for Disaster Risk Reduction. URL: www.carecinstitute.org/publications/climate-vulnerability-infrastructure-finance-and-governance-in-carec/

Determinants of Vulnerability to Climate-Induced Water Stress in CAREC.
URL: https://www.carecinstitute.org/publications/policy-brief-determinants-of-vulnerability-to-climate-induced-water-stress-in-carec/

United Nations University Institute for Water, Environment and Health

UNU-INWEH Series of Reports for 2020: Strategic Foresight to Applications of Artificial Intelligence to Achieve Water-related Sustainable Development Goals; Ageing Water Storage Infrastructure: An Emerging Global Risk; Migration and Water: A Global Overview.
URL: https://inweh.unu.edu/category/unu-inweh-reports/

Other

Economic valuation in the monitoring of ecosystems services: Methodical guide/ R. Corobov, O. Cazanteva, Gh. Sirodoev and I. Trombitsky; PROJECT BSB165 "HydroEcoNex". – Chişinău: Eco-Tiras, 2020 (Arconteh). – 88 p.
URL: www.eco-tiras.org/books/ES-book-Eco-TIRAS-2020-final.pdf

Hindu Kush-Himalaya Watersheds Downhill: Landscape Ecology and Conservation Perspectives/R. Regmi, F. Huettmann; Eds, 2000.
URL: https://doi.org/10.1007/978-3-030-36275-1

Hydropower Sector Climate Resilience Guide/International Hydropower Association (IHA)/ London, 2019.
URL: www.hydropower.org

Rights of Rivers: A global survey of the rapidly developing Rights of Nature jurisprudence pertaining to rivers/ The Cyrus R. Vance Center, Earth Law Center, and International Rivers, October 2020. It presents the UN resolutions on the rights of rivers, legislative enactments and judicial decisions across Oceania (Aotearoa/New Zealand and Australia); South America (Bolivia, Brazil, Colombia, and Ecuador); Asia (India, Bangladesh and the Philippines), North and Central America (USA, Costa Rica and Mexico) and Africa (Uganda).
URL: https://static1.squarespace.com/static/55914fd1e4b01fb0b851a814/t/5f760119bde1f0691fc7c7e0/1601569082236/Rights+of+Rivers+Report_Final.pdf

Section 14

Central Asia Awards in Water-related fields

Awards in the Water Sector of Kyrgyzstan

By a decision of Prime-Minister **K. Boronov** of 19 June 2020, the following employees were awarded for diligent work and contribution to water development

Honorary certificate:

Chyngyz Karybekov – Chief engineer of Hydrogeological and land reclamation field office, State Water Resources Agency;

Aynura Toktonaliyeva – Senior water management specialist, State Water Resources Agency.

Valuable gift (watches engraved with person's name):

Akylbek Sulaymanov – Head of Water management administration, State Water Resources Agency;

Shayirgul Orozbakiyeva – Head of drinking water and wastewater division, Department of drinking water supply and sanitation development, State Water Resources Agency.

Source: https://www.tazabek.kg/news:1628667, http://cbd.minjust.gov.kg/act/view/ru-ru/218221

Awards in the Agriculture, Water and Energy Sectors of Turkmenistan

By a decree of the President of Turkmenistan "On awarding State honors and granting honorary titles on the occasion of the 29th anniversary of independence" (25 September 2020), given the personal contribution to independence and sovereignty, national economic development and state programs and the achieved success and professional competence, a number of employees of the Ministry of Agriculture and Environment, the State Committee for Water Management, and the Ministry of Energy were awarded **medals "Gaýrat" and "Watana bolan söýgüsi üçin"**.

Awarding representatives of international organizations with orders and medals of Turkmenistan

On the occasion of the 25th anniversary of Turkmenistan's neutrality, by a decree of the President of Turkmenistan "On awarding foreign nationals the order 'Bitaraplyk' and the jubilee medal 'Türkmenistanyň Bitaraplygynyň 25 ýyllygyna'" (11 December 2020), the following international representatives were awarded

Order "Bitaraplyk":

Natalya Drozd – Head of the OSCE Centre in Ashgabat.

Jubilee medal "Türkmenistanyň Bitaraplygynyň 25 ýyllygyna":

António Guterres – Secretary-General of the United Nations;

Jens Wandel – Special Adviser to the UN Secretary-General on Reforms;

Olga Algaerova – Executive Secretary of UNECE;

Natalia Gherman – Special Representative of the UN Secretary General for Central Asia, Head of the United Nations Regional Centre for Preventive Diplomacy for Central Asia;

Miroslav Jenča – Assistant Secretary-General for Political Affairs;

Ban Ki-moon – Head of Global Green Growth Institute;

Gurry Francis – Secretary General of the International Union for the Protection of New Varieties of Plants;

Shamshad Akhtar – Advisory Committee, Scientific Group for 2021 Food Systems Summit.

Full list of awardees is available on https://turkmenistan.gov.tm/?id=22219

Awards in Production and Socio-Economic Spheres of Uzbekistan

On the occasion of 29 years of independence, the following persons received awards by Presidential Decree:

Title of Honor for contribution to agriculture:

Masturakhon Saifitdinova – Head of "Quva anori" agrofirm, Kuva district, Fergana province.

Order "Fidokorona khizmatlari uchun":

Abdullajon Kenjaboyev – farm machinery operator, "Nurli obod" farm, Altiaryk district, Fergana province.

Order "Mehnat shuhrati":

Nizomidin Bakirov – Chairman, State Forestry Committee;

Saloidin Djalilov – Head of Khatyrchi district irrigation division of the Basin Irrigation System Authority, Navoyi province;

Khikmat Jumaniyazov – Shift master, Unitary Enterprise "Tuyamuyun Hydropower", Khorezm province;

Shukhrat Inagamov – Deputy Head of the Republican Association of Sanitation and Cleaning Services, State Committee of Ecology and Environmental Protection;

Ulugbek Mustaphoyev – Chairman of Board, Regional Electric Grids;

Shukhrat Sadikov – Minister of Information Technology and Communication Development;

Alisher Sultanov – Minister of Energy;

Aktam Khaitov – Chairman of the Council of Individual, Dekhkan and Subsidiary Farms.

Order "Dustlik":

Shukhrat Vafayev – Deputy Minister of Investment and Foreign Trade;

Lutfulla Mukhamednazarov – Head of division, Information-Analytical and Resource Center of the Ministry of Water Management

Raimboy Sherjanov – Chairman of Yangibazar District Council of the Trade Union of Agricultural Workers, Khorezm province.

Medal "Sodiq khizmatlary uchin":

Khairillo Gapporov – Committee of Oliy Majilis Legislative Chamber on ecology and environmental protection;

Sharyar Jaksimuratov – Head of Irrigation System and Hydraulic Structure Division, Ministry of Water Management of Karakalpakstan.

Awarding agrarian workers of Uzbekistan

On occasion of the Day of Agricultural Workers in Uzbekistan, 250 employees of the agricultural sector were awarded the "Kishlok Khujaligi Fidoisi" badge for a great contribution to the development of agriculture. The awardees list included also Vladimir Rakhmanin, FAO Assistant Director-General and Regional Representative for Europe and Central Asia; Viorel Gutsu, FAO Subregional Coordinator for Central Asia and FAO Representative in Uzbekistan; and, Sherzod Umarov, Project Coordinator of the FAO Office in Uzbekistan.

Source: http://www.uzdaily.uz/ru/post/57748

Section 15

Global Risks 2021

This Section presents key global risks and foreign policy trends according to the versions of several analytical centers, namely the analysts of the World Economic Forum, the consulting company Eurasia Group, and the Laboratory of International Processes Analysis at the Moscow State Institute of International Relations of the Ministry of Foreign Affairs of Russia (MFA Russia MGIMO).

15.1. Risks 2021 (World Economic Forum)

"The 2021 report reflects the depth and disparity of the pandemic's impact, explores how critical global challenges have been exacerbated and reshaped, and highlights the need to address these risks in a more collaborative way."

Carolina Klint, Managing Director, Risk Management Leader Continental Europe, Marsh

COVID-19 is exacerbating ongoing geopolitical and societal challenges, and the existential crisis of climate change looms large. More innovative and collaborative approaches to resilience are needed more than ever. The 16th edition of the Global Risks Report, published by the World Economic Forum (WEF) with support from Marsh McLennan, highlights the disruptive implications of major risks, including the COVID-19 pandemic that may reshape our world in 2021 and over the next decade. The report draws on the survey results from nearly 700 experts and decision-makers globally who were asked about their concerns for the next decade, how global risks interact, and where opportunities exist to collectively act to mitigate these threats.

Global Risks 2021: Fractured Future

The emerging risks landscape

The Digital Divide. Biased algorithms, lack of access to information, widening digital skills gaps, and inadequate regulation are exacerbating societal inequalities. If left unaddressed, this will further erode already-fraying societal cohesion. Businesses and governments need to seek new partnerships and approaches to drive digital cohesion without compromising technological advancement.

Generation Pandemic. Youth, already suffering from long-standing intergenerational inequalities, were severely impacted by COVID-19. Impacts to education, migration, and mental health will further harm this generation's outlook. Avoiding a future of deep societal fracturing requires their voices to be heard and be actively involved in the pandemic recovery process.

Navigating Global Fractures. Deepening rivalries and competition in various domains between superpowers could impede the influence of other G20 nations in international relations and further splinter geopolitics. Such developments could destabilize the global order and slow critical progress on transnational concerns.

A Trilemma of Pressures on Industry. The growing power and influence of nation states, market concentration in the technology sector, and values-driven pressure from consumers, employees, and society at large present complex challenges for industry globally. They need to consider strategy and investments during their COVID-19 recovery to avoid catastrophic outcomes.

2020 Hindsight: Reflecting on Resilience. The COVID-19 crisis has exposed fundamental disconnects between assumptions of global and national pandemic preparedness and the realities of crisis management on the ground. Remarkable examples of determination, cooperation, and innovation have surfaced, particularly with collaboration between the public and private sector, but very few nations have shone across all aspects of their response effort. There are many lessons to be learned to improve our collective management of global risks.

Climate continues to be a looming risk as global cooperation weakens. Climate change – to which no one is immune – continues to be a catastrophic risk. Although lockdowns worldwide caused global emissions to fall in the first half of 2020, evidence from the 2008-2009 Financial Crisis warns that emissions could bounce back. A shift towards greener economies cannot be delayed until the shocks of the pandemic subside.

No vaccine for environmental degradation. Last year, for the first time in 15 years of the Global Risks Perception Survey (GRPS), the five most likely long-term risks were environmental – analyzed in last year's Global Risks Report chapters. The WEF COVID-19 Risks Outlook, published in May 2020, analyzed how the crisis could stall progress on climate action. This year, GRPS respondents ranked environmental risks as four of the top five by likelihood – "infectious diseases" is fourth. Global CO_2 emissions fell by 9% in the first half of 2020, when COVID-19 forced most economies to shut

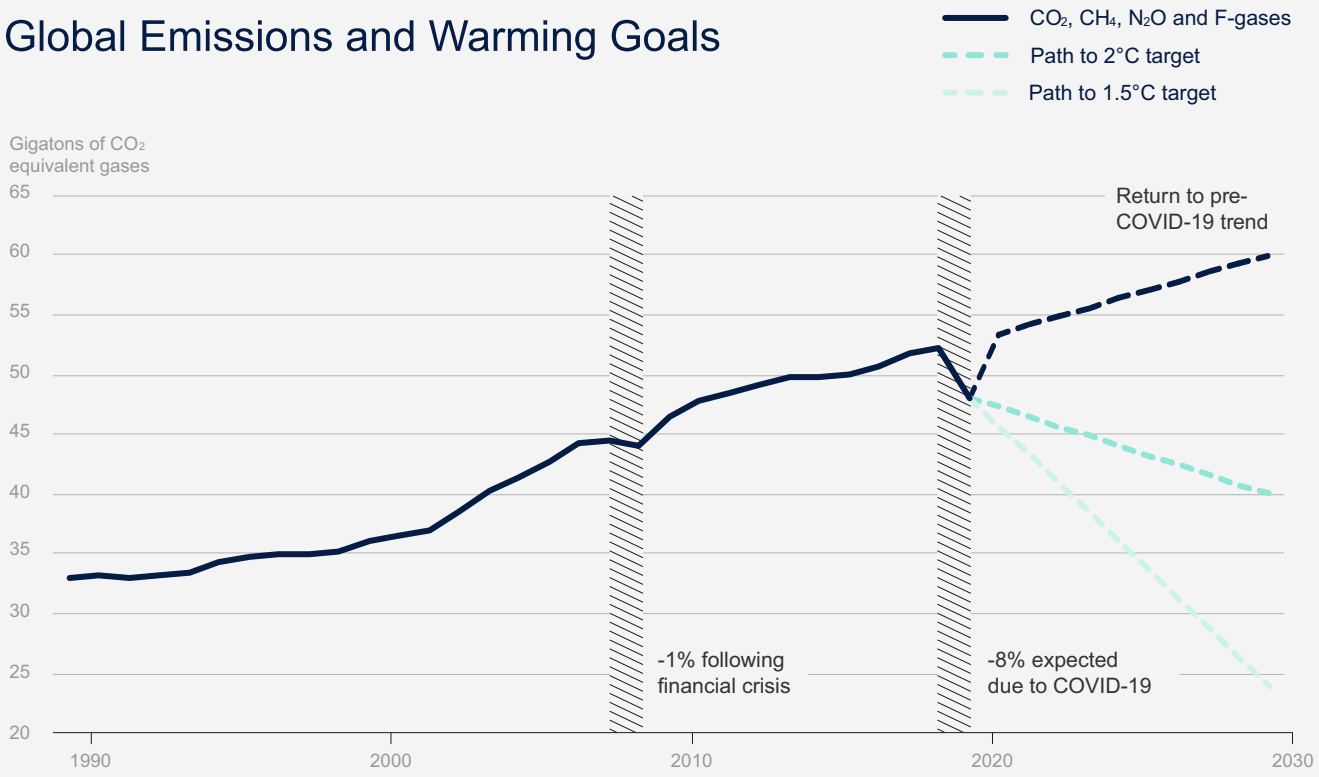
down for weeks. A similar decrease is required every year for the next decade to maintain progress towards limiting global warming to 1.5°C (see Figure below) and avoid the worst effects of climate change. Collective efforts are needed to prevent a repeat as economies emerge from the pandemic. Growth and emissions must be decoupled and transition risks managed in an urgent evolution to a low-carbon economy. At present, only four of the world's largest economies have assembled recovery packages that will produce a net environmental benefit.

Risk outlook: Failure to act looms large in 2021. A failure to act on climate change dominates the risk landscape in 2021 as the world gets ready for a delayed COP26. Like 2020, environmental risks rank highly in consequence and likelihood, with infectious disease and its ripple effect on employment and livelihood high on the risk landscape. This year respondents also highlighted areas of opportunities to act and mitigate potentially dire consequences.

Clear and present dangers (0-2 years) reveal concern about lives and livelihoods – among them infectious diseases, employment crises, digital inequality and youth disillusionment. In the medium-term (3-5 years), respondents believe the world will be threatened by knock-on economic and technological risks, which may take several years to materialize – such as asset bubble bursts, IT infrastructure breakdown, price instability and debt crises. Existential threats (5-10 years) – weapons of mass destruction, state collapse, biodiversity loss and adverse technological advances – dominate long-term concerns:

The report also reflects on the responses to COVID-19, drawing lessons designed to bolster global resilience. These lessons include formulating analytical frameworks, fostering risk champions, building trust through clear and consistent communication, and creating new forms of partnership. The key risks outlined in the report are complemented with recommendations to help countries, businesses, and the international community to act, rather than react, in the face of cross-cutting risks. The report closes

Global Emissions and Warming Goals



Source: PBL (Netherlands Environmental Assessment Agency). 2019. Climate and Energy Outlook 2019. 11 January 2019. https://www.pbl.nl/en/publicaties/klimaat-en-energieverkenning-2019; UNCTAD. 2020. "COVID-19's economic fallout will long outlive the health crisis, report warns". 19 November 2020. https://unctad.org/news/covid-19s-economic-fallout-will-long-outlive-health-crisis-report-warns

with an overview of "frontier risks" – nine high-impact, low-probability events drawn from expert foresight exercises – including geomagnetic disruption, accidental wars and exploitation of brain-machine interfaces.

The Global Risks Report 2020 is available on: https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf

Risk categories

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

Top Risks by likelihood

1. Extreme weather
2. Climate action failure
3. Human environmental damage
4. Infectious diseases
5. Biodiversity loss
6. Digital power concentration
7. Digital inequality
8. Interstate relations fracture
9. Cybersecurity failure
10. Livelihood crises

Top Risks by impact

1. Infectious diseases
2. Climate action failure
3. Weapons of mass destruction
4. Biodiversity loss
5. Natural resource crises
6. Human environmental damage
7. Livelihood crises
8. Extreme weather
9. Debt crises
10. IT infrastructure breakdown

Envolving Risks Landscape

Top Global Risks by Likelihood

	1st	2nd	3rd	4th	5th	6th	7th
2021	Extreme weather	Climate action failure	Human environmental damage	Infectious diseases	Biodiversity loss	Digital power concentration	Digital inequality

	1st	2nd	3rd	4th	5th
2020	Extreme weather	Climate action failure	Natural disasters	Biodiversity loss	Human-made environmental disasters
2019	Extreme weather	Climate action failure	Natural disasters	Data fraud or theft	Cyberattacks
2018	Extreme weather	Natural disasters	Cyberattacks	Data fraud or theft	Climate action failure
2017	Extreme weather	Involuntary migration	Natural disasters	Terrorist attacks	Data fraud or theft
2016	Involuntary migration	Extreme weather	Climate action failure	Interstate conflict	Natural catastrophes
2015	Interstate conflict	Extreme weather	Failure of national governance	State collapse or crisis	Unemployment
2014	Income disparity	Extreme weather	Unemployment	Climate action failure	Cyberattacks
2013	Income disparity	Fiscal imbalances	Greenhouse gas emissions	Water crises	Population ageing
2012	Income disparity	Fiscal imbalances	Greenhouse gas emissions	Cyberattacks	Water crises

Economic · Environmental · Geopolitical · Societal · Technological

Top Global Risks by Impact

Source: World Economic Forum – Global Risks Perception Survey 2020

15.2. Risks 2021 ("Eurasia Group")

The consulting company "Eurasia Group" presented its rating of ten global risks for 2021.

1. **46* or "Divided America"** – a situation, in which about half of the U.S. population will consider every new leader of the country illegitimate. According to experts, this situation has developed with the accession to power of President-elect Joe Biden and President Trump's refusal to accept the outcome of an election.

2. **Long COVID.** Neither the coronavirus nor its wide-ranging impacts will disappear once widespread vaccination begins. Vaccination will further divide society into rich and poor, leading to social unrest in many countries. The pandemic will also result in job losses, loss of confidence in government, debt crises in the developing countries.

3. **Climate change.** Analysts consider the US's return to the Paris agreement and commitments of the world's largest economy to net-zero emissions by 2050 as a step toward a new era of global cooperation and the triumph of net zero over G-Zero[104]. However, climate change fight and energy transformation will take place in the face of fierce competition and lack of coordination.

4. **US-China tensions broaden.** US efforts to enlist allies, vaccine diplomacy, and climate tech competition will further complicate US-China relations.

5. **The global data reckoning** starts with strategic competition between the US and China but doesn't end there. Other governments concerned about who is accessing their citizens' data – and how – are disrupting the foundations of an open global internet.

6. **Cyber tipping point.** More vulnerable devices, absence of effective diplomacy, and greater emphasis on cyber responses mean the unstable

[104] G-Zero concept implies power vacuum in international politics as no country or group of countries has the political and economic leverage to drive an international agenda or provide global public goods

status quo in cyberspace will be tough to maintain in 2021.

7. Economic problems in Turkey may lead to political consequences.

8. The downturn in Middle Eastern economies due to low oil prices.

9. Europe after Angela Merkel's resignation.

10. Political and social crises in Latin America because of the pandemic and elections in some countries.

Eurasia Group's Top Risks Report for 2021 is available on:
https://www.eurasiagroup.net/issues/top-risks-2021

15.3. Risks 2021 (MFA Russia MGIMO)

1. "More state" is the leitmotif of 2021. This is a direct consequence of the coronavirus pandemic. It is from the states that citizens expect effective protective measures and guarantees against economic losses. The pandemic does not make states weaker. However, their unconvincing and inadequate response to the threat gives the impression of weakness to friends, enemies and, perhaps most importantly, to their own citizens. Such scenarios of "state fiasco" will be repeated in the future.

2. The US stalls. In 2021, the US will almost certainly be unable to decide on a long-term foreign policy course, and this will be a year of dispelled illusions. The combination of factors, which are at the root of the current domestic political crisis and divide the country into two irreconcilable camps, has been building up over the past forty years, and who knows in what perspective their effect can be weakened.

3. "Green invasion" of Germany: technology without power. In 2019, EU adopted the Green Deal, which set a strategic goal of making Europe a climate-neutral continent by 2050. Germany, as the main mover and beneficiary of European integration, counts on new green economy, where it will set its own rules by right of a pioneer and technological leader. German business will dominate by taking over most of the production standards.

4. China is collecting its strength. In the documents of the fifth plenum of the CPC Central Committee, which defined the guidelines for China's development until 2035, the word "security" appears more often than "openness" or "innovation". It is the interests of sustainability and security of the political system that will be the constraint dictating new external modesty and determining strategic priorities of internal development.

5. Strategic dilemmas of digital development. In 2021, the gap will continue to grow between independent platforms-providers of global technology and recipient countries gradually becoming dependent on technologically advanced states. "Digital colonialists" offer preferential terms for the creation of necessary infrastructure to transit to digital future, thus ensuring reliance on their solutions.

6. The danger of "sanctions bubbles". The rapid spread of secondary sanctions lays the ground for a fundamentally new phenomenon of "sanctions bubbles", where the gap grows sharply between a company's actual operating activities and the sanctions risks associated with them.

7. Turkey's "brilliant bluff": power without technology. The last year events, when Turkey directly or indirectly intervened in the conflicts in Syria, Nagorno-Karabakh, Libya and the eastern Mediterranean Sea, convince us that Turkey's course is much more twisted than any of its partners may assume. One of the threats is further increase in Turkey's expansion.

8. Climate migration in Africa. Climate migration is becoming a reality on the African continent, which in the last decade has recorded the highest average temperatures ever recorded. The World Bank estimates that by 2050 the number of climate migrants within states or to neighboring states may reach 70 million in sub-Saharan Africa at business as usual. Some 15-25 million of these migrants and victims of climate conflicts may go to EU and the Arabian Peninsula.

9. Vaccine as a geopolitical marker. The events of 2020 gave rise to the term "infodemia". The pandemic appeared to be firmly tied to the digitalization of citizens' lives. In 2021, we are likely to see the strongest states increasingly dominate the IT market and, in turn, the biggest IT players increase their influence on the weakest states.

"International Threats 2021: Geopolitics after Pandemic" Report is available on:
https://mgimo.ru/upload/iblock/a1a/int-threats-2021.pdf

Section 16

2021 Calendar of Events

Due to the pandemic, all events are planned in the online format

January

- **21 January** – Conference "New Trends in Foreign Policy of Uzbekistan: State and Prospects of Relations between the CA Countries and Afghanistan", Tashkent State Institute of Oriental Studies, Tashkent
- **27 January** – Working Meeting "International HydroDiplomacy – in focus: Central Asia", Konrad-Adenauer-Stiftung (KAS) & the EastWest Institute (EWI)
- **27-28 January** – OECD-FAO 7th Meeting of the Roundtable on Financing Agricultural Water

February

- **2 February** – World Wetlands Day
- **2 February** – IFAS Agency and GWP Online Consultation on the Water-Related Disaster Risk Reduction under the COVID-19 Pandemic
- **3 February** – UNECE Webinar "Upholding Mekong Cooperation for Present & Future Challenges"
- **4-5 February** – Meeting of the Implementation Committee of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes
- **26 February** – UNECE and INBO 5th Meeting of the Global Network of Basins Working on Climate Change Adaptation

March

- **2-3 March** – EECCA NWO Conference "Transboundary Water Cooperation in EECCA Countries: Lessons Learnt and Areas for the Future Development"
- **3 March** – World Wildlife Day: "Forests and Livelihoods: Sustaining People and Planet"
- **3-4 March** – International Forum "Towards New Opportunities: Green Recovery of Uzbekistan after the COVID-19 Pandemic", UN, UNDP, EU, UNECE, Government of Uzbekistan
- **3-4 March** – International Conference "Improving Knowledge Exchange on Water Issues in Central Asia" under the Central Asian Knowledge Network funded by the Central Asia Water and Energy Program (CAWEP)
- **10 March** – IFAS Agency and NWP of Uzbekistan Roundtable "Towards the IWRM Strategy in the Republic of Uzbekistan"
- **11-12 March** – International Scientific-Practical Conference "Water Resources Management in the Conditions of Globalization" dedicated to the 105th anniversary of Professor L.Ye. Tazhibaev
- **14 March** – International Day of Action for Rivers
- **21 March** – International Day of Forests: "Forest restoration: a path to recovery and well-being"

- **22 March** – World Water Day: "Valuing Water"
- **23 March** – World Meteorological Day: "The Ocean, our Climate and Weather"
- **26 March** – Aral Sea Day
- **29-31 March** – UNECE Global Workshop on building climate resilience through improving water management and sanitation at national and transboundary levels

April

- **14-15 April** – UNECE-WHO/Europe 12th meeting of the Working Group on Water and Health
- **26-28 April** – Conference "Transboundary Waters and International Relations"
- **29 April** – "A Conversation on Water: The Past Informing Water Futures". IWRA 50th Anniversary

May

- **11 May** – 80th meeting of ICWC Central Asia
- **17-20 May** – XVI International Scientific-Technical Symposium and Exhibition "Clean Waters of Russia -2021"
- **22 May** – International Day for Biological Diversity: "We're part of the solution"
- **25 May** – Regional Dialogue "Policy and Governance Issues to Transform Food Systems in Europe and Central Asia"

June

- **5 June** – World Environment Day: "Ecosystem Restoration"
- **8 June** – World Oceans Day: "The Ocean: Life and Livelihoods"
- **16 June** – Conference "Mutual understanding, friendship and openness are the basis for further progress of Uzbek-Tajik cooperation", Institute of Strategic and Interregional Studies at the President of Uzbekistan and the Center for Strategic Studies at the President of Tajikistan
- **16 June** – Session "Nexus, Digitalization and Human Capital for a Green-Deal in Transboundary Waters" as part of the European Development Days
- **17 June** – Desertification and Drought Day: "We build back better with healthy land"
- **21 June** – International Scientific-Practical Conference "Land Reclamation and Desertification" LRAD 2021
- **21 June-2 July** – Singapore International Water Week
- **21-25 June** – 8th World Congress on Conservation Agriculture, Bern, Switzerland
- **28-30 June** – 24th Session of the IHP Intergovernmental Council, UNESCO

29-30 June – 3rd Regional Conference "Education and Knowledge on Climate Change in Europe and Central Asia"

29 June – Meeting of the Board of the International Fund for Saving the Aral Sea, Dushanbe

30 June – 11th Asia-Pacific Water Forum: Groundwater: Making the Invisible Visible

July

1 July – High-Level Dialogue "European Union – Central Asia"

1-2 July – 5th Eurasian Business-Forum for Renewable Energy and Waste Recycling, Astana, Kazakhstan

1-3 July – International Scientific-Practical Conference "Global Challenges for Food Security: Risks and Opportunities"

6-15 July – High-Level Political Forum 2021 on Sustainable Development

7-9 July – 71st Meeting of the Compliance Committee to the Aarhus Convention

29 July – Earth Overshoot Day

August

12 August – Day of the Caspian Sea

23-27 August – SIWI World Water Week

24 August – LCOY Kyrgyzstan 2021 – Youth Conference on Climate Change, Bishkek, Kyrgyzstan

25 August – International Conference of Agricultural Economists, Sri Lanka

September

3-11 September – IUCN World Conservation Congress, Marseilles, France

19 September – World Cleanup Day

21-23 September – 5th Annual Arab Water Forum, UAE

22-23 September – International Conference Seymartec Ecology 2021, Chelyabinsk, Russia

27-29 September – Water-Energy-Food-Ecosystems (WEFE) Nexus Science Advances Conference

29 September-1 October – 9th Session of the Meeting of the Parties to the UNECE Convention on the Protection and Use of Transboundary Watercourses

29 September-2 October – 2nd International and 15th National Congress on Agricultural Structures and Irrigation, Turkey

October

- **6-8 October** – Accadueo-H2O 2021 – International Water Exhibition Technologies, Treatment, Distribution, Sustainability, Bologna, Italy
- **12-14 October** – International specialized exhibition GETCA 2021, Tashkent
- **12-15 October** – International specialized exhibition Water & Air Technologies 2021, Minsk, Belarus
- **15 October** – International Day of Rural Women
- **18-19 October** – 18th Session of the Joint Task Force on Environmental Statistics and Indicators
- **18-21 October** – 72nd Meeting of the Compliance Committee to the Aarhus Convention
- **18-23 October** – World Water Congress and Exhibition of IWA
- **19-20 October** – Central Asian Regional Preparatory Conference for the 9th World Water Forum "Water Security for Peace and Development", Dushanbe, Tajikistan
- **19-21 October** – International Exhibition SMAGUA 2021, Saragossa, Spain
- **24 October** – 2021 Cairo Water Week
- **27-30 October** – 13th International Conference on Irrigation and Drainage, Sacramento, California
- **31 October-12 November** – 12 November – XXVI Conference of the Parties to the UN Framework Convention on Climate Change (COP26), Glasgow, Scotland

November

- **3-5 November** – 27th Session of the Committee on Environmental Policy, Geneva, Switzerland
- **23-26 November** – Forum "Strategic Directions of Central Asia Development: History, Trends and Prospects", Yekaterinburg, Russia
- **24-26 November** – European Forum for Disaster Risk Reduction, Matosinhos, Portugal
- **24-30 November** – 72nd meeting of the ICID International Executive Committee
- **29 November-3 December** – IWRA's XVII World Water Congress
- **November** – International Conference "Aral Sea Region – the Zone of Ecological Innovations and Technologies"

December

- **8-10 December** – 19th International Conference of the Europe-INBO
- **11 December** – International Mountain Day