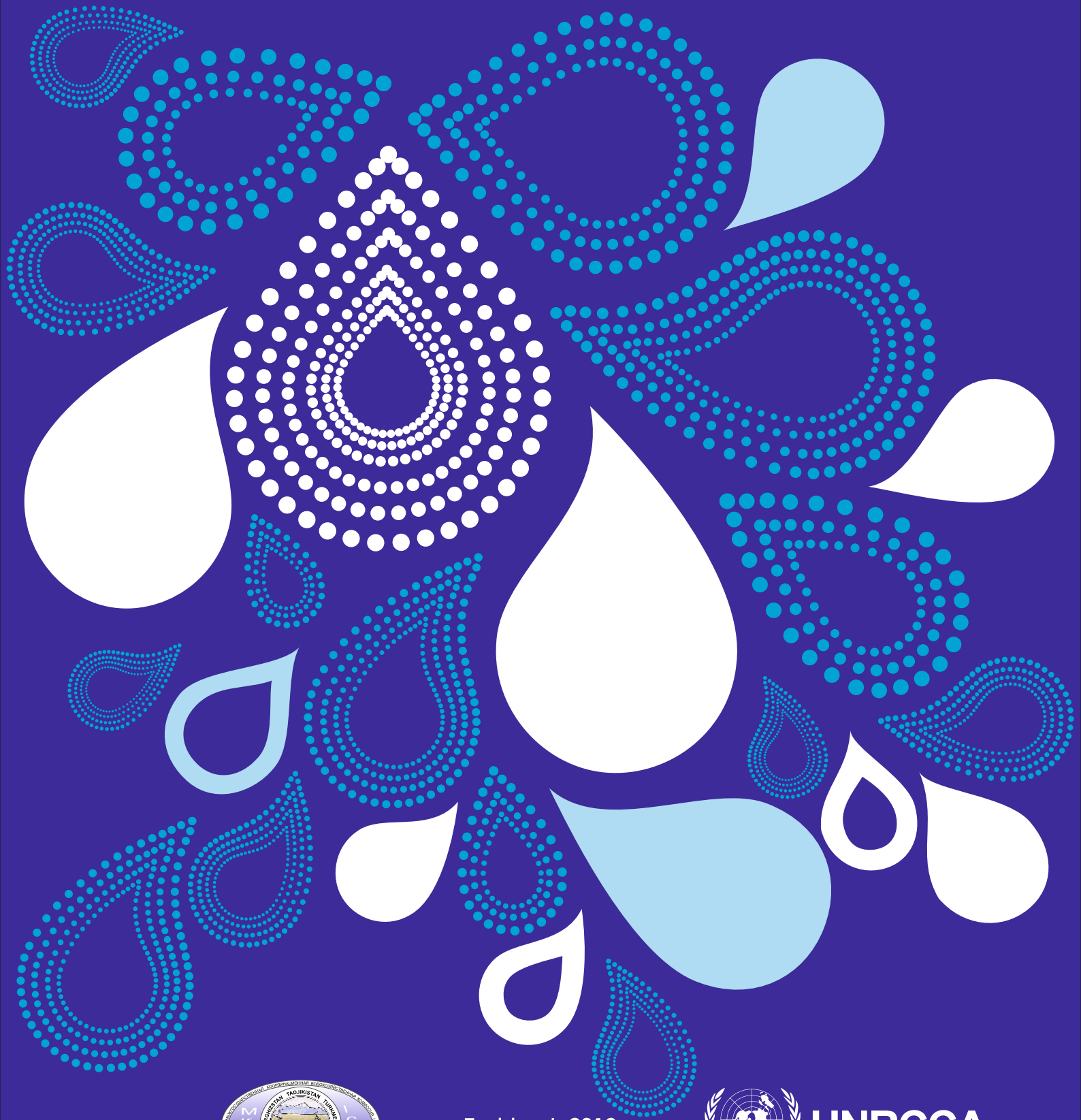
2017 WATER YEARBOOK: CENTRAL ASIA AND AROUND THE GLOBE



Tashkent 2018

UNRCCA

WATER YEARBOOK:

CENTRAL ASIA AND AROUND THE GLOBE

2017

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Content

Introduction

We are delighted to introduce this first edition of the *Water Yearbook: Central Asia and Around the Globe*, which covers key water related events and developments in 2017.

The idea of such a yearbook originated during the preparation to the 25th anniversary of the Interstate Commission for Water Coordination (ICWC) in Central Asia. It became apparent that despite regular issue of ICWC newsletters, much of the Commission's activity and achievements remained in memories of its veterans only and had not been properly documented. We thought that it would be instrumental for all of us and especially for future generations to have an annual publication, where one may trace the water history of our countries against the background of global trends and developments.

Another motive for initiation of this work was that the year 2017 turned to be very rich for memorable events.

Besides the 25th jubilee of ICWC, last year we celebrated 30th anniversary of the Basin Water Organization Amu Darya and the Basin Water Organization Syr Darya, 15 years since the establishment of the Global Water Partnership (GWP) for Central Asia and Caucasus, 10th birthday of the Chu-Talas Commission, and 10th anniversary of the UN Regional Centre for Preventive Diplomacy for Central Asia.

The year 2017 was marked by enhanced cooperation in the Central Asian region. A new direction for Uzbekistan's foreign policy towards closer relations with its neighbors opened new horizons for cooperation. In the course of the year the leaders of the Central Asian countries had frequent and productive meetings that addressed complex issues, including demarcation of boundaries and reinforcement of water relations (see Bilateral water cooperation between the states in Central Asia).

The Heads of Central Asian states made statements from a high tribune of the UN about their concerns and priorities, with the water issues taking central place (see General Assembly). Bilateral working groups (or commission) continued collaborating on water matters between Kazakhstan and Uzbekistan, Kazakhstan and the Kyrgyz Republic, Tajikistan and Uzbekistan, and Uzbekistan and Turkmenistan.

ICWC members took active part on different platforms. The Kazakhstan's Vice-minister of Agriculture Mr. Nysanbayev participated in the work of the Global High-level Panel on Water and Peace (see Global High-level Panel on Water and Peace). First Deputy Minister of Energy and Water Resources of Tajikistan Mr. Rahimzoda was appointed Special Presidential Envoy for the High-level Panel on Water (see High Level Panel on Water).

Two members of ICWC have been awarded by state decorations. The Uzbekistan's Deputy Minister of Agriculture and Water Resources Mr. Khamraev was awarded the title of Honored Irrigator of the Republic of Uzbekistan. Director General of the Department for Water Resources and Land Reclamation of Kyrgyzstan Mr. Tashtanaliyev received an honorary order "Dank".

On the occasion of the 25th jubilee of ICWC, six veterans of the Commission were awarded the title "Honorary member of ICWC" and more than 100 persons received awards for diligent work and significant contribution to international and regional water cooperation (Section Central Asia Water Awards).

The Yearbook also contains information on water related activities of international organizations and development partners in Central Asia (Section Activity of International Partners in Central Asia). It is our hope that this collection will contribute to better coordination of their efforts.

In addition to major developments in Central Asia, the Yearbook highlights key developments around the globe to give sight of general trends, challenges and innovations in water management and related spheres (Section Innovations in 2017, Key Water Developments). Key events and activities

of international water organizations, such as the International Commission on Irrigation and Drainage (ICID), GWP, World Water Council, International Network of Basin Organizations (INBO) and many others are presented in Section International Water Organizations and Initiatives.

The content of the Yearbook covers wider than only water issues, given that water should be viewed against the background of general development in the countries and in the context of integration processes. For example, Eugene Simonov's review of the China's Belt and Road Initiative highlights possible direct or indirect impacts of this initiative on water management and use in Central Asia. Climate change and progress in achieving the SDGs also were spotlighted under separate thematic sections due to their particular relevance and importance (Section Thematic Reviews).

However, this publication does not pretend to be exhaustive. This is only first trial to highlight key water-related events and developments of the past year in single and easy to read format.

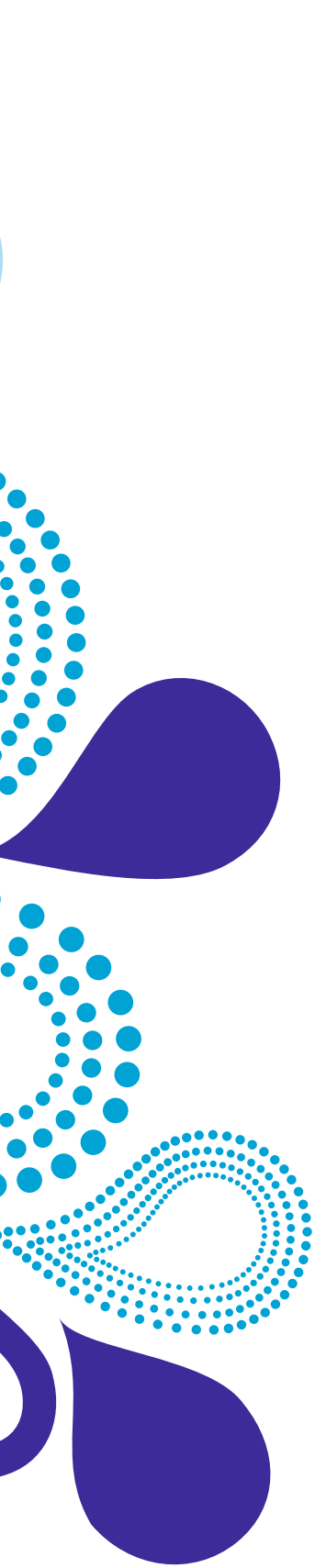
Materials that fed the publication were collected and compiled from official sites of public bodies, international organizations and information agencies. Those were supplemented by SIC's analytical reviews, web searches and inputs from individual persons and organizations in response to our requests.

In this context, the authors would like to express their utmost gratitude to all organizations and individuals who responded to our request for information.

We hope that our collective work will give valuable insights into the historical origins and context of regional developments in the water sphere.

We would appreciate your comments and additions and rely on your collaboration in the future.

Professor Viktor A.Dukhovniy
March 2018



Section 1

2017 Calendar of Events

January

26 January – 69th ICWC meeting, Ashgabat, Turkmenistan

February

2 February – World Wetlands Day

March

3 March – Meeting of the Inter-agency mechanism for bilateral consultations between Uzbekistan and Kazakhstan, Tashkent, Uzbekistan

16-17 March – 4th meeting of regional organizations working on sustainable development and water management issues in Central Asia, Almaty, Kazakhstan

22 March – World Water Day

26 March – Aral Sea Day (declared during the first International Aral Forum for Sustainable Development, May 30-31, 2017, Kyzylorda, Kazakhstan)

31 March – Central Asian Regional Meeting of the Heads of Emergency Services on Disaster Risk Reduction, Dushanbe, Tajikistan

April

2 April – National holiday of Turkmenistan "A drop of water- a grain of gold"

11 April – 70th ICWC meeting, Tashkent, Uzbekistan

11-12 April – International Scientific and Practical Conference "Challenges and Prospects of Effective Water Management against the Backdrop of Globalization", Tashkent, Uzbekistan

17-18 April – Regional workshop on climate change under the CAMP4ASB project, Almaty, Kazakhstan

18–20 April – XIV International Scientific and Practical Symposium and Exhibition "Clean water of Russia - 2017", Yekaterinburg, Russia

21 April – International Mother Earth Day

May

4-5 May – Training workshop for central administration and territorial branches of BWO Amu Darya, Urgench, Uzbekistan

9-11 May – VI World Hydropower Congress, Addis Ababa, Ethiopia

- **10-11 May** – 4th Istanbul International Water Forum, Istanbul, Turkey
- **18-19 May** – International Conference of EECCA NWO "Challenges of river basin management in the context of climate change", Moscow, Russia
- **22 May** – International Day of Biological Diversity
- **22-26 May** – 5th session of the Global Platform for Disaster Risk Reduction, Cancun, Mexico
- **23-24 May** – Meeting of the Implementation Committee under the UNECE Water Convention, Haparanda, Sweden
- **25-26 May** – 8th Nevsky International Ecological Congress "Environmental education – clean country", St. Petersburg, Russia
- **29 May-3 June** – IWRA World Water Congress, Cancun, Mexico
- **30-31 May** – International Aral Forum for Sustainable Development, Kyzylorda, Kazakhstan
- **30-31 May** – Energy Charter Conference: Towards a multilateral framework agreement on energy transit, Ashgabat, Turkmenistan

June

- **5-7 June** – International Ecological Forum "Initiative for cooperation in environmental protection and sustainable development in Central Asia", Ashgabat, Turkmenistan
- **6 June** – Meeting of the ICWC Working Group on Water Conservation under the "Implementation Plan on strengthening ICWC activities in key directions", Ashgabat, Turkmenistan
- **6-8 June** – Ordinary meeting of ICSD, Ashgabat, Turkmenistan
- **8-9 June** – UN Secretary-General A.Guterres visit to Kazakhstan
- **9-10 June** – UN Secretary-General A.Guterres visit to Uzbekistan
- **10-11 June** – UN Secretary-General A.Guterres visit to Kyrgyzstan
- **11-12 June** – UN Secretary-General A.Guterres visit to Tajikistan
- **18-20 June** – International Conference "Water Diplomacy of Central Asian states – Dialogue 2030. Water security and inclusive growth", Astana, Kazakhstan
- **19 June** – International Conference "Role of the International Fund for Saving the Aral Sea in developing cooperation in Central Asia", Ashgabat, Turkmenistan
- **19-20 June** – Conference "Blue Peace in Central Asia: Agenda 2030 – water security and mutually beneficial growth", Astana, Kazakhstan
- **27-28 June** – 19th session of the Working Group on Environmental Monitoring and Assessment, UNECE, Geneva, Switzerland

29-30 June – 13th meeting of the Joint Task Force on Environmental Statistics and Indicators, UNECE, Geneva, Switzerland

July

4 July – Workshop on recent progress on transboundary water cooperation: from getting cooperation started to its long-term sustainability, UNECE, Geneva, Switzerland

5-6 July – 12th meeting of the Working Group on IWRM under the UNECE Water Convention, Geneva, Switzerland

6 July – Regional consultations of the High-Level Panel on Water: International Decade for Action "Water for Sustainable Development" 2018-2028 and Valuing Water Initiative, Dushanbe, Tajikistan

7 July – 71st ICWC meeting, Dushanbe, Tajikistan

August

12 August – Caspian Sea Day

September

4 September – Meeting of the ICWC Working Groups on IWRM as a Green Growth and Adaptation Tool and on Capacity Building of Regional and National Organizations, Tashkent, Uzbekistan

4-5 September – 5th meeting of regional organizations working on sustainable development and water management issues in Central Asia, Tashkent, Uzbekistan

7-8 September – International Conference "Transboundary Cooperation in Central Asia – Sustainability and Prosperity of the Region", Almaty, Kazakhstan

7-8 September – Meeting of the ICWC Working Group on Improvement of Water Accounting Quality and Accuracy, Almaty, Kazakhstan

17-19 September – 10th meeting of the Executive Council of the Inter-Islamic Network on Water Resources Development and Management, Amman, Jordan

20-23 September – 1st Asian International Water Week "Asian Solutions for Water", Gyeongju, Korea

October

2-3 October – 14th session of the Joint Task Force on Environmental Statistics and Indicators, UNECE and FAO, Rome, Italy

3-5 October – Expert Forum for producers and users of climate change-related statistics, UNECE and FAO, Rome, Italy

- **3-5 October** – Conference "Catalyzing an Agriculture-led Transformation for Food Security and Wealth Creation in Eurasia", Dushanbe, Tajikistan
- **5 October** – International CIS Forum under the Russian Agricultural Exhibition "Golden Autumn-2017", Land Reclamation: technologies and investments, Moscow, Russia
- **8-14 October** – XXIII Congress of the International Commission on Irrigation and Drainage, 68th meeting of the International Executive Council, Mexico city, Mexico
- **16-17 October** – Global Workshop on Water Allocation, Geneva, Switzerland
- **18 October** – 5th meeting of the Task Force on the Water-Food-Energy-Ecosystem Nexus, Geneva, Switzerland
- **16-18 October** – National workshop "Shared Environmental Information System and Environmental Statistics for the Sustainable Development Goals", Dushanbe, Tajikistan
- **23-25 October** – International Summit "Meeting of the Great Rivers of the World: taking action for water and climate", Rome, Ital

November

- **2-4 November** – World Water Council Bureau meeting, Marseilles, France
- **7-8 November** – 14th meeting of the Task Force on Regional Energy Cooperation in Central and South Asia, Ashgabat, Turkmenistan
- **10-11 November** – International Conference "Central Asia: Shared Past and a Common Future, Cooperation for Sustainable Development and Mutual Prosperity" under the UN auspices, Samarkand, Uzbekistan
- **13-14 November** – 6th meeting of regional organizations working on sustainable development and water management issues in Central Asia, Ashgabat, Turkmenistan
- **16 November** – Amu Darya River Day
- **23-24 November** – Central Asian International Scientific and Practical Conference "The 25 years of Water Cooperation in Central Asia: Lessons Learnt and Future Outlook", Tashkent, Uzbekistan
- **23 November** – Central Asian International Exhibition "Water Technologies and Industry – WATER-2017", Tashkent, Uzbekistan
- **24 November** – 72nd ICWC meeting, Tashkent, Uzbekistan
- **28-29 November** – 28th meeting of the Energy Charter Conference, Ashgabat, Turkmenistan

December

- **7-8 December** – Opening of the International Water Assessment Center, Astana, Kazakhstan
- **11-12 December** – International workshop on Water Scarcity: Taking action in transboundary basins and reducing health impacts, Geneva, Switzerland
- **11-13 December** – 9th meeting of the Task Force on Water and Climate under UNECE Water Convention, Geneva, Switzerland
- **11–13 December** – International workshop "Innovations in Marginal Water Use for Resilient Agriculture and Food Security", Tashkent, Uzbekistan
- **19 December** – Seminar "International Water Law: main legal principles and substantive norms", Ashgabat, Turkmenistan

Section 2

Water Management Situation in the Aral Sea Basin

2.1. Water Management Situation in the Basins of the Amu Darya and the Syr Darya

Water Resources

The early conditions of the hydrological year 2016-2017 turned to be well better than in previous years, although water withdrawals in 2016 corresponded to average value over the last decade – 100.6 km^3. The annual water volume in the Syr Darya basin (judging from inflow to three reservoirs, such as Toktogul, Andizhan, and Charvak) was 42.9 km^3, while water content in the Amu Darya (as measured at the section upstream of water intake to Garagumdarya) was 59.3 km^3.

By October 1, 2016, the total accumulation by reservoirs in the Syr Darya basin was 23,244 Mm^3, including 19,897 Mm^3 in the key water bodies in the catchment area. This amount of accumulation was even higher than that by October 1, 2009, i.e. the year prior to the wettest year over the last twenty years.

As to the Amu Darya basin, though the situation related to absolute accumulation (13,300 Mm^3 only) was much worse, it was at the average level of water accumulation by the reservoirs on this river. Autumn, winter, and spring seasons were characterized by relatively good precipitation, close to the level corresponding to average year.

Operation of Reservoir Hydrosystems

Annual inflow to the Toktogul reservoir located on the Naryn was 17 km^3, including 13.4 km^3 (79%) during the growing season. Annual water releases from the reservoir were lower than the inflow and amounted to 14.9 km^3, of which 6.57 km^3 only or 44 % were discharged down the Naryn during the growing season. Such flow re-distribution allowed filling the Toktogul reservoir up to 19.6 km^3 by the end of the growing season.

Inflow to and accumulation in the Nurek reservoir on the Vakhsh were close to the forecast, with considerable exceedance of the forecast values in May and June only. This enabled accumulating all monthly reference quantities, with the average deviation of 6.8%.

Annual inflow to the Nurek reservoir was 25.7 km^3, including 21.9 km^3 or 85% during the growing season. Annual water releases from the reservoir were also 25.7 km^3, but showed different seasonal distribution. During the growing season, 18 km^3 or 70% of annual flow were discharged.

Due to insufficient flow along the Panj, inflow to the Tuyamuyun reservoir (Birata) turned to be lower than the forecast by 11.42 km^3 and amounted to 33.5 km^3 during the growing season. The largest difference between the forecast and the actual inflow to the Tuyamuyun reservoir was observed in July and August: 5,091 and 1,891 Mm^3, respectively. Water releases from the Tuyamuyun reservoir were 31.8 km^3 or 82% of the value scheduled by BWO Amu Darya.

Water Distribution and Water Deficit

The total water withdrawal in the Amu Darya basin amounted to 52.6 km^3, including 38 km^3 during the growing season or 96% of the established limit on water intake to canals (39.7 km^3). The plan of water distribution in the basin was underfulfilled on average by 20%, including minus 13.9% for Tajikistan in the reach from Nurek to Tuyamuyun reservoirs during the growing season. Deviation from the plan was minor in this reach for Turkmenistan and Uzbekistan. Evidently, that deviation for Tajikistan was caused by unpreparedness to water diversions as no obstacles were observed. However, in the reach from Tuyamuyun to Samanbai the situation was worse. During the growing season, Turkmenistan was under-supplied with water by 14%, and Uzbekistan received 6.2% less water than planned.

As to the Syr Darya basin, virtually no deficit of water was observed either with respect to water accumulation by all reservoirs or water distribution. The total water withdrawal in the basin amounted to 14.1 km^3, including 11.2 km^3 during the growing season or 96 % of the established limit on water intake to canals. 2.3 km^3 of water were discharged from the Syr Darya into Arnasai.

Inflow to the Prearalie

A positive point is that under conditions of the average year (in terms of flow) the water supply to the Prearalie and the Aral Sea was: 10.9 km^3 from the Amu Darya and collectors; and, 7.1 km^3 from the Syr Darya. Water discharge from the Northern Aral Sea to Large Aral Sea amounted to 5.2 km^3.

Open Channel Losses

Balance calculations indicate to relative lowering of flow losses: 8.98 km^3 during the growing season and 1.13 km^3 during the non-growing season along the Amu Darya or 10.11 km^3 in total. This is almost 40% less than over the last decade on average. As to the Syr Darya, water losses slightly increased and amounted to 3.3 km^3 a year.

Meeting Demands

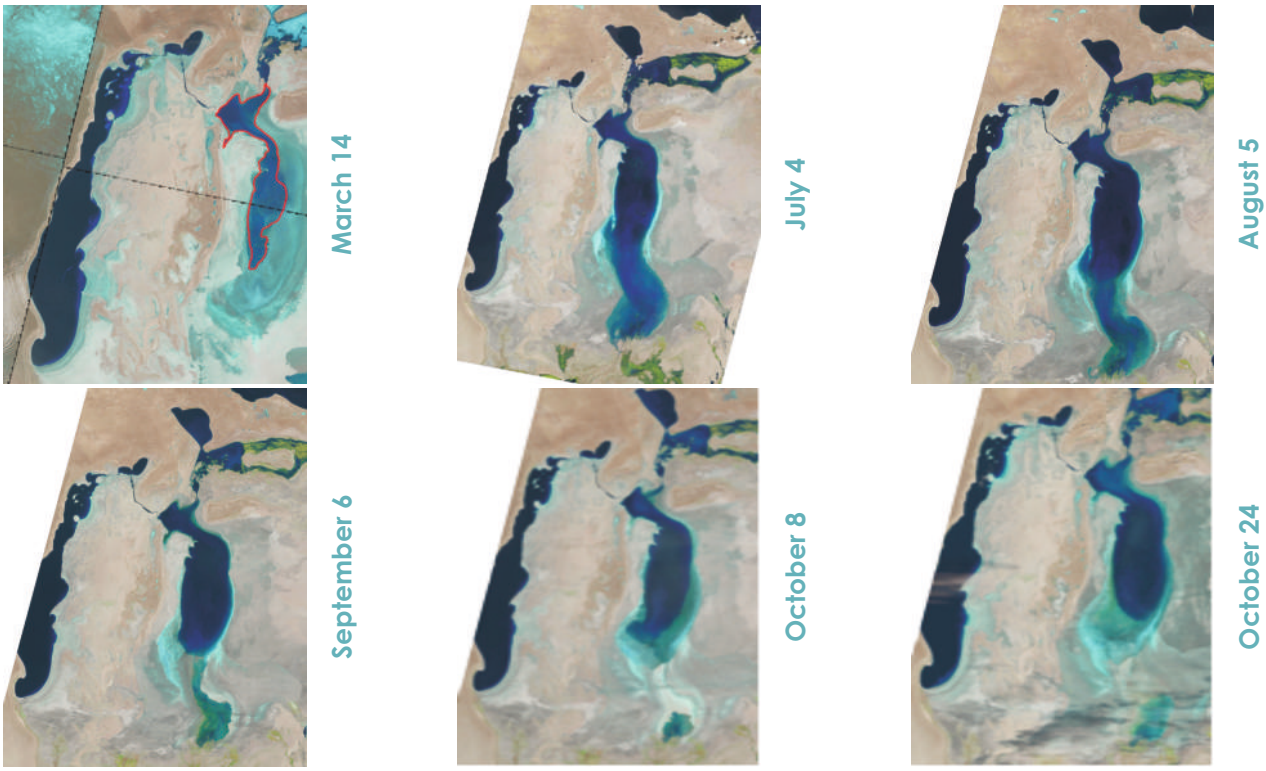
The picture of how water demands of the CA states are met during the growing season is shown in the Table below. In general, no failures in water delivery were observed in the both basins.

CA States	Meeting water demands during the growing season, %	
	Amu Darya	Syr Darya
Kazakhstan	-	101
Kyrgyzstan	-	76
Tajikistan	86	84
Turkmenistan	96	-
Uzbekistan	100	99

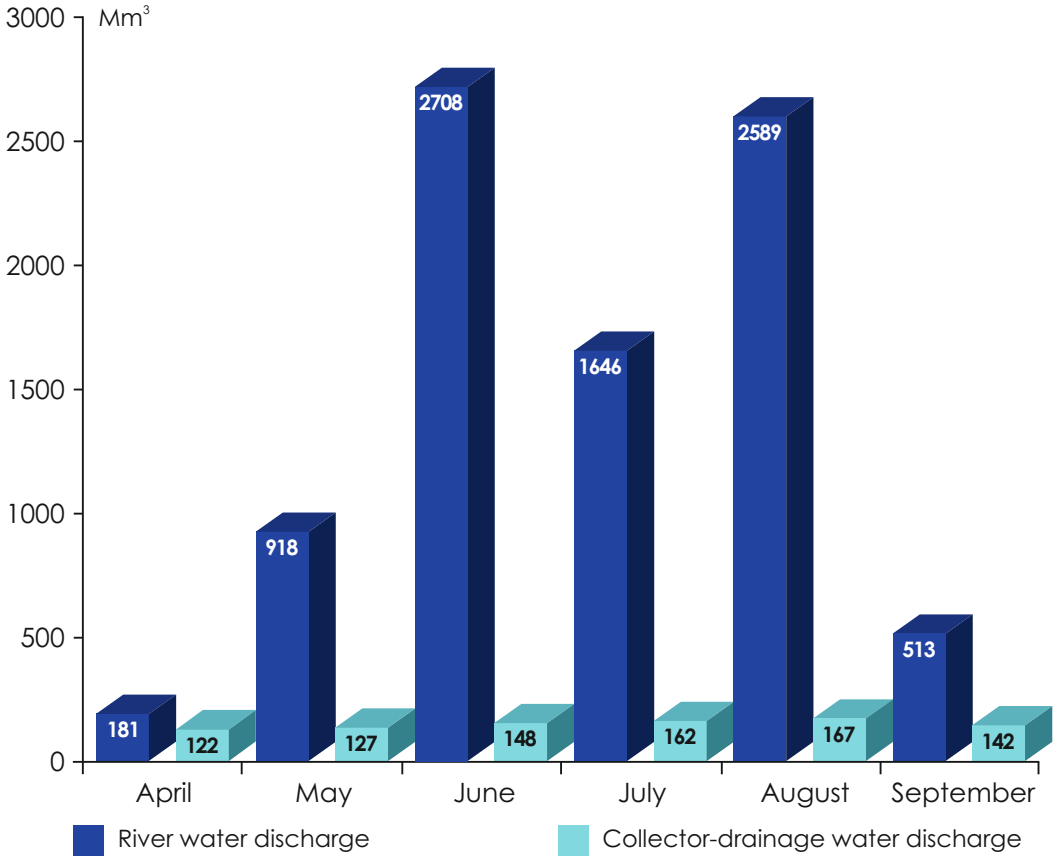
2.2. Dynamics of Changes in the Water Surface Area of Large Aral Sea and South Prearalie

In 2017, SIC ICWC continued monitoring of the dynamics of changes in the water surface area of the Eastern and Western parts of the Large Aral Sea, as well as lake systems of the Amu Darya delta in the South Prearalie through satellite images Landsat 8 OLI. The Center also monitored water supply to the Aral Sea and the Amu Darya delta by using the data of BWO Amu Darya.

Satellite Images Landsat 8 OLI (2017)



Water Supply to the Aral Sea and the Amu Darya Delta in 2017, Mm^3

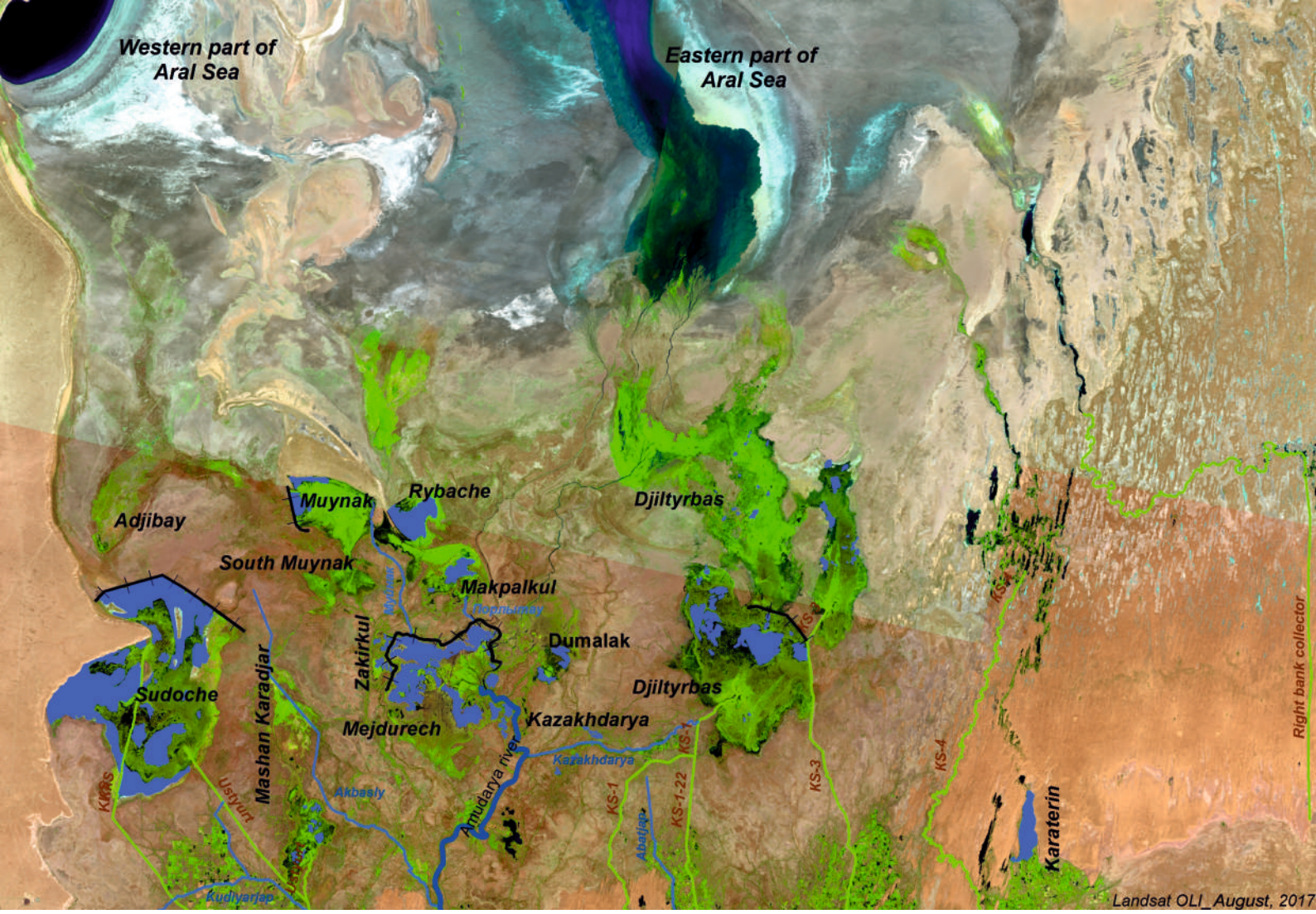


Despite sharp variations of water supply, in 2017 the water surface area of the Western part of the Large Aral Sea was stable, while the area of the Eastern part increased through inflow from March (101,191 ha) till the end of the flooding period (460,805 ha). Then the area was shrinking till the end of the year due to discontinuance of inflow (229,742 ha).

Wetland and Open Water Surface Area of the Western and Eastern Parts of the Large Aral Sea

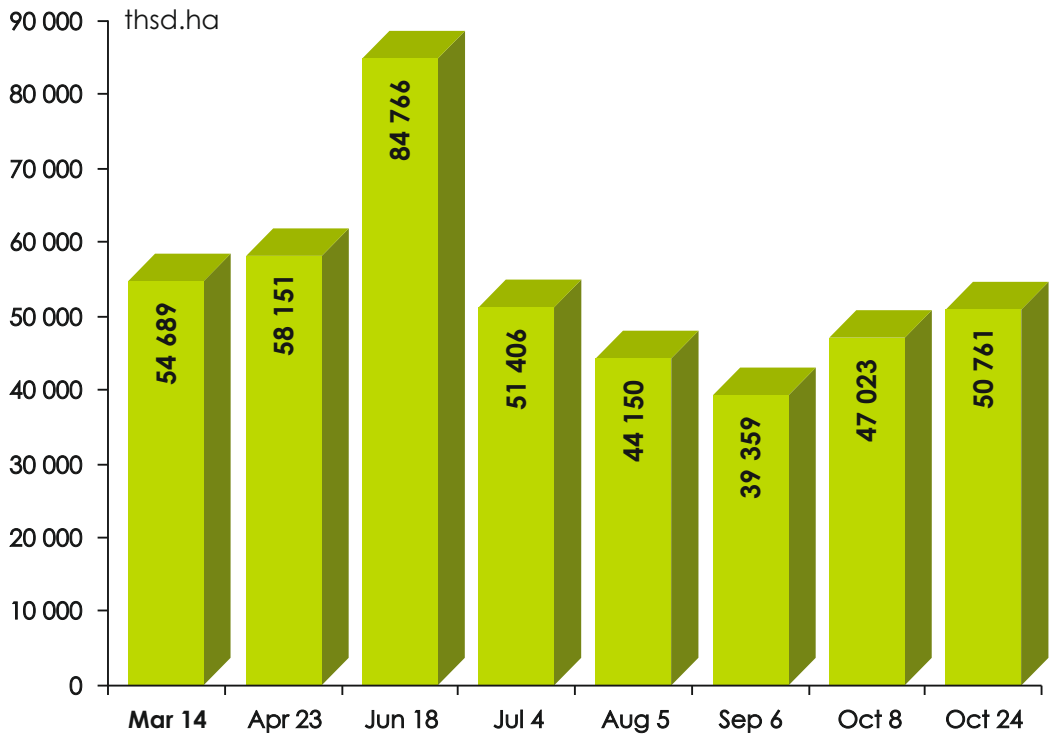
Date	Mar 14	Apr 23	May 1	Jun 18	Jul 4	Aug 5	Sep 6	Oct 8	Oct 24
Western part of the Aral Sea, ha									
Wetland	278978	278978	278978	280157	284241	283154	286264	290562	290850
Water surface	282372	282372	282372	281194	280109	278195	275085	270788	270499
Eastern part of the Aral Sea, ha									
Wetland	1395633	1327443	1325458	1099641	1075170	10360718	1157626	1245473	1267081
Water surface	101191	169381	171365	397182	421653	460805	339198	251351	229742

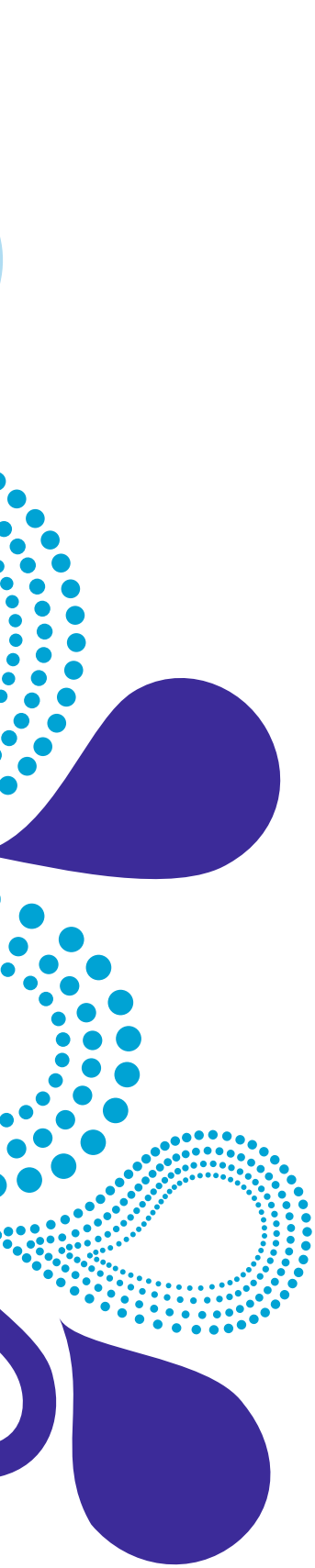
The water surface area of lake systems in the Amu Darya delta in the South Prearalie depends on inflow: the area increases till the beginning of irrigation season (June) and then decreases, although almost up to 3 km^3 of river water reaches the lake systems in June and August.



Schematic Map of Lake Systems in the Prearalie

Dynamics of Changes in the Water Surface Area of Lake Systems in the Amu Darya Delta in 2017, thousand ha

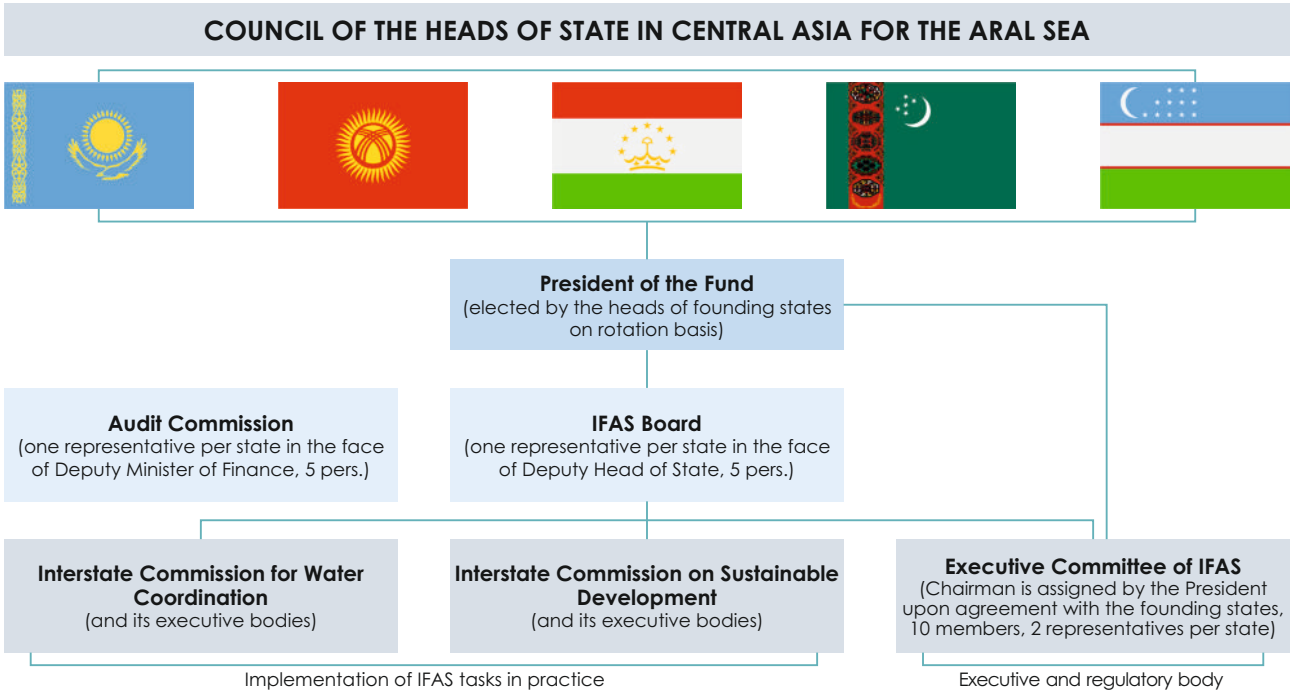




Section 3

IFAS and Other Regional Organizations in Central Asia

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 research and applied projects and programs in order to improve ecological situation in the areas affected by the Aral Sea catastrophe and address the socio-economic issues in the region. The organizational structure of IFAS is shown below.



3.1. Executive Committee of IFAS and its Country Branches

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

Location of EC IFAS by Country and Year

On 16 June, the Cabinet of Ministers of Turkmenistan approved a package of documents related to the Turkmenistan's chairmanship in IFAS over 2017-2019.

The main objective of Turkemenistan's chairmanship in IFAS is to further develop and strengthen cooperation among the countries in the Aral Sea basin for socio-economic and ecological improvement in the Prearalie, efficient water use and better environmental protection in the region. This objective to be achieved wihin the practical implementation of SDGs.

Under its chairmanship in IFAS, Turkmenistan will:

- promote representation of the Fund on the international arena and its positive role in global processes on sustainable development;
- develop, together with the CA countries, a new fourth phase of the Aral Sea Basin Program (ASBP-4);
- initiate elaboration of the Central Asian Water Strategy, which could serve as a basis for the UN Global Water Strategy in the future;
- prepare and send to all founding member countries of IFAS proposals for the revision of the Regional Action Plan for Environmental Protection in Central Asia (REAP).

Under the IFAS chairmanship the following events have been conducted:

On 19th of June 2017 premises of the IFAS Executive Committee were officially opened in Ashkhabad and the International conference "The role of the International Fund for saving the Aral Sea in developing cooperation in the Central Asian region" was held;

On November 3-4 a workshop on integrated water resources management was organized by the Regional Environmental Centre for Central Asia (CAREC);

On November 13-14 the 6th meeting of CA regional organizations working on sustainable development and water management issues was held. Memorandums of cooperation were signed between the IFAS Executive Committee and the German Agency for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ) represented by Transboundary Water Management Program in Central Asia and with CAREC;

The first Day of the Amu Darya took place in Lebap province **in November**;

On 19th of December a workshop on international water law was held in Ashkhabad.

3.1.1. 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 (NHMS) in the region.

In 2011-2017, RCH implemented a World Bank supported project ($M27) on modernization of hydrometeorological services in Kazakhstan, Kyrgyzstan, Uzbekistan and Tajikistan (PMHMS). The objective of the project was to improve quality and timeliness of hydrometeorological services in CA.

In 2017, the COSMO-CA software was developed and passed to UzHydromet (Uzbek Hydrometeorological Service) for beta testing in the interests of four HMS' in CA. As a result, accuracy of weather forecasts has been substantially improved and averaged 94.7%. 13 gauging stations in Kyrgyzstan and 16 stations in Tajikistan have been modernized and re-equiped.

NHMS' of Uzbekistan, Kyrgyzstan, and Tajikistan were equipped with automated workstations for the system of hydrological information visualization. Hydrometeorological data at NHMS' of Kazakhstan, Kyrgyzstan, and Tajikistan were digitized for long-term storage and to ensure timely access.

As a result of the project activities, the users of hydrometeorological information were provided with new high-quality information products.

Source: RCH

3.1.2. Executive Directorate of IFAS in Kazakhstan

The Executive Directorate (ED) of 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. ED IFAS together with international organizations implemented 47 projects under ASBP-3 for a total amount of $543,950. In 2017, it continued implementing **four projects** for an amount of $64,000.

Advancement of Kazakhstan's legislation on safety of hydrotechnical facilities. In 2017, with the support of the UN Economic Commission for Europe (UNECE) and the OSCE Programme Office in Astana, a work meeting was organized to discuss the results of expert review and recommendations on the development of Kazakh legislation on safety of hydrotechnical facilities as part of the International Conference "Transboundary cooperation in Central Asia – security, stability, and well-being of the whole region" held on 7-8 September in Almaty.

In December 2017, the Government of Kazakhstan approved a proposition to enact a law on safety of hydrotechnical facilities in Kazakhstan. The national Parliament planned a round-table in early 2018 to discuss the matters concerning adoption of the Law, taking into account a need for establishment of a freestanding supervisory body with the diagnostic center and expert coucil (from Russian and Uzbek experience).

Capacity building. Support was provided to the International Education Center (IEC) on safety of hydrotechnical facilities at the Kazakh Water Research Institute (KazNIIVH) in Taraz and to the Training Center of the Aralo-Syr Darya Basin Council (TC ASBC) at the Kazakh Rice Growing Research Institute (KazNII) in Kyzylora (see "Water education").

In 2017, with the financial support of the UNECE Project "Dam safety in Central Asia: capacity building and regional cooperation" and the EU Project "Supporting Kazakhstan's transition to a Green Economy model over 2016-2018", 68 specialists from Kazakhstan and neighboring countries got training and received certificates at IEC.

Two training workshops were organized at TC ASBC:

- Training for improving knowledge of local population about the basics of small and medium sized businesses as part of preparation to the International Forum on sustainable development in the Aral region "Aral-2017", 6-11 February, Aralsk, Kazalinsk;
- Practical training for farmers in the Aral-Syr Darya Basin in advanced agro-technology and water saving, 29-30 June, Kyzylorda.

ED IFAS is involved in the projects that have training components:

- Project "IWRM, sustainable development and education standards for higher educational institutions", component IV "Drafting proposals on state education standards for preparation of water engineers" implemented by the OSCE Programme office in Astana;
- The Skills and Jobs Project with the technical and financial support of World Bank together with German-Kazakh University (GKU) and other national higher educational institutions.

Outreach activities on the Aral Sea problem. Making the world community aware of the Aral Sea problems is one of ED IFAS focus areas. In 2017 they organized:

- First International Aral Forum on sustainable development, with the resulting resolution, 30 - 31 May, Kyzylorda;
- Scientific-applied expedition along the exposed seabed of the Aral Sea, during which ecology, flora and fauna, hydrometeorology and hydrology, and soil studies were undertaken, 15-25 May, Prearalie, Aralsk

Cooperation. In 2017, ED IFAS took part in 60 national, regional, and international events (research/practice conferences, work meetings, training workshops, roundtables, Basin Councils, etc.).

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

3.1.3. IFAS Agency for implementation of the Aral Sea Basin and GEF projects

The IFAS Agency was established in 1998 during the period of Uzbekistan's chairmanship in EC IFAS. The Agency provides project management in the Aral Sea Basin.

In 2017, implementation of a Comprehensive Program for mitigation of consequences of the Aral catastrophe, rehabilitation and socio-economic development in the Prearalie region over 2015-2018 was continued. The annual program budget is $M500-700. A number of projects are undertaken under the Program. Particularly, the most important project – Construction of small local water bodies in the Amu Darya Delta, Phase 2 – provides for construction and reconstruction of 12 structures (dams, offtake regulators, diversion canals, side spillways, etc.). The total project cost is 131.37 billion soum (or about $M90 at 2016 values). By the end of 2019, it is planned to construct fish-breeding water bodies and pastures on the total area of 28,250 ha and 153,000 ha, respectively.

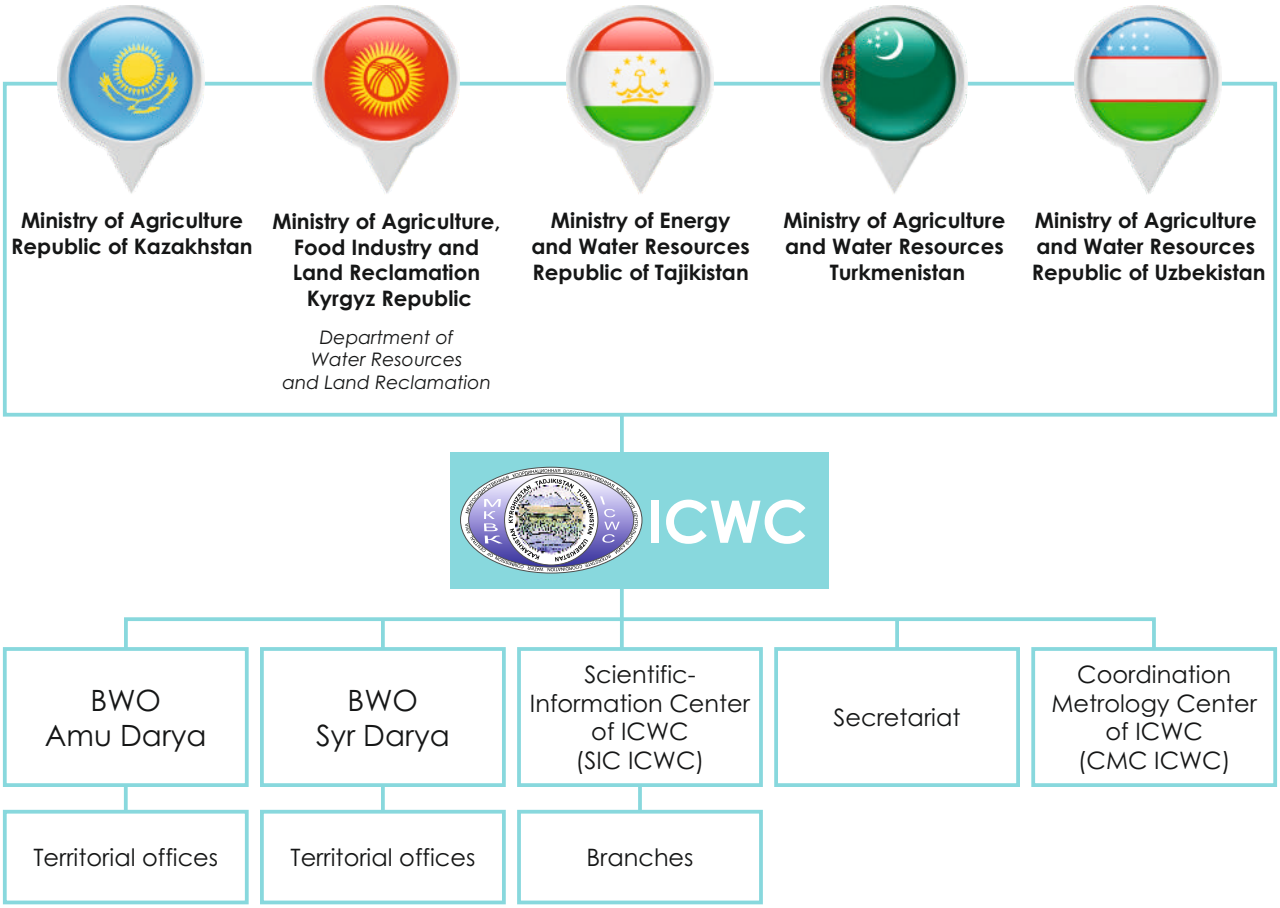
The Project "Ornithological monitoring of lakes in Southern Prearalie" was also continued in 2017. The Project aims to study and assess the environmental conditions and biodiversity in deltaic lakes through ornithological expeditions. Over 2015-2017, more than 230 bird species were recorded in the Sudochie Lake and included 12 endangered species and 3 species in the Red Book of Uzbekistan. In 2017, flamingo rookeries were observed in many places in Karakalpakstan: Vozrozhdeniye Island, Muynak, West Karateren Lake, Shegekul (Mezhdureche Reservoir), Sarykamysh and Zhyltyrbars lakes, and Amu Darya Right-Bank.

The Comprehensive Program also includes the on-going projects on protective afforestation in the Akhantay site and on the Akkum ridge within the dried bed of the Aral Sea. Such afforestation is to prevent salt and dust transfer and fix shifting sand on the dried seabed. However, as the past experience of forest plantation showed, natural establishment was less than 10%. In this context, the IFAS Agency drafted a Memorandum on cooperation together with the United Nations Development Programme (UNDP) in Uzbekistan and the Karakalpakstan's Committee of Forestry to improve quality of forest plantation work and monitoring.

Source: The IFAS Agency, www.aral.uz/a5.php

3.2. ICWC of Central Asia

Interstate Commission for Water Coordination of 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 the 18th of February 1992. The organizational set-up of ICWC is shown in the figure below.



3.2.1. ICWC meetings

ICWC meetings are held on a quarterly basis and, if necessary, extraordinary meetings can be gathered upon an initiative of any party.

The Commission held four meetings in 2017: 69th meeting on 26 January in Ashkhabad; 70th meeting on 11 April in Tashkent; 71st meeting on 7 July in Dushanbe; and, 72nd (jubilee) meeting on 24 November in Tashkent. ICWC members from Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan[1], 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 considered and approved forecasts and water limits and reviewed their implementation for growing

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

(2016 and 2017) and non-growing (2016-2017 and 2017-2018) seasons. Interests of the parties in improvement and upgrade of gauging stations in the Syr Darya basin as a whole, a need to mobilize donors for support of installation of automated stations at gauging stations and continue work of BWO Syr Darya on closing the difference between the forecast and actual water availability were underlined. BWO Amu Darya was requested to regulate, in coordination with the Turkmen and Uzbek sides, water releases from the Tuyamuyun reservoir during the growing season of 2017, depending on actual water availability. Jubilee events were organized on the occasion of the 25th Anniversary of ICWC, where distinguished water sector workers from the region's countries were awarded memorial signs. Activities and annual results of ICWC working groups on the four directions of strengthening ICWC activities were considered as well.

For more details, please, see:
http://icwc-aral.uz/meetings_ru.htm

3.2.2. Jubilee events on the occasion of 25th Anniversary of ICWC

2017 marked the 25th anniversary of ICWC work on promoting the interstate water cooperation in CA.

Several events were organized as part of the ICWC anniversary celebrations in the course of 2017. Those included the International Scientific and Practical Conference "Challenges and Prospects of Effective Water Management against the Backdrop of Globalization" (11-12 April 2017, Tashkent), International Scientific and Practical Conference "Transboundary Cooperation in Central Asia Sustainability and Prosperity of the Region" (7 September 2017, Almaty), International Conference "Blue Peace Central Asia: Dialogue for 2030 - Water Security and Inclusive Growth" (18-20 June 2017, Astana), Regional consultations of the High-Level Panel on Water: International Decade for Action "Water for Sustainable Development" 2018-2028 and Valuing Water Initiative (June, Dushanbe), as well as meetings of working groups on the Implementation Plan on strengthening ICWC activities (6 June 2017 in Ashkhabad, 4-5 September 2017 in Tashkent, and 7 September 2017 in Almaty).

The final jubilee Central Asian International Scientific and Practical Conference "The 25 years of Water Cooperation in Central Asia: Lessons Learnt and Future Outlook" was held on 23-24 November 2017 in the city of Tashkent. The Conference was attended by the heads of water-management organizations of Central Asian countries, as well as by more than 200 experts and leading scientists of the water sector and representatives of international organizations and financing institutions. The most important conclusion of the Conference was the recognition of a fundamental role the ICWC of Central Asia played in establishing and maintaining regional water cooperation and the adopted Resolution setting directions of future actions in the region.

On the occasion of the anniversary, the awards were presented to more than 100 specialists of country water sectors in the Aral Sea basin. The Central Asian International Exhibition "Water Technologies and Industry WATER-2017" was organized as part of the Conference. The exhibition showcased best practices and scientific achievements in the field of water use and protection and on promotion of innovations for sustainable water management.

The main *topics* of the Conference and jubilee events were formulated in line with 17 Sustainable Development Goals, the focus areas of the Implementation Plan on strengthening ICWC activities and the themes of the 8th World Water Forum and included: (I) Transboundary water cooperation as an important driver of food, energy, and environmental security in Central Asia; (II) IWRM, water security and climate change; (III) Water saving and water accounting; (IV) Water and ecosystems; and, (V) Information, knowledge and capacity.

Particular attention was paid to encouraging young water professionals to address the water use related issues.

For more details, please, visit:
http://icwc-aral.uz/25years/index.htm

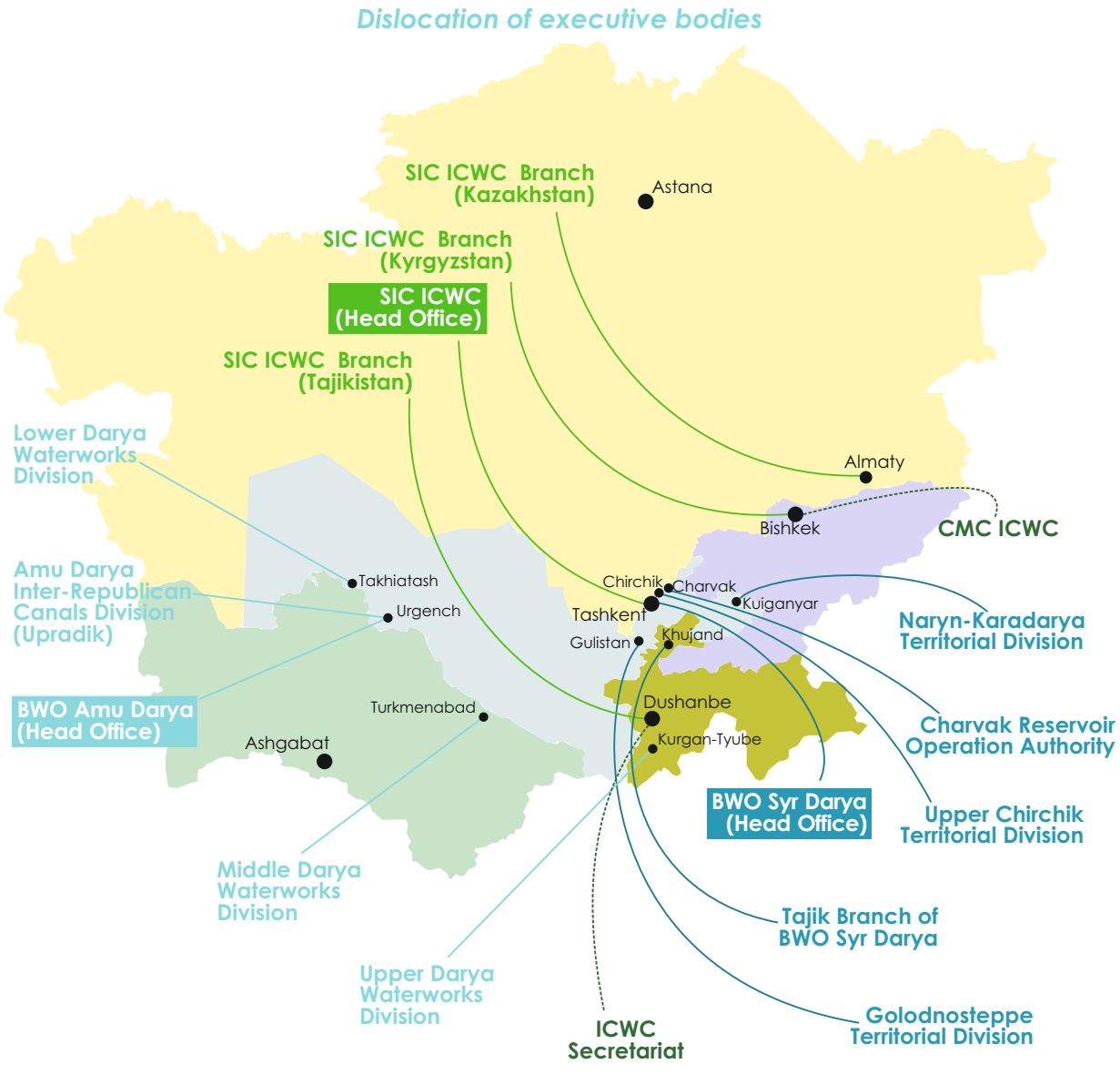
3.2.3. ICWC working groups

In 2017, representatives of Kazakhstan, Turkmenistan, and Uzbekistan[2] intensified their work on the Implementation Plan to strengthen ICWC activities that was adopted at the 63rd ICWC meeting[3] on April 18-19, 2014. Four meetings of the working groups were held on the main directions of the Plan, namely: water conservation (6 June, Ashkhabad); implementation of integrated water resource management and adaptation to climate change (4 September, Tashkent); building capacity of regional and national organizations (5 September, Tashkent); improvement of water accounting quality and accuracy (7-8 September, Almaty).

Progress of the four working groups was reported at the 72nd ICWC meeting, emphasizing the need to work more actively on water conservation, water accounting, and capacity building of water professionals. Additionally, the meeting noted that it would be advisable to organize a network of representative demonstration plots on an area of 50 ha each in all the countries of the Aral Sea basin. It was decided to request donors to develop a common program to support the Plan.

For more details, please, see:
http://icwc-aral.uz/work_plan_ru.htm

3.2.4. Activities of ICWC executive bodies in 2017



[2] *Republic of Tajikistan temporarily refrains from being involved in the fulfillment of this plan (as written in the decision of 70th ICWC meeting).*
[3] *April 18-19 2014, Tashkent*

BWO Amu Darya and BWO Syr Darya ensure real-time control of water allocation among the states in the basin, timely and trouble-free supply of water to users according to the established water limits (agreed by the states) and sanitary-ecological releases of water to Prearalie zone and the Aral Sea.

BWO Amu Darya is located in Urgench and has 4 territorial divisions: Upper Darya (Tajikistan); Middle Darya (Turkmenistan); Lower Darya (Uzbekistan); and Dashoguz Administration (Turkmenistan).

In 2017, BWO Amu Darya continued working on interstate water allocation and real-time control over observance of the established water withdrawal limits, on modernization and operation of waterworks facilities under responsibility of BWO, and prepared materials for and participated in four ICWC meetings, as well as in the Central Asian Conference "The 25 years of Water Cooperation in Central Asia: Lessons Learnt and Future Outlook" and a meeting of water managers of lower reaches on water allocation.

In 2017, BWO Amu Darya organized the Day of Amu Darya, with the support of GIZ, in Kurgantyube (Tajikistan), Turkmenabad (Turkmenistan), and Urgench (Uzbekistan). This event was timed to coincide with jubilee events dedicated to 30th anniversary of BWO and 90th anniversary of the Amu Darya Inter-republican Canals Division (UPRADIK). The web-site of BWO Amu Darya started to be developed and currently is operated in the test mode. The staff of BWO and its territorial divisions took an active part in regional programs, conferences, and training workshops.

BWO cooperates with EC IFAS, Ministries of Agriculture and Water Resources (MAWR) of Turkmenistan and Uzbekistan, Ministry of Energy and Water Resources (MEWR) of Tajikistan, National Hydrometeorological Services, SIC ICWC, CAREC, and GIZ.

BWO Syr Darya has its headquarters in Tashkent. For trouble- and fault-free supply of water to users, BWO keeps maintenance of hydraulic structures, canals, gauging stations, communication facilities, buildings and other water-management sites that are on the books of territorial divisions.

In 2017, BWO repaired facilities of automated control, calibrated gauging stations and made current repair of the control station at the Upper Chirchik waterworks facility and the mechanical equipment of the Zakh Canal and the Uchkurgan waterworks facility. It repaired the Dustlik Canal and its offtake, rehabilitated banks of the Zakh and Khanym canals. Mechanical cleaning of canals and structures was done as planned. Reconstruction and modernization of the Upper Chirchik waterworks facility were completed. All repair and construction work was made in line with the state standards. All funds allocated for repair were fully used.

Work is underway on reconstruction of tailwater pool of the largest and important structure – the Kuiganyar waterworks facility which passes 1,210 m^3/s – constructed in 1939 and damaged in 2010 due to heavy floods. Reconstruction of the Kuiganyar waterworks facility will ensure reliable operation of the latter in the long-term and guarantee water supply for 230,000 ha in the Fergana Valley.

ICWC Secretariat formed by the decision of the 6th ICWC meeting on 10 October 1993 and located in Dushanbe supervises fulfillment of ICWC decisions, prepares together with other executive bodies agendas, events and draft decisions for ICWC meetings and coordinates international communication.

Scientific-Information Center of ICWC

SIC ICWC was established on 5 December 1992. The headquarters of SIC ICWC is located in Tashkent, with the branches in Kazakhstan, Kyrgyzstan and Tajikistan. The Center provides ICWC with organizational and technical support, information and analytics, capacity building, international communications, scientific research and expert advise.

Organizational and technical activity

In 2017, SIC together with other bodies of ICWC was involved in preparation and organization of four ICWC meetings. SIC held meetings of the regional working groups on the Implementation Plan on strengthening ICWC activities and prepared summary reports. Also analytical reports on water management situation in the region during growing and non-growing seasons were prepared. SIC took active part in organization of the Anniversary conference of ICWC. The Center rendered assistance to national and regional agencies through timely provision of information materials and analyses by requests.

Information and analytical activity

In 2017, the regional information system, analytical tools, databases and the website, with the Aral Sea Basin model, ASBmm, were further developed. These analytical software products are unique tools at the regional scale for practical assessment of regional water management situation based on data on available water resources, their distribution by river reaches, provinces and water systems, operation regimes of reservoirs and hydropower stations; losses, deficits, imbalances; environmental water releases; water quality, etc.

As part of the PEER Project "Transboundary water management adaptation in the Amu Darya Basin to climate change uncertainties", a database of planning zones and a planning zone model were developed and helped to enhance substantially the ASBmm model.

Based on long-term cooperation with German universities and other international partners, a big push was made in application of remote sensing (RS) in practices. In 2017, a beta version of RS-based monitoring tool, WUEMoCA, was launched. This tool allows comparing long-term data showing dynamics of available water supply, crops, and productivity.

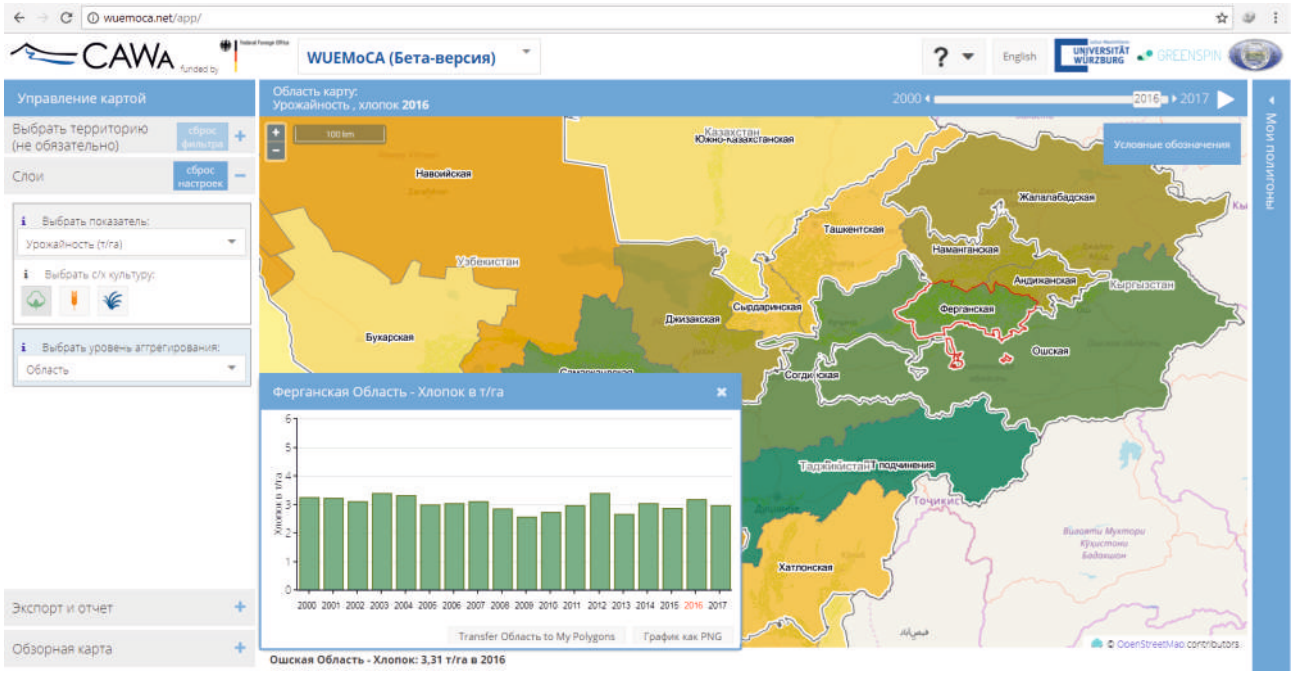
Water Use Efficiency Monitoring of Central Asia (WUEMoCA) is a system, which is based on logical, fully automated chain of information processing, which was developed by the Wurzburg University, "green spin" company (Germany) and SIC ICWC for visualization of irrigated land use, water use efficiency and crop yields (namely, cotton and wheat) through an interactive web-mapping application (WebGIS). Automatic classification and processing of MODIS images provide the data. The data on land use and yield are derived annually on all years since 2000.

Information and publications

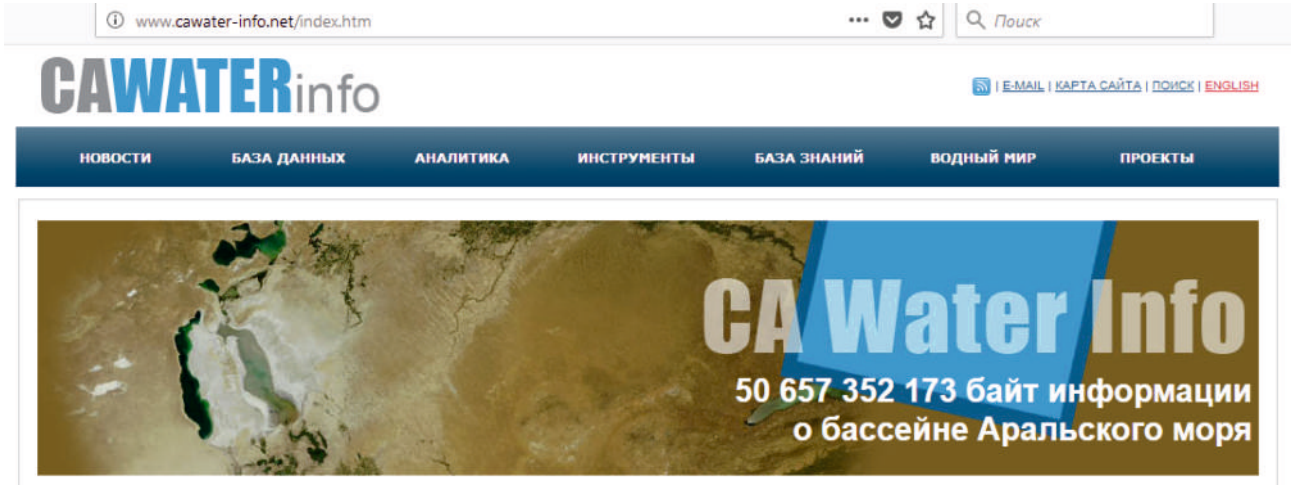
In 2017, regional web-resources such as the knowledge portal on water and ecology of CA (CAWater-Info), the websites of ICWC, SIC ICWC, and the Network of water management organizations in Eastern Europe, Caucasus, and Central Asia (EECCA) were further developed. A special website was created for the ICWC Anniversary conference. More than 20 publications on water management and law were issued and disseminated in electronic format (See Publications in 2017).

More than 1200 information items, such as monographs, articles, manuals and other publications were uploaded to the knowledge base "Water in Central Asia" (www.cawater-info.net/bk/).

The Atlas of water-management and environmental organizations in the EECCA countries was updated (http://atlas.cawater-info.net/base/index).



http://wuemoca.net



http://www.cawater-info.net/

Research and expertize

In 2017, the following projects and work were completed:

Project "Assessing Land Value Changes and Developing a Discussion-Support-Tool for Improved Land Use Planning in the Irrigated Lowlands of Central Asia" (LaVaCCA), which resulted in the assessment of land productivity and degradation in the lower reaches of the Aral Sea Basin.

The research project "Transboundary water management adaptation in the Amu Darya Basin to climate change uncertainties" (PEER Program), the results of which included a set of scenarios and options of transboundary water management in the Amu Darya Basin in the context of climate and other changes and in connection with the national plans of irrigated agriculture and hydropower development along transboundary rivers for the long-term (in form of assessments and recommendations for different stakeholders). For the first time, a detailed analysis of future water availability in the Amu Darya Basin was made and directions for future actions were outlined to avoid water crisis.

Assessment of needs and opportunities of the regional CA institutions for mutual learning, knowledge and experience exchange; generation of interactive maps on best practices on the use of water, land and energy resources and the nature in the countries of CA and on capacity building in the water sector (as part of the EU-funded CAREC Project "Promoting dialogue for conflict prevention related to water nexus in Central Asia" (CAWECOOP) (See "Water Education").

Assessment of work under the UNDP Project in Uzbekistan "Capacity and needs assessment of institutions responsible for training provision", Technical Capacity Building component of the EU Program on "Sustainable Management of Water Resources in Rural Areas in Uzbekistan. Capacities and needs were assessed of the Professional development center at the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIIAME), 12 professional colleges, 8 higher educational institutions, 5 Basin Irrigation System Administrations (BISA), 6 Irrigation System Administrations, water consumer associations in 6 pilot provinces in Uzbekistan. Finally, a package of recommendations was prepared on how to enhance capacities of the institutions assessed and draft Provisions on professional development and re-training in the water sector were developed.

Capacity building

In 2017, SIC's experts were invited as lecturers to various training events. Additionally, SIC ICWC also conducted a number of training workshops, including:

Training for water consumer associations staff in administrative and legal basics, financial and organisational matters: 31 March - 1 April, Tashkent; August-September, Khorezm, Kashkadarya, Surkhandarya, Fergana, Samarkand, and Syr Darya provinces in Uzbekistan (UNDP Project in Uzbekistan);

Training for the staff of BWO Amu Darya and its territorial divisions, the teachers, post-

graduates, and master's students of higher educational institutions in approaches to effective water management in the context of climate change, 4-5 May, Urgench, Training Center of BWO Amu Darya (PEER Project);

Training in geographical information systems and remote sensing, 8-11 November, GIS-Center of the Urgench State University (LaVaCCA Project).

International cooperation

SIC keeps maintaining cooperation with embassies, international financing institutions and organizations (WB, Asian Development Bank (ADB), United Nations Educational, Scientific and Cultural Organization (UNESCO), UNDP, OSCE, Swiss Agency for Development and Cooperation (SDC)) and takes part in activities of UNECE, World Water Council (WWC), ICID, GWP, INBO and International Water Resources Association (IWRA).

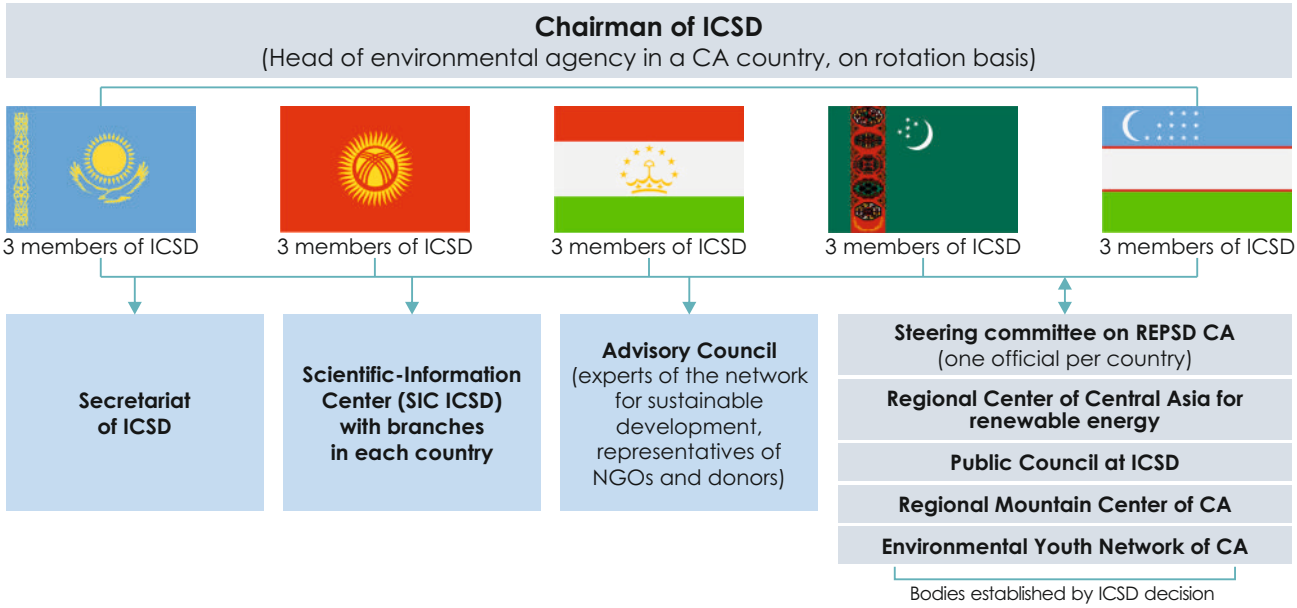
SIC took an active part in the work of ICWC working groups, preparation of discussion notes, reports, presentations, translation and organization of international events and publication of materials.

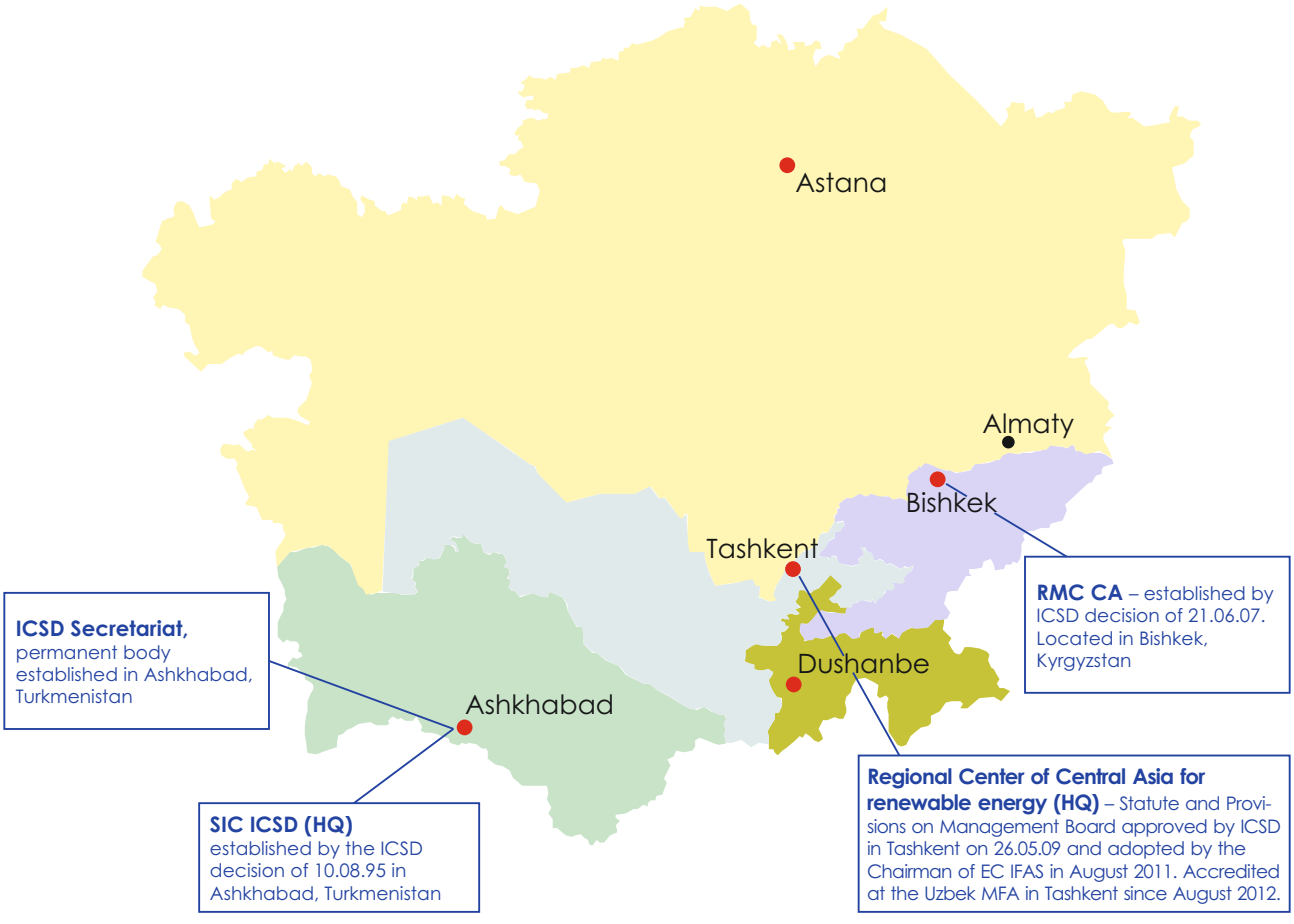
SIC continues disseminating the Russian versions of materials of WWC and INBO in the EECCA countries.

The Center also keeps playing a coordinating role in the activity of ICID working group for the countries under socio-economic transformation.

3.3. 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 Central Asian states. The organizational setup of ICSD and location of its executive bodies are shown in the figures below.





3.3.1. ICSD meetings and activities of executive bodies in 2017

In 2017, one regular meeting of ICSD was held (6-8 June, Ashkhabad) and gathered national delegations of the CA countries and representatives of international organizations, such as United Nations Environmental Programme (UNEP), EC, UNECE, CAREC, and Regional Mountain Center of Central Asia.

The Agenda covered a wide range of matters related to implementation of national environmental conservation strategies and international ecological programs and projects aimed at creation of favorable conditions for population in Prearalie, the efficient use of water and other natural resources, adaptation to climate change, etc. Particularly, the ICSD workplan for 2017 was adopted and a decision was made to pass presidency of the Commission from Turkmenistan, which coordinated regional cooperation in 2015-2016, to the Kyrgyz Republic. Reports were delivered on work plans for the next two years by the Scientific-Information Center (SIC) of ICSD and the Public Council at ICSD, RMC CA and the Regional Center of Central Asia for renewable energy (RCCA RE). It was informed that the review on adaptation of mountain systems in Central Asia to climate change was under preparation.

The meeting made a decision on the development of a **Regional Environmental Program for Sustainable Development in Central Asia** (REPSD CA) to update the Regional Action Plan on environmental protection for the five states in CA. The drafting process of REPSD CA was considered at a meeting of the regional working group that brought together representatives of IFAS bodies, state agencies and international organizations on 20-21 November in Almaty. Based on the results of discussion, a Road Map was drafted up to 2030. The Road Map sets that REPSD CA is to be developed in line with national priorities and interests of each of the five countries. In this context, ICSD together with GIZ develops a draft of Framework guidelines on promotion of country processes on the development of REPSD CA.

This draft is to be presented for discussion at one session of the Central Asian Conference on climate change on 24-25 January 2018 in Almaty. Then, through five national consultations on country positions, a draft regional program is to be prepared for further approval by the countries and presentation at the next ICSD meeting.

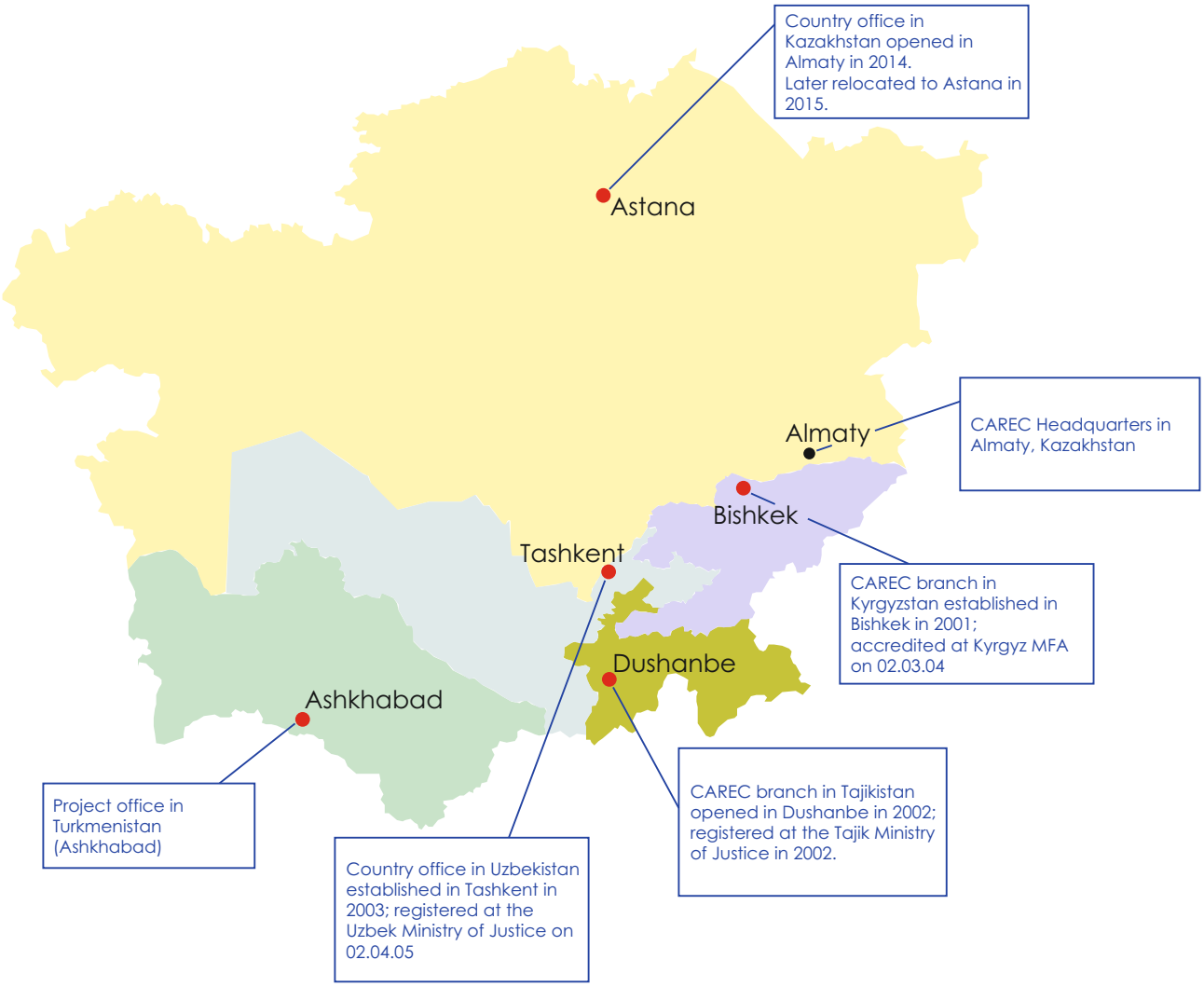
In 2017, the **Regional Mountain Center of CA**, one of ICSD bodies, in cooperation with the Central Asian experts and with the support of UNEP and GRID-Arendal finalized a regional review "Adaptation of mountain systems in Central Asia to climate change".

The Review was presented at the regular meeting of ICSD as part of the first Ecological Forum of CA (June, Ashkhabad), the 6th meeting of Working group EU-CA on environment and climate change (July, Astana) and during other regional meetings in CA. Negotiations were held with donors on regional projects on adaptation of mountain ecosystems in CA to climate change to implement conclusions and recommendations of the Review in practice.

Source: Secretariat and SIC ICSD; www.mkurca.org

3.4. Regional Environmental Center for Central Asia (CAREC)

CAREC is an independent, non-profit, non-political international organization, which assists Central Asian governments, regional and international stakeholders and partners in addressing their environmental and sustainable development issues in CA. The headquarters is located in Almaty, with the country offices operational in 5 CA states.



Most **important activities undertaken by CAREC** in 2017 include:

Central Asian International Environmental Forum on the theme "Climate change and water cooperation in the context of sustainable development in Central Asia" (5-7 June, Ashkhabad), during which first dialogue on the project "Environment for Central Asia" was launched;

Organization of participation of the CA delegation in the World Water Week in Stockholm;

Memorandums of cooperation with the Kazakh Ministry of Energy and EC IFAS and the Framework agreement with the Uzbek State Committee on Ecology and Environmental Protection;

Opening of country office in Kazakhstan;

Appointment of the CAREC Executive Director Dr. I. Abdullayev as a Special Adviser to the China Council for international cooperation on environment and development for the period 2017-2021.

Program and research activities of CAREC in 2017 were carried out within the following programs:

Water Initiatives Support Programme (WIS), which focused its activities on the following topics: Transboundary cooperation and promotion of the IWRM principles; Water diplomacy and platform for cooperation; Promotion of innovative approaches and practices; Capacity building and scientific exchange.

Climate Change and Sustainable Energy Programme (CCSE) continued to work on the Climate Adaptation and Mitigation Program for Aral Sea Basin (CAMP4ASB) Project and PRISE ("Pathways to Resilience in Semi-Arid Economies") research initiatives in Tajikistan.

Education for Sustainable Development Programme (ESD). The 8th Central Asian Leadership Programme on Environment for Sustainable Development (CALP) was held; also the programme worked on UNESCO regional project: "Sustainability Begins with Teachers in CA", "Innovation Academy of Samsung in the Republic of Uzbekistan".

Environment and Health Programme (E&H). Partnership was established with the European process "Environment and Health", supported by WHO, UNECE and UN. At the regional level, an updated concept of the E&H programme has been finalized and disseminated among a broad range of stakeholders. At the national level, the training course "Medical Ecology" was developed (Uzbekistan).

The Environmental Management Programme (EMP). A Project "Central Asian Dialogue on Using Opportunities of Multi-Sectoral Funding through Enhancing Interaction "Water-Energy-Food".

Source: CAREC Annual report 2017

3.5. The platform of interaction between regional organizations

In 2015, EC IFAS and CAREC initiated a platform for interaction of Central Asian regional organizations working on sustainable development and water management issues. The main goals of the platform are better coordination of activities of the regional organizations, exchange of information and lessons, joint development and implementation of regional projects, and building capacities. In 2017, three meetings of regional organizations were held, and the opportunities and needs of the CA regional organizations for capacity building assessed.

3.5.1. Meetings of regional organizations in 2017

At its fourth meeting on 16-17 March in Almaty, regional organisations supported the launch of the process "Environment for Central Asia" and their involvement in organization of the Central Asian Environmental Forum on 5-7 June in Ashkhabad. Concrete actions were outlined for promotion of jubilee events on the occasion of the 25th ICWC Anniversary and changing the current format of meetings of the regional organizations.

At the fifth meeting on 4-5 September in Tashkent organized by SIC ICWC the participants discussed how to strengthen regional organizations and their work with key stakeholders and the public to promote integrated water resources management and sustainable development and how to build capacities of regional organizations. They emphasized a need for a meeting of regional organizations to be organized by the newly established EC IFAS in Ashkhabad.

The sixth meeting was held by EC IFAS on 13-14 November in Ashkhabad with the aim to coordinate joint efforts in implementing proposals stated in the Concept of Turkmenistan's chairmanship in IFAS and other matters of sustainable development of mutual interest. Particularly, revision of the Regional Action Plan on environmental protection (RAPEP) was addressed and the Program of Actions to provide assistance to the Aral Sea Basin countries for 2011-2015 (ASBP-3) and elabora-

tion of ASBP-4, and opportunities for interaction and cooperation with international organizations in implementation of the Concept, regional processes and programs were discussed.

3.5.2. Assessment of opportunities and needs of the CA regional organizations for capacity building activities

In 2017, the opportunities and capacities of regional organizations for mutual learning, information, experience, and knowledge exchange, and cooperation under regional and international processes and projects have been assessed.

This assessment showed that most regional organizations in CA had highly qualified staff with substantial experience and expert knowledge on different topics of sustainable development and water management, scientific and methodological basis, as well as conditions for training workshops and experience in training activities.

Since financial possibilities of regional organizations are limited, the mutual learning approach could be one of the forms of capacity building, stronger ties and cooperation.

As a result of the assessment, the topics of potential training workshops were determined, organizations that need training and that have capacities (i.e. methodological and scientific bases and lecturers) for organization of training were identified, and the knowledge base on thematic directions for future joint regional projects was created.

A matrix of opportunities for mutual learning, knowledge and experience exchange between regional organizations in various topics and fields of their activity was developed. As a next step in this direction, it is necessary to elaborate a program on capacity building of regional organizations.

The assessment was conducted by SIC ICWC as part of the EU-funded CAREC Project "Promoting dialogue for conflict prevention related to water nexus in Central Asia" (CAWECOOP).

The survey covered the following organizations: RCH, EC IFAS, Secretariat of ICSD, EC IFAS, RMC CA, RCCA RE, Secretariat of ICWC, SIC ICWC, BWO Syr Darya, BWO Amu Darya, and CAREC.

Section 4

Bilateral water cooperation between the states in Central Asia

4.1. Kazakhstan – Kyrgyzstan

High-level meetings

Matters related to water and energy cooperation were addressed in negotiations between the President of Kazakhstan and the President of Kyrgyzstan on the 25th of December 2017. The Parties re-affirmed the common nature of water resources from the CA transboundary rivers for all states of the region.

Source : www.akorda.kz

Cooperation within the Chu-Talas Water Commission (CTWC)

Bilateral water relations between Kazakhstan and Kyrgyzstan are regulated by the Agreement on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas (21 January 2000, Astana). Under Article 2 of the Agreement, water management facilities of the intergovernmental status include: Orto-Tokoyskoye water reservoir on the Chu River; By-Pass Ferroconcrete Chu Canals on the Chu River from Bystrovskaya HPP to Tokmok; Western and Eastern Bolshoi Chu Canals with structures; Chumysh Hydrosystem on the Chu River; Kirovskoye Water Reservoir on the Talas River. Water is allocated according to Regulation "On flow allocation in the Chu River" and Regulation "On flow allocation in the Talas River" approved by Deputy Minister of Land Reclamation and Water Resources of USSR on 23 February 1983. Water resources are allocated between Kazakhstan and Kyrgyzstan in the following ratio: 50/50 – the Talas River; 42/58 – the Chu River.

The Commission held 23 meetings from 2006 till 2017. The 23rd meeting of the Commission was held in Taraz (Kazakhstan) on the 26th of April 2017. Issues discussed at the meeting include: maintenance of facilities of intergovernmental status on the Chu and Talas, agreement and approval of water withdrawal limits, results of activities of working groups on environmental protection, adaptation to climate change and long-term action programs, and implementation of international projects with the support of the Commission.

On the 19th of September 2017, the International Conference dedicated to 10th Anniversary of CTWC was held in Bishkek and the Day of River in the basins of the Chu and Talas rivers was celebrated.

In 2017, as part of CTWC activities:

- the GEF/UNDP/UNECE project on Enabling Transboundary Cooperation and Integrated Water Resources Management in the Chu and Talas River Basins was continued. The Transboundary Diagnostic Analysis (TDA) was developed that identified key transboundary problems in the basins. Now the work on the Strategic Action Programme is underway for solution of problems identified in the analysis;
- 4th and 5th meetings of the joint Working group on environmental protection at the Commission's Secretariat were held. The group decided to develop legal framework and technical and methodological base for surface water quality management and harmonization of surface water quality monitoring systems. Given scenarios are shown in the Transboundary Diagnostic Analysis (TDA), section 4.4 "Impact of trends and future scenarios";
- the Working group on adaptation to climate change and long-term action programs had three joint meetings. The Group was formed under decision of 22nd CTWC (30 November 2016, Bishkek);
- The Program of cooperation with the International Commission on the Sava River Basin was underway for organization of exchanges.

Source: Ministry of Agriculture of RK, CTWC

4.2. Kazakhstan – Turkmenistan

High-level meetings

On the 18th of April 2017, summarizing the results of negotiations between the Presidents of Kazakhstan and Turkmenistan, the President of Kazakhstan in his statement to the press noted that water and energy issues as well as enhanced activity of ICWC had been particular topics of discussion. The Heads of State recognized that transboundary water resources in CA were common good and that the lives of tens of millions in the region depended on wise use of these resources.

Following the state visit of the President of Turkmenistan to Kazakhstan, in particular, the following documents were adopted:

- Joint statement of the President of Kazakhstan and the President of Turkmenistan;
- Treaty on strategic partnership between the Republic of Kazakhstan and Turkmenistan;
- Agreement between the Government of Kazakhstan and the Government of Turkmenistan on the Kazakh-Turkmen Intergovernmental Commission.

Source: www.akorda.kz

4.3. Kazakhstan – Uzbekistan

High-level meetings

On the 23rd of March 2017, following the meeting of the Presidents of Kazakhstan and Uzbekistan, an agreement was signed between the Government of Kazakhstan and Government of Uzbekistan on inter-regional cooperation.

On the 29th of April 2017, during a meeting of the Presidents in South Kazakhstan province, the President of Uzbekistan noted that intensity of bilateral meetings had a direct impact on effectiveness of interstate relations and underlined that after his visit in May same year the Heads of State adopted a Roadmap on all areas of cooperation.

In September 2017, the President of Kazakhstan visited Uzbekistan. During media briefing he informed on discussion related to water issues with the President of Uzbekistan. The Head of State underlined that the issue was exceptionally important for further development in the whole Central Asian region and that transboundary water resources in CA were the common good for all nations in the region.

The President of Kazakhstan also focused on the results of discussion with the President of Uzbekistan on the situation around the Aral Sea. It was emphasized that IFAS, which would celebrate its 25 anniversary in 2018, was the only interstate mechanism of cooperation on the Aral Sea problem. In this context, the unity of opinions on a need to activate the Fund operations was affirmed. Additionally, it is planned to hold a high-level meeting in 2018 and discuss mutually acceptable ways for solution of the common problem.

As part of the state visit, in particular, the following documents were signed:

- Roadmap on water cooperation;
- Joint statement of the President of Kazakhstan and the President of Uzbekistan.

Source: www.akorda.kz

Meetings of the working group on water management issues

In November 2016, a Kazakh-Uzbek working group was formed to develop proposals on strengthening bilateral water cooperation. The Uzbek side is headed by Deputy Minister of Water Resources Mr. Sh.Khamraev, while the Kazakh side is chaired by the Vice-Minister of Agriculture Mr. E.Nysanbayev. The working group addresses issues related to water use in the middle and lower reaches of the Syr Darya River, in other transboundary water basins located in the territories of the both states and paves the ways for further improvement of bilateral cooperation.

By January 1, 2018, four meetings of the working group were held. First meeting was held on 9 December 2016, the second one – on 15 February 2017 in Chimkent, the third one – on 12 April 2017 in Tashkent, and the fourth one – on 7-8 November 2017 in Astana. During those meetings, the group dealt with issues related to management, sharing and protection of water resources in transboundary sources between Kazakhstan and Uzbekistan.

Source: http://mfa.uz, http://podrobno.uz/
MAWR RUz

4.4. Kyrgyzstan - Tajikistan

High-level meetings

On the 6th of November 2017, the meeting between the President of Tajikistan and the Prime-Minister of Kyrgyzstan took place. During the meeting the parties addressed matters related to cooperation in the field of efficient use of transboundary rivers crossing the territory of the countries.

Source: www.president.tj/ru/node/15731

4.5. Kyrgyzstan – Uzbekistan

High-level meetings

On 5-6 October 2017, the President of Kyrgyzstan made the state visit to Uzbekistan. During the state visit the following documents were signed among others:

- Memorandum of understanding between the publicly owned joint-stock company "National energy holding company" of KR and the joint-stock company "Uzbekgidroenergo" of RUz on cooperation in the Kambarata HPP-1 construction project;
- Agreement between KR and RUz on confidence-building measures at the state border;
- Agreement between the Government of Kyrgyzstan and the Government of Uzbekistan on the interstate use of the Orto-Tokoyskoye (Kasansai) reservoir in Ala-Buka district, Jalal-Abad province in Kyrgyzstan;
- Contract between the publicly owned joint-stock company "National energy holding company" of KR and the joint-stock company "Uzbekgidroenergo" of RUz on electricity supplies from Kyrgyzstan to Uzbekistan.

Statement to the press

The Heads of State made a statement to the press during the state visit of the President Almazbek Atambayev to Uzbekistan. The President of Kyrgyzstan considered taking the boundary issue off the table and intention to build jointly Kambarata-1 as a merit on Uzbek President's part.

On 13 December 2017, in particular, the following documents were signed during the official visit of the President of Kyrgyzstan to Uzbekistan:

- Joint statement of the President of Kyrgyzstan and the President of Uzbekistan;
- Plan of measures as part of cooperation between national ministries of emergencies in the area of emergency prevention and recovery for 2018.

Source: www.president.kg

4.6. Tajikistan – Turkmenistan

High-level meetings

On 2 November 2017, during the official visit of the President of Turkmenistan to Tajikistan a package of documents was signed to strengthen the legal framework of bilateral relations. The documents included, in particular: the Treaty on strategic partnership and the Joint statement of the Presidents. In their Joint statement, the Presidents emphasized the importance of further development of cooperation in the field of efficient water and energy use.

Source: www.president.tj/ru/node/16500

4.7. Tajikistan – Uzbekistan

Bilateral working group on water issues between Uzbekistan and Tajikistan

A working group on matters related to efficient water and energy use was formed between Uzbekistan and Tajikistan in 2016. First meeting of the working group was held on 17-20 October 2016 in Tajikistan, the second one – on 15-16 November 2016 in Tashkent. The Parties discussed the aspects of water sharing in the basins of the Amu Darya and the Syr Darya.

Source: MAWR RUz

4.8. Turkmenistan – Uzbekistan

High-level meetings

In March 2017, the President of Uzbekistan made a state visit to Turkmenistan. Following the negotiations, a number of documents was signed, including Treaty on strategic cooperation, Treaty on economic cooperation over 2018–2020, Agreement on cooperation on water related issues between the Ministries of Agriculture and Water Resources of Uzbekistan and Turkmenistan, Agreement on cooperation between the Ministry of Agriculture and Water Resources of Turkmenistan and AO "Uzagrotehsanoatholding", Memorandum of understanding on further facilitation of cooperation in the agricultural sector between the Ministries of Agriculture and Water Resources of Turkmenistan and Uzbekistan.

Under the Treaty on economic cooperation over 2018–2020, the parties will allow for, in particular:

building consensus on cooperation in the field of environmental protection and efficient nature use, including in water and energy management and use in transboundary river basins in Central Asia, as well as in overcoming the ecological crisis and improving socio-economic situation in the Aral Sea basin;

facilitating, in line with established procedures, entrance, exit and stay of operational staff, motor transport and mechanisms used on water and energy facilities in the territory of the Parties.
(Article 6).

In line with the Agreement on cooperation on water-related issues, the Parties, in particular, agreed to develop cooperation in order to take joint actions for sustainable transboundary water management and improvement of water availability in the Amu Darya River Basin and take measures for efficient implementation of international treaties (Article 1).

On 19-20 May 2017 the President of Uzbekistan made a working visit to Turkmenistan. The parties underlined priorities of cooperation in such areas as agriculture, chemical and metallurgical industry, water facilities operation, and tourism. Heads of relevant ministries and departments of the two countries were entrusted to fulfill consistently reached agreements.

Source: http://tdh.gov.tm, http://president.uz, http://narodnoeslovo.uz/

Trilateral working group on water-related issues

Cooperation on water-related issues between Uzbekistan and Turkmenistan is maintained through the trilateral working group, which includes BWO Amu Darya as well. The parties address matters related to joint use of watercourse in a constructive way and in the spirit of mutual trust and recognition of interests of each other. As of January 1, 2018, the group held 181 meetings, including 11 meetings in 2017.

Section 5

Key water developments in the countries of Central Asia

5.1. Kazakhstan Overview

General information

Territory. 2, 724,900 km^2 (9th place in the world). Most of the territory of the country is occupied by desert (44%) and semi-desert (14%). Steppes cover 26 % of the Kazakh terrain, while forests occupy 5.5 %. By administrative division, the country is divided into fourteen provinces and two cities of the "state importance".

Climate. The extreme continental climate of the country can be explained by its remoteness from oceans. The average temperature in January varies from −19 °C in the north to −2 °C in the south, while the average temperature in July ranges from +19 °C in the north to +28 °C in the south. Summers are warm and dry and winters are cold and snowy.

Population. By the beginning of 2018, the population was estimated at 18.1 millions, of which 48 % men and 52 % women.

Natural resources. Kazakhstan is the top zinc, tungsten and barium sulphate producer in the world . The country also has vast petroleum and gas reserves mostly found in its western regions. Nowdays, Kazakhstan is considered to be the one of the leading oil ountries in the world.

Economy. In 2017, the GDP growth in the country reached 4%. In 2017 a foreign trade turnover was $69.5 million. Productoin of mining, fuel and energy, metallurgical, chemical and agriculture industries are the main export commodities. Hystorically, agriculture development is one of the priorities in the country. Kazakhstan is among the ten leading exporters of grain and one of the leaders in flour export. 70% of cropland in the north are covered by grain and technical crops, such as wheat, barley, and millet. The leading subsector of agriculture is the livestock farming which focuses mostly on breeding cattle, horses, camels and pigs.

Water resources. Due to its its geographical location, Kazakhstan experiences a shortage of water. Glaciers are the main sources of rivers in Kazakhstan. There are 8,500 rivers in the country, and Irtysh, Ishim, Ural, Syr Darya, Ili, Chu, Tobol, etc are the major ones. There are 48,000 large and small lakes. The major lakes are the Caspian Sea and the Aral Sea. Balkhash, Zaisan, and Alakol are the largest lakes are. The Aral Sea is shared by Kazakhstan and Uzbekistan.

The territory of Kazakhstan can be divided into eight water-management basins:

1. Aralo-Syr Darya water management basin;
2. Balkhash-Alakol water management basin
3. Irtysh water management basin;
4. Uralo-Caspian water management basin;
5. Ishin water management basin;
6. Nura-Sarysus water management basin;
7. Shu-Talas water management basin;
8. Tobol-Turgai water management basin.

The unit water supply of the Republic of Kazakhstan is 37,000 m^3/km^2 or 6,000 m^3 per capita a year. The total river water resources are 101 km^3, of which 57 km^3 are formed on the territory of Kazakhstan. The rest of the water from neighboring countries: Russia - 8 km^3; China - 19 km^3; Uzbekistan - 15 km^3; and, Kyrgyzstan - 3 km^3.

Water resources management is implemented by the Committee for Water Resources of the Ministry of Agriculture of Kazakhstan.

Latest developments in legislation

In February 2017, the State Program for agro-industry development in Kazakhstan was adopted for 2017-2021. Based on the analysis of the existing problems, the Agro-industry Expansion Roadmaps were developed during in 2017 for each region. The Law On amendments and additions to some legislative acts of the Republic of Kazakhstan on the flora and fauna issues was enacted. This law is aimed to improve the legislation related to flora and fauna protection, conservation, reproduction and use.

Flood control

Annually, different regions of Kazakhstan are suffering of floods that cause substandial damage. The insufficient flow capacity of downstream springs, rivers, and canals used for water discharge are among the reasons of

causing floods. During the 2017 flood season all necessary **preventive measures** were implemented; however, as the Kazakh Minister for Internal Affairs reported at the Governmental Meeting, not all large reservoirs had been ready for the safe bypass of flood water. According to him, free storages in reservoirs during the flooding periods should be ready to regulate the streamflow safely.

The **four-year master plan for flood prevention and elimination** has been developed in Karaganda region for the period of 2017-2020. The plan includes dredging and bank protection work, protective dams, capital repair of bridges and pipe culverts and other measures to prevent flooding. Regional authorities decided to divert the course of the Nura River in order to prevent the possible damage during thespring floods of 2018. In 2017, the local flood warning systems were installed in Zhana-Arka district of the region. By 2020 it is planned to install such systems in all settlements and district centers.

Water facilities and construction

Shardara HPP. Replacement of all hydroagregates and equipment at the Shardara hydropower plant (HPP) under the modernization program to be completed in 2018, would extendthe operation service of this hydropower plant for another 50 years. The plant has been operating successfully as part of the Naryn-Syr Darya cascade of the hydropower stations providing with irrigation water the South Kazakhstan and Kyzylorda regions.

Additional 20 reservoirs with possible accumulation of almost 2 billion m^3 of water will be built in seven regions of Kazakhstan. The project cost is estimated for 57 billion tenghe. 15 emergency reservoirs are under rehabilitation, of which in 7 the work was completed in 2017.

The **capital repair** has been started **in the Char reservoir** in the Eastern Kazakhstan. Formerly, that reservoir used to umulate almost 80 milion m^3 and irrigated 1,800 ha of land. The Kazakh Government has allocated 1.6 billion tenghe to implement this work. After the reconstruction of canals, dam embankment and other necessary activities, the irrigated land area is planned to be extended by 6,000 ha.

Irrigation and land reclamation

Kazakhstan is planning to attract investments for rehabilitation of 481,000 ha of irrigated land. In particular, loan agreements were signed with the European Bank for Reconstruction and Development (EBRD) and the Islamic Development Bank (IDB) for irrigation rehabilitation on 128,000 ha and drainage restoration on 101,000 ha for a total amount of more than 102 billion tenghe. Investment proposals are being developed for the rest of 481,000 ha. of land.

Irrigated land reclamation in Kyzylorda province. Funds from international financial institutions for land reclamation projects are being raised in Kyzylorda province. It is planned to reclaim 188,400 ha of available 238,600 ha of irrigated land in the region through international institutions' funds. 180,000 ha land have been used in crop farming this year, which is in 10,000 ha more than last year. Irrigated land expansion is achieved through hydrotechnical structures, including the Kyzylorda hydrosystem. As part of the Irrigation and Drainage Improvement Project Phase 2 initiated by the Ministry of Agriculture, it is planned to rehabilitate 15,000 ha of irrigated land in Zhalagash district, Kyzylorda region.

Agriculture

In Kazakhstan, **agricultural GDP amounted** to 3,880.3 billion tenghe in January-November 2017. This is 2.3% higher than the same period of the last year. Agricultural production growth can be explained by an increase in crop production by 1,4 %, cattle and poultry slaughtering by 5.2%, milk yield by 2.9 % and eggs by 6.7 %.

Grain yield. In 2017, the total cultivated land was 22.1 Mha which is 651,000 ha higher than in 2016. Production of crop requiring high amount of water was reduced. Spring sowing covered 18.7 Mha. In general, yields of spiked cereals in 2017 were forecasted at the average level of 12.6 centner per ha, with the gross harvest of grain 19.2 Mt. By 30 October, grain harvesting was fully (100%) completed. Given the average yields of 14.4 centner/ha in the current year, farmers of the country have harvested more than 22 Mt of grain.

Increase in oil crop and lentil acreage. The acreage of oil crops were record-breaking and exceeded 2 Mha in 2017. The planned planted lands of those crops increased from 1,901,800 ha in 2016 to 2,310,600 ha in 2017. In fact, 1,956,400 ha and 2,377,500 ha were planted accordingly. The plan was 102.9 % exceeded in 2016 and 2017. The lantil-planted land extended three times as much: from 105,000 ha to 295,000 ha. Horticulture development is increasing in the South Kazakhstan region. As

the regional authority reported, the total horticulture area is expected to reach 2,000 ha.

In 2017, 777 agricultural cooperatives were established in Kazakhstan and covered about 85,400 of private subsidiary farms and peasant farms. Cooperatives will provide centralized services related tocattle slaughtering, veterinary, forage production, agrochemistry, and delivery of production to the places of processing and sale. The above measures will help to increase the load of processing entreprizes by average 30% and reduce the trade margin between producer and consumer.

By 2021, Kazakhstan plans to increase food export by 40% through agricultural diversification. To achieve the goal, the Ministry of Agriculture should implement 6 conditions:
1) revise the subsidy allocation principles;
2) establish new cooperatives;
3) increase the level of agricultural production processing;
4) improve productivity and reduce production costs through modernization and application of the advanced agricultural technologies;
5) improve land use efficiency and increase of irrigated land by 40% in the next 5 years;
6) increase investments in research in agricultural field.

For development and enhancement of **export opportunities in the agroindustrial sector** for the period of 2017-2020 in Kyzylorda region, it is planned to implement 99 projects for the total amount of 30 billion tenghe. The European Investment Bank and AO "Agrarian Credit Corporation" have signed a financial contract for the amount of 100 million Euro for lending and credit of small- and medium-scale agroindustries in Kazakhstan.

Hydropower and other renewable sources

Kazakhstan has set the target to reduce greenhouse gas emmissions by 15% of the 1990 level by 2030. At the same time, there is more ambitious goal to reduce the total national emissions by 25%. Consequently, it is necessary to reduce the emissions by 73 Mt of CO_2 in the republic. Among various measures to implement this is the expansion of renewable energy sources. Thus, by 2020, the share of wind and solar powered stations would reach about 7% of the Kazakhstan's power system installed capacity, with the share in energy generation would be about 3%. In 2017, the first 12 MW solar power station was constructed in Mangistou region together with French engineers and Chinees investors. The pilot green energy project is to be put in operation as early as in the first quarter of 2018.

The largest Central Asian 200 MW solar power station for the total amount of about 300 million Euro is to be constructed by TOO «Duesun Taraz» in Zhambyl region.

The World N1 Project, which will use solar power for railway transport, was launched in Saryagash district, South Kazakhstan region. The foundation of the construction producing 20 MWt electricity a day was laid in rural district of Zhilga on the total area of 41 ha. The Project for the total amount of 14 billion tenghe is under implementation by the TO "EC PROTECH-ASTANA".

200 MW solar power station "KUNNURY" will be constructed on 300 ha-piece of land in Otyrar district, South Kazakhstan region by the "Zindao Bayhay"Chineese company.

The 2.5 MW mini hydropower station "Mankent" on the Aksu Lake and a 1 MW/hour solar power station have been put into operation in the Sayram district, South Kazakhstan region.

28.5 MW HPP along the Kora River is the second after the Maynak HPP (on the Charin river) high-capacity diversion power plant built in Almaty region. The project, cost 7.1 billion tenghe, has been fully financed for the enterprise' funds.

AO "Development Bank of Kazakhstan" has started financing of the **24.9 MW Turgusun hydropower project** in Eastern Kazakhstan region. The total project cost is 11.6 billion tenghe.

EBRD will allocate €1 billion to Kazakhstan for the green energy projects and provide training assistance for the specialists working in oil-and-gas and mining industries. For the period of cooperation with the EBRD, 222 projects for the total amount of more than USD 7 have been implemented in Kazakhstan.

Over the last five years, the **European Investment Bank has allocated** €500 million for the development of green and renewable energy projects.

Seven green energy projects are being developed in the Karaganda region. All these innovation projects have been shown at the international exhibition "EXPO-2017" at the "Nur

Alem" pavillion. Three of the above projects have been already completed. The project is fully financed from Europenian Union countries direct investments and is also supported by the governmental and private investment facilities of Germany, Czech Republic and Slovakia. In particular, a biogas plant for processing of organic wastes with the purpose to receive electric and thermal energy and organic fertilizers has been put into operation in Dubovka settlement. Mini 570 kW HPP was commenced at the Intumak reservoir. The energy generated by HPP is transmitted to the public electric grid of the Amangeldy settlement through the "Karaganda Zharyk" transmission lines And the third project is the innovative gas treatment system "ABsalut-ecology", which helps to resolve of the regional energy problems through the high-tech cleaning of industrial emissions.

Environmental protection

Over the period of January-August 2017, 14.3 billion tenghe have been invested for the environmental protection actions. That was 32.5% more than in the same period of the last year. The highest amount of investments was given to to the Western Kazakhstan, Atyrau and Eastern Kazakhstan regions.

Massive fish death was recorded in the area of the Kokaral dam downstream on 7 to 8 August 2017. The possible reason of death in the Aral Sea could be the breach of rules for fishstock protection. Experts think that huge inflow to the lower reach of the Syr Darya River, including the Small Aral could also be the reason of this tragedy. "As a result of such situation accompanied by hot weather and reduced water discharge, 210 tons of young fish were lost. In this context, environmental prosecutor's office of the Kyzylorda region has initiated a criminal case by article 336 (breach of fishstock protection rules) and article 371, part 2 (negligence) of the Criminal Code of Kazakhstan".

Foreign policy and cooperation

In 2017, the Kazakh Ministry for Foreign Affairs held about 300 events and prepared more than 500 visits of foreign entrepreneurs to Kazakhstan. Mr. N.Nazarbaev in his new publication "The Age of Independence" marked 2017 as a year that opened a new chapter in the country's foreign policy. Among the key developments of the year related to the foreign policy are:

Start of Kazakhstan's membership in the UN Security Council for the period of 2017–2018, with the January chair in the Security Council (see Section UN Security Council).

The Astana negotiation process for Syrian conflict resolution.

Success of the "EXPO-2017" Exhibition, with the participation of 115 countries and 22 international organizations.

Historical summits of the Shanghai Cooperation Organization and the Islamic Cooperation Organization held in Astana in June and September.

Establishment of the International Water Assessment Centre

The International Water Assessment Centre (IWAC) was established in July 2017 in Astana as a branch of the TOO "Geography Institute". The core funding of the IWAC is provided from the government budget of Kazakhstan. Kazakhstan is making its contribution to the international community through the work of the Centre and becoming an international scientific hub on regional and global water problems. Activities of IWAC will be particularly focused on protection and sustainable use of transboundary water resources in Kazakhstan's neighboring countries and other countries of Central Asia, as well as in the UNECE countries and beyond.

Transboundary water cooperation between Kazakhstan and China in 2017

Water relations between the Republic of Kazakhstan and the People's Republic of China are governed by the Inter-governmental Agreement on Cooperation in Transboundary Water Use and Protection (12 September 2001, Astana). For implementation of the Agreement, a Kazakh-Chineese Joint Commission for transboundary river use and protection and an expert working group were established. The Joint Commission and the working group have meeting once a year. From their establishment in 2003 till 2017, 15 meetings of the Joint Commission and 14 meetings of expert working group have been conducted.

In November 2017, the Agreement between the governments of Kazakhstan and China on reconstruction of Kazakh-Chineese joint water

intake structure on the Sumbeh River was signed in Beijing. The countries will finance the project in equal shares. The project works started 26 December.

In June 2017, the Agreement between the Governments of Kazakhstan and China on construction of the mudflow protection dam Chukurbulak on Khorgos River was signed in Astana. The financing of the Project will be implemented in equal shares.

Major information sources:
Official web-sites of the President of Kazakhstan (www.akorda.kz),
the Ministry of Agriculture (http://mgov.kz),
the Ministry for Foreign Affairs (http://mfa.gov.kz),
the Committee for Water Resources (http://mgov.kz/ru/komitet-povodnym-resursam-msh-rk/),
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5.2. Kyrgyzstan Overview

General information

Territory. The total area is 199,900 km^2, of which land area is 191,800 km^2 and water area is 8,100 km^2. The highest terrain point is Pobeda Peak (7,439 m). Administratively, Kyrgyzstan is divided into seven regions, such ass: Jalal-Abad, Isyk-Kul, Naryn, Osh, Talas, Chuy, and Batken.

Population. Beginning of 2018, the population was 6.1 million, of which 2.1 million or 33.8 % urban population and 4.1 million or 66.2% rural population.

Economy. By the World Bank's assessment, for the period of first nine months of 2017 the actual GDP increased by 5% comparing to 2016. Economic growth in 2017 is estimated at 3.5%. Considering slow-down in gold production due to geological factors, economic activity decreased in the second half of the year. It is expected that production growth would be be slightly higher than 4% in the mid-term.

Climate. The climate is continental. In July, the average temperature varies from 17 to 27 °C in the valleys (maximum temperature may exceed 40 °C), whereas at the altitude of 3,000 meters above the sea level the temperature is not more than 10 °C. In winter time all regions of the country face freezing weather. The largest amount of precipitation is recorded in mountain areas, mainly as snow, with the maximum level of 1,000 mm in the mountainside of the Fergana Valley. Precipitation level varies within 250-500 mm in Talas province: from 200 mm in the western part of Issyk-Kul Lake, and up to 600 mm in the eastern part of Issyk-Kul Lake.

Rain and snow usually fall during autumn, winter and spring. The potential annual evaporation level is recorded from 200 mm at a high altitude (more than 3,500 m) to 1,600 mm in lowlands. Evaporation in main irrigated areas varies from 1,200 to 1,600 mm, considerably exceeding the average precipitation level (400 mm). The climate seriously ifluences on the natural and anthropogenic ecosystems. Changing of climate is one of the major factors in biosphere evolution.

Water resources. Freshwater resources in mountain glaciers are estimated at 650 km^3. The area of current glaciation is 4% of the Kyrgyzstan's territory and varies within 750,000-800,000 ha or 7,500-8,000 km^2, including: the Sary-Zhaza and Kakshaala basins (3.5 km^2); Naryn, Kara-Darya and other sources of the Syr Darya (2.4 km^2); and Chu, Talas and Issyk-Kul (1.5 km^2). The rivers' outflow formation takes 7% of the territory of Kyrgyzstan, with the runoff exceeding 47 billion m^3 /year. The amount of annually renewable groundwaters in the main artesian basins is within 250 m^2/s or 7.7 billion m^3.

Energy. There are 18 power plants in the Republic of Kyrgyzstan, including 16 HPPs and 2 thermal electric power stations (TEC) located in the cities of Bishkek (666 MW) and Osh (50 MW). The electric power system of Kyrgyzstan comprises the transmission lines of 0.4-500 kW with the total length of 86,800 km. Considering the geographical location of Kyrgyzstan and its nature-and-climate conditions, the territory of the country is divided into seven economic regions with two industrially developed cities. Kyrgyzstan's energy system can generate, transmit and distribute the electricity not only within the country but also export, import and interchange the electricity to the neighbouring states, as well as cover the power deficiency and the on-peak load in energy grids of the Central Asia regions. In terms of hydro-resources, Kyrgyzstan is number three among the CIS countries after Russia and Tajikistan. Thus, the development of huge hydropower potential, which is about 142 billion kWh, is the main strategy of the national energy develop-ment program. As many as 31 hydropower plants could be potentially built along the Naryn River and its tributaries with annual energy generation of more than 16 billion kWh. Attraction of private investments within the country and from international sources plays an important role in development, construction and rehabilitation of HPS situated on the outflows areas of the small rivers of Kyrgyzstan.

The state agency responsible for water resources management is the Department of Water Resources and Land Reclamation (DWRLR) of the Ministry of Agriculture, Food Industry, and Land Reclamation of the Republic of Kyrgyzstan. The Department provides governance, monitoring and regulation of the conditions and use of water resources through the irrigation and drainage infrastructure, and fulfills ministerial and coordinating functions on the implementation of the unified state water policy.

Irrigated area and water-management system. The Kyrgyz Republic has 1,023,000 ha of irrigated land, of which 240,000 ha are equipped with the collector and drainage network. Reclamation-wise, the conditions of about 87,000 ha of irrigated land are very poor.

The water-management system is comprised of 34 reservoirs for irrigation purposes and approximately 400 basins for daily and decade flow regulation with the total volume of about 2 billion m^3, 28,900 km of irrigation canals, including 5,700 km of of inter-farm canals (which are on the balance sheet of the DWRLR) and 23,200 km of on-farm canals (being on the balance sheet of the local administration of Aiyl Okmotu, water-users association and other acting legal entities). There are 274 irrigation systems, 93 accumulating irrigation structures, and 219 pumping stations (of which 111 electrified) being on the balance sheet of of the DWRLR. The length of collector-drainage network is 5,705 km, 1,187.1 km of which are on the balance sheet of the DWRLR, 460.7 km are on the balance sheet of the WUA and 4,057.2 km are on the balance sheet of Aiyl Okmotu.

Latest developments in legislation

Certain improvements have been made to legislation in part of water and land management in 2017. In particular, it includes the following:

Water Code and Law On Water have been amended:

The amendments made by the Law No.54 of 6 April 2017, bring the provisions of water legislation in accordance with the Law On the Basis of administrative activity and administrative procedures. The above-mentioned Law provides an order of appeals against acts. Amendments made by the Law No. 193 of 23 November 2017, would allow the entities contributing to the country economy and regional development, whose activity has an impact on glaciers, implement the activity on prospecting and development of mineral resources, however, with obligatory transfer of glacial mass located in place of mining to another place. Additionally, in accordance to the amendmends to the Article 62, big taxpayers and budget-generating companies on exceptional basis are allowed to implement activity affecting glaciers, provided the maximal possible mitigation of damage and control over glacial status.

The Concept for conservation and improvement of fertility of agricultural land was adopted for 2017-2020 (PP KR No. 414 of 30 June 2017). The main objectives of the Concept are continuos reproduction of agricultural land fertility, improvement of nutrient balance in the soil, and achievement of seady crops. The Concept's priorities include maintainance of favorable environment and consolidation of land for intensive farming.

The State Program for irrigation development in the Kyrgyz Republic was adopted for 2017-2026 (PP KR No. 440 of 21 July 2017). The Program makes provisions for construction of irrigation infrastructure to develop new irrigated land in rural area, improvement of socio-economic conditions and ensure regional development, as well as assistancy in solving the issues of food security and poverty reduction. As a result of implementation of the State Program, 66,500 ha of new irrigated land will be put into operation; water supply for 51,080 ha will be improved; 9,500 ha of land will be transferred from pumping irrigation to gravity irrigation; and conditions of 50,000 ha of land will be improved.

Basin and regional water authorities and reservoirs of the DWRLR have been re-organized into state agencies. In total, 26 basin and regional water management authorities have been re-organized (PP KR No. 524 of 24 August 2017).

Amendments to the Law On introduction of moratorium for transformation of arable land into another land categories (Law No.174 of 14 October 2017) have been made in. In accordance with the adopted Law, the moratorium for transformation of irrigated arable land into another land categories does not cover the list of lands mentioned in the Law.

The work on development of the National Sustainable Development Strategy up to 2040 has been started. The first draft of the Strategy is to be ready by February 2018.

Irrigation and Land Reclamation

In 2017, the construction of 4 irrigation projects on the piece of new irrigated land of 1,090 ha for the total amount of 285 million Som was completed. Thus, the work included the following:

- Kakakyshtak-Boz Canal in Kadamjai district of Batken region on the Isfairam-Say River. The capacity is 560 ha of new irrigated land.

- Irrigation of land from the Cholpon-Ata River in rural community "Kara-Oy" in Issyk-Kul district. Project cost is 80 mln,Som. The capacity - 330 ha of new irrigated land;
- Iirrigation of land from the Bash-Kuugundy River in Zhumgal district of Baryn region. The Project cost is 60 mln.Som. The capacity – 200 ha of new irrigated land;
- rehabilitation of of Ak-Tektir and Terek-Talaa canals of one irrigation systemof the Kyzyl-Zhar district, Kara-Kulzha district of Osh province; the source is zun-Airys River. The Project cost is 55 mln.Som, and the capacity is 560 ha of new irrigated land.

Additionally, the above project will create 4,200 new jobs.

During the Project "Development of new irrigated land in Burganda scheme of Kadamjai district in Batken region" implemented within the National Sustainable Development Strategy for 2013-2017, 3,850 ha of new irrigated land have been developed. Ath the same time, the inverted 1.56-km syphon with intake structure, main 3-km canal with structures, and on-farm irrigation network have been constructed.

The 5,300 m long canal has been put into operation in the Nooken district of the Djalal-Abad province. Irrigation of 1,379 ha lands would be improved and in future 1,025 ha of new land can be irrigated. Water losses will be reduced to 1,993,000 m^3 a year.

The Loan Agreement On financing of Sarymsak Irrigation System Development Project between the KR and the WB has been ratified. Under the Agreement, the loan would be provided in the amount of more than $13 million. The Kyrgyz Government will allocate more than $3 million. The objective of the project is to put new irrigated land in use (Decree of the Zhogorku Kenesh of the KR N 1331-VI of 9 February 2017).

China has provided grant in the amount of $32 million for reconstruction of 6 irrigation investment projects, including:

- Construction of a new canal and modernization of existing canal in Batken province for 1,500 ha of new irrigated land. Project cost - $7.2 million; 3000 people will be provided with new jobs;
- Irrigation on 330 ha of new irrigated land in Kara-Oy settlement in Issyk-Kul region. The project costs $1.2 million; 260 people will be given new jobs. Possible implementation of drip irrigation;
- Reconstruction of Ak-Olen canal in Tonsk ditrict on 1,200 ha of new irrigated land. Project cost is $10 million. By present, it is necessary to have $8,4 million. 2400 people will be given new jobs. At present, 1.7 km of the canal has been constructed;
- Development of new irrigated land on 2.700 ha near Spartak reservoir in Moscow district. Project cost is $11 million; 5400 people will be given new jobs.
- Construction of Bakhty-Nogoi canal in Kara-Buura distrct, the Talas region rovince on 380 ha of new irrigated land. Project cost is $2.5 million. 760 people will be given new jobs.
- Completion of Kyzyl-Jar and Jalpak-Til canals in Bakay-Aty district, Talas region on 16 thousand ha. Project cost is $1.7 million. 30000 people will be provided new jobs.

Agriculture and water economy

The **Concept of agricultural cooperative system** development has been approved for 2017-2021 (PP No.237 of 21 April 2017).

The concept provides development of agricultural cooperative movement in the country in the short- and mid-term. Under the short-term (2017-2018), a number of issues related to development of agriculture cooperatives should be resolved. During the mid-term (2019-2020), it is planned to set up the cooperation infrastructure in agricultural sector through the establishment of sustainably developing network of agriculture cooperatives in the area of processing of agricultural products, services, lending, insurance and logistics and marketing.

The amendments to the Decree on approval of the **"Financing of agriculture-5"** Project of 3 February 2017 No. 58 (PP No. 665 of 13 October 2017) have been made. According to the amendments, funds allocated for crop production should not exceed 15% of the total sum of financing. The "Financing of agriculture-5" Project objective is to ensure the state support to enterprizes and physical entities of the KR for timely implementation of the field work in spring 2017 and further development of

livestock, crop farming, agro-processing and services via credits on easy terms. The project implementation period is 36 months. By the end of 2017, more than 13,700 agricultural producers have been provided soft loans for an amount of more than 5.9 billion soms.

Experts of the World Food Programme together with the National Strategic Research Institute of Kyrgyzstan have developed an **innovation Internet-platform (SNAP)** that would help to make food crisis forecasts. With the new system, huge volumes of information on food and prices will be collected and analyzed which would help government to receive warning on coming crisis. The new platform would play several food development scenarios in case of natural disasters, conflicts, and socio-economic crises. This would allow the government to plan its actions and take necessary measures to socially protect population. The project has been developed under the financial support of Japan.

Agricultural cooperation

In January 2017, the **Kyrgyz Ministry of Agriculture, Food Industry and Land Reclamation and the German Federal Ministry of Food and Agriculture** signed a Joint Declaration on cooperation. The main areas of agricultural cooperation have included the following: exchanges of scientists and specialists; assistancy in development of cooperation between research and educational institutions; experience exchange in innovation in agriculture and creayion of the appropriate conditions to support small and medium enterprises.

The **FAO and the Kyrgyz Government** have signed a Cooperation Agreement. The key areas of cooperation include: improvement of nutrition; reduction of rural poverty; sustainable nature management in Kyrgyzstan; and, adaptation to climate change. The signed Cooperation Framework Program would govern the FAO's activity in the country for the period of 2018-2022. The program was developed in line with the National Strategy up to 2040 and the National Development Strategy for the period of 2018-2022.

In April 2017, the **KR and Saudi Arabia** signed the Agreement on cooperation in agriculture, livestock farming and fishery. The Agreement will form the legal framework for cooperation and implementation of joint investment projects.

The **modern logistics center has been established launched in the south of the Republic** in the Kadamjay rayon of the Batken region under USAID support. In the world standard wholesale warehouse it will be possible to store 6,400 m^3 of fresh fruits and up-to-date technology that allow sorting and packaging up to 500 tons of fruits a day. This center will help local farmers from the southern part of Kyrgyzstan to store their production longer and to become more competitive on local and export markets.

The **World Bank and the KR have started working on the new Partnership strategy for the period of 2018-2021**. Future project needs are assessed jointly with the Government, based on national priorities and the World Bank's analysis results.

The **UN assisstance framework agreements have been signed for an amount of $233 million for the period of 2018-2022**. The key areas to receive the financial aid inclue the following: industrial development, agriculture, food security and nutrition; responsible governance, rule-of-law, human rights and gender equality; environment, climate chage and disaster risk management; social protection, health and education.

Drinking water supply

In 2017, **as part of the state program Ala-Too Bulagy**, the water supply and sanitation systems and treatment plants were reconstructed in 22 cities and towns. This program has been implemented since 2016 in order to provide access to water supply for 141 villages in Chu, Osh, Issyk-Kul and Jalal-Abad regions . By 2020 under the Program, it is planned to supply with water 120 villages situated in Osh, Issyk-Kul and Batken regions.

Amendments have been made in the Technical Regulation Document On Safety of drinking water that, among others, provide the changes in permissible levels of uranium contents in drinking water from 0.015 to 0.030 mg per 1 liter of water as well as change in the standards of the Maximum Permissible Concentration for the indicator "Cumulative alpha activity" from 0.1 to 0.5 Bq / l (Law No. 67 of 28 April 28 2017).

World Bank and Islamic Development Bank have provided $51 million for improving access to clean drinking water for Kyrgyz population. Two projects are planned to be implemented for the period of 2017 to 2022: "Sustainable

development of rural water supply and sanitation" financed by the World Bank in the amount of $23 million, of which $15 million are financed by the IDB; $5 million – Islamic Solidarity Fund; $3 million – co-financing of KR (Law No. 222 of 29 December 2016) and "Improved rural water supply and sanitation" Project financed by the IDB in the amount of $20 million (Law No. 116 of 30 June 2017). Co-financing of the KR is $7,5 million. Under these projects, it is planned to construct/rehabilitate 25 rural water supply systems in 64 villages in Chu, Osh, Issyk-Kul and Jalal-Abad regions, with population more than 170,000 people.

Several Agreements have been signed between KR and EBRD for implementation of projects on rehabilitation of water supply and sanitation in Kara-Suu (€6.3 million); Cholpon-Ata (€6.2 million); Osh (€10.76 million); Mailuu-Suu (€6.65 million and €1.6 million); Uzgen (€8,5 million and €2,75 million); Toktogul (€5,5 million and €1.21 million); Balykchi (€5.3 million and €1,21 million) and setting up modern water meters and replacing the equipment necessary for the system to work in 13 villages of Danbulaksk, Myrzaken and Kurshab in Uzgen district of the Osh region and 13 villages situated near to the cities of Kerben, Toktogul of the Jalalabad region.

With the support of EBRD and the Government of Swiss Confederation, drilling of 35 new wells has been started under "Rehabilitation of water supply and sanitation in the city of Bishkek, Phase 2" Project for the amount of €16 million (€8 million credit funds and €8 million grant). The project aims to increase supply of drinking water to the people of Bishkek city, ensure control of drinking water quality and wastewater with the up-to-date analysis methods and equipment.

Hydraulic structures

Upper-Naryn cascade of HPPs. In July 2017, an agreement between KR and Czech company «Liglass Trading CZ, SRO» onr the construction and commencement of Akbulun HPP and Naryn HPP-1 of the cascade, as well as on implementation of the project "Construction of small hydropower plants in the Kyrgyz Republic" has been signed. The document on construction in the country small HPPs provided financing, preparation of feasibility study, construction, and commencement of small hydropower plants "Orto-Tkoy-1", "Orto-Tkoy-2", "Papan", "Chon-Aksuu", "Kirovskaya", "Karasuu-1", "Karasuu-2" till 30 December 2019, as well as construction and commencement of small HPPs "Sandyk-1", "Sandyk-2", and "Sandyk-3" up to the end of 2020 year. The total amount of investments by Liglass trading CZ SRO for the whole cascade of Upper Naryn HPPs was approximately$500 million. However, in October 2017, the agreement was terminated unilaterally by a decree of the Kyrgyz Government..

Toktogul HPP. In July 2017, the Agreement between KR and the Asian Development Bank (ADB) on financing of the Toktogul HPP rehabilitation project, Phase 3 for the total amount of $175 million was ratified. The main goal of the project is to improve energy security of Kyrgyzstan through reconstruction of Toktogul HPP by increasing capacity of each aggregate up to 60 MW. The ADB contribution is $110 million, $60 million of which are credit funds; $40 million - EBRD, and $25 million is a Kyrgyzstan's contribution as tax and duty exemption. As part of the ADB's Project "Modernization of energy sector", a hydroagregate and a transformer have beenput into operation at Toktogul HPP. The new generator transformer supports protection from explosion and fire, as well as continuous monitoring.

Kambarata HPP. In June 2017, an Agreement on investment loan by the Eurasian Stabilization and Development Fund for the Project "Commencement of second hydroagregate at Kambarata HPP-2" between KR and EBRD was ratified. The objective of the Agreement is to increase the generating capacities by putting into operation of the second hydroagregate (120 MWt) at the station. As a result, it is expected to increase the capacity of Kambarata HPP-2 up to 240 MW. This will also allow reducing water releases from the Toktogul reservoir by 1.4 billion m^3 in winter season and increasing power generation up to 1.019 billion kWh, of which 0.864 billion kWh in spring and summer period; and 0.155 billion kWh in autumn and winter period. The total project amount is $138 million, of which the amount of $110 million is the EBRD credit and the amount of $28 million has been provided by the energy joint stock companies.

Orto-Tokoy (Kasansay) reservoir. The agreement on interstate use of the Orto-Tokoy reservoir signed on 6 October 2017 in Tashkent was ratified between Kyrgyzstan and Uzbekistan (Degree of Zhogorku-Kenesh No. 2153-VI of 28 December 2017). According to the agreement, after ratification, the reservoir is transferred under responsibility of the Department of Water Resources and Land Reclamation. The Kyrgyz party will be responsible for

safety of structures, operation, maintenance and water releases within the established limits based on the current mutually agreed documents and legal acts. The Uzbek party will share O&M costs and other negotiated actions proportionally to the water volume received. No additional payment of taxes and duties required. February 2018, the Law on ratification of the Agreement on interstate use of Orto-Tokoy (Kasansay) water reservoir in the Jalal-Abad region between the Government of the Republic of Uzbekistan and the Kyrgyz Republic was signed by the Kyrgyz President.

Energy export. In June 2017, Kyrgyzstan started exporting energy to Uzbekistan at the price of 2 cents per kilowatt-hour. The contracted volume is 1.25 billion kWh for $25 million.

Small HPPs

Tender regulations on the right to construct small HPPs in KR have been approved. The regulations set general conditions for small HPPs construction projects as well as allow to establish the terms and conditions for conduction of tender process (PP No.175 of 24 March 2017). In February 2017, small Tegirmen HPP (installed capacity 3,077 kW) was put into operation in Kema rayon. The total estimated project cost was 215 Million soms, of which 71.6 Million soms - own funds, and the rest amount is loan. The loan has been provided for 5 years with the yearly interest rate of 12%. Project cost recovery is 8 years with the guarantee of 2 years.

An Agreement on implementation of small HPP project "Leilek" construction Project in the Batken region was signed in July 2017.

Construction of HPP (capacity 10 MW) will be implemented by the OOO "Kyrgyz Kaganat".

Emergencies

158 landslides were recorded in the country for the period of January – May 2017. The same amount of landslides happened over the last nine years. As a result of the landslides, 34 people died. 5,146 households are in the area of risk. 1,871 households have been provided with financial aids and pieces of land for resettlement, however, they had not resettled. 2,465 families were have been resettled. The most severe landslides that led to tragedy are:

- 29 April, about 07:20 am. 11 houses were under landslides in the village of Ajuu, Uzgen district, Osh region. 24 people suffered.

- The village Kurbu-Tash, Uzgen district, Osh region, Three landslides have been recorded. First was 1 May and 11 houses were under the landslides. 5-th of May another landslides happened between the villages Kurbu-Tash and Marks. 30 houses were under the landslides and 35 transmission lines. According to the Ministry of Emergencies, no victims have been recorded. 11 May was the third landslides covered 45 houses and 3 social buildings. According to the Ministry of Emergencies, the soild mass volume was 2.8 million m^3.

- 1 May the village Kurlush, Alai district, Osh region the movement of landslides has been recorded.

Foreign policy and cooperation

In 2017, the President of KR made a state visit to the Russian Federation, official visits to Kazakhstan and Uzbekistan, and working visits to PRC, RF and Belarus.The President took part in the jubilee session of the Collective Security Treaty Organization in Minsk.

As the Kyrgyz Ministry of Foreign Affairs estimates, the most important developments in the foreign policy of the country in 2017 included the following:

- progress in delimitation of the Kyrgyz-Uzbek border and establishment of a strategic partnership between Kyrgyzstan and Uzbekistan;

- further strengthening of strategic partnership with RF;

- strengthening of relations with China considering the level of strategic partnership;

- chairmanship of Kyrgyzstan in the Eurasian Economic Union;

- participation of the President of Kyrgyzstan Mr. A. Atambaev in the 72nd UN GA (see section General Assembly) in New York;

- the first visit of the new UN Secretary General Mr. Guterres to the Kyrgyz Republic on 10-11 June (see section Secretariat);

- strengthening of political dialogue between the Kyrgyz Republic and EU, and beginning of negotiations on a new agreement on further partnership and collaboration between the KR and EU;

- organization of the second international forum for preservation of snow leopard and its natural habitat (25 August, Bishkek), etc.

Kyrgyzstan takes an active part in different international events. In 2017, the Head of State and country representatives participated in many important events, including:

On 14-15 May in Beijing, the President of Kyrgyzstan A.Atambayev took part in the International Cooperation Forum "One belt, one road". (see section China's Belt and Road Initiative: green directions and water-management projects). The representatives of the 110 countries also participated in the Forum.

On 10 July the Vice-Prime Minister presented a report on the achievement of SDGs in the EAEU region in the UN Headquarters in New-York as a country chairing EAEU.

On 17 July during the High-level policy forum on sustainable development the Kyrgyzstan's permanent representative at ECOSOC shared experience of the country's sustainable development and underlined that the country had joined the PAGE initiative – Partnership for Actions on green economy in 2016 in order to create politically-friendly environment, incentives and partner relations for encouregement investments in green technology and in natural, human and social assets.

On 20 September the Kyrgyz President Mr. A. Atambaev spoke on a plenary session of the 72nd UN GA in New York and focused on the effects of climate change and a necessity of mutually beneficial use of water and energy resources (see section General Assembly). Under the Summit Mr. President took part in Special High-Level Meeting on the issues of uranium heritage in the Central Asia countries.

On 10 November in Samarkand the Foreign Minister of KR spoke at the International Conference on security and sustainable development in CA "Central Asia: Shared Past and a Common Future, Cooperation for Sustainable Development and Mutual Prosperity". The Kyrgyz Foreign Minister called to remove the existing obstacles for free movement of people, goods and services and boost the cooperation in culture, education, science, arts, tourism, sports, and other areas.

On 27 November in Vienna the Kyrgyz delegation headed by the Chairman of the State Committee of Industry, Energy and Mineral Resource Management took part in the 17th session of UNIDO during which the decision to include the Kyrgyz Republic into the Program of UNIDO country partnership was officially declared. The topic of the event was "Partnership for successful achievement of the sustainable development goals".

On 1 December the Kyrgyz delegation headed by the Deputy Minister of International Affairs took part in the 7th Ministerial conference of the Istanbul process "The Heart of Asia (on Afghanistan issues)", which was held in Baky, Azerbaijan. The Conference was dedicated to "Safety and economic connec-tivity to strengthen the Asian region "The heart of Asia". At the Conference, the Kyrgyz party announced the priority areas of cooperation between Kyrgyzstan and Afghanistan and its partners, particularly, in part of implementation of the regional energy project CASA-1000, establishment of transportation corridor in CA, establishment of trilateral agroindustrial consortium between Kyrgyzstan, Tajikistan and Afghanistan, etc.

The year 2017 was a landmark in the development of Uzbek-Kyrgyz cooperation. (See Bilateral water cooperation between the states in Central Asia).

Major information sources:

Official web-sites of the President of Kyrgyzstan (www.prezident.kg),
Parliament of Kyrgyzstan (www.kenesh.kg),
Ministry of Justice (http://cbd.minjust.gov.kg),
Ministry of energy and industry (http://energo.gov.kg).
Explanatory note to the State Irrigation Development Program of the Kyrgyz Republic for 2017-2026.
News sites:
http://barometr.kg,
https://24.kg,
https://ru.sputnik.kg

5.3. Tajikistan Overview

General information

Territory. The total area is 142,600 km^2. The country terrain is represented by mountains with altitudes varying from 300 m to 7,495 m. 93% of the country territory is covered by highest Central Asia mountain systems, such as Tien Shan and Pamir. Mostly, all population and economic activity of Tajikistan are concentrated in valleys which are only 7% of its territory.

Population. By the beginning of 2017, the population was 8.7 million, of which 26.4% live in urban area and 73.6% live in rural area. The average annual population growth is about 2.5% a year.

Economy. According to the results of 2017, the GDP amounted to about 61.1 billion somoni ($6.9 billion), and the economic growth was 7.1% compared to the year 2016. Agriculture (including hunting, forestry, fishery) takes major part in GDP and accounts for 21.1% of its total volume. Comparing to 2016, the share of agriculture in GDP has increased by 0.4%. The industry in GDP, including energy sector, was 17% (1.9% growth compared to 2016), construction was 9.3%. The total trade turnover in Tajikistan in 2017 was $3,973 billion. This is 1.1% more comparing to the figures of 2016.

Climate. Almost all climatic zones can be found in Tajikistan, with temperatures ranging from +50°C to -60°C. Climate is arid and warm and widely variable within year. The average annual precipitation is 760 mm. The climate change is evident in Tajikistan. Over the last 65 years the average annual air temperature increased by 0.7-1.2 °C in valley areas; 0.1-0.7°C in mountain area, and 1.2-1.9°C in cities. Climate change has affected the country's glaciers as well. By some estimations, glaciers lost 20% of their volume for the last 50-60 years, and 30% of their area. Based on the ADB assessment, by the end of the century the air temperature is predicted to increase by 6°C in Asian territory and by 8°C in Tajikistan, Afghanistan, Pakistan and North-West China.

Water resources. Tajikistan is on the first place in terms of water resources in Central Asia. Mountains and piedmont zone are the main streamflow generation areas in the Aral Sea basin. More than 80% of Amu Darya runoff and 1% of Syr Darya runoff are formed in Tajikistan and account for 64 km^3 a year or 55.4% of water resources in the Aral Sea Basin. The total glacial volume is more than 845 km^3. Groundwater amount to 18.7 km^3 a year, and lake water is about 46.3 km^3.

Energy. Given insignificant oil and gas resources and difficulties for large-scale coal mining, Tajikistan has huge, inexhaustible reserves of hydropower resources. By expert estimations, those reserves amount to approximately 527 billion kWh/year. At present, about 95% of energy in the country is generated by hydropower plants. In 2017, energy generated all over the the country amounted to only 17.13 billion kWh or a little over than 3% of available potential. This potential is threefold higher than the current energy consumption in the Central Asia as a whole, and provided its efficient use, the region would have cheap and clean energy.

The state agencies dealing with water management in Tajikistan include the Ministry of Energy and Water Resources (MEWR), Ministry of Agriculture, Ministry of Health and Social Protection, Committee for Environmental Protection, Committee for Emergencies and Civil Defense, Chief Administration of Geology, Service of State Monitoring of safe operations in industry and mining, Agency of Land Reclamation and Irrigation (ALRI) at the Government of Tajikistan, State Unitary Enterprize "Khochagii Manziliyu Kommunaly" and The Open Joint-Stock Company OAHK "Barki Tojik".

Latest developments in legislation

In 2017, the following regulations were adopted in agriculture and water sector, hydropower and environment:

The Law No.1448 of 18 July 2017 "On environmental impact assessment";

The Law No.1416 of 30 May 2017 "On seismic safety";

Decree of the Government of Tajikistan No.107 of 25 February 2017 "On Draft Agreement between the Government of Tajikistan and the Government of Russian Federation on environmental cooperation";

Decree of the Government of Tajikistan No.487 of 26 October 2017 "On preparation and implementation of the International Action Decade "Water for Sustainable Development, 2018-2028".

Majlisi Namoyadagon, the lower house in the Parliament of Tajikistan, has ratified the Agreement on financing of water resources management project in the Pyanj River Basin and the Document on Technical Assistance Agreement Revision between the "Barki Tojik" and EBRD on rehabilitation of Kairakkum HPP.

Implementation of national strategies and programs

Implementation of the National Development Strategy of the Republic of Tajikistan up to 2030 was underway during the period of 2016-2017 and the first-stage priority measures have been included into the Mid-Term Development Program for the period of 2016-2020. Over this period, more than 36 billion somoni have been allocated from the state budget for the implementation of planned tasks and additional approximately 70 billion somoni are planned to be allocated for the period of 2018-2020. The total amount of estimated funds (including all sources of financing) for the Strategy for the next 15 years is $118.1 billion.

Within the State horticulture and grape development program for the period of 2016-2020, new orchards would be established and old ones would be restored. All these measures will help to achieve the main strategic goals – food security and improved socio-economic well-being of population.

Irrigation and land reclamation

Irrigation in Dangara Valley. In 2017, the third phase of the regional irrigation project was started in Dangara district, for which $381,4 thousand have been allocated. According to the Decree of the Government of Tajikistan No.330 of 29 June 2017 "On withdrawal and allocation of land plots to the "Dangara Valley Irrigation" Project implementation unit, land-plots have been given for unlimited time of use for inter- and on-farm construction on the area of 107.11 ha and for short-term use, for the period from one to three years, for development of 1,635.32 ha of land.

Water tarifs. Agency of Land Reclamation and Irrigation proposes either raising the water tariffs for irrigation or making water free as Tajik water users pay nowdays only 1.5 dirham per 1 $м^3$ of water, whereas electricity tariffs for water pumps and pumping canals of Agency's repair and manufacturing centers are 5.1 dirhams (for the period from 1 April – 30 September) and 14.65 dirhams (for the period from 1 October - 31 March). It is proposed not to take money from water users and declare free water for all farms, while all costs should be incorporated into land tax, depending on land category.

Hydroponics. An innovative greenhouse for growing vegetables based on hydroponics technology was created in Buston town in the Sogd region ("Elegant" Limited Company). This greenhouse is experimental, and vegetables are grown without soil using the basalt fiber. Production of basalt fibers is one of the directions of the "Elegant". Annually, 14 thousand m^3 of the fiber are produced. The greenhouse produces tropical fruits, tomatoes, cucumbers and lemons. Based on the progress, it is expected to achieve good crops. The estimated cost of the greenhouse was 4.5 Million somoni. 30 permanent new jobs have been created.

Repair and reconstruction work. In 2017, with the support of authorities of Kanibadam town, the local Land Reclamation and Irrigation Administration together with the population and local jamoats of the town have started the work on cleaning The Big Fergana Canal. Reconstruction of the Dasht irrigation canal was completed in the village Siponj, Rushan district. Repair of pumping stations in B.Gafurov district has been started as part of preparation for irrigation season-2018.

Agriculture

Yielding year. In 2017 the crop yields in Tajikistan was very high. Grain harvest exceeded 432,700 tons. By the beginning of November, 372,100 tons of cotton and about 156,000 tons of fruits were collected and more than 424,000 tons of potato were produced. On the whole, the yields 2017 exceeded the yields 2016 by 39,600 tons. Different sources of information show that Tajik farmers collected more than 800,000 t of vegetables, of which: onion – 393,500 t; tomato – 144,000 t; carrot – 90,400 t; cucumber - 49,400 t; cabbage – 22,700 t. Unfortunately, pistachio yields decreased in 2017. This could be caused by different factors, such as dense plantation, dust storms, drought, plant diseases, etc.

Agribusiness Investment Forum. ECTAP (Enhanced Competitiveness and Agribusiness Project in Tajikistan) has been conducted in Dushanbe. The purpose of the Forum was to assist and attract local and foreign investments in dairy and meat industry and enhance industrial modernization, with maximum effective and mutually beneficial relations between the local producers and international counterparts.

Technical assisstance. In 2017, the following grants from international organizations were provided to support and improve agriculture in the Republic of Tajikistan:

The US Government started implementing a new project on land reform under the Program "Food for Future". The Project provides development of a land market, where farmers may buy, sell and give their agricultural land to rent. The Land user right market Project Cnference was held in Dushanbe. The participants have discussed such topics as effective management of agricultural land under Reserve and Special Funds, development of assessment process, improvement of knowledge, and protection of land market.

Preparatory work has been started under the Project "Achievement of food security through increased climate change resilience", which was aimed at strengthening food security in Tajikistan through improving dairy production and its resilience to climate change. ADB has provided grant in the amount of $500,000 for feasibility study of the proposed investment project.

The WB's Board of Directors approved additional $15 million in support of the current Agricultural Commercialization Project in Tajikistan.

Drinking water supply

By UN estimates, in terms of water supply and sustainable access to improved drinking water sources, the Republic of Tajikistan, with its 57.5% of access, is 156th out of 177 estimated countries and the last one among the CIS countries.

In 2017, in order to improve this situation, the work under the"Rehabilitation of water supply systems in northern cities of Tajikistan"Project financed by EBRD for the total amount of $22.7 million was continued. The project covers Buston, Isfara, Guliston, Kairakkum, and Istiklol cities of the Sogd region as well as Khorog city of the Gorno-Badakhshan autonomous region. Implementation of project's phase I was started in 2012 and finished in 2017. EBRD allocated more than $15 million for the Phase II.

Hydropower

Roghun HPP. By 15 May 2017, one more stage in construction of Roghun HPP was completed. "Salini Impregilo" (Italy) completed construction of lower arc of the dam which is 35 thousand m^2. Dushanbe officials informed that by the end of 2018 three aggregates of the Roghun HPP could be put into operation.

In 2017, Tajikistan allocated 1.7 billion somoni for Roghun or 200 million somoni less than in 2016. The total estimated cost of Roghun HPP is approx. $5 billion (as estimated at the beginning of 2013). This does not include the costs of local and intersystem/interstate trans-mission lines.

To convince international creditors in ability to meet payments, Tajikistan has got the independent credit rating of the second international rating agency. The international rating company "Standard and Poors" has assessed the independent credit rating of Tajikistan as B3, Outlook Stable. After that, for completion of Roghun HPP, the Tajik Ministry of Finance has proposed dollar securities for 10 years with the size of equity offering from $500 million to European and American investors. The results of successful debut and sale of state securities on the world market were announced on 15th of September on the official web-site of the National Bank of Tajikistan. According to the Bank's data, 38% of bonds were bought by the US investors, 24% - by British investors, 35% - by EU investors, and 3% - by Asian ones. The bond yield is up to 7.125% per annum.

CASA-1000. August 2017 the tender process has been started under the CASA-1000 Project for the Package TW06 – supply and installation of transmission lines and extension of relevant modules in Tajikistan and Kyrgyzstan in as part of the CASA-1000 Project. It is planned to construct a 477-km long transmission line of 500 kW from a substantion in Kyrgyzstan (Datka) to Khujand. Besides, Sangtuda, Kabul and Peshavar are planned to be connected through a 750-km high-voltage transmission line.

Sarband HPP. In 2017, modernization of Sarband HPP was continued. It started in November 2016 with the financial support of ADB. The cost of modernization is $136 million. The Project consists of two phases and is planned to be finished in 3 years. The initial design capacity of HPP was 240 MW, and after reconstruction this indicator would increase to 252 MW.

Nurek HPP. The lower chamber of the Tajik Parliament has ratified the Finance Agreement for the "Rehabilitation of Nurek HPP, Phase I"Project signed in June 2017 between RT and the International Development Association (IDA). The Agreement provides for allocation of $225 million, of which the amount of $57 million is grant, and the rest is rest is a soft loan. Previously, the loans for that project were provided by the European Stabilization and Development Fund ($40 million) and Asian Infrastructure Investment Bank ($60 million). Thus, the whole necessary amount for implementation of the first phase of Nurek HPP rehabilitation for the period of five years was collected.

The Nurek HPP Rehabilitation Project devided into two phases, provides replacement of all nine hydroagregates and key elements of the plant's infrastructure, autotransformers, reconstruction of auxiliary transformers, improvement of dam safety, and technical assistance. After complete rehabilitation of the HPP, energy generation is to achieve 3,300 MW.

Sangtuda HPP-1. 31st of July 8 years ago the Sangtuda HPP-1 was put into operation, which generates up to 12% of total energy in the Republic of Tajikistan. Since April 1, 2017, by the Decision of the Board of Directors of the OAO "Sangtuda", its new Director General Mr. Shevnin was appointed .

The Small 400 kW HPP "Tekharv" was put into operation after complete reconstruction. Thus, Upper Vanch has been provided with regular electricity supply. HPP"Tehrav" was reconstructed and connected to the main grid for the Pamir Energy funds, which has allocated more than $1.3 million. Now, about 1,200 households are provided with electricity on regular basis.

A **new tarific ation concept** in the energy sector was adopted in May 2017. The Concept provides reforming energy tariff system in order to improve the quality of services to population, thus, bringing national energy sector to new level.

Electricity production. 18.1 billion kWh were generated in Tajikistan in 2017. This figure is 889.8 billion kWh higher than in 2016.

Currently, energy is mostly exported to Afghanistan and Kyrgyzstan. In 2017, Tajikistan exported 1.3 billion kWh for an amount of $53 million (at 4 cents per 1 kW) to Afghanistan. Energy from Tajikistan to Afghanistan was mainly exported during the period of early April to late September. According to the main macroeconomic forecasts of Tajikistan for the period of 2018 – 2020, during the nearest three years the Tajik energy providers are planning to increase annual energy exports up to 3 billion kWh. It is also informed that Tajikistan may start delivering energy to Uzbekistan in summer 2018. For rehabilitation of the Integrated electricity system (IES), Uzbekistan has to rehabilitate 60 km of transmission lines connecting the south of Uzbekistan with Tajikistan.

Climate change, glaciers and environmental conservation

In 2016, Tajikistan became the first country, with which EBRD started implementing the **Climadapt** Program in cooperation with the international donors. Since then, four local financing institutions have joined the Program, and $5 million – half of the allocated funds – were used for support of implementation of technologies that would increase resilience to climate change in the country.

The process of development of **local adaptation action plans** was finished for 10 villages that were identified as the most vulnerable suffering of the negative consequences of climate change.

According to the invitation of the Tajik Academy of Sciences, researchers from the Institute of Ecology and Geography of Xinjiang at the **Chinese Academy of Sciences** have visited Tajikistan for joint collection of field data, and the further improvement of climate change research network and update of the database on environmental changes in the regions under "Belt and Road Initiative".

The President of Tajikistan in his message to the Majlisi Oli on 22 of December 2017 stated that given the sharp glacier shrinkage, it would be necessary to establish a **Center for Glacial Studies** within the Academy of Science with the purpose to conduct detailed monitoring of glaciers and other water sources in the country on a regular basis.

Disaster prevention

In 2017, the agreement on allocation of more than **$6.3 million for the River Pyanj and the Chubek Canal** (Khamadoni district, Southern Tajikistan) bank protection works was signed between the King Salman Humanitarian Aid and Relief Centre and AMI .

A special observation point has been established **at Sarez Lake** for timely warning of local people in case of any safety hazards.

Tajik geologists have prepared a **map with disaster risk areas** to help the authorities to identify locations for priority measures. The map shows the most vulnerable to natural disasters places .

The Board of Directors of the World Bank has approved the allocation of $50 million of the IDA funds for the **Strengthening of Critically Important Infrastructure Project** to ensure resilience to natural hazards in the country. The country capacities in the area of preparedness, response and mitigation of natural disasters will be built under the Project.

The **UNDP's Disaster Risk Management Program for the period of 2016-2021 was continued** under the three projects: Strengthening capacities of disaster risk response and mitigation ($10.6 million, Japan), Stengthening capacities in preparedness and response ($1.5 million, Russia), and, Improved mechanism for policy development on disaster risk reduction. Strengthening the disaster risk management system in Tajikistan ($800,000, SDC). Particularly, in 2017, to improve the search-and-rescue functions of the national Committee of Emergencies, the latter has been provided with relevant equipment and a regional meeting was organized among the heads of Central Asian country agencies for emergency situations and disaster risk reduction (See section UN Development Program).

The **joint training program** on disaster risk management in Badakhshan for border services and citizens living in border area of Tajikistan and Afghanistan was organized by UNDP EC-BOMNAF and JICA-BMP.

Investments in Tajikistan

In 2017, Tajikistan was provided substantial investments for support and development of its sectors. Among those are: $750 million from EBRD for implementation of 100 projects in addition to already given financing of 65 projects for the total amount of $420 million.

The Board of Directors of AIIB has approved the credit in the amount of $60 million for the first phase of the Nurek HPP reconstruction project co-financed by the World Bank.

IDB has provided more than $335 million for implementation of the most important projects in Tajikistan. Currently, 7 investments projects are implemented in the country for the amount of more than $173 million in education, poverty reduction, energy, irrigation, and transport.

Foreign policy and international initiatives

In 2017, the President of Tajikistan made a state visit to China; official visits to Qatar, Armenia, and Jordan and work visits to Pakistan, Kyrgyzstan, Saudi Arabia, Kazakhstan, Turkmenistan, USA, Russian Federation and Belarus.

One of the most significant facts in Tajikistan's foreign policy of 2017 was warm-up in relations with Uzbekistan. Regular flights between the two countries have been restored, industrial exhibitions of Uzbek and Tajik produers were held in Dushanbe and Tashkent, and the progress in launching the integrated energy system of the two countries was observed (see also Bilateral water cooperation between the states in Central Asia).

Preparational work under the "2018-2028 International Decade for Action on Water for Sustainable Development" initiated by Tajikistan was continued in 2017. The Relevant resolution proposed upon initiative of Tajikistan in co-authorship with 177 member-countries of UN was adopted on December 21, 2016 at UN GA. According to the resolution, the International Decade of Actions "Water for sustainable development" would starts on 22nd of March 2018 (International Water Day) and ends on 22nd of May 2028.

Tajikistan takes an active part in various **international events**. In 2017, the Head of the State and the representatives of Tajikistan participated in some important events, including:

23 March – The Head of MFA took part and spoke at the high-level event "Climate change and sustainable development agenda". The Minister Mr. S.Aslov in his speech has informed the participants about recent ratification of the Paris Agreement by Tajikistan that would "create a solid base for further joint actions in addressing the climate change problems."

9-11 May – The Ambassador of Tajikistan to Egypt Mr. Noziri presented his country in Addis Ababa at the VI World Hydropower Congress where the isues of hydropower development for

the next decade were discussed to ensure the existence of reliable and sustainable water and electricity systems for all.

20 July – The Minister of Economic Development and Trade N.Khikmatullozoda was speaking at the 3rd UN Special event on water and natural disasters Adaptation to climate change and extreme water-related phenomena" In New York. In his speech the Minister underlined a considerable increase in xtreme natural phenomena in Tajikistan and noted an increasing impact of climate change on environmental conditions and the critical glacier and snowfield melting in the country.

19 September – The President E.Rakhmon spoke in New York at the plenary meeting of the 72nd UN GA session and focused on such problems as counterterrorism efforts, dialog with North Korea, and development of green economy in the context of climate change (see General Assembly). The Head of MFA had a meeting with the FAO's Director General José Graziano da Silva and discussed potential development of cooperation on agriculture and food security.

21 September – The President E.Rakhmon spoke on the 4th Meeting of the High Level Panel on Water, where he stated that Tajikistan, being a country-initiator – intended to conduct the high-level events under the process of implementation of actions of decade "Water for Sustainable Development" for the period of 2018-2028 years. The high-level events to be conducted in cooperation with the UN and other partners every 2 years (see UN High-Level Panel on Water).

1 November – The Permanent Representative of Tajikistan to the United Nations Mr. M.Makhmadaminov spoke at the High Level Symposium "Global energy interconnection: achieving of Sustainable Development Goals" conducted by the United Nations Department on Economic and Social Affairs.

30 November – The Permanent Representative of Tajikistan to the United Nations Mr. M.Makhmadaminov spoke at the regular meeting of the Group of Friends of Water at the UN Headquarter. He has introduced the participants with process of launching the International Decade for Actions on Water for Sustainable Development and its importance in further development of SDGs.

Major information sources:

Official web-sites:
of the Ministry of Justice (www.adlia.tj),
Ministry for Foreign Affairs (http://www.mfa.tj/),
Chamber of Commerce and Industry (http://tpp.tj/)
National Information Agency of Tajikistan "Khovar":
http://khovar.tj/
News Agency Sputnik-Tajikistan:
https://ru.sputnik-tj.com/
ASIA-Plus – independent media-group of Tajikistan
https://news.tj/
«Dialog»: http://www.dialog.tj/
News of Tajikistan: http://novostitadzhikistana.ru/

5.4. Turkmenistan Overview

General information

Territory. The second largest country in Central Asia region in terms of territory (491.21 thousand km²). More than 80% of the territory is covered by the Karakum desert, mainly, in the center of the country. Foothills and mountains occupy approximately 15% of Turkmenistan. The highest point is the Ayrybaba mountain (3,139 m). There are five administrative regions in the country (velayat): Akhal, Balkan, Lebap, Mary, and Dashoguz.

Population. By the beginning of 2018, there were 5.5 million people, of which 49.2% is male and 50.8% is women. Urban and rural population is 50.7% and 49.3%, accordingly. Annual population growth was 1.27%.

Economy. Industrial development is based on rich mineral and raw material base (gas and oil). Fuel and energy sector, oil refining, chemical, petrochemical, light and food production industries, mechanical engineering, and metal working are well-developed. Strategic sub-sectors in agriculture are cotton production and grain-growing. The socio-economic results of 2017 were as follows: GDP growth rate - 6.5%, including 5.5% - industrial sector, 1.3% - construction, 11.1% - transport and communications, 9.4% - trade, 5% - agriculture, and 9% - services. In general for agroindustry, growth of production, work and services was 103.8%. In 2017, construction of industrial buildings amounted to 48,5%, and social and cultural facilities amounted to 51.5%.

Climate. The climate of the country is dry, sharply continental, with wide temperature variations, low precipitation, and high evaporation. Summer is hot and dry, with average temperatures of July 28-32°C. Winter is mild and with low snowfall. In some years, there is heavy but short-term snowfall, and the temperature may reduce to -20°C. Average temperature in January varies between –5°C in the North-East of the country to +4°C in the Southern areas of Turkmenistan. Average annual rainfall is about 80 mm in the midstream of the Amu Darya river, 150 mm in Karakum, 200-300 mm in foothills and intermountain valleys, and higher than 400 mm in mountains. Dry winds and dust storms are typical for valleys

Water resources. Turkmenistan's water resources are very poor. Annual water resources storage per capita is the lowest in the Central Asia region (232.0 m³). Water resources of Turkmenistan are represented by large (Amu Darya - the only largest river, Murgab, Tedjen, and Etrek) and small rivers, springs and kariz (drainage gallery), as well as fresh groundwater resources. Rivers flow only in the southern and eastern regions of the country. Most lakes are saline. Yaskhan and Topiatan located in the Uzboy valley are the fresh water lakes. There are also lakes of karst origin, such as Kouata (in the Bakharden cave) and Khordjunly (in the Kugitangtau) in the mountain area. 95% of surface water is formed outside the country. 88% of all surface water in the country refers to the Amu Darya River. Fresh groundwater accounts for less than 2% in the water balance. Collector and drainage water also is a source of country's water; the former is estimate at 5.6-6.0 billion m³/year. Part of thewater is slightly saline and may be re-used. The Karakum-River plays the important role in meeting the needs for water. It is the largest hydrotechnical construction in the world (1,380 km in length) that irrigates approx. 1 million ha.

The cumulative length of rivers is 14,300 km. The longest river is the Amu Darya, with the total length of 1,437 km and more than 1,200 km in the territory of Turkmenistan.

Energy. Energy sector is comprised of 9 gas-fired TPPs (Mary, Turkmenbashi, Abadan, Balkanabad, Seyd, Ashgabat, Dashoguz, Avaz, Akhal) and one HPP (Gindukush). The country is entirely self-sufficient in electricity and even exports it to Iran, Turkey and other countries. Until recently, electricity within the pre-determined limit has been free for population. Energy potential is continuously developed: new power stations and transmission lines are being constructed, and existing energy facilities are being technically reconstructed. For the period from January to December 2017, more than 23.8 billion kWh were generated, given the growth rate of 100.5%.

In Turkmenistan, the Cabinet of Ministers, the Ministry of Agriculture and Water Resources, the State Committee of Turkmenistan for Environment Protection and Land Resources, the State Corporation "Turkmengeologiya", the National Committee of Hydrometeorology, the National Deserts, Flora and Fauna , the Ministry of Energy, and the Ministry of Communal Services are the state bodies responsible for use and protection of water resources.

Latest developments in legislation

Since the beginning of the year, the Parliament has conducted 8 sessions ; 194 legislative documents were adopted, including111 laws and 83 decrees of Mejlis (National Assembly). The following regulations adopted in on water, agriculture and environmental protection play an important role: the Law on collection, storage, and rational use of genetic resources of cultivated plants (4 February 2017), The Law on grain production (20 March 2017), Law on environmental security (3 June 2017), Law on cotton farming (26 August 2017), the Program for Socio-Economic Development of Turkmenistan for the period of 2018-2024 (10 October 2017), Law on the State land cadaster (25 November 2017), and the Law on amending and supplementing the Land Code of Turkmenistan (10 December 2017).

Water sector

Water resource management is a crucial factor of the economy and environment in dry climate of Turkmenistan. On 1 January 2017, a new "Water Code of Turkmenistan" came into force. It governs relations under sustainable and rational water use with the purpose to meet the needs of physical and legal entitiesin water and aims to increase the value of water, ensure protection of water from pollution, clogging, and depletion, as well as prevent and mitigate the negative impact of waters, and restore and improve conditions of water bodies.

Strengthening water infrastructure. Big amounts of funds are allocated for technical modernization; new hydro-technical facilities are being put into operation in all regions of the country. For the period of 2015-2017, the first stage of works was completed on land reclamation, including 28,164 ha in the Akhal region, 9,176 ha in the Balkan region, 11,362 ha in the Lebap region, and 9,249 ha in the Mary region. Similar work is close to completion in the Dashoguz region covering the area of 14,506 ha.

The second phase of construction of the "15 Years of Independence" reservoir in the Lebap region is underway. This reservoir is also regulating river runoff as well, thus ensuring continuous water flow along the Karakum-River with the defined parameters.

"Dyaneata" reservoir (capacity of 47.3 million m^3) for collection of flood water is under construction in Bereket district of the Balkan region. A new artificial water reservoir is under construction in Kunyaurgench district of the Dashoguz region. Khanhovuz (on Karakum river) and Saryyazy (Murgab river) reservoir bowls are under technical extention. Those reservoirs accumulate water resources and efficiently re-distribute them by season, keeping the water until it is the most needed for irrigated land.

In accordance with the "**Program of Work for Rational Water Use in Turkmenistan and Increasing Flow Capacity of the Karakum-River for 2015-2020**", the reconstruction of existing water-regulating and water pumping facilities and construction of new ones are underway; the water meters and other necessary equipment are being installed. A reservoir is planned on the Karakum-River, which supplies water to several regions.

In 2017, under the "**General Program on Clean Drinking Water for Turkmen Settlements**", groundwater reserves are being asessed; and the new water treatment facilities, reserve water intakes, and a water conduit are under construction. Additionally, it is planned to build desalination plants. Existing communications are under reconstruction to meet the necessary modern requirements.

The national holiday A Drop of Water Is a Grain of Gold is celebrated every first Sunday in April in Turkmenistan. It is intended for water managers, irrigators, engineers and other water sector workers. On 2 April 2017, Karakum-River and its bank became the heart of the celebration event.

An ambitious hydrotechnical project "Altyn Asyr" is under implementation in the country. This is a manmade Turkmen lake in the middle of the Karakum desert. The Decree for its construction was signed in August 2000. It is projected to collect secondary water via collectors from all irrigated land of the country, including Amu Darya lower reaches, into a natural low land Karashor located in the north-west of Turkmenistan. Its bottom is 25 meters below sea level. The water to be diverted through the collector and drainage facilities was flooding previously abandoned pastures in the Mary, Balkan, and Akhal provinces. It is expected that the Project would reduce the groundwater level and risk of floods, as well as increase the agricultural crop, enrich flora and fauna in Karakum, and, would have positive environmental impact in Turkmenistan and in the region as a whole. The second phase of construction is underway.

During 2017, the following water-related events were conducted in Ashgabat:

On 3-4 November: the CAREC workshop "The basics and principles of the integrated water resources management: International practice and regional experience" was held.

On 13-14 November, the sixth meeting of regional organizations dealing with sustainable development and water resources management issues in Central Asia was held.

The first time Amu Darya River Day was celebrated in November in the provincial center of Lebap.

On 19 December, the International Water Law Workshop was conducted

Turkmenistan continues its cooperation under the ICWC of Central Asia. Ashgabat hosted the 69th meeting of ICWC (January 26). On 6 June 2017, the first meeting of the Working Group on Water Saving was held at the premises of the Central Asian Ecological Forum. The Group was established by a ICWC Decision as part of the "Implementation Plan on strengthening the ICWC activities in key directions" (See ICWC of Central Asia).

Turkmenistan's Chairmanship in IFAS. A package of documents concerning Turkmenistan's Chairmanship of IFAS for the period of 2017-2019 was signed during the session of the Cabinet of Ministers on 16th of June. The main focus of Turkmenistan chairmanship in IFAS is made on the further development and strengthening of cooperation between the countries of the Central Asia region in stable development, rational use of water resources, reduce of desertisation and assistance in social and economic development of the Aral Sea region. Turkmenistan is preparing the Summit of Heads of state-founders of IFAS to be held in Ashgabat in 2018.

An international conference "The Role of the International Fund for Saving the Aral Sea in the Development of Cooperation in the Central Asian Region" was held in Ashgabat on 19 June 2017 under the Turkmenistan Chairmanship in IFAS. During the Conference the following issues have been addressed: efficient and rational use of transboundary water resources, mitigating the Aral Sea crisis' consequences and prevention of ecosystems degradation in the Prearalie, biodiversity conservation and sustainable use of natural resource, promotion of economic and social development of people living in the region (See Executive Committee of IFAS and its country branches).

On 9 February 2018, at the session of the Cabinet of Ministers, the Head of State has requested to draft a "**Program of water sector development in Turkmenistan for the period of 2018-2030**". The President has announced the relevant tasks on using the potential of water sector and assist in technical modernization of this sector through application of modern irrigation technologies in agro-industry, taking into account local climatic conditions, introduction of advanced technologies for rational water use, improvement of reclamation conditions, etc.

Turkmenistan actively cooperates on the Caspian Sea on a pentalateral basis. It hosts national conferences and regional workshops under the Caspian Ecological Program, which was established in line with the 1995 agreement supported by UNEP, UNDP, and WB; sessions of working groups; meetings for development of environmental documents on the Caspian Sea, and the international conferences aimed at resolution of Caspian problems. Turkmenistan continues scientific and environmental activities in the Caspian basin, including field monitoring of avifauna, research and practical expeditions, and young volunteers campaigns.

Agriculture

The key aspect of the state agrarian policy is the development of efficient governance system in agro-industry, increase of agricultural profitability, development of new economic relations in rural area, rational use of water and land resources, and protection of environment.

An integral **state support system of agro-industry** has been developed and currently successfully operating. The main elements of the system are investments in infrastructure modernization, technical re-equipment of agro-industry and services, including construction of agro-processing enterprises and fertilizer plants. Substantial funds are allocated for irrigation and land reclamation, seed farming, science and selection, and adoption of advanced resource-saving technologies and latest scientific and technological developments.

The real support for farmers is provided through **state subsidies and tax benefits**, including nominal fee for land plots and entire

tax exemption. Maintenance of equipment, supply with seeds, mineral fertilizers, and irrigation water and other services are provided to tenants and daikhan associatios on preferential terms. Concessional loan systems are widely used. To implement all of the above-mentioned actions, the land plots are provided to the ministries, regional bodies, members of the Association of engineers and enterpreneurs and daikhan households.

In 2017, during the enlarged session of the Cabinet of Ministers, the President of Turkmenistan highlighted the importance of wider adoption of **advanced technologies and scientific achievements**, improvement of soil fertility, and rational use of water resources. Agricultural research institutes being the key mechanisms for innovation development in agro-industry and their main scientific and technological platform should be brought to a higher level. The Turkmen President has requested to continue reforming agriculture and commence to lease out unprofitable daikhan associations for the period of 50 years and more.

Energy

International cooperation on energy is a priority for Turkmenistan, given the fact the country initiated two UNGA Resolutions of "Reliable and Stable Transit of Energy Resources and Its Role in Ensuring Sustainable Development and International Cooperation". Turkmenistan promotes these initiatives in international organizations, such as UN, OSCE, and Energy Charter Conference, the member of which Turkmenistan became in July 1997. By the end of 2016, Turkmenistan was elected as a chair-country of the Energy Charter Conference for 2017. In 2017, a range of activities was conducted to speed up the process of development of a new international legal mechanism for sustainable energy.

On 30-31 May, the International Energy Charter Conference "Towards a multilateral framework agreement on energy resources transit" was held. During the Conference, the issues of transit and cross-border transportation of energy resources, including natural gas, oil products and electricity, have been discussed. A Final document was adopted by the end of the Conference.

On 31 May 2017, a media forum dedicated to the 28th session of the International Energy Charter Conference was held to raise awareness of international mass media on the main activities of the Energy Charter.

On 7-8 November 2017, the 14th meeting of the Working group on the Regional Energy Cooperation in Central and South Asia (RECA) was held in Ashgabat. During the meeting, participants have discussed the implementation of regional and interregional infrastructure projects, as well as the strengthening of regional and interregional cooperation in energy, assessment of regional and inter-regional connections and infrastructure, prospects and potential for regional simplification of trade, transit and communication procedures. International experts were focusing in details on methodology for development of a roadmap on expanding cross-border trade.

On 28-29 November 2017 in Ashgabat, the 28th session of the International Energy Charter Conference on the issue of "Mobilizing Investments for Sustainable Energy of the Future and Diversifying Transportation Routes" was held. The Conference has become a platform for policy dialogue on sustainable energy investments, reliable transit and diversification of supply routes and energy sources within the International Energy Community Charter. During the event, a Memorandum of Understanding between the Ministry of Foreign Affairs of Turkmenistan and the Energy Charter Secretariat on Enhanced Cooperation has been signed. At the end of the session, the Ashgabat Declaration of the Energy Charter Conference, which was distributed as a main document of the 72nd Session of UN General Assembly under the item 19 (i) of the Agenda has been adopted.

Environment and climate change

Environment protection and efficient use of land and water resources are the priority areas of the state environmental policy of Turkmenistan. Turkmenistan's environmental strategy for the nearest future is aimed at environmental security and sustainable development through the integrated resolution of economic, social and environmental issues in a comprehensive manner, while saving the exsting natural resources.

There is a National Strategy for Climate Change in the country. The State inventory of green gas emissions, assessment of vulnerability, and mitigation measures are conducted on regular basis. Introduction of water conservation technologies, expansion of artificial

forest areas, construction of "Altyn Asyr" Lake to regulate drainage system, reduction of groundwaters level, improvment of land reclamation, and enrichment of desert biodiversity are currently under way. Seminars and conferences are being held. Thus, the Technology Center hosted a Round table, during which the activities on improvement of socio-economic and environmental conditions of the country's territory, affected by the Aral Sea have been discussed. A meeting on the management issues of the Ramsar site, "Turkmenbashi Bay", was conducted in Turkmenbashi city. Management practices in the Khazar National Park, the only place in the country nominated in the Ramsar site, have been interactively reviewed. A training workshop on geobotanical research of pastures was organized with the support of GIZ at the National Institute of Deserts, Flora and Fauna. The State Committee for Environmental Protection and Land Resources in cooperation with GIZ has conducted a workshop to discuss prospects of implementation of "green" economy principles.

Protective forest belts are established around rotation farms using various trees and shrubs watered by collector and drainage water. At the same time, pine-family trees and fruit trees are also planted. They prevent erosion, keep water in the soil, and enrich air with oxygen. A manmade forest park creates a special environment.

Since 2001, on annual basis, 22 of May, Turkmenistan has been celebrating the International Day of Biological Diversity. This day was proclaimed by the UN GA in 1995.

The first International Ecological Forum "Initiative for Cooperation in the Field of Environmental Protection and Sustainable Development in Central Asia" was held at the World Environment Day.

The Forum was held on 5-7 June 2017 in Ashgabat. It was organized by the State Committee for Environmental Protection and Land Resources of Turkmenistan and CAREC. The main topic of the Forum was "Climate change and water cooperation in the context of sustainable development in Central Asia". Under the Forum, the Ministry of Foreign Affairs of Turkmenistan has conducted a Round table "Role of mass media in covering environmental problems of the region". As follow-up to the Forum, CAREC was requested to develop and negotiate between the countries and international development partners a roadmap of the further cooperation "Environment for Central Asia".

The list of ongoing and already implemented in 2017 regional and national projects covering the issues of water resources management and their efficient use, combatting desertification, forest reproduction, and biodiversity conservation is as follows:

Putting into operation new sewage treatment and water recycling system at the Turkmenbashi oil refineries: implemented by "Petro Gas LLP";

The project "Ecosystem Approach in management of land and forest resources in the area of the Amu Darya River to improve the living conditions of local community as adaptation to climate change" was completed. As a result, a regional map showing location and condition of the coastal tugay forests of the midstream of Amu Darya has been developed; the territory has been physiographically analyzed;

The project "Supporting climate resilient livelihood in agricultural communities in drought-prone areas of Turkmenistan" was continued. It is aimed at sustainable development in the field of rational use of water and soil;

The project "Energy Efficiency and Renewable Energy for Sustainable Water Management in Turkmenistan" was continued. The project objective is to support and improve social conditions and economic livelihood of the population of Turkmenistan;

Completion of construction of an environment-friendly combined cycle gas turbine power station with enhanced efficiency was completed on the territory of the existing Mary power plant. In addition to gas turbines, boiler-utilizers and steam turbines are installed at this power plant.

SDGs in Turkmenistan

Turkmenistan takes substantial efforts to achieve SDGs, improve ecological efficiency of national economy, and create appropriate legal framework for management of natural resources Turkmenistan was one of the first countries that has adjusted the SDGs to the national context by starting the joint activity on their incorporation into national plans and programs.

On the 1st of September, the Science and Methodology Center for SDGs was opened at the Institute of International Relations of the Ministry of Foreign Affairs of Turkmenistan.

"Opening of the Center is a result of joint work of the Turkmen Government and the UN with reference to the appeal of the Chairman of the 71st UN GA Session to the UN member-states. We hope that the Center will become a foundation for exchange of experience on international practices in sustainable development" said Ms. Yelena Panova, the UN Resident Coordinator in Turkmenistan.

In early November, the Science and Methodology Center for SDGs organized its first training. The curriculum has covered 18 topics, including best practices of Turkmenistan on alternative energy and other relevant innovations; global climate change; preservation of marine ecosystems; and legal aspects.

Just before the upcoming UN Day the Government of Turkmenistan and the UN agencies have held a UN Debate Cup on SDG focusing on Turkmenistan's development efforts, students debated over "Economic growth to achieve sustainable development in the country".

Foreign policy and international cooperation

In 2017, the President of Turkmenistan had many meetings with officials from other countries and international organizations, including ministers, heads of international and regional organizations, diplomatic missions accredited in the country, and various international corporations and companies. As the Head of the State underlined, "the great achievement of our diplomacy in 2017 was the UN GA announcement **12th of December the International Day of Neutrality** (71st UNGA session, 2 February 2017), as well as the **adoption of Resolutions "Role of the UN Center for Preventive Diplomacy for Central Asia"** (55th Plenary meeting of the 72nd UNGA Session, 17 November 2017) **and "Strengthening the Links between all Modes of Transport to Achieve the Sustainable Development Goals"** (74th Plenary meeting of UNGA, 20 December 2017), and including Kushtdepdi singing and dancing to the Representative List of the Intangible Cultural Heritage of Humanity".

In 2017, 584 delegations at different levels visited Turkmenistan. 624 Turkmen delegations were sent abroad. 235 conferences, meetings and other events were organized in Turkmenistan and in other countries. Bilateral consultations between the representatives of the Ministry of Foreign Affairs of Turkmenisan and other countries were conducted on a regular basis. 226 bi- and multilateral international documents were signed. In 2017, Turkmenistan joined 6 international conventions. 47 bilateral political consultations, 18 meetings of Joint Intergovernmental Commissions, and 14 bilateral business-forums were organized.

On 29-31 March, Bangkok, the Turkmen delegation participated in the fourth Asia-Pacific Forum on Sustainable Development in the headquarters of the Economic and Social Commission for Asia and the Pacific.[4]

In June 2017, the UN Secretary-General Antonio Guterres visited Turkmenistan, and in September the Turkmen delegation participated in the 72nd UNGA Session, where the Permanent representative of Turkmenistan to the UN Mrs. A.Ataeva made a report and called the international community to be more involved in resolution of environmental issues, including water resource management issues (see Secretariat).

On 11-12 October, Ashgabat hosted the 1st Turkmen-Chinese Research and Innovation Forum "Innovations, new technologies and their use in production environment" organized by the Academy of Sciences of Turkmenistan and the P.R.C. Ministry of Science and Technology. Main topics of the conference included technology development under the renewable energy; farming innovations; modernization of gas-fired power plants to minimize negative effects on the natural environment; genetics and selection, veterinary and livestock breeding issues.

The MFA of Turkmenistan and Afghanistan adopted the Cooperation Program for the period of 2018-2019. On 13 October 2017, the Institute for International Relations of the Ministry of Foreign Affairs of Turkmenistan hosted the Academic Forum under the VII Ministerial Conference on the Regional Economic Cooperation for Afghanistan (RECCA). Under the energy cooperation, Turkmenistan's energy is supplied to the northern regions of Afghanistan on concessional terms. With the

[4] *Report of the Fourth Asia-Pacific Forum on Sustainable Development* - https://www.unescap.org/commission/73/document/E73_31E.pdf

completion of additional facilities, the amount of energy supply would be increased.

ADB's Board of Directors has endorsed a 5-year Country Partnership Strategy for Turkmenistan for the period of 2017-2021 "Catalyzing Regional Cooperation and Integration, and Economic Diversification". ADB has launched the country operations business plan for 2018–2019. It is aligned with ADB's country partnership strategy over 2017–2021 for Turkmenistan. The plan has been agreed with the adopted five-year strategy. The credit program is estimated at $950 million, of which $150 million is for energy projects, $600 million for transportation projects, and $200 million for SMEs.

The 13th EU-Central Asia Ministerial Meeting was held in Samarkand on 10-11 November. The Turkmen delegation headed by the Deputy Chairman of the Cabinet of Minister and the Minister of Foreign Affairs attended the meeting. The participants signed the Joint Communiqué "EU and Central Asia: Working for a Safer and More Prosperous Future Together".

Sources:

Official sites of the Ministry of Foreign Affairs (www.mfa.gov.tm/eng)
and the Ministry of Justice of Turkmenistan (minjust.gov.tm/ru/php/home.php);
State Information Agency "Turkmenistan Today" (http://tdh.gov.tm/eng);
On-line newspaper "Turkmenistan: the Golden Age" (http://www.turkmenistan.gov.tm/);
2017 Energy Charter Conference web-site (http://www.energyashgabat2017.gov.tm/en)
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5.5. Uzbekistan Overview

General information

Population. Beginning of 2018, the population was 32.6 million, 50.6% of which live in urban area, and 49.4% in rural area. From January to December 2017, the population increased by 533,400 people.

Economy. GDP at current prices amounted to more than UZS249.13 trillion and increased by 5.3% compared to 2016. At the end of 2017, GDP per capita was UZS7.69 million or 3.6% higher than in previous year. In terms of economic sectors, positive growth was recorded in agriculture, forestry, and fishery: from 18.1% in 2016 to 19.2% in 2017; industry and construction from 32.9% in 2016 to 33.5% in 2017. Small business and private entrepreneurship accounted for 53.3% or UZS119.3 billion in GDP. In 2017, the share of small business amounted to 39.6% in industrial production, 99% in agriculture, 65.1% in construction sector, and 88.4% in retail turnover. Small business accounted for 27% in the total exports, 50% in imports, and 32% in investments. In 2017, 81% of the total volume of GDP accounted for private sector and 19% for public sector. Exports increased almost by 15%.

Reforming public administration bodies

Significant changes have taken place in the sector of state and public works of Uzbekistan. Two ministries have been established: the Ministry of Innovation Development and the Ministry of Pre-school Education. 17 ministries, agencies, and other institutions have been reorganized; and 21 state public and administration facilities have been established.

The relevant measures for fundamental improvement of work of the **Ministry of Agriculture and Water Resources (MAWR)** have been taken. It was decided to abolish the working groups on agriculture issues within the structure of Central Administration of MAWR; to establish a Center for agricultural and water investment projects implementation at MAWR; to re-organize the Lower Syr Darya, Lower Amu Darya, and Zarafshan Basin Irrigation System Administrations (BISA) into the Lower Syr Darya, Syr Darya-Zarafshan, Lower Amu Darya, Left-Bank Amu Darya, Zarafshan and Lower Zarafshan BISA; to establish district irrigation departments at BISAs, including transfer of a part of district irrigation facilities and relevant staff of the Irrigation System Administrations to them, to transfer 1,324 operational staff members of operational water agencies at MAWR and establish administrative body to regulate district irrigation departments at BISAs (Decree of the President No. 5134 of 4 August 2017, Order of the President No. 3172 of 4 August 2017).

To increase the efficience of the system of emergency warning and mitigation of natural disasters and technogenic consequences, the work of the **Ministry for Emergency Situations** (MES) has also been improved. The Center of Hydrometeorological Service (UzHydromet), the State Inspection Committee for control and supervision over technical conditions and safety of large and particularly important water facilities at the Cabinet of Ministers, the State Inspection Committee for Small Vessels, and the Service of urgent reports at the Institute of Seismology of the Academy of Sciences have been transferred to the MES (Decree of the President No.5066 of 1 June 2017, Order of the President No. 3029 of 2 June 2017).

The **Ministry of Innovation Development** has been established. One of the focus areas of the Ministrty is introducing innovations into the system of environmental protection and natural resource use. Efficient introduction of ecologically friendly, resource- and energy-saving technologies, including wide development of alternative energy sources and water treatment and desalination are set as priorities of innovation development in Uzbekistan (Decree of the President No.264 of 29 November 2017).

The **State Committee for Environmental Protection** has been re-organized into the State Committee for Ecology and Environment Protection. These changes will increase consistency of work of public authorities and inspections in environmental protection and rational nature use; improve efficiency of inter-agency cooperation on the environmental and nature protection issues; protection of environmental systems; natural complexes and some other facilities (Decree of the President No.5024 of 21 April 2017).

To fundamentally **improve the system for protection of rights and legal interests of farm enterprizes, peasant (dehkan) housefarms, and garden plots owners and more efficient use of irrigated land**, the following decisions have

been made: (i) re-organize the farmer counicls into councils of farm enterprizes, peasant farms, and garden plots ownners; (ii) gradually re-organize farm enterprizes into multi-profile ones over the period of 2018-2021; and (iii) strengthen control over land use. Those who have failed in efficient use of land or have not planted crops in full, and have not implemented agrotechnical operations in due time would be under strong actions including termination of their land rights (Decree of President No.5199 of 9 October 2017).

Specific tasks have been developed to improve training for **water and agricultural engineers**; to strengthen material-technical and scientific-technological bases of relevant high education institutions; to widely introduce modern pedagogical technologies and ICT into educational process, and to organize systematic professional development and re-training for academic staff and personnel (Order of the President No. 3003 of 24 May 2017).

Agriculture and water management

Data on irrigation system as of January 2017. The total length of the inter-farm irrigation network in Uzbekistan is 27,868 km, of which 16,608 km is in earthen canal. The total length of the inter-farm irrigation network is 154,957 km, of which 120,120 km (77%) is in earthen canal. On the MAWR balance sheet, there are 1,665 pumping stations with 5,284 pumps having annual delivery of water 59.6 billion m³ and total capacity of 3,644 thousand kW. They deliver water to more than 2.2 million ha. Pumping stations of the Karshi cascade have the total water discharge of 175 m³/s (+35 m³/s of reserve), pumping altitude 157 m, and purched area of irrigation is 335,000 ha. Pumping stations of the Amu-Bukhara canal have the total water discharge of 216.4 m³/s, pumping altitude of 115 m, and irrigate territory of 315,000 ha. The main and inter-farm canals are equipped with 27,372 hydraulic facilities and 19,694 gauging stations. The on-farm network is comprised of 73,182 hydraulic facilities and 61,006 gauging stations. The total irrigated area of Uzbekistan is 4,293,000 ha, while the drainage area is 3,050,000 ha. The length of the collector-drainage network is 141,469 km, including 1,089 km of main network; 25,923 km of inter-farm network; 6,662.5 km of inter-district network; 36,740 km of subsurface horizontal drainage, and 72,143.9 km of on-farm drainage network. The total number of drainage wells is 7,871, including 3,802 vertical drainage wells and 4,069 irrigation wells. There are 55 reservoirs, of which 23 are off-stream reservoirs and 24 are in-stream reservoirs. The total water storage is 20,368 bcm, of which 16,272 bcm is useful storage.

Source: MAWR (2018)

Relevant measures are taken to **increase export potential** of some economic sectors and regions of the country, as well as to **reduce the territories given to cotton production**. From 1 June 2017, economic entities of Uzbekistan were given the right to export their own products without pre-payment, excluding fresh horticultural products, cucurbits, grapes, and raw products. Taking into account the plans to expand the export of horticultural products and, at the same time, increase provision of fruits and vegetables to the internal market, in 2017 Uzbekistan, for the first time, had organized year-round planting of crops. Annually, Uzbekistan grows about 20 million tons of horticultural products, of which 1 million tons are exported. At the same time, geographic coverage of export becomes wider. Currently, the country export market includes more than 80 countries. In 2016-2017, Uzbekistan exported agricultural products to 9 new markets, including Spain, Italy, Belgium, the Netherlands, Switzerland, Czech Republic, Israel, Lebanon, and Vietnam. According to official data, in 2016 Uzbekistan exported 818.5 thousand tons of horticultural products; this is 38% more comparing to previous year. Traditionally exported products include apricots, sweet cherry, raisins, grapes, legumes, tomatoes, herbs, peaches, and persimmons. The future aim is to increase export of these products and reduce dependence on cotton. According to the Program adopted for the period of 2017-2022, fruit- and berry-planted areas will be expanding and replacing cotton-planted areas. In 2017, the cotton area was reduced by more than 40,000 ha. In 2018, it is planned to free up 100,000 ha for growing of horticultural products. The fields with cereal planted in 2017, have been sown with imported potato seeds as a double-season crop (11,650 tons).

Uzbekistan is experimenting with the planting of new crops, such as soya, red beans, saffron, and others. Scientists are helping farmers in this process. The Government relies on agricultural diversification, increasing of private initiatives, and growth of export of new goods. The orders of the President (No.2832 of 14 March 2017 and No.3144 of 24 July 2017) provide relevant measures for organization of soya sowing and expansion of soybean production in the country for the period of 2017-2021.

Development of **greenhouses on the basis of hydroponics is underway**. It is planned to establish such greenhouses in rainfed areas throughout the country, including financial support from international investments. This will allow increasing fresh horticultural production in the country.

In 2017, Uzbekistan began introducing the **sustainable cotton farming standards** based on the principles of Better Cotton Initiative (BCI). This will allow growing cotton in a more environment - friendly way through significant reduction of water used, pesticide, and fertilizer inputs. Uzbekistan is planning to create its own specialized e-platform for cotton fiber trade. Today, global cotton fiber trade is regulated by prices offered by several worldlarge exchanges. In exporting cotton, Uzbekistan is guided by quotations of the Cotlook Limited (Liverpool cotton exchange).

Uzbekistan has become a **member of the International Sericultural Commission** registered within the United Nations, the purpose of which is development of sericulture and silk industry.

The **Union of Young Uzbek Farmers has been established** at the Youth Union of the Republic of Uzbekistan. It is planned that the activity of the Union will support young farmers; raise awareness, and develop farming among young people in the country. Together with the Union of Young Farmers, it is planned to provide consulting services through such centres as "Consultant farmer" and implement the "Youth on the Way of Innovation Development" Project.

Investments in agriculture and water management sector

The **Center for Implementation of Investment Projects in agriculture and water management sector has been established** on the base of MAWR's investment project units and their staff memebers. The main activity of the Centre incudes implementation of investment projects in agriculture and water management.

The **World Bank's Board of Executive Directors has approved allocaion of two loans in the total amount of $294.9 million to Uzbekistan for implementation of water resource management and livestock sector development projects**. A $144.9 million loan was provided to the Fergana Valley Water Resources Management Project - Phase 2, which would help to improve irrigation and drainage systems for the benefit of 180,000 farmers. The World Bank also provided a loan in the amount of $150 million for the Livestock Sector Development Project in Uzbekistan. By 2017, the portfolio of bilateral cooperation between Uzbekistan and the World Bank included 33 joint projects with attracted funding of the Bank in the amount of $2.8 billion in energy, modernization of irrigation and sanitation networks, water supply, and development of production, transport, and social infrastructure.

WB will allocate $1 billion loan to Uzbekistan for development and diversification of its agriculture.

Loan agreements with ADB to allocate $573 million for implementation of four projects have been signed. The Small Business Financing Project ($100 million) will expand the access to the financiall resources for small businesses in rural areas and women entrepreneurs. The"Water Supply System Development Project in Tashkent Region" in the amount of $121 million, which will improve living conditions of 3 million local people. $154 million is designated for a project "Horticulture Value Chain Development" to create and rehabilitate the orchards; modern greenhouses and processing and storage facilities in all regions of the country. $198 million is to be directed to the "Road Development Project in Kashkadarya Region", within which 77 km of provincial roads will be rebuilt and modernized.

The **International Fund for Agricultural Development intends to invest $100 million in the agricultural development of the Fergana Valley.** The project will provide concessional loan (at low interest rates) and grants to organize the process of processing of agricultural products focusing on internal and external markets.

MAWR and the Chinese Tebian Electric Apparatus Stock Co. Ltd signed a contract for the amount of $7.3 million to supply support equipment, pressure pipelines, and spare parts for assembling and dessambling as well as trainining. The loan agreement on co-funding of the project has been signed between the National Bank of Uzbekistan and the Export-Import Bank of China (Exim Bank). Under this agreement, the Exim Bank will provide a $6.9 million loan, with a five-year of grace period. Additionally, to fund the project, $14.3 million will be allocated from the State budget of the country. These funds will be used to improve irrigation in the Kashkadarya region.

China's Jiangsu Jiujiu Silk Co. Ltd. plans to invest $100 million in cultivation of prolific mulberry trees and cocoons; and production of silk and creation of new jobs in Uzbekistan. JiujiuSilk has been operating in Uzbekistan's "Jizzakh" Free Economic Zone since 2013.

Chinese Wanbang will invest $500 million to implement agricultural projects in Uzbekistan. The Agreement has been signed by the Ministry of Agriculture and Water Resources and the Uzbekozikovkat holding company. The agreement envisages joint implementation of more than 15 projects, including production, processing and packaging of agricultural products, livestock products, as well as export, import and re-export of finished products.

The Government of the Republic of Korea has approved a $3.5 million grant for the Boosting Uzbekistan's Agriculture through Building of Cold Storage Facilities Project. The grant will support the supply of special cold storage equipment, materials and vehicles, as well as construction and operation of cold storage rooms with a total capacity of 1,000 tons in the territory of AgroInnovatsiya, an enterprise of the Ministry of Agriculture and Water Resources of Uzbekistan in Yukorichirchik district of Tashkent region.

The **European Union will provide €21.5 million to Uzbekistan to develop innovative agriculture.** The EU delegation visited Uzbekistan on 26-28 April. The parties discussed an agreement on possible funding "The Horticulture Development Project", under which Uzbekistan will be provided with the grant for agricultural research, access of farmers to relevant technologies, information, and sales markets, as well as for aligning the National Food Program with the international standards. On July 17, Uzbekistan and EU signed a Financial agreement to modernize and strengthen the material-technical base of research institutes under MAWR.

Drinking water supply and sanitation

According to the Decree of the President of Uzbekistan No.5018 of 18 April 2017, the **State Inspection Committee for Control over Drinking Water Use was established** at the Cabinet of Ministers of the Republic of Uzbekistan. The Committee and its territorial branches form a single system for state control over water supply and sanitation.

On 21 April 2017, the Order of the President of Uzbekistan No. 2910 on the "**Program for Integrated Development and Modernization of Drinking Water Supply and Sewarage Systems for the period of 2017-2021**" was approved. The program provides construction and reconstruction of 10,200 km of water conduits and pipelines; 1677 water wells; and 1744 water towers and reservoirs, as well as installation of 1440 pumping facilities. The Clean Water Fund has also been established. Its funds would be provided for improvement and modernization of the whole water -supply and sewerage system and provision of population with quality water, especially in rural areas.

Hydropower and renewable energy

By the Order of the President of Uzbekistan No.2947 of 2 May 2017, the "**Program of Measures to Further Develop Hydropower over 2017-2021**" has been approved. In line with the Program, hydropower potential of the country is to be developed through construction of 42 new HPPs and modernization of 32 existing HPPs, with the increase of environment-friendly hydropower capacity in 1.7 times by 2025. In this context, for the period of 2017-2021, Uzbekistan plans to implement 18 construction projects and 14 modernization projects on hydropower stations for the whole amount of $2.65 billion.

According to the Decree of the President of Uzbekistan No.5044 of 18 May 2017, the joint stock company **"Uzbekgidroenergo" has been established** on the basis of HPPs, and other hydrotechnical and energy-related departments of the JSC "Uzbekgidroenergo" and the Company "Uzsuvenergo" under MAWR. This was done to increase efficient use of hydropower potential of the country, form a single water and energy resources management system; gradually increase the share of renewable hydropower resources in the energy production system; create new environment-friendly generating capacities; carry out technical and technological upgrade of the existing HPPs; mobilize foreign investments in hydropower development, and thus, fully meet the energy requirements of population and industry.

The "**Program on Further Development of Renewable Energy, Increase of Energy Efficiency in Economic and Social Sectors over 2017-2021**" was approved by the Order of the President No.3012 of 26 May 2017. The program sets targets for further development of renewable energy, including increase in the

share of renewables in the structure of generating capacities by 2025 from 12.7% to 19.7%, of which 15.8% will be from HPP, 2.3% will be generated by solar energy, and 1.6% will be generated by wind. The list of investment projects on development of renewable energy has been approved. The implementation of 810 projects worth $5.3 billion over the period of 2017-2025 is expected under the projects. The priority directions for the development of renewable energy sources through implementation of innovative technologies, science and technical reserch, diversification of energy and fuel balance, reduction of energy entensity of the production have been set up.

Over the period of 2017-2021, Uzbekistan is planning to implement projects on renewable energy for the total amount of $1.9 billion. In particular, it is planned to construct five solar photovoltaic stations with the total capacity of 500 MW in five regions of the country, with approximate total cost of $1.1 billion. The program also provides modernization of 8 HPPs and construction of 13 new small HPPs, with the capacity increased by 154 MW and the total cost of $724 million. Funding is to be made through the own funds of energy companies ($854 million); foreign loans ($804.6 million), loans from the Uzbek Fund for Reconstruction and Development ($110 million), and loans from Uzbek banks ($113.4 million).

Uzbekistan and China have signed contracts on hydropower development for the amount of $3 billion. Uzbekistan has also attracted Chinese loans for modernization of 299 pumping stations. This project will allow Uzbekistan to save energy and ensure reliable and regular water supply to population.

Uzbekistan has ratified the IRENA charter. The President of Uzbekistan Mr. Shavkat Mirziyoyev signed a Law "On ratification of the charter of the International Renewable Energy Agency (Bonn, 26 January 2009)" on 1 June 2017. Legislative Chamber of Oliy Majlis (the Parlament) has adopted the law on 25 May 2017 and Senate approved it on 27 May 2017. Ratification of the agency's charter will strength the cooperation in the filed of energy-saving technologies and renewable energy sources.

Russian state atomic energy corporation (Rosatom) is working on two projects to supply mini hydro power stations to Uzbekistan. Another ten hydro power stations are planned to supply in future. The Director for international activities of Atomenergomash (part of Rosatom) Roman Murashov told that the company was working on two projects in Uzbekistan. He noted that one project envisaged supply of six 60 MW units and the second project - about 10 MW. Murashov said that 10 additional projects were planned in the nearest 2-3 years.

The **Government approved the Program to build 37 pilot micro- HPPs in four regions of Uzbekistan.** It is planned that all HPPs will be built on natural and artificial watercourses in the Djizzak, Namangan, Syr Darya, and Khorezm regions. The total capacity of HPPs will be 6,100 kilowatt; their total cost would be over $8.5 million.

The **German Siemens and Uzbek State Investment Committee have signed a Memorandum of Understanding on scenarios of energy development in Uzbekistan.** Energy development will be focused on introduction of innovative technologies, creation of new jobs, localization of production and export opportunities. A integrated program to train young Uzbek engineers and graduates of the relevant universities and colleges to use Siemens equipment has been developed.

The **Asian Development Bank's (ADB) Board of Directors has approved a new $450 million loan to help install additional generating equipment with the capacity of between 850 to 950 megawatts (MW) in the Talimarjan thermal power plant (TPP).** The project will help expand Talimarjan TPP's capacity through the installation of additional combined cycle gas turbine units with combined heat and power facilities. This will increase the aggregate capacity of Talimarjan TPP to approximately 2,600 MW and improve its thermal efficiency from 48% to 52%. Besides, ADB will allocate $2 million for improvement of financial sustainability of the JSC "Uzbekenergo" and, strengthen power sector planning and tariff studies.

ADB will provide Uzbekistan a $2 billion loan to modernize energy sector. Since the country joined ADB in 1995, Uzbekistan has received $5.1 billion for 54 projects in agriculture, education, and modernization of energy sector and transport infrastructure. In addition $65 million have been provided under technical assistance grants.

Russian company is planning to modernize the HPPs in Uzbekistan. In November, "RusHydro" and "Uzbekgidroenergo" signed a Memorandum on cooperation. Under the Memorandum,

the JSC "Lengidroproekt" (a subsidiary of RusHydro) would implement the design of the 404 MW Pskem HPP in Uzbekistan. Based on invitation of Uzbekistan, the "Lengidroproekt" would compete in the process of development of projects for upgrading the Tashkent cascade (HPP-1); Chirchik cascade (HPP-10) phase III; Samarkand cascade (HPP-2) phase III; and Andizhan cascade. The "Lengidroproekt" has signed a contract with the joint stock company "Gidroproekt" (part of "Uzbekgidroenergo") to develop preliminary feasibility study for construction of the Pskem HPP in the Tashkent region. The work on preparation of feasibility study is planned to be completed by mid of 2018.

Environment, ecology, and climate change

The **State Committee for Ecology and Environment Protection has been established.** According to the Decree of the President of Uzbekistan No.5024 of 21 April "On Improving of the State Management for Ecology and Environment Protection", the State Committee for Environment Protection was re-arranged into the State Committee for Ecology and Environment Protection. The new Committee will be responsible for state control over ecology, environment protection, rational use and reproduction of natural resources. These changes will improve consistency of work of public authorities and environment protection inspections and rational nature use; improve efficiency of inter-agency interaction on the environment protection issues create conditions to achieve the environment-friendly ecosystem and its protection

Uzbekistan has joined the Paris Agreement on Climate. The Ambassador of Uzbekistan to the United States Bakhtiyor Gulyamov, on behalf of Uzbekistan, and Santiago Villalpando, chief of the treaty section at the Office of Legal Affairs of the United Nations have signed the Agreement.

The work on **increasing climate resilience of farming communities in the Republic of Karakalpakstan** under "Developing Climate Resilience of Farming Communities in the Drought Prone Parts of Uzbekistan" (UNDP and UzHydromet) Project has been continued. The project is funded by the Adaptation Fund under the Kyoto Protocol of the UN Framework Convention on Climate Change. In particular field seminars have been conducted in the districts of Karakalpakstan to practically demonstrate various approaches and measures for increasing resilience of farmers communities to climate change and to know the possibility of introduction of agro- and water saving technologies.

On 27 December 2017, a **Framework agreement was signed between Goskomecology of the Republic of Uzbekistan and CAREC**. The document establishes the conditions for efficient cooperation and mutual support of the Parties in implementation of joint measures, including implementation of particular projects, initiatives, and events aimed at improving ecological situation and supporting sustainable development of Uzbekistan, as well as coordinating joint participation in regional and international processes.

Aral Sea and Prearalie

The Order of the President No.2731 of 18 January 2017 envisages the adoption of the "**State Program for Development of the Prearalie Region for the period of 2017-2021**". The Pprogram includes a set of measures aimed at improving the environmental and socio-economic settings, living conditions of people of Prearalie, and timely and efficient implementation of investment projects to mitigate the consequences of environmental disaster of the Aral Sea. The State Program sets targets for creation of new permanent jobs in 2017 and specific parameters for increase of population access to clean freshwater over the period of 2017-2021 in the Republic of Karakalpakstan and the Khorezm region. To ensure reliable and stable funding of measures on the further development of Prearalie as well as fundamental improvement of living conditions of population, the Prearalie Development Fund has been established at the Ministry of Finance of the Republic of Uzbekistan.

On 10 February 2017, a **Joint Program "Building the resilience of communities affected by the Aral Sea disaster through the Multi-partner Human Security Fund for the Aral Sea Region"** has been launched in Tashkent. A "bottom-up" approach will be used under this program financed by the UN Human Security Trust Fund. The approach will ensure that population would be given an opportunity to define the priority tasks of the communities, and thus, boost public participation in the decision-making processes at the local level. On October 12-14, the UN Resident Coordinator in Uzbekistan Helena Fraiser and Ambassador of

Switzerland to Uzbekistan Olivier Chave visited the Republic of Karakalpakstan to see the current situation in the region; the efforts taken by the government to eliminate the consequences of the ecological catastrophe; measures for adaptation to climate change, and the UN activity in the northern region of the country.

Antonio Gutteres will promote the project on water resources use in the Amu Darya. President Sh.Mirziyoyev had a meeting with the UN Secretary-General Antonio Gutteres in the UN headquarters in New York. The President of Uzbekistan has invited the UN Secretary-General to participate in the International conference on current issues of security and sustainable development in Central Asia, which would take place in the city of Samarkand on November 10-11, 2017. The UN Secretary-General Antonio Gutteres assured that he would be fully dedicated to the promotion of the Conventions on use of Amu Darya and Syr Darya water resources and attraction of international attention to the mitigation of consequences of ecological catastrophe in the Prearalie Region.

Foreign policy and international cooperation

2017 was a successful year for the foreign policy development in Uzbekistan. During this year, the President of the country Sh.Mirziyoyev three times visited Turkmenistan, twice Kyrgyzstan and one time Russia and Kazakhstan. The Heads of the above countries have also visited Tashkent. A significant package of agreements has been signed with each of the Central Asian states.

The Presidents Sh.Mirziyoyev and G.Berdymukhamedov adopted a joint statement and signed the Agreement on Strategic Cooperation between Turkmenistan and Uzbekistan, as well as opened two new motor-vehicle and railway bridges across the Amu Darya. During the further visits, an agreement on easy exitway through the Turkmen ports to the Caspian Sea has been signed.

At the end of the Uzbek-Kazakh negotiations during the meeting between Sh.Mirziyoyev and N.Nazarbayev, 13 interstate, intergovernmental, and inter-agency documents have been signed. New check points and motor-vehicle roads were opened at the border with Kazakhstan.

During the visit of the President of Uzbekistan Sh.Mirziyoyev to Russia, a record number of joint documents has been signed, including the documents on tourism development, labor migration, public health, education, and industry for the total amount of $16 billion.

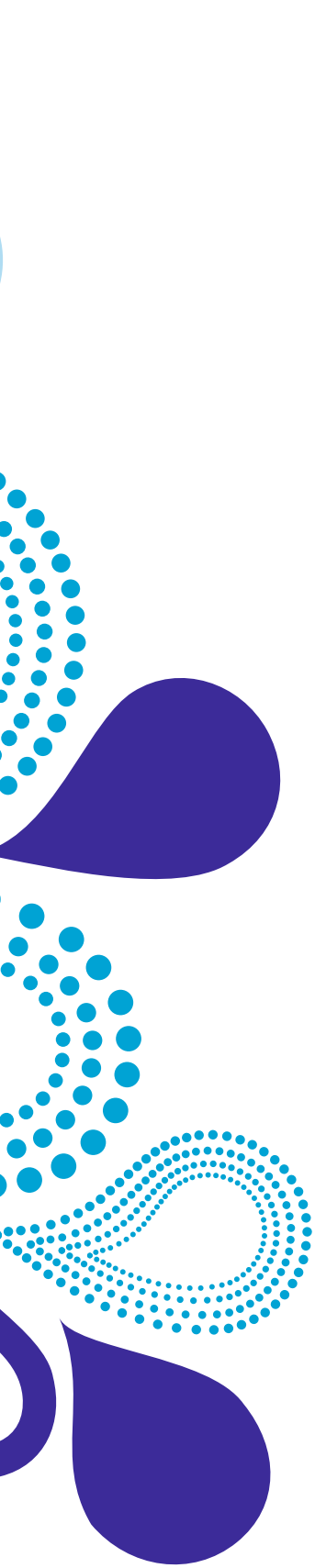
Given close cooperation and continued negotiations between the leaders of Kyrgyzstan and Uzbekistan, the Uzbek-Kyrgyz Agreement on demarcating of 85% of the Uzbekistan-Kyrgyzstan state border came into force in October 2017.

During the visit of the newly elected President of Kyrgyzstan S.Zheenbekov to Tashkent in December 2017, it was underlined that mutual trade increased by 56% and amounted to $235 million during 2017.

Development of cooperation with Afghanistan should also be mentioned. During the visit of the President of Afghanistan Ashraf Ghani to Uzbekistan, 20 agreements on security and 40 commercial contracts have been signed. The opening of the first civil flight between Uzbekistan and Afghanistan is a big achievement in cooperation between the two countries.

The visits of Uzbek leader to USA, China, and South Korea were also very successful. In the end of September, Sh.Mirziyoyev visited USA. In his speech at the UN General Assembly, the President mentioned the key aspects of the new development strategy of Uzbekistan and recent significant developments of the country. At the end of the US visit, joint documents on trade and economy, and finance and investments for the total amount of $2.6 billion have been signed (see section Bilateral Water Cooperation between the states in Central Asia).

Major information sources:
State Committee for Ecology and Environment Protection - http://uznature.uz/ru;
Ecological Movement of Uzbekistan http://eco.uz;
National information agency of Uzbekistan - http://www.uza.uz/ru/;
Uzbekistan Daily (https://www.uzdaily.com);
CA-NEWS: http://ca-news.org/;
New agency Sputnik Uzbekistan http://ru.sputniknews-uz.com/;
Vesti.Uz - https://vesti.uz/;
News agency Podrobno.uz -http://podrobno.uz/;
News of Uzbekistan – Газета.uz; https://www.gazeta.uz;



Section 6

United Nations and Its Specialized Agencies

6.1. General Assembly

The General Assembly 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 UN General Assembly meets September each year.

On September 12, 2017, the seventy-second session of the General Assembly was opened. Its agenda included 172 items. During the general debate held under the theme "Focusing on people – striving for peace and a decent life for all on a sustainable planet", the Presidents of the Kyrgyz Republic, Republic of Tajikistan, Republic of Uzbekistan, Minister of Foreign Affairs of the Republic of Kazakhstan, and Permanent Representative of Turkmenistan to UN delivered their speeches, where they focused on water, climate change, and energy-related issues.

Address by the Minister of Foreign Affairs of the Republic of Kazakhstan

In his speech, H.E. Mr. Kairat Abdrakhmanov underlined that the enhanced regional partnership between the Central Asian states would make the latter more capable of confronting threats and challenges. In this context, Kazakhstan pays particular attention to regional cooperation in overcoming the Aral Sea catastrophe. IFAS remains the only platform for dialogue between the heads of Central Asian states. "We believe that this platform could promote our common efforts in the development of mid- and long-term regional development strategies", said the Minister.

The speaker informed that Kazakhstan was actively working on establishing and hosting a UN Regional Hub for multilateral diplomacy in Almaty focusing on sustainable development, humanitarian assistance, disaster risk reduction and resilience building in the region and the wider area.

"My country remains deeply committed to sustainable development. Reckoning the reality of climate change, Kazakhstan, despite its abundant conventional energy resources, is deeply committed to a green economy through diversifying and developing alternative energy sources. This thinking led us to choose "Future Energy" as the theme for the Astana EXPO 2017 International Exhibition. Throughout the summer, 115 countries and 22 international organizations showcased their creative experiences.

This enormous undertaking is a clear evidence of Kazakhstan's pledge to carry forward the Paris Agreement and Agenda 2030. One of the best ways to promote green economy and green business we see is the use

of the heritage of the EXPO infrastructure. With the support of five UN agencies we are establishing the International Centre for Green Technologies and Investment Projects "Future Energy". Its activities will be in full compliance with the Kazakhstan "Green Bridge" Partnership Program reflected in the Rio+20 Outcome Document", he concluded.

Source: http://mfa.gov.kz/ru/content-view/vystuplenie-ep-g-na-kajrata-abdrahmanova-ministra-inostrannyh-del-respubliki-kazahstan-v-hode-obsih-prenij-na-72-j-sessii-generalnoj-assamblee-oon-nu-jork-sentabr-2017-goda-2

Address by the President of the Kyrgyz Republic

H.E. Mr. A. Atambayev underlined that climate change was a particular menace to mountainous countries, such as Kyrgyzstan. The climate change has impact on all sectors of economy in the Republic and cause substantial damage through more frequent natural disasters, such as landslides, mudflows, floods, and avalanches. He underscored that intensive melting of Kyrgyz glaciers was of particular concern.

As forecasted, by 2025 the total glacial area in the Republic could drop by 30-40% on average and, consequently, Central Asian rivers could lose 25-35% of water. Therefore, the country stands for implementation of joint projects for preservation of glaciers in mountain ecosystems of upstream countries.

The President spoke of the mutually beneficial use of water and energy resources as one of the main factors for prosperity in Central Asia. The Kyrgyz Republic consistently advocates the origin and implementation of economic mechanisms for water use in the region. The limited nature of water resources sooner or later brings us to the understanding that water is an economic resource that requires reasonable use.

He especially underlined that the matters of water use in Central Asia could and must be resolved by the countries in the region themselves via open dialogue, with account of the interests and needs of all concerned parties. It is unacceptable that international and regional organizations impose upon the countries of Central Asia their approaches and their ways for building cooperation in this sphere.

Source: http://kg.akipress.org/news:1405770/

Address by the President of the Republic of Tajikistan

H.E. Mr. E. Rakhmon mentioned that Tajikistan over the past years made a great stride towards implementation of Sustainable Development Goals. The Government of the Republic of Tajikistan, in cooperation with the relevant UN agencies, has developed and adopted a Mid-Term Development Strategy 2020 and National Development Strategy 2030.

The strategies have been developed in line with the Global agenda on sustainable development and their timely and effective implementation would contribute to the achievement of the global Sustainable Development Agenda.

In his speech, the President focused on glacial melting and natural disasters caused by climate change. With 93% of its territory covered by mountains, Tajikistan, due to its geographical location, faces destructive consequences of climate change and natural disasters. Climate

change accelerates melting of glaciers that brings about the rise of water level in rivers, which, in its turn, has a negative impact on the real sectors of national economy, particularly hydropower, agriculture and industry. It is obvious that accelerated melting of glaciers adversely affects processes of water resource generation in the region.

The President mentioned that one of the ways to achieve the goals of the Paris Agreement on Climate Change was to adhere to the recommendation of the "green" economy and promote comprehensive use of renewable energy sources. 98% of the country's energy is produced at hydropower stations generating environmentally friendly energy. In this context, the country reiterates its commitment to the global initiatives "Sustainable Energy for All" and the International Decade "Sustainable Energy 2014- 2024".

He informed that in order to review and deliberate on proposals and with the view of adopting a roadmap of a decade, the country intends to organize in New York on the World Water Day, 22 March 2018, a Special Event on the occasion of the launch of the International Decade for Action "Water for Sustainable Development 2018-2028" and host a High-Level International Conference on Water for Sustainable Development next June in Dushanbe.

Source: http://khovar.tj/rus/2017/09/vystuplenie-glavy-gosudarstva-emomali-rahmona-na-plenarnom-zasedanii-72-j-sessii-genassamblei-oon/

Address by the Turkmenistan Delegation

The Permanent Representative of Turkmenistan to the UN Mrs. Atayeva mentioned that Turkmenistan paid special attention to preventive diplomacy and gave a high status to the activities of the United Nations Regional Center for Preventive Diplomacy for Central Asia. In this context, it is proposed at the 72nd General Assembly to consider a possibility for adoption of a resolution in support of the preventive diplomacy mechanisms for addressing the important issues of delivering peace and security.

It was noted that the implementation of the SDGs was one of the key directions of Turkmenistan's strategic cooperation with the UN, and that in 2015, 17 objectives, 148 tasks and 193 SDG indicators were selected and adopted at the Government level by the UN. In this context, the National mechanism was developed for the implementation of SDG.

In light of Turkmenistan's chairmanship in the International Fund for Saving the Aral Sea (IFAS), it is proposed holding a Summit in 2018 in Turkmenistan, namely the Summit of the Heads of Founding States of IFAS, with participation of

the UN specialized agencies, such as the UNDP, UNEP, and the UN Regional Center for Preventive Diplomacy for Central Asia.

Source: https://gadebate.un.org/sites/default/files/gastatements/72/tm_ru.pdf

Address by the President of the Republic of Uzbekistan

H.E. Mr. Sh. Mirziyoyev underlined that Uzbekistan considered the region of Central Asia to be as the main priority of its foreign policy. And this is a conscious choice. Being in the heart of Central Asia, Uzbekistan is keenly interested in the region to become a zone of stability, sustainable development and good-neighborliness. A peaceful and economically prosperous Central Asia is our most important goal and key task. Uzbekistan is determined to engage in dialogue, constructive interaction and strengthening the good-neighborliness. The republic stands ready for reasonable compromises with the countries of Central Asia on all issues without exception.

The President focused on the joint use of the region's shared water resources. He told that he fully shared the position of the UN Secretary-General that "the problems of water, peace and security are inextricably linked". He expressed convince that there was no alternative to addressing the water problem other than equally taking into account the interests of the countries and nations of the region. Uzbekistan supports the draft conventions on the use of water resources of the Amu Darya and Syr Darya River Basins developed by the United Nations Regional Center for Preventive Diplomacy.

The President once again drew attention to one of the most acute ecological problems of

our time – the Aral Sea catastrophe. Overcoming the consequences of desiccation of the sea requires today the active consolidation of international efforts. "We stand for full implementation of the special UN Program to provide effective assistance to the population affected by the Aral Sea crisis adopted this year", the President said.

Source: http://www.president.uz/ru/lists/view/1063

6.2. Security Council

The Security Council (UNSC) 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 (China, France, Great Britain, Russia, USA,) and 10 non-permanent members elected by the General Assembly for two-year terms for 5 countries each year.

In 2017, Central Asia was presented in the UNSC for the first time in the UN history

On June 28, 2016, Kazakhstan for the first time was elected as a non-permanent member of the UNSC for 2017-2018. Kazakhstan's work in the UNSC began on 1 January 2017.

Priorities of Kazakhstan in UNSC:

promoting national strategic interests while strengthening regional security and cooperation in the country and Central Asia; addressing security challenges towards the enhancement of a zone of peace, cooperation and prosperity in the region; focusing on the settlement of situation in Afghanistan; promoting, through the Council, international initiatives of the Head of State related to the nuclear non-proliferation, fight against terrorism and extremism as set out in the Manifesto: The World. The 21st century.

Source: Ministry of Foreign Affairs of Kazakhstan, www.mfa.kz

UNSC briefing on Preventive Diplomacy and Transboundary Waters

On June 6, 2017, UNSC briefing "Maintenance of international peace and security: Preventive diplomacy and transboundary waters" was held. In his speech, the UN Secretary-General António Guterres told that the United Nations actively promoted mediation and dialogue as effective tools for preventing and resolving disputes over water and other natural resources. For example, the United Nations Regional Centre for Preventive Diplomacy for Central Asia is collaborating closely with the International Fund for Saving the Aral Sea and other partners to build capacity in water diplomacy and to modernize the regional legal framework on the management of trans-boundary water resources.

The Secretary-General told that while visiting the Aral Sea he would discuss with all five Governments of Central Asia how the United Nations is supporting mediation to prevent and resolve local and transboundary disputes over water in Central Asia and elsewhere. Water-related issues in Central Asia were also highlighted by the representatives of Kazakhstan and Japan.

Mr. Ashikbayev (Kazakhstan) mentioned the joint work of the countries in the region to conclude regional agreements on water resources and transboundary water manage-ment. He spoke on the Kazakhstan's initiatives to create a Central Asian investment fund for water projects to co-finance the construction and renovation of water facilities, establish a regional centre for water security, and jointly develop and sign a pact on water and environmental security in Central Asia.

Mr. Bessho (Japan) told that his country has been a proud partner of the Central Asian nations in promoting regional cooperation. He shared information on projects in Tajikistan and Uzbekistan and concluded that improving water management in both upstream and downstream countries benefits both groups of countries, thereby contributing not only to sustainable water use in the region but also to regional confidence-building.

The other members of UNSC indicated a large set of measures for preventive diplomacy to ensure water security, including improving knowledge, data, and information; political, legal, and institutional framework; capacity building; integrated approaches; joint projects and investments; and strengthening dialogue and interaction.

Detailed: S/PV.7959

Open debate in UNSC related to non-traditional challenges to international peace and security

On September 20, 2017, Japan initiated in UNSC an open debate related to addressing complex contemporary challenges to international peace and security, such as the proliferation of weapons of mass destruction, expansion of terrorism, climate change, pandemics, and transnational organized crime.

Almost everyone underlined that climate change was one of the key factors of escalating the threats, particularly, in the basin of Chad Lake, Darfur, Somali, and Sahel.

Other threats include food insecurity, deteriorated environment, and water scarcity. Representatives of Senegal, Slovenia, Lebanon, Columbia, Switzerland, Turkey, Norway, Peru, Hungary, Belgium, the Netherlands, Nepal, and Tuvalu focused on water-peace-security nexus. Central Asia was represented by Kazakhstan, Kyrgyz Republic, and Tajikistan.

Detailed: S/PV.8144

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).

On 8-14 June 2017, Mr. Antonio Guterres paid official visits to the Central Asian states and Afghanistan. Visit priorities included preventive diplomacy and regional cooperation as a response to regional challenges. The following issues were raised: environment and trans-boundary water use; achieving the SDG; preventing violent extremisms and fighting terrorism; situation in Afghanistan; fighting drugs and organized crime; economic and infrastructure cooperation; human rights and efficient management. Bilateral cooperation was discussed in each country.

The Secretary-General started his visit from Kazakhstan (8-9 June) as part of the Shanghai Cooperation Organization Summit and opening of EXPO-2017. Speaking at the Summit, he made a special plea to them to show commitment in efforts to implement the Paris Agreement on climate change (SG/T/3172).

On 9-10 June, the Secretary-General visited Uzbekistan (Samarkand, Nukus, and Muynak). After visiting Muynak and flying over Prearalie, he told that the Aral tragedy was one of the biggest ecological catastrophes of our time (SG/T/3173).

In the Kyrgyz Republic (10-11 June), he held a bilateral meeting with President Almazbek Atambaev and participated in a high-level forum on "Taza Koom", a project supported by the United Nations Development Program to facilitate achieving SDGs (SG/T/3174).

In Tajikistan (11-12 June), The Secretary-General had a number of visits and participated in the national conference on the SDG, where he stressed the importance of involving all stakeholders and their close cooperation. Mr. Antonio Guterres visited Lake Sarez, in the Pamir Mountains. He was informed that almost 30 per cent of its glaciers having melted in the last 10 years alone due to climate change (SG/T/3175).

In Turkmenistan (12-14 June), Mr. Antonio Guterres discussed transport, energy, and environmental protection problems, and participated in a high-level dialogue on implementing the UN Global Counter-Terrorism Strategy in Central Asia (SG/T/3176).

On 14 June, the Secretary-General finished his tour along the region visiting Afghanistan, where he discussed security problems and counter-terrorism measures (SG/T/3177).

(See also speeches of the Secretary-General at the UN Security Council in section Security Council).

6.4. UN Development Program (UNDP)

UNDP is the United Nations' global development network. It operates in 177 countries and territories.

UNDP activity in the Central Asian states in 2017:

Kazakhstan

The Expert support for the establishment of a national ODA system in Kazakhstan project is implemented. Particularly, the scientific-practical seminar "Improving the productivity and profitability of agribusiness through training of farmers and agricultural specialists of Central Asian countries in innovative technologies for water and energy saving" was held (April 24-28, Almaty).

The mechanism was launched to support energy-saving investment projects under the joint project of UNDP, GEF and the Government of the Republic of Kazakhstan "Low-carbon Urban Development".

The pilot project "Secure and integrated use of hydraulic facilities in the Aktobe province" was launched (9 November, Aktobe).

The Conference for presentation of the National Communication of the Republic of Kazakhstan to the UN Framework Convention on Climate

Change was organized by the Kazakh Ministry of Energy, GEF, and UNDP (29 November, Astana).

Source: www.kz.undp.org

Tajikistan

In 2017, the Disaster Risk Management Program was continued (2016-2020). UNDP signed three project documents with the Committee of Emergency Situations and Civil Defense. They are financed by the Government of Japan, Swiss Agency for Development and Cooperation, and Russian Trust Fund for Development to ensure preparedness and response capacities, as well as disaster risk management in Tajikistan.

"*Strengthening Disaster Risk Reduction and Response Capacities*" is a $10.6 million four-year project funded by the Government of Japan and designed to support the Government of Tajikistan in undertaking a nation-wide risk assessment, develop and implement risk reduction measures, improve early warning and disaster management planning, preparedness and response, as well as strengthen capacities of search and rescue teams.

"*Strengthening Preparedness and Response Capacities*" is a $1.5 million two-year project funded by the Russian Trust Fund for Development and designed to support the Committee of Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan in strengthening emergency preparedness and response capacities in the country through:

1) establishment of a unified emergency preparedness and response system; and

2) strengthening technical bases, as well as search and rescue capacities of Tsentrospas (specialized department of the Committee responsible for search and rescue operations).

"*Improved DRR Policy Making Mechanism. Strengthening Disaster Risk Governance in Tajikistan (SDRGT)*" is a $800,000 three-year project funded by Swiss Agency for Development and Cooperation and designed to improve risk governance in the country at all levels and broaden the engagement of key government, private sector and external organization actors in disaster risk governance in Tajikistan. The project will also increase the awareness of River Basin Organizations on managing water related hazards.

In April 2017, during a meeting with the President of Tajikistan, UN Resident Coordinator and UNDP Resident Representative in Tajikistan highlighted that UN agency would contribute over $363 million to the country during 5 years. These funds would support Tajikistan in implementation of its mid-term and long term National Development Strategy (NDS) until 2020 – 2030 and of water-related global initiatives of Tajikistan. The actions as part of those programs include improving the welfare of the population, socio-economic development, and environmental protection, ensuring universal access to electricity, and mitigation of water disaster risks.

The round table on the National Adaptation Plan of Tajikistan was held in Dushanbe in June. The event was aimed at assessing needs, capacities, and potential for adaptation to climate change and presenting the country National Plan.

A pilot workshop on Flood Management Planning was organized to discuss flood control management approaches at basin level (13 September, Khujand).

Source: http://www.tj.undp.org/

Turkmenistan

Under the new project "Climate resilient livelihoods in drought-affected areas", UNDP held a series of educational seminars and onsite trainings for the farmers, cattle breeders and administrative personnel of the local administration of Galkynysh district of Lebap region and Gorogly district of Dashoguz region to raise awareness on effects of climate change and discuss potential adaptation mechanisms (1-25 June, Lebap, Dashoguz).

The final results of the project "Addressing Climate Change Risks to Farming Systems in Turkmenistan at National and Community Level" were summarized. The Project was funded by the Adaptation Fund (August, Ashgabat).

In 2017, the project "Energy Efficiency and Renewable Energy for Sustainable Water Management in Turkmenistan" was continued. Particularly, UNDP held a seminar presenting innovative technologies and international best practices in efficient irrigation techniques in agriculture (November, Ashgabat).

As part of a joint project of UNDP, the Ministry of Agriculture and Water Resources of Turkmenistan and the Global Environment

Facility (GEF), construction of one of the largest infrastructure projects in the history of the UNDP Permanent Mission in Turkmenistan, the 14.8 km long Khivaabad-Kaahka waterway has commenced in November 2017.

Source: www.tm.undp.org

Uzbekistan

Implementation of the joint EU/UNDP "Technical Capacity Building" Project of the EU Sustainable Water Management in Uzbekistan's Rural Areas Program was continued. A series of training courses were conducted for 130 national water managers. The training modules and tools (see section United Nations Educational, Scientific and Cultural Organization), needs and capacities of national organizations providing training in the water sector were assessed (see section Activities of ICWC executive bodies in 2017).

A Joint program "Building the resilience of communities affected by the Aral Sea disaster through the Multi-partner Human Security Fund for the Aral Sea" was launched. It aims at improving social, economic, and environmental security in three pilot districts of Karakalpakstan (Muynak, Takhtakupyr, and Shumanay). Inception workshops were held for farmers, representatives of rural citizens' assemblies, government institutions and agencies, and private entrepreneurs (13 January), and a study tour for the representatives of Diplomatic Corpus and international organizations accredited in Uzbekistan, ministries, agencies, national and regional mass media was organized (14 March).

Work was continued to increase resilience of farming communities to climate change consequences in the Republic of Karakalpakstan under the project "Developing Climate Resilience of Farming Communities in the Drought Prone Areas of Uzbekistan" funded by the Adaptation Fund under the Kyoto Protocol of the UN Framework Convention on Climate Change.

EcoWeek 2017 was organized to raise awareness of local people and encourage their interest in and actions for environmental protection (31 May, International Press Club).

UNDP and Goskomecology launched a new initiative "High-Mountain Ecosystem Sustainability in Uzbekistan" (September, 2017).

Source: www.uz.undp.org

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 2017, UN-Water continued supporting UN member-states in sustainable management of water and sanitation.

A special focus was on implementation of the Integrated Monitoring Initiative for SDG 6. The Initiative aims to support countries in their monitoring efforts on the goals on water and sanitation across sectors and collect data to track global progress. The Program will be implemented in several phases. In 2017, the baseline data were generated for 11 global indicators of SDG 6. In addition, webinars for National Coordination Centers for SDG 6 monitoring were organized. At about 50 countries made their inputs in the SDG 6 Synthesis Report that would be presented in 2018 meeting of the High-level Political Forum on Sustainable Development (HLPF).

UN-Water released the United Nations World Water Development Report 2017 "Wastewater: the untapped resource". It calls for a quantum shift to see wastewater as a resource rather than a problem in a world where water is increasingly scarce but in growing demand.

Source: www.unwater.org, http://www.sdg6monitoring.org/, http://enb.iisd.org/water/un/27/

6.6. Economic Commission for Europe

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 multilateral environment agreements, including the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). In 2017, UNECE in cooperation with regional countries and partners continued to implement the Water Convention's Program of Work for 2016-2018 in six program areas: support to implementation and application of the Convention; identifying, assessing, and communicating the benefits of transboundary cooperation; the water-food-energy-ecosystem nexus in transboundary basins; adapting to climate change in transboundary basins; opening, promotion and partnerships; EU Water Initiative and National Policy Dialogues.

In 2017, the following events were organized by UNECE as part of the Water Convention: first Meeting of the Expert Group on Third Assessment (9-10 May 2017), twenty-fifth meeting of the Bureau of the Water Convention (7 July 2017), eighth meeting of the Implementation Committee (23-24 May 2017), twelfth meeting of the Working Group on IWRM (5-6 July 2017), 9th meeting of the Task Force on Water and Climate (13 December 2017), the Task Force meeting on the Water-Food-Energy-Ecosystem Nexus (18 October 2017), workshop on recent progress on transboundary water cooperation: from getting cooperation started to its long-term sustainability (4 July 2017), Global Workshop on Water Allocation (16-17 October 2017), and International Workshop on Water Scarcity: Taking action in transboundary basins and reducing health impacts (11-12 December 2017).

Source: www.unece.org/env/water/meetings.

Representatives of the Central Asian states participated in those meetings[5].

UNECE activities in Central Asia

In 2017, UNECE activities in Central Asia were focused on transboundary cooperation, water-food-energy-ecosystem nexus, national policy dialogues on IWRM, dam safety, and the Protocol on Water and Health.

Transboundary cooperation. The work focused on protection and use of transboundary rivers is at the centre of activities by the UNECE Water Convention team. In Central Asia, work was continued in the Chu-Talas basin (Kazakhstan-Kyrgyzstan), targeted on climate change adaptation issues. In 2017, the 10th anniversary of the Chu-Talas Water Commission was celebrated. In Panj River (Afghanistan-Tajikistan), UNECE kept supporting bilateral cooperation on hydrology and environment.

Since 2013, UNECE has carried out work on water-food-energy-ecosystems nexus in transboundary basins. In 2014-2015, a pilot nexus study was conducted for the Syr Darya basin. In 2017, a final report was published.

The work to support regular meetings of *National Policy Dialogues (NPDs)* under the EU Water Initiative (EUWI) is ongoing in Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan. In 2017, high-level NPD Steering Committee meetings were organized in Kazakhstan, Kyrgyzstan and Tajikistan. Representatives of different ministries and other stakeholders discussed latest water policy issues and international donors presented their ongoing projects. As part of the 7 December 2017 Kazakh NPD Steering Committee meeting, the International Water Assessment Centre (IWAC), the collaborative centre of the UNECE Water Convention, was launched in Astana. In Uzbekistan, the Government is currently considering launching of the NPD process. It is planned that in April 2018, a first Central Asian regional meeting of delegates from national NPD processes will be organized in Almaty.

In 2017, UNECE continued its support to Central Asian countries for improving dam safety through capacity building and development of relevant national legal frameworks for safe operation and maintenance of the dams.

None of the Central Asian countries are Parties to the UNECE-WHO/Europe Protocol on

[5] *Press-releases of ICWC* http://sic.icwc-aral.uz/releases/index.htm

Water and Health. Nevertheless, all five countries take active part in meetings and trainings that UNECE organizes regularly. In 2017, revision of earlier drafted water and health targets was ongoing in Kyrgyzstan and Tajikistan. In Kazakhstan, targets were being drafted for the first time as the country aims at becoming Party to the Protocol in 2018/2019. In Uzbekistan, events were organized by UNECE to inform in detail the ministries and agencies about requirements of the Protocol Water and Health.

In addition, UNECE in cooperation with UNESCAP manages the Special Program for the Central Asian countries (SPECA), thus facilitating economic cooperation between seven member-states of the Program (see section Economic and Social Commission for Asia and the Pacific).

Source: UNECE Secretariat
www.unece.org/env/water.html

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 the five regional missions of 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.

ESCAP in cooperation with UNECE manages the Special Program for the Central Asian countries (SPECA), which was launched under the Tashkent Declaration on 26 March 1998. Working mechanism of SPECA is represented by the activity of its Thematic Working Groups on Water, Energy and Environment; Sustainable Transport, Transit and Connectivity; Trade; Statistics; Knowledge-based Development; and on Gender and Economy.

On 5-6 December 2017, the Economic Forum "Innovation for the Sustainable Development Goals in the SPECA region" and twelfth session of the SPECA Governing Council were organized in Dushanbe under the chairmanship of Tajikistan. The Forum was attended by high-level representatives of the SPECA member-states, as well as international, Asian, and European organizations. The main theme was the call of SPECA countries for transboundary cooperation to address challenges related to disasters, food, energy, and water to achieve SDGs both in the region as a whole and in each of SPECA member-states.

The twelfth session of the SPECA Governing Council summarized work undertaken over 2016-2017, interactions with international organizations, and approved Work Plan for 2018-2019. Kazakhstan was elected as the Chair country of SPECA for 2018.

Source: www.unescap.org

6.8. 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. It facilitates international cooperation to create the networks for meteorological, climate, hydrological, and geophysical observations, as well as exchange, processing, and standardization of relevant data, and helps in technology transfer, staff training, and research. The organization organizes global events aimed at joining efforts to combat climate change, disasters and exchange information for their prevention.

In 2017, WMO organized:

Science Summit on seamless research for weather, climate, water and environment (October, Switzerland)

Stakeholders workshop on climate services for agriculture (November, Bhutan)

International workshop on Innovation in Hydrometry from ideas to operation (December, Switzerland)

6.9. 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 on-going projects in Central Asia.

Uzbekistan

In Uzbekistan, IFAD loans work to enable sustainable income growth for rural people through viable small-scale agricultural production and rural enterprise systems. IFAD country strategic opportunities program for Uzbekistan aims to improve rural people's capacity and ability to benefit from high value agricultural systems; increase the productive assets and competitiveness of smaller-scale productive entities in rural areas to enhance their participation in markets; and enhance the ability of small-scale producers to make environmentally sustainable use of natural resources and build their proficiency in adapting to climatic variations.

Projects in Uzbekistan:

Agriculture Diversification and Modernization Project;

Horticultural Support Project;

Dairy Value Chains Development Program.

Tajikistan

In Tajikistan, IFAD loans work to improve the livelihoods of poor rural people by strengthening their organizations and enabling them to access productive technologies and resources. Key activities include: natural resource management; implementing land reforms; and strengthening local institutions and grass-roots organizations.

Projects in Tajikistan:

Livestock and Pasture Development Project. Phase I/ Phase II;

Community-Based Agricultural Support Project

Kyrgyzstan

In Kyrgyzstan, IFAD loans help to reduce poverty and enhance economic growth by helping rural poor earn more and improve their living standards. Activities target vulnerable households, especially women headed ones, through increased production and advanced value chain in livestock production. Key activities include: improving livestock productivity and enhancing the climate resilience of pastoral communities, increasing the returns of livestock farmers; and improving the access and integration of smallholder livestock farmers with remunerative markets for their products.

Projects in Kyrgyzstan:

Livestock and Market Development Program I and Program II;

Access to Markets.

Source: www.ifad.org

6.10. United Nations Educational, Scientific and Cultural Organization

The United Nations Educational, Scientific and Cultural Organization (UNESCO) coordinates international cooperation on education, science, culture, and communications relying on the following priorities: attaining quality education for all and lifelong learning; mobilizing science knowledge and policy for sustainable development; addressing emerging social and ethical challenges; fostering cultural diversity, intercultural dialogue and a culture of peace; and building inclusive knowledge societies through information and communication. Established in 1945, it includes 193 member-states.

In 2017, UNESCO continued implementing the following projects in Central Asia, including in the area of nature and water resources:

The project "Building the resilience of communities affected by the Aral Sea disaster through the Multi-partner Human Security Fund for the Aral Sea" (Uzbekistan) aims at ensuring livelihood generation, social cohesion and efficient management of natural resources in the sustainable development of tourism, use and management of cultural and natural resources;

The project "Capacity building for sustain-able water management in Uzbekistan" in the framework of the component 2 "Technical capacity building" implemented within the framework of the EU Program "Sustainable Water Resources Management in Rural Areas in the Republic of Uzbekistan". Assessment results were presented during the seminar "Baseline assessment of existing and past training modules and tools" (June 2017);

The project "Sustaining Livelihoods Affected by the Aral Sea Disaster" aims to improve economic, food, health and environmental security for the population of Karakalpakstan affected by the Aral Sea environmental disaster (Uzbekistan);

The project "Improving the welfare and quality of life in the Kyzylorda region through innovative approaches to delivering economic, social and environmental services to the local population, including those most vulnerable" (Kazakhstan);

The project "Expanding the opportunities of the Mangystau region in achieving sustainable development and socio-economic modernization (Kazakhstan).

6.11. Food and Agriculture Organization

Food and Agriculture Organization of the United Nations (FAO) was established in 1945. It carries out analyses and gives recommendations on reforms related to agriculture, land use rights, and natural resource use.

On August 22-24, the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan in cooperation with FAO organized an International Conference on **Development of Organic Agriculture in Central Asia**. The Conference aimed at exchanging experiences and discussing local practices and modern technologies for further cooperation among Central Asian countries.

In October, several Central Asian states organized events dedicated to the **World Food Day**. Thus, Expo 2017 Astana included numerous roundtable discussions and other events organized by FAO. In addition, a festival, fair, and other events were held to raise public awareness.

The inception workshop dedicated to the launch of the project entitled Central Asian Desert Initiative - **Conservation and adaptive use of cold winter deserts in Central Asia (CADI)** was held in Tashkent in November 2017. CADI is an initiative taken by Michael Succow Foundation for the Protection of Nature (MSF), University of Greifswald, FAO and national partner institutions that aims for long term commitment by governments for conservation and sustainable use of Central Asian cold winter deserts. It seeks to generate knowledge, transfer practical knowledge into sustainable land management practices, foster the protection of the ecosystem and improve nature conservation, and feed lessons learned into national, regional and international dialogue. The 3-year initiative (2017-2020) will cover activities in Kazakhstan, Turkmenistan, and Uzbekistan.

Source: http://www.fao.org

6.12. United Nations Regional Center for Preventive Diplomacy for Central Asia

The United Nations Regional Center for Preventive Diplomacy for Central Asia (UNRCCA) was established by the UN Security Council on 16 May 2007 with the headquarters in Ashgabat. UNRCCA promotes dialogues between the Central Asia states on transboundary water resource management and supports initiatives aimed at solving environmental and other problems influencing the situation in the Aral Sea basin. It supports the governments in capacity building for water diplomacy and revising legal mechanisms for rational use of transboundary water resources in compliance with the international law and agreements in force. It cooperates with the Central Asian states to raise awareness on consequences of glacial melting and climate change.

In 2017, the former Minister of Foreign Affairs and Deputy Prime Minister of Moldova Ms. Natalya Gherman was appointed a new Head of UNRCCA. She succeeded Mr.Petko Draganov from Bulgaria.

10th anniversary and Program of Action 2018-2020

In 2017, UNRCCA marked its 10th anniversary. On that occasion on November 2017, UNGA adopted a resolution initiated by Turkmenistan, highlighting the central role of the Centre in "encouraging political dialogue directed towards collective actions to address common challenges and development of economic and social cooperation in the region of Central Asia."

On 11 December 2017, UNRCCA conducted a Meeting of Foreign Ministers of Central Asia and Afghanistan, on the occasion of the Centre's 10th anniversary. During the meeting, participants expressed their support to the Centre's fourth Program of Action 2018-2020.

The Program of Action for 2018-2020 focuses on five key priority areas which correspond to the Centre's mandate: (1) promoting prevention among the governments of Central Asia; (2) monitoring and early warning; (3) building partnerships for prevention; (4) strengthening the UN's preventive activities in the region; and (5) encouraging cooperation and interaction between Central Asia and Afghanistan. Issues of water and energy security are treated as the key ones when implementing the Program.

Center's activities on water-related issues

In accordance with its mandate, UNRCCA provides all-round support to the countries in strengthening regional water dialogue by providing political platform and necessary expertise. The task of the Center is to support the efforts of all five Central Asian countries without exception in finding mutually acceptable solutions in the sphere of water and energy.

As a result of numerous rounds of consultations and negotiations conducted at the platform of UNRCCA in 2012-2014, the basic legal principles of equitable and mutually beneficial use of water resources in Central Asia were developed. Then, in March 2017, with the assistance of independent international experts, and with the participation of relevant UN agencies, UNRCCA developed and proposed to the Central Asian countries two draft agreements on the Amu Darya and Syr Darya river basins as a basis for possible negotiations. These drafts incorporated best international practices on transboundary water cooperation as well as the specifics of Central Asia region.

Seminars on International water law and cooperation

In 2017, the following seminars were organized as part of the program: "Ensuring Equitable Management of Transboundary Watercourses in Central Asia through International Diplomacy, Law and Institutions: Theory and Practical Solutions":

"International water law: main legal principles and substantive norms", 5-6 April 2017, Ashgabat, Turkmenistan;

"Institutional Mechanisms of Transboundary Water Cooperation", 17-18 July 2017, Almaty, Kazakhstan;

"International water conflicts: principles and means of dispute resolution", 18-19 October 2017, Dushanbe, Tajikistan.

International Conference on Security and Development in Samarkand

UNRCCA hosted as a co-organizer an International conference "Central Asia: Shared Past and a Common Future, Cooperation for Sustainable Development and Mutual Prosperity", which took place in the city of

Samarkand on 10-11 November 2017. UNRCCA hosted the Session dedicated to cooperation of Central Asian states on water use and ecology, which was moderated by the SRSG Natalia Gherman. The debate highlighted the need to unite efforts in resolving disagreements on water-energy issues in Central Asia and called all interested parties to enhanced cooperation.

Source: https://unrcca.unmissions.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.

In 2017, ILC focused its activities on: immunity of State officials from foreign criminal jurisdiction; provisional application of treaties; protection of the environment in relation to armed conflicts; protection of the atmosphere; crimes against humanity; and peremptory norms of general international law (jus cogens). At its 69th session, The Commission decided to include in its long-term program of work the topics: a) general principles of law; and b) evidence before international courts and tribunals.

Source: Report on the work of ILC at its 69th session, 2017 (A/72/10)

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 2017, two cases directly related to water were examined by the Court.

Gabčíkovo-Nagymaros Project (Hungary/Slovakia)

In its Judgment of 25 September 1997, the Court called upon both States to negotiate in good faith in order to ensure achievement of the objectives of the 1977 Treaty, which it declared was still in force, while taking account of the factual situation that had developed since 1989. On 3 September 1998, Slovakia filed in the Registry of the Court a request for an additional judgment in the case because of the unwillingness of Hungary to implement the Judgment delivered by the Court. Hungary filed a written statement of its position on the request for an additional judgment made by Slovakia within the time limit of 7 December 1998. The parties subsequently resumed negotiations and regularly informed the Court of the progress made.

By a letter from the Agent of Slovakia dated 30 June 2017, the Slovak Government requested that the Court "place on record [its] discontinuance of the proceedings [instituted by means of the Request for an additional judgment in the case]". In a letter dated 12 July 2017, the Agent of Hungary stated that his Government "[did] not oppose the discontinuance of the proceedings instituted by means of the Request of Slovakia of 3 September 1998 for an additional judgment". By a letter to both Agents dated 18 July 2017, the Court communicated its decision to place on record the discontinuance of the procedure begun by means of Slovakia's Request for an additional judgment.

Dispute over the Status and Use of the Waters of the Silala (Chile v. Bolivia)

On 6 June 2016, the Republic of Chile filed an Application instituting proceedings against the Plurinational State of Bolivia with regard to a dispute concerning the status and use of the waters of the Silala. Chile contends that "due to Bolivia's insistence on denying that the Silala River is an international watercourse and

Bolivia's contention that it has rights to the 100% use of its waters" and requests the Court to adjudge and declare that:

> "(a) the Silala River system, together with the subterranean portions of its system, is an international watercourse, the use of which is governed by customary international law;
>
> (b) Chile is entitled to the equitable and reasonable use of the waters of the Silala River system in accordance with customary international law;
>
> (c) Under the standard of equitable and reasonable utilization, Chile is entitled to its current use of the waters of the Silala River;
>
> (d) Bolivia has an obligation to take all appropriate measures to prevent and control pollution and other forms of harm to Chile resulting from its activities in the vicinity of the Silala River;
>
> (e) Bolivia has an obligation to cooperate and to provide Chile with timely notification of planned measures which may have an adverse effect on shared water resources, to exchange data and information and to conduct where appropriate an environmental impact assessment, in order to enable Chile to evaluate the possible effects of such planned measures, obligations that Bolivia has breached."

By an Order of 1 July 2016, the Court fixed 3 July 2017 and 3 July 2018 as the respective time limits for the filing of a Memorial by Chile and a Counter-Memorial by Bolivia. The Memorial of Chile was filed within the time limit thus fixed.

Source: ICJ report at the 72nd Session of UNGA, 2017 (A/72/4)

Section 7

International Water Organizations and Initiatives

7.1. 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.

In 2017, the Council continued its **key initiatives**: financing water infrastructure; cities at the heart of growth; water and climate change; integrating World Water Forums; involving key political actors; and integrated water resource management.

In 2017, preparations to the **8th World Water Forum** to be held on March 18-23, 2017 in Brasilia (Brazil) were well underway. Organized every three years, 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. The Forum brings together participants from all levels and areas, including politics, multilateral institutions, academia, civil society and the private sector, among others. The five processes of the 8th World Water Forum – Thematic, Regional, Political, Sustainability Focus Group and Citizen's Forum – were on track. Session coordinators have been selected and in August, the Thematic Commission launched a call for contributions to enhance the content of the Forum. In addition, the first Preparatory Committee meeting of the Ministerial Process was organized at the end of year.

Source: www.worldwatercouncil.org

7.2. 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.

In 2017, the major event of ICID activity was the **23rd ICID Congress** and 68th ICID International Executive Council Meeting. Attended by more than 832 delegates from 35 countries, this year the Congress theme was "Modernization of Irrigation and Drainage towards a New Green Revolution". Policy makers and officials from various countries unanimously voiced their support to take the world towards a path of modernization for a new green revolution through collaborative efforts and a partnership for Agriculture Water Management.

Recommendation on the first question (Question 60: Water productivity: Revisiting the concepts in light of water, energy and food nexus) mainly focus on water security, which has environmental and social aspects. It was underlined that analysis of water laws and legal frameworks to achieve sustainable water management leading to water security was necessary.

The second question (Question 61: State of knowledge of irrigation techniques and practicalities within given socio-economic settings) considered precision agriculture, definition of which evokes different understanding amongst the community covering a wide range of options and technologies for application management at the field level and also the necessary decision support. Advances in technologies like ICT and cloud based computing models for real time decision support coupled with accurate determination of the status in the field using drones enable the application to large areas with multiple holdings.

Representatives of Central Asian countries and SIC ICWC participated in the 23rd ICID Congress.

For details see: www.icid2017.org

A publication titled 'A Roadmap to ICID Vision 2030: A Water Secure World Free of Poverty and Hunger' was unveiled during the **68th Plenary**

Session of the International Executive Council (IEC). This Roadmap depicts ICID's Mission, Vision and Goals under the global program of sustainable development, with focus on water management in agriculture to eradicate poverty and hunger. Particularly, within the Action Plan 2017-21, which forms part of the Roadmap, the work will be carried out to include the Americas, Mediterranean region and Africa in the research network supported by the current member countries' financial capabilities and aimed at broad technical support of agricultural production.

On 4-7 March 2017, the Iranian National Committee on Irrigation and Drainage successfully organized the **13th International Drainage Workshop** (IDW-13) in **Ahwaz City, Iran.** The IDW-13 was attended by some 700 delegates from 23 countries. ICID has been organizing International Drainage Workshops since 1983 when the main emphasis was on 'Land Drainage' design and construction. The emphasis moved on to 'Modern Drainage' where the concerns about disposal of the drainage water and the ways and means to reduce environmental adverse impacts were given a priority. The theme Drainage and Environmental Sustainability enabled issues related to measures to improve drainage water quality; measures to lower volume of drainage water; adaption of new design criteria in favor of the environment; and application of alternative drainage methods.

Source: I.G.Bondarik, ICID Vice-President, ICID web-site www.icid.org

7.3. International Network of Basin Organizations

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 river basins as an essential tool for sustainable development. 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, including African, Latin American, Mediterranean, etc. In 2017, INBO actively participated in preparatory process of the 8th World Water Forum, as well as in organization of important water related events.

INBO was a partner of the African Great Lakes Conference, which took place on 2-5 May 2017 in Entebbe, Uganda. The conference was aimed to link science and best practices to solutions for conservation and sustainable development of the African Great Lakes region. The conference brought together leaders from government resource agencies, basin organizations and other lake basin management groups of the region's major lakes, multi-lateral agencies, academic institutions, the private sector and non-governmental organizations, to facilitate collaboration, strengthen capacity, inform policy and management with science and practice, and encourage basin-scale ecosystem management. The outcome of the conference was a resolution.[6]

INBO also co-organized the International Summit on "Water and Climate: Meeting of the Great Rivers of the World", which was held on October 23-25 in Rome (see section "Key Water Developments in the World").

The 15th International Conference "EUROPE-INBO 2017" for the Implementation of the European Water Directives was organized on 20-23 September in Dublin, Ireland. The conference was organized with the updated issues of the field Implementation of the Water Framework Directive and other European Water Directives. The workshop on "Water data management organization and electronic reporting" took place, and 4 thematic roundtables were organized: Water Framework Directive: upcoming milestones; adaptation to climate change; public participation; and new threats to aquatic environments. The outcome of the Conference was the Dublin Declaration of INBO-EUROPE.[7]

INBO took part in the 23rd session of the Conference of the Parties (COP 23) to the UN Convention on Climate Change (UNFCCC), held on 6-17 November in Bonn, where the Network presented two-year dynamics of the Paris Pact on Water and Adaptation to Climate Change in the Basins of Rivers, Lakes, and Water Courses already signed by 359 organizations[8].

[6] www.greatlakesofafrica.org
[7] www.inbo-news.org
[8] www.cop-23.org/

In 2017, INBO published its regular Newsletter (Issue 25 of August 2017), which highlighted key water developments within the framework of Network.

English version of the Newsletter is available on https://www.riob.org/en/documents/inbo-newsletter-ndeg25-august-2017

Network of the Eastern Europe, Caucasus, and Central Asia 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 developed by the Scientific-Information Center of ICWC and JSC "Vodstroy" under support of the Government of Russian Federation and the UN Economic Commission for Europe, and Network's activities are coordinated with those of the International Network of Basin Organizations (INBO).

On 18-19 May 2017, the EECCA NWO International Conference: Challenges of river basin management in the context of climate change was held in Moscow. It brought together researchers and experts from many countries, including Russia, Belarus, Moldova, Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, France, Switzerland, and Austria.

The focus areas of the Conference were: transboundary river basin cooperation; sustainable water management and adoption of information-communication technologies at basin level; adaptation of water management to climate change and anthropogenic impact; water-food production-hydropower-environment nexus; SMART-water; water supply and sanitation; and, river basin reclamation issues.

The collection of scientific papers - "Challenges of River Basin Management in the context of Climate Change" – was issued as a follow-up to the Conference. It contains articles reflecting the current state of research and efforts on climate mitigation in the EECCA countries.

Source: www.eecca-water.net/

7.4. Global Water Partnership

The Global Water Partnership (GWP) is a global network of action including over 3000 partners in 183 countries.

GWP is comprised of 13 Regional Water Partnerships (RWPs) and 86 National Water Partnerships (NWPs), with the mission to advance governance and management of water resources for sustainable and equitable development.

GWP for the Countries of Caucasus and Central Asia (GWP CACENA) is one of the 13th RWPs established in 2002. It is a network that unites the national water partnerships, which in their turn unite the Partners in the regional countries. By 31 December 2017, the network is comprised of 135 acting accredited partners.

The mission of GWP CACENA is to support and assist the countries in Central Asia and Caucasus in sustainable water resources management; its ultimate goal is the implementation of IWRM principles and SDG. From 2003 to 2017, $2.6 million €3.4 million were mobilized for GWP CACENA programs in the region.

In 2017, GWP CACENA delivered knowledge products focused on region-specific issues, such as irrigated agriculture and water for food security; transboundary aspect (water diplomacy); water-energy-food-ecosystem nexus; water and environment/ecosystems; water supply and sanitation – urban IWRM; water and climate – adaptation and mitigation.

GWP CACENA provides consultations and expert services, supports National Policy Dialogues on IWRM in all countries and facilitates coordinated process of capacity building and water diplomacy in the region.

GWP CACENA partners contribute to accumulation and dissemination of knowledge, visit major national, regional, and international events, and conduct round tables, workshops, and trainings.

The 2018 Work Plan of GWP CACENA consists of three main components:

1. Basic activities: facilitating GWP CACENA operational network working with strategic partners and stakeholders to integrate SDGs and water security, as well as IWRM as the tools in development process;

2. Water, Climate and Development Program (WACDEP): supporting national governments in implementing the Paris Climate Agreement by supporting the development of quantitative targets as part of the National Adaptation Plans and relevant SDGs and of project proposals to be financed through the Green Climate Fund; and

3. Increasing preparedness to achieve water-related SDGs by 2030: supporting concrete efforts for better understanding, monitoring, and financing the implications of new SDGs structure in selected countries in 2016-2019. The component will supplement other efforts made by GWP in these countries. Two countries were selected in the region, Armenia and Kazakhstan, which would be supported by GWPO.

Source: www.gwp.org/en/CACENA/

7.5. International Water Resources Association

International Water Resources Association (IWRA) is a global knowledge network of water experts. It was established in 1971. It provides a global, knowledge based forum for bridging disciplines and geographies by connecting professionals, students, individuals, corporations, and institutions who are concerned with the sustainable use of the world's water resources. Since 1973, IWRA holds a World Water Congress every three years in various locations around the world.

The **XVI World Water Congress** was held in Cancun, Mexico, from 29 May to 3 June 2017 and it was co-hosted by IWRA, the National Water Commission of Mexico (CONAGUA) and the National Association of Water and Sanitation Utilities (ANEAS). One of its major outcomes was IWRA's Cancun Declaration – A Call for Action to Bridge Science and Water Policy-Making for Sustainable Development, which stresses the following:

- Business as usual" in science, policy and implementation is not an option;
- Stronger efforts for new interdisciplinary knowledge and better knowledge sharing are crucial;
- Scientific evidence-based policy making is essential; and
- Dissemination of good practices is crucial for fostering implementation of adaptive solutions.

The Congress solemnly urged:

Policy makers and donors: to assimilate science into the decision-making process; to finance and facilitate programs and processes to build evidence-based policies;

Scientists and professionals: to respond to the needs of civil society and to make new knowledge available for public debate; to commit themselves to the implementation of adaptive solutions;

Civil society: to adapt its own behavior to new challenges; to share its knowledge of realities and take part in the design and implementation of adaptive innovative solutions.

Source: www.iwra.org/

7.6. Stockholm International Water institute and World Water Week

The Stockholm International Water Institute (SIWI) is a Swedish not-for-profit foundation, which seeks to strengthen the governance of fresh water globally, regionally, nationally, and locally. Its priority areas include cooperation over shared waters, informed internation. In 2017, the 2018-2021 period strategy was adopted, based on which SIWI intends to influence decision-makers, by combining its convening power with our expertise in water governance, and by building dialogue, improving policies, and changing water governance practice.

World Water Week

The World Water Week in Stockholm, organized by SIWI, is the annual focal point for the globe's water issues. In 2017, the Week was held from 27 August to 1 September 2017 and addressed the theme "Water and Waste: Reduce and reuse". It gathered policy makers, civil servants, parliamentarians, scientists, activists, environmentalists, representatives of business and academia from 133 countries, including from Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

During the World Water Week, three events were organized with participation of the representatives of Central Asia and addressed such issues as water diplomacy, participation of local communities in water resource management, and involvement of regional academic community in global sustainable development processes.

The main conclusions from the Week include:

- Policy-makers want to hear what we have to say;
- Strengthened governance allows and directs vital investment;
- Young professionals are claiming their rightful place at the table;
- Interest from the private sector at World Water Week is escalating;
- We must make a new push for the Water Goal in the Agenda 2030;
- Water Cooperation is crucial in times of increased demand and scarcity, and
- We must strive to better understand the different values of water.

Professor Stephen McCaffrey received the 2017 Stockholm Water Prize for his unparalleled contribution to the evolution and progressive realization of international water law.

Source: www.siwi.org

7.7. High Level Panel on Water

Achieving SDGs will require governments, societies, and the private sector to change the way they use and manage water. To accelerate this transformation the UN Secretary General Ban Ki-moon and World Bank Group President Jim Kim have convened a High Level Panel on Water (HLPW) in 2016. The Panel, consisting of 11 Heads of State and Government, is to provide the leadership required in championing a comprehensive, inclusive and collaborative way of developing and managing water resources, and improving water and sanitation related services.

Members of the Panel

H.E. Mrs. Ameenah Gurib-Fakim, President of Mauritius (Co-Chair);

H.E. Mr. Enrique Peña Nieto, President of Mexico (Co-Chair);

H.E. Mr. Malcolm Turnbull, Prime Minister of Australia;

H.E. Mrs. Sheikh Hasina, Prime Minister of Bangladesh;

H.E. Mr. János Áder, President of Hungary;

H.E. Mr. Hani Mulki, Prime Minister of Jordan;

H.E. Mr. Mark Rutte, Prime Minister of Netherlands;

H.E. Pedro Pablo Kuczynski Godard, President of Peru;

H. E. Mr. Jacob Zuma, President of South Africa;

H.E. Mr. Macky Sall, President of Senegal;

H.E. Emomali Rahmon, Tajikistan President; and

Special Advisor Dr. Han Seung-soo, Former prime Minister of the Republic of Korea.

Mandate and focus

Over the 2 years of its mandate, the Panel aims to mobilize support for a new approach to water that will underpin a more sustainable approach to global development – as outlined in the 17 Sustainable Development Goals, and in particular SDG 6 which focuses on ensuring the availability and sustainable management of water and sanitation for all. To achieve this, the Panel will motivate efficient actions and promote efforts to mobilize and target financial resources, scale-up investment, and encourage innovation and partnerships.

Action Plan

On 21 September 2016, the HLPW called for a fundamental shift in the way the world deals with water and launched its Action Plan on new approach to water management, achievement of which is stipulated by the 2030 Global Agenda. It is built around the following key areas:

- Catalyzing Changes, Building Partnerships and International Cooperation;
- Resilient Economies and Societies, and Disaster Risk Reduction;
- Universal Access to Safe Water and Sanitation;
- Sustainable Cities and Human Settlements;
- Water and the Environment;
- Infrastructure and Investments;
- Water Governance;
- Water Data; and
- Valuing Water.

Leadership Initiatives of the Panel members

Following an initiative led by the President of Tajikistan H.E. Mr. Emomali Rahmon, UN has adopted resolution no.A/RES/71/222 calling for a new **International Decade for Action on "Water for Sustainable Development" 2018-2028**. The main goal of the Decade is to increase awareness of water resources and its role in the global development agenda, as well as to promote the implementation of the water related SDGs. Tajikistan proposed the Concept note on the implementation of the Decade, including a set of activities under the Panel. It will work at its implementation and intends to adopt a Plan of action on the implementation of the Decade. Tajikistan is going to establish under the Government of Tajikistan a Special Centre and Preparatory Committee for monitoring the implementation of the Decade.

Recognizing that water is life, but also a cause of 90% of disasters, Panel Co-Chair, H.E. Mr. Enrique Pena Nieto, President of Mexico, is promoting **an initiative on water and disaster risk reduction**. Special Adviser to the Panel Dr. Han Seung-soo, former Prime Minister of the Republic of Korea, also works on the issues related to water resources and disasters.

To address the goal of 10 billion people with access to water and sanitation by 2030, President of South Africa H.E. Mr Jacob Zuma launched the World Water Development Report focused on the theme **"Wastewater: the untapped resource"**.

President of Hungary H.E. Mr. János Áder has initiated a dialogue with multilateral development banks and other stakeholders to increase **investment in the sector**.

H.E. Mrs. Ameenah Gurib, President of Mauritius, H.E. Mr. Macky Sall, President of Senegal and H.E. Mr. Pedro Pablo Kuczynski, President of Peru, are taking action in their own countries to accelerate the achievement of **universal access** through new service delivery and sector financing models.

Prime Minister of Australia H.E. Mr. Malcolm Turnbull announced **Water Data** initiative, with a focus on innovation and harmonization to improve access to water-related data.

To strengthen sustainable water management and water use, Prime Minister of the Netherlands H.E. Mr. Mark Rutte invites all stakeholders in dialogue on the approach and

principles for **valuing water**. This dialogue aims at developing a set of shared principles to motivate and encourage governments, business and civil society to consider water's multiple values.

Prime Minister of Bangladesh H.E. Ms. Sheikh Hasina hosts a meeting of South and East Asian leaders in Dhaka to discuss **cross-border collaboration and improved access to safe drinking water** and sanitation in Asia.

The report of HLPW will be launched in March 2018.

Source:
https://sustainabledevelopment.un.org/HLPWater

7.8. Global High-level Panel on Water and Peace

The Global High-Level Panel on Water and Peace was launched in November 2015 upon the initiative of Switzerland. 15 countries have co-convened the Panel: Cambodia, Colombia, Costa Rica, Estonia, France, Ghana, Hungary, Jordan, Kazakhstan, Morocco, Oman, Senegal, Slovenia, Spain, and Switzerland.

Panel Members serving in their individual capacity:

Prof. Danilo Türk, former President of the Republic of Slovenia (Chairman);

H.E. Mr. Mansour Faye, Minister of Hydraulics and Sanitation of the Republic of Senegal (Vice-Chair)

Dr. Alvaro Umaña Quesado, former Minister of Energy and Environment of Costa Rica (Vice-Chair);

Mr. Abdelaaziz Ameziane, adviser to the General Secretariat of the Ministry of Water of Morocco;

Prof. Laurence Boisson de Chazournes, Professor at the Law Faculty at the University of Geneva;

Mr. Franck Galland, founder and CEO of Environmental Emergency and Security Services for the French Republic;

His Royal Highness Prince Hassan bin Talal of the Hashemite Kingdom of Jordan;

Dr Claudia Patricia Mora, former Vice Minister of Water and Sanitation of the Republic of Colombia;

Mr. Yerlan Nysanbayev, Vice Minister of Agriculture of the Republic of Kazakhstan;

Mr. Ciaran O'Cuinn, Center Director of the Middle East Desalinization Research Center of the Sultanate of Oman;

Dr Andres Tarand, nominated by Estonia, former Prime Minister of the Republic of Estonia;

Dr Pascual Fernandez, former State Secretary for Water and Seashore of Spain;

Hon. Mike Hammah, former Minister for Land and Natural Resources of the Republic of Ghana;

H.E. Mr. Thor Chetha, State Secretary of the Minister of Water Resources and Meteorology of the Kingdom of Cambodia;

Prof. Andras Szöllösi-Nagy, former Rector for the UNESCO-IHE Institute for Water Education in Delft.

Tasks

The Global High-Level Panel on Water and Peace was asked to study the nexus between water and peace, in light of the experiences of our era and to make recommendations for water as an instrument of peace. The issue of "Water and Peace" has many facets. The Panel was asked to focus on four main themes:

- Identify legal, economic, financial and institutional mechanisms to incentivize multi-sectoral and transboundary water cooperation;
- Examine how to cope with and prevent water-related conflicts, namely trans-boundary and inter-sectoral – possibly exploring potential mechanisms to promote hydro-diplomacy;
- Promote effective implementation of the global water conventions;
- Promote best practices in water cooperation.

Outcomes

Between November 2015 and May 2017, the Panel met four times and conducted a series of consultations with experts, decision makers, and civil society organizations.

Two years of work resulted in the report "A Matter of Survival" presented on 14 September 2017.

The Panel recommendations include: monitoring and data sharing should be prioritized; the UN Global Compact should be signed to develop an appropriate voluntary code of private companies of practice on water management; the Blue Fund should be created for concessional and preferential funding of transboundary water cooperation projects; and a new mechanism should be established - Global Observatory for Water and Peace – to facilitate assistance to governments in using water as an instrument of cooperation and to build peace.

The Geneva Water Hub acted as Secretariat of the Panel with support of the Strategic Foresight Group (Mumbai).

Source: Geneva Water Hub, www.genevawaterhub.org/panel-water-peace

7.9. Geneva Water Hub

The Geneva Water Hub is a joint Project of the Swiss Confederation (Agency for Development and Cooperation, Global Program Water) and the University of Geneva. The Geneva Water Hub was established to help prevent water conflicts at an early stage and to promote water as an instrument of peace and cooperation.

A Platform of international water law was established under the Geneva Water Hub on the base of the Faculty of Law. It leads a coalition of universities on international humanitarian law related to protection of water infrastructure during and after armed conflicts.

In 2017, the Geneva Water Hub acted as Secretariat of the Global High-Level Panel on Water and Peace (see section Global High-Level Panel on Water and Peace).

Other events of the Hub in 2017 included:

On 3 February 2017, the Geneva Water Hub organized a Think-Tank Round Table on "Refugees and Access to Water: Challenges and Responses" in Geneva. Representatives from international organizations and non-governmental organizations participated in the event, including ICRC, IOM, UNHCR, UNICEF, UNEP, and others. Some of the key recommendations are:

1) Prevent forced forms of migration by identifying water and security hotspots and by supporting protection activities connected to the WASH sector;

2) Ensure that WASH needs of the most vulnerable displaced populations such as refugees and internally displaced people (IDPs) are considered in the implementation of SDGs in host countries in order to promote the co-development of displaced populations and host communities;

3) Promote the right of refugees, IDPs and other displaced population to work. The event was supported by the Global Water Program of the Swiss Agency for Development and Cooperation.

Online courses were organized on International water law (see section Water Education).

7.10. OECD Initiative on Water Governance

The Water Governance Initiative of the Organization for Economic Cooperation and Development (OECD) is an international multi-stakeholder network of members from the public, private and non-for-profit sectors gathering regularly to share good practices in support of better governance in the water sector. The Water Governance Initiative (WGI) provides a multi-stakeholder technical platform to share knowledge, experience and best practices on water governance across levels of government; advises governments in taking the needed steps for effective water reforms through peer-to-peer dialogue and stakeholder engagement across public, private and non-profit sectors; provides a consultation mechanism to raise the profile of governance in the Global Water Agenda; supports the implementation of the OECD Principles on Water Governance in interested member and non-member countries, basins and cities by scaling up best practices and developing indicators.

In 2017, several meetings of the OECD Initiative were organized.

The 8th meeting of the OECD Water Governance Initiative (12-13 January 2017, Rabat, Morocco) gathered more than 75 representatives from major stakeholder groups. Delegates shared key messages from recent global water-relevant events (COP 22, Habitat III, and Budapest Water Summit) and welcomed the efforts towards water governance indicators as a self-assessment tool for dialogue on the OECD Principles on Water Governance. Ways forward to set up an online platform of water governance practices were discussed. A session was devoted to water governance in Morocco.

At the 9th meeting of the OECD Water Governance Initiative (3-4 July 2017, Paris, France), the members welcomed the revised water governance indicator framework and the 69 water governance stories that were collected to illustrate how the OECD Principles can be implemented at different levels, as well as results achieved and lessons learned during policy and reform processes. A session was devoted to water governance in France.

At the 10th meeting of the OECD Water Governance Initiative (20-21 November 2017, Vienna, Austria), a special issue on the OECD Principles on Water Governance of the journal Water International was presented as a joint OECD/IWRA imitative to help bridge the science-policy gap through a series of articles co-authored by WGI members. Delegates discussed the results of the four peer-learning webinars on "water governance stories". A knowledge sharing session was devoted to water governance in Austria.

In addition, WGI members held active consultations to shape the session topics under the theme "Governance" of the 8th World Water Forum coordinated by OECD together with other organizations and to organize discussions at the Forum.

Source: http://www.oecd.org/cfe/regional-policy/water-governance-initiative.htm

Section 8

Activity of International Partners in Central Asia

8.1. World Bank

In 2017, the World Bank made its contribution to the High-Level Panel on Water through the organization of regional consultation led by Tajikistan. In July 2017, Tajikistan hosted the second regional consultation on Valuing Water Initiative. The event was aimed at providing exchange of views, experience and best practices, as well as recommendations, which would further create new mechanisms and opportunities to solve water issues at the national and regional levels. Regional consultations are part of a global process contributing to work of the Panel (see High-Level Panel on Water).

In the Central Asia region, the Water-Energy-Climate Nexus remains an important area of action for 2017, with the ending of the 2nd phase of the Central Asia Energy and Water Development Program (CAEWDP), which consists of three pillars:

1 Energy Development: Promote and study high-value energy investments that focus on winter energy security, energy efficiency, trade and accountability, and infrastructure planning;

2 Water Productivity: Enhance the productive and efficient use of water in agriculture and energy sectors;

3 Energy-Water Linkages: Improve the understanding of linkages between energy and water at the national and regional levels through dialogue, energy-water modelling, regional hydrometeorology, and exploring the future impacts of climate change.

To assist countries in adaption to future climate risks, the Central Asia Hydrometeorology Modernization Project (CAHMP) was continued. It is bolstering weather forecasting and early warning efforts in the region.The project provided cutting-edge technical equipment – such as modern workstations, automated observation networks, access to satellite data and numerical weather prediction – coupled with specialized trainings for participating agencies. Because of these improvements, the forecast accuracy in the Kyrgyz Republic and Tajikistan increased by 20 to 30 percent.

Source: World Bank

8.2. German Society for International Cooperation

The German Society for International Cooperation or , Deutsche GesellschaftfürInternationale Zusammenarbeit (GIZ) carries out its activity in Central Asia under the Transboundary Water Management in Central Asia Program as part of the Berlin Process.

In 2017, one of the key events organized by GIZ was the successful launch of a new initiative. For the first time in the history of the Central Asian states, the Amu Darya River Day was celebrated in October-November. The event aimed at strengthening ties between peoples living in the river basin in Tajikistan, Turkmenistan, and Uzbekistan. A regional conference "Amu Darya – the River of Friendship and Cooperation" (Turkmenabad), concerts, as well as photo and drawing competitions were held on the occasion of the event.

Significant efforts were focused on strengthening material and technical base of the ICWC Executive Bodies, particularly of BWO Amu Darya and BWO Syr Darya. To increase technical capacity, as well as improve hydrometric monitoring, modern computers and hydrometric equipment were handed over to BWOs and their branches. In addition, trainings were organized for the staff. Activities were carried out to raise awareness of stakeholders on BWOs' activities. Particularly, working meeting of BWO Amu Darya branches were organized; the draft version of the BWO Amu Darya web-site is developed. A special focus was on improving the structure and form of and unifying reporting of BWOs to ICWC.

Introduction of integtrated water resource management is important in Central Asia. In this context, the work was continued with government agencies to develop and implement the modern method of basin planning, including on transboundary rivers. Development of unified approaches to water management in Central Asia enables additional opportunities for cooperation.

Source: GIZ Transboundary Water Management in Central Asia Program

8.3. Swiss Agency for Development and Cooperation

The Swiss Agency for Development and Cooperation (SDC) is the agency for international cooperation of the Federal Department of Foreign Affairs of the Swiss Confederation.

The Agency aims to prevent conflicts, support social and economic development, good governance, and protect environment. Water management is a central aspect of Switzerland's involvement in Central Asia.

In order to tackle water, energy, food and security-related challenges, Switzerland supports dialogue and cooperation in the region through its "Blue Diplomacy" approach. Under this approach, water resources are to be managed, protected and shared equitably among the Central Asian countries.

Among other goals, Blue Diplomacy is also intended to contribute to peaceful coexistence and stability in the region. In June 2017, the Blue Peace Central Asia Conference was organized in Astana to share knowledge on water resources, security, and sustainable growth. On June 17-19, 2017, SDC supported organization of the first "Youth Regional Meeting on Water in Central Asia".

Around 20 young people from Central Asia and the nearby region between the ages of 18 and 30, who are active in the water and sanitation sector, had the opportunity to exchange on and contribute to the required actions aimed at better integrated water management in the region.z

8.4. United State Agency for International Development

The United State Agency for International Development (USAID) works across the whole Central Asian region to transform water sharing problems into cooperation that would lead to better and equitable water management.

On July 26, 2017, a forum on **"Innovative Water Management for Sustainable Development"** was organized by the USAID Local Governance Project in Dushanbe and chaired by the First Deputy of the Ministry of Energy and Water Resources of the Republic of Tajikistan Mr. Sulton Rahimzoda. It focused on improving the quality and management of drinking water supply services in Tajikistan.

More than 60 participants, including key government counterparts, representatives of the water sector, chairmen of districts and jamoats, and development partners discussed the current state of the drinking water supply in rural Tajikistan and identified ways to increase access through investment and improved management. At the end of the forum participants drafted a resolution with recommendations on ways to improve rural water management, which will be forwarded to the President's Executive Office for approval.

On February 1, 2017, The Ministry of Agriculture and Water Resources of Uzbekistan and the Regional Environmental Centre for Central Asia signed a cooperative agreement to implement a five year water management project **"Smart Waters"**. The project aims to improve water management training system for professionals, academic researchers and policy makers among the countries of Aral Sea basin.

On 11-13 December 2017, USAID in partnership with the Academy of Sciences and Ministry of Agriculture and Water Resources of Uzbekistan and development partners convened a three-day international workshop on **"Innovations in Marginal Water Resource for Resilient Agriculture and Food Security"**. The main purpose of this workshop was to exchange best practices and technologies for better human and ecosystem health. More than 50 scientists, researchers, policy makers from 15 countries gathered in Tashkent under USAID's Partnerships for Enhanced Engagement in Research (PEER), which is a competitive grant program designed to increase cooperation and networking between U.S. scientists and local experts.

8.5. Organization for Security and Co-operation in Europe

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 trans-boundary water management, training and capacity development, research and development of standards and legislation. Following are some highlights of the OSCE's work in these areas during 2017.

The **OSCE Program Office in Astana** (POiA) worked with IFAS and UNECE in supporting the Aralo-Syr Darya Water Basin Council and the Chu-Talas Water Basin Council in addressing water management challenges. The POiA also supported youth education through the Central Asia Leadership Program on water resources monitoring (in partnership with CAREC) and the Summer School for environmental specialists on methods for monitoring water resources (in partnership with the German-Kazakh University). Both events covered the representatives of the five Central Asian countries and Afghanistan.

The **OSCE Program Office in Bishkek** (POiB) continued to support the Kyrgyz-Kazakh Chu-Talas Commission, a body that co-ordinates maintenance and use of infrastructure along the transboundary Chu and Talas Rivers, by funding the publication of its 2007-2016 activities report. OSCE, UNECE and UNESCAP have been supporting the Commission since 2003, and the work conducted by the Commission represents a remarkable success story of shared transboundary water resources management in Central Asia.

The **OSCE Centre in Ashgabat** (CiA) provided support to the State Committee on Environmental Protection and Land Resources of Turkmenistan in the organization of the International Environmental Forum on Climate Change and Water Cooperation in the context of Sustainable Development in Central Asia. The forum brought together more than 200 representatives from governments of all 5 Central Asian countries and strengthened the dialogue on environmental issues between government agencies, the international community, academia and business in Central Asia. The Aarhus Centre in Ashgabat, supported by the CiA, was a co-organizer of the special session of the forum on the role of media in covering environmental problems in the region.

The **OSCE Program Office in Dushanbe** (POiD) supported the Ministry of Energy and Water Resources in the development of regulatory frameworks as well as awareness raising and dissemination of relevant materials. POiD jointly with the Ministry of Emergency Situations of Azerbaijan organized training for Tajik officials from different government bodies for exchanging experience on the safety of hydraulic structures and their operational conditions. PoiD also in cooperation with Chemonics provided training to newly established Water Users Associations (WUAs) in Khatlon region on institutional and technical issues.

The **OSCE Project Co-ordinator in Uzbekistan** assisted in organization of a wetland monitoring mission carried out by the Agency GEF of IFAS (see Agency GEF of the International Fund for saving the Aral Sea for implementation of the Aral Sea Basin and GEF projects).

The **Office of the Co-ordinator of OSCE Economic and Environmental Activities** (OCEEA) has also continued its engagement in and support to the Central Asian Journal of Water Research,a bilingual, interdisciplinary and open access online journal, which connects water experts from Central Asia and beyond (www.water-ca.org).

Source: OSCE Office of Economic and Environmental Activities

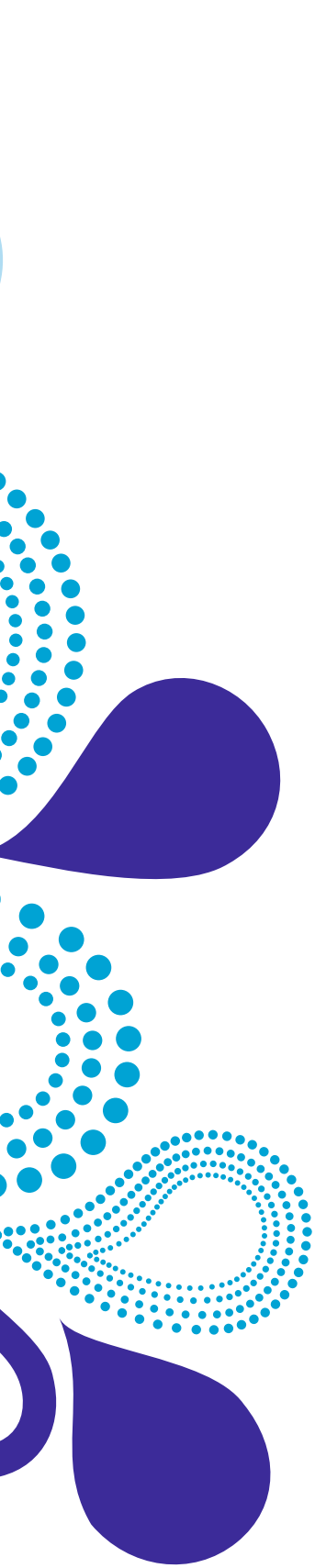
8.6. European Union – Central Asia: Environment and Water Cooperation Platform

The EU-Central Asia Platform for Environment and Water Cooperation was established at the EU-CA High Level Conference in Rome (Italy) in 2009. In its core is the EU-Central Asia Working Group (WG) on Environment Climate Change and Water which assists in identification of EU-CA regional cooperation priorities. The WECOOP2 project supports the Platform by strengthening policy dialogues and cooperation at the regional level and between EU and CA. The Italian Ministry for the Environment, Land and Sea has been chairing the Working Group since its establishment in 2009.

The EU-Central Asia Cooperation priorities are based on the Joint Declaration of the EU-CA High Level Conference in Milan in October 2015 in accordance with the EU Strategy for Central Asia agreed by the CA countries. It is reflected in the Action Plan, which was endorsed by the 5thWG meeting in December 2016. The Action Plan foresees improving access by the countries of Central Asia to international funds for climate resilient environment/water infrastructure, green finance and eco-innovation. The EU-CA regional workshops were organized in May and in November 2017 in Almaty, where the relevant Ministries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan had face-to-face working meetings with the major International Financial Institutions (EBRD, KfW, ADB, etc.) to discuss the investment projects pipelines. This topic was thoroughly discussed at the 6th WG meeting in Astana (EXPO 2017) in July 2017 and at the 7th WG meeting in Brussels in February 2018.

The next steps for 2018 include identification of concrete investment projects in CA countries for IFIs consideration, the 8th EU-Central Asia Working Group meeting in Tashkent 7-8 June 2018, and organization of the EU-Central Asia High Level Conference in the end of 2018.

Source: WECOOP2 project, http://wecoop2.eu/



Section 9

Water Education

9.1. Higher Education Institutions and Professional Development Centers

9.1.1. Kazakhstan

Al-Farabi Kazakh National University

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

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

The department conducts research in the following areas:

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

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

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

Source: KazNU

German-Kazakh University

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

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

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

Source: GKU

International Training Center for the Safety of Hydrotechnical Constructions

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

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

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

The training focus areas include:

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

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

Source: ITC

Kazakh National Agrarian University

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

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

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

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

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

Source: KazNAU

9.1.2. Kyrgyz Republic

Kyrgyz-Russian Slavic University

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

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

Major events in 2017:

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

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

Kyrgyz National Agrarian University named after K.I.Skryabin

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

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

In 2017, 45 masters successfully graduated from KNAU.

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

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

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

American University of Central Asia

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

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

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

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

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

Source: Environmental Sustainability Office, AUCA

9.1.3. Tajikistan

Tajik Agrarian University named after Shirinshokh Shotemur

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

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

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

- Republican Scientific and Practical Conference on "Water is the basis for achieving food security", 18 February;
- Workshop on "Adoption of the UN General Assembly Resolution on announcing 2018-2028 as the International Decade for Action "Water for Sustainable Development";
- Round table on "Improving methods of integrated management and use of water resources", etc.

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

Source: TAU Administration

9.1.4. Uzbekistan

Tashkent Institute of Irrigation and Agricultural Mechanization Engineers

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

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

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

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

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

In 2017, 7 doctoral theses were defended, including 4 DSc and 3 PhDs. Based on research activity of the Institute, 21 monographs, 39 textbooks, and 17 patents were issued. As of January 2018, ten issues of the Irrigation and Land Reclamation Journal were published.

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

Source: TIIAME

National University of Uzbekistan named after Mirzo Ulugbek

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

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

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

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

9.2. Regional HEIs and Professional Development Centers

Training Center of SIC ICWC

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

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

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

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

University of Central Asia (Kazakhstan, Kyrgyzstan and Tajikistan)

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

UCA's mission is to promote the social and economic development of Central Asia, particularly its mountain communities, by offering an internationally recognized standard of higher education, and enabling the peoples of the region to preserve their rich cultural heritage as assets for the future. UCA brings with it the commitment and partnership of the broader Aga Khan Development Network.

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

In 2017, MSRI has promoted the dialogue of water cooperation in Central Asia through Guest Lecture on "Water Security in Central Asia and Policy Implications" at Graduate School of Public Policy, Nazarbayev University (November 22, 2017, Astana, Kazakhstan); through Chairing a session on Water and Agriculture at the "International Scientific and Practical Conference on Water Resources in Central Asia" (November 2-3, 2017, Almaty, Kazakhstan); and through participation in Panel Discussion "Empowering the New Water and Climate Generation" at the Blue Peace Central Asia: Dialogue for 2030 - Water Security and Inclusive Growth (June18-19, 2017, Astana, Kazakhstan).

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

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

9.3. Professional Development Courses and Trainings

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

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

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

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

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

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

14-17 November, Almaty, Kazakhstan – workshop on sharing experience between regional organizations involved in sustainable development and water resources management in Central Asia on the themes "Project management" and "Financial policy";

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

Professional development courses and trainings in 2018

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

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

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

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

Organizations included into the database are grouped into 6 categories: higher education institutions, research and design institutes, water agencies, non-governmental organizations, institutes for competence development of public employees, and others. It also enables searching information by theme, including integrated water resource management, hydrotechnical constructions, land reclamation and irrigated agriculture, water conservation and water accounting, international and national water law, transboundary water resources, information and communication technologies in the water sector, environment issues in the water sector, state regulation, and other themes. There is an option to modify and update data, as well as to input new information.

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

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

Section 10

Science and Innovations

10.1. Innovations in 2017

Drones and robots are improving water management

Drones enable control of water use even in the more inaccessible regions of Thailand, where water shortage is linked not only with excessive agricultural water use but also with drought as a result of climate change. Aerial photographs support monitoring of water resources (siltation, erosion) and are used for the 3D models that enable experts to simulate the effectiveness of planned conservation measures. The experts use such models to rapidly recreate different weather scenarios, climate developments and impacts[9].

The Canadian company Deep Trekker developed an underwater drone system DTG2 ROV to explore underwater parts of the hydraulic facilities. This helps to escape expensive inspection by divers. DTG2 ROV may be deployed for four-sided control over operation of underwater parts of dams, pumping stations, and various water intakes[10].

The International program of agricultural robotics "Ural Cognitive Agro" is launched by Cognitive Technologies Group (a Russian developer of artificial intelligence system for drones) and the Ural Federal University. The Program seeks to develop artificial intelligence technologies and hardware-based solutions for robot-aided agriculture (sensors and calculators) and create ground- and air-based robotic systems. According to international analysts, application of agricultural robotics would increase efficiency of business processes by 50-70% through reduced inputs of fuel and decreased water and energy losses, improve harvesting due to lower losses of crops (to 60-80%) and optimization of main work flows, increase crop yields 1.5-2 times and reduce the cost of planting by 80%[11].

Farmers may be substituted by "speaking" tractor robots, which could help address problems related to ageing of rural population in Japan. In the future, tractor robots will be connected to GPS system and will be able to work at any time and under any weather conditions, even when their owners sleep[12].

The **fully automated innovation tractor** was developed. It uses the Global Navigation Satellite System (GNSS), gyroscopes, camera, and computer. The tractor developed by a Laboratory of the Illinois University leaves the agricultural machinery barn, conducts preset operations and returns to the barn without human intervention. Combination of GNSS and other tractor location sensors, including telematics, enables innovation tractors to navigate in the field. The farmer may observe the process through the camera[13].

In Poland, a new affordable sorting machine was invented. GreenSort is an innovative sorting machine designed especially for small farms and growers, with 5 to 20 ha orchards. The innovative sorting machine is equipped with camera, which allows it to precisely measure the diameter, sort by color and detect visual damages. It has simple design and construction, relatively small size. Fruits are moved practically without pulling away from the surface on which they travel. This minimizes the potential risk of damage during sorting. At the same time, price starts from approximately €14,000[14].

Intra-row weeding possible with vision systems. Researchers of Wageningen University & Research Center developed weeding machines which are able to do intra-row weeding. The intra-row weeding machines are based on vision systems which detect the weeds in the crop. The machine allows extracting data on weed pressure, harvest moment and nutrient shortage. Data will be represented as heat maps to the grower, which can be viewed in all main farm management systems. By structuring the data in a user friendly way, the grower will be supported to make choices to grow its crops more efficiently[15].

[9] http://reliefweb.int/report/thailand/drones-are-improving-water-management-thailand
[10] *World Water Journal, volume 40, June 3, 2017*
[11] www.kazakh-zerno.kz/novosti/mirovoj-rynok-selskogo-khozyajstva-i-prodovolstviya/237277-v-rossii-zapuskayut-proekt-po-robotizatsii-selskogo-khozyajstva (in Russian)
[12] www.kazakh-zerno.kz/novosti/mirovoj-rynok-selskogo-khozyajstva-i-prodovolstviya/239622-fermerov-smogut-zamenit-govoryashchie-roboty-traktory-premer-ministr-yaponii (in Russian)
[13] www.agroxxi.ru/selhoztehnika/novosti/fermer-sobiraetsja-upravljat-traktorom-iz-kuhni.html
[14] www.agroxxi.ru/selhoztehnika/novosti/v-polshe-pojavilos-novoe-sortirovochnoe-oborudovanie-dostupnoe-lyubomu-sadovodu.html
[15] www.agroxxi.ru/selhoztehnika/novosti/vnutrirjadnaja-propolka-teper-vozmozhna-pri-pomoschi-robotov.html

Alternative Energy in Agriculture

The Department of Agriculture of Philippines plans to set up **solar-powered irrigation systems** nationwide to improve rice production. Each system would pump up 400-1,000 gallons of water a day[16].

In the Punjab province (Pakistan), a project is implemented to improve water productivity and increase water availability through **provision of climate smart technology**. Particularly, interventions envisaged under the proposed project would entail promotion of hi-tech technologies including solar system and tunnel technology for enhancing crop yields and alleviating poverty in the province[17].

Agrophotovoltaics increases the land use efficiency by over 60 percent. Until now, acreage was designated for either photovoltaics or photosynthesis, that is, to generate electricity or grow crops. An agrophotovoltaics (APV) pilot project near Lake Constance, however, has now demonstrated that both uses are compatible. For one year, the largest APV system in Germany is being tested on the Demeter farm cooperative Heggelbach. In the demonstration project "Agrophotovoltaic -- Resource Efficient Land Use" (APV-Resola)" led by the Fraunhofer Institute for Solar Energy Systems ISE, solar modules for electricity production are installed directly above crops covering an area of one third hectare. Winter wheat, potatoes, celeriac and clover grass were the first crops to be tested. The south-west orientation and the extra distance between the five meter high rows of bifacial glass-glass PV modules ensured that the crops were exposed to uniform solar radiation. The results from the first harvest were, for the most part, promising. "The crop yield of clover grass under the PV array was only 5.3 percent less than the reference plot," reports Prof. Petera Högy, agricultural expert at the University of Hohenheim. The yield losses for potatoes, wheat and celeriac are between 18 to 19 percent and therefore somewhat higher." About 40 percent of the electricity produced on the farm was used directly to charge the electric vehicles and process the harvested crops. In the future, farmers want to further optimize consumption and use the energy generated to self-supply up to 70% with the help of an energy storage system. Overall, the dual use of space increased the efficiency of land use by 60%[18].

The Dutch company SunGlacier has created a new solar powered device to collect the water in the middle of the hottest, driest places on the planet such as the Sahara desert. The device is dubbed the Desert Twins, and the company refers to it as an "artificial water well". It uses a process of condensation to collect and create water out of the air. The harvester is made out of two separate devices, one of which is an energy unit that allows the device to generate and store power from solar cells. The other device is a water maker which uses the stored energy to cool down a metal plate and begin the process of condensation[19].

At the Los Angeles Auto Show, **Toyota has announced it will build the world's first megawatt-scale carbonate fuel cell power generation plant** with a hydrogen fueling station in California. This 'Tri-Gen" facility will use locally-sourced agricultural bio-waste to generate huge amounts of power, lots of hydrogen, and clean water. Yes, that probably means cow poop. The plant is scheduled to go online in 2020 and will generate approximately 2.5 megawatts of electricity, which is equivalent to the amount used by 2,350 average homes in the region. Additionally, the plant will generate 2.35 MW of electricity and produce 1.2 tons of hydrogen every day, which is enough to power about 1,500 vehicles on an average daily drive[20].

SolarGaps blinds collect solar energy. The idea of developers is to expand the function of ordinary blinds. SolarGaps not only darken the room but also collect sunshine converting it into energy. The developers guarantee that the smart blinds automatically track the sun throughout the day. This will allow reducing energy bills by up to 70%[21].

Agricultural Innovations – Irrigation to Floating Farms

The Spanish company Expanhouse developed **an irrigation system that can save up to 50% of water** and fertilizer compared to traditional drip irrigation. The project consists in the use of small

[16] http://www.sunstar.com.ph/2017/02/07/solar-powered-irrigation-system-be-replicated-nationwide-524505
[17] http://dailytimes.com.pk/punjab/19-Feb-17/solar-based-agriculture-may-help-enhance-crop-yields
[18] www.agroxxi.ru/mirovye-agronovosti/agrofotovoltanika-povyshaet-rentabelnost-selhozbiznesa-na-60.html
[19] http://carawan-net.org/node/1280
[20] https://rtr.md/novosti/raznoe/novaya-elektrostanciya-ot-toyota-budet-rabotat-na-navoze
[21] http://ekois.net/solargaps-zhalyuzi-dlya-sbora-solnechnoj-energii/#more-22825 (in Russian)

deposits of porous ceramic material buried next to the roots, which release the water as the plants require it. The immediate advantages of the system are the elimination of evaporation and infiltration in the soil, almost reducing them to zero. As a result, the soil surface remains dry and the impact of pests and weeds is reduced, which entails savings in labour, pesticides and herbicides. The roots have the water they need at all times, thus preventing moments of excessive or deficient irrigation. The system is self-regulated, without the need for a large investment in sensors or other technologies, and the deposits can be connected to existing drip networks in order to minimize installation costs. Fertirrigation (technique through which irrigation is combined with fertilization) and smart irrigation will lead to a significant saving of water, nutrients and energy in the farms thanks to the improvement in the efficiency of their use[22].

In Tamera, Portugal, the permaculture system was implemented successfully[23]. The project's goal was to retain all the rainwater that falls on the land to refill the groundwater which was getting lower each year. The lakes were dug out and formed without any concrete seal at the bottom so water can seep into the earth. There's a principle in permaculture called the triple S – slow, spread and sink. The Tamera case study was presented at the UN's COP22 in Marrakech. The key to ecosystem restoration is rainwater and vegetation management[24].

The Centre for Ecological Security in cooperation with the experts from research center of the Kazakh-American Free University planted trees using new technologies. They used water-retaining hydrogel, one gram of which may absorb 200-250 milliliter of water. Acclimatization of plants with the help of hydrogel was assessed by ecologists in spring[25].

Chinese crack 'game-changing tech' turning desert into farmable land. Scientists in China claim to have invented breakthrough technology that can convert desert sand into fertile soil. In just six months, researchers at Chongqing Jiaotong University were able to transform 200 hectares of an arid inner Mongolian desert into a green pasture of cultivated crops. The secret to their remarkable success is a special paste made of a substance which is found in plant cell walls. When mixed with sand, the paste is able to retain water, nutrients and air. Crops including corn, tomatoes, sorghum and sunflowers are thriving in the once hostile environment, according to Zhao Chaohua, Associate Professor of Chongqing Jiaotong University. "According to our calculation, there are over 70 kinds of crops growing here. Many are not planted by us but they just grow themselves," said Chaohua. The research team has big future plans. This fall, it hopes to transform an additional 200 hectares of desert – and possibly more than 13,000 in the next few years[26].

Japan develops new methods of growing agricultural products: instead of soil polymer film is used where plants take their roots. Initially developed as a permeable membrane for building an artificial kidney, the film allows growing crops in desert and other places, which have no suitable soil. The technology enables easy control over plants nutrition. Even those who have no special education may be involved in agriculture using it. It is also used to produce innovative containers, which as high as possible hinder the process of oxidation of food and drinks[27].

Chinese scientists develop rice that can grow in seawater, potentially creating enough food for 200 million people. The rice was grown in a field near the Yellow Sea coastal city of Qingdao in China's eastern Shandong province. 200 different types of the grain were planted to investigate which would grow best in salty conditions. Sea water was pumped into the fields, diluted and then channeled into the rice paddies. The scientists expected to produce 4.5 tons of rice per hectare but the crops exceeded expectations, in one case delivering up to 9.3 tons per hectare. There are one million square kilometers of land in China where crops do not grow because of high salinity. Scientists hope the development of the new rice will allow some of these areas to be used for agriculture. If even a tenth of these areas were planted with rice, they could

[22] http://www.freshplaza.com/article/171358/Spanish-project-for-smart-irrigation-praised-by-international-jury

[23] **Permaculture** is a system of agricultural and social design principles centered on simulating or directly utilizing the patterns and features observed in natural ecosystems. The word permaculture originally referred to "permanent agriculture" but was expanded to stand also for "permanent culture", as it was understood that social aspects were integral to a truly sustainable system. It has many branches that include, but are not limited to, ecological design, ecological engineering, environmental design, and construction.

[24] https://www.theguardian.com/global-development-professionals-network/2017/mar/07/tamera-portugal-permaculture-water

[25] http://www.inform.kz/ru/novye-tehnologii-pri-posadke-derev-ev-primenyayut-v-vostochnom-kazahstane_a3021782 (in Russian)

[26] https://tech.onliner.by/2017/09/19/sand

[27] http://kvedomosti.ru/news/v-yaponii-razrabotali-chudo-plenku-kotoraya-sovershit-perevorot-v-selskom-xozyajstve.html (in Russian)

produce 50 million tons of food – enough to feed 200 million people and boost China's rice production by 20 per cent. The saltwater rice is currently on sale for around 50 yuan (£6) per kilogram – around eight times more than ordinary rice. Despite the cost, six tons of the grain have already been sold, with consumers praising its flavor and texture. The rice is also thought to have several health benefits, including being high in calcium[28].

UAE's first vertical farm opens in Dubai. Based in Al Quoz Dubai, Badia Farms uses innovative commercial hydroponic technology to grow micro-greens and baby leaf herbs without sunlight, soil or pesticides[29].

In Mexico, a trial has produced raspberries in a commercial berry operation in a greenhouse with an automatic retractable roof. The raspberries are planted in a retractable roof house. They get wet during rains, since the roof covering is water porous, and are being pollinated naturally by native bees. This technology has increased development of fruiting laterals. They have virtually no problems due to spotted mite or spotted wing drosophila, including fewer problems with rust than those in the tunnels even though the retractable flat roof is allowing the frequent summer rains to fall on the crops[30].

The recent development of advanced multi-layer mulch films produced in Israel at Ginegar Plasticshas brought significant advantages for farmers worldwide. Films with different combinations of layers, thicknesses and widths as well as coatingshave various properties to suit specific growers' needs, specifications and crops[31].

Joanne Chory, a Californian plant biologist and geneticist, intends to develop a **super plant that will both provide food and store carbon dioxide in its roots**. A "super chickpea plant" now in development could remove huge amounts of excess atmospheric carbon dioxide and fix it in the soil, greatly diminishing the impacts of climate change. Ultimately, Chory's goal is to breed plants that grow extra-deep roots with lots of suberin for long-term carbon storage. Chory estimates that developing a super plant in this fashion would take around 10 years and $50 million. She estimates that if 5 percent of the world's cropland, approximately the total area of Egypt, were devoted to such super plants, they could capture about 50 percent of current global carbon dioxide emissions[32].

Underground London farm uses WWII bomb shelter. At 7,000 square feet, the tunnels are used to host trays upon trays of sprouting herbs. Childhood friends and founders Steven Dring and Richard Ballard had a simple idea – find a solution to the way that we, often arduously, source our food. About twenty different types of herb are being cultivated in the former bomb shelters, including pea shoots, rocket, red mustard, pink stem radish, garlic chives, fennel and coriander. The plants are being supplied to markets and wholesalers right across London. The Growing Underground uses hydroponics, a system whereby plants are grown without soil but with the help of low-energy LED lights. This allows each crop to grow in a carefully controlled, pest-free environment[33].

The Spanish design company proposed the concept of Smart Floating Farm (SFF) in case of global food deficit. The company envisions that the triple-decker Smart Floating Farms would feature 2.2 million square feet of fish farms, a hydroponic garden, and solar panels on the roof. The goal of these water-bound farms is to bring sustainable food resources to parts of the world that need it most[34].

Wastewater Treatment and Desalination

Wastewater is a depository of useful substances. Designed and developed by a team of engineers from the University of South Florida (USF), the NEWgenerator processes waste to produce three different resources. By hooking it up to existing toilet blocks, the system also removes the need for the facilities to be connected to sewage systems. First, the waste is fed into a bioreactor, where anaerobic microorganisms break down the solids and produce biogas. This process is done without the need for chemicals or aeration equipment, and the methane created can be harvested for use

[28] www.independent.co.uk/news/rice-seawater-chinese-scientists-food-200-million-a8017971.html
[29] www.agroxxi.ru/zhurnal-agromir-xxi/novosti/pervaja-vertikalnaja-ferma-v-oaye-pohvastalas-urozhaem-mikro-zeleni.html
[30] www.agroxxi.ru/zhurnal-agromir-xxi/novosti/v-meksike-testiruyut-teplicu-s-razdvizhnoi-kryshei-dlja-vyraschivanija-maliny.html
[31] www.israelagri.com/?CategoryID=402&ArticleID=1454
[32] www.agroxxi.ru/zhurnal-agroxxi/novosti-nauki/superrastenie-spaset-ot-goloda-i-klimaticheskih-izmenenii.html
[33] http://kvedomosti.ru/news/podzemnaya-ferma-vyrashhivanie-rastenij-na-glubine-33-metrov.html
[34] www.agroxxi.ru/zhurnal-agroxxi/novosti-nauki/plavuchie-fermy-pomogut-vyzhit-chelovechestvu-v-kataklizmah.html

in cooking, heating or electricity production. Then, the liquid waste moves into another chamber, where a fine-pore microscopic membrane filter removes bacteria, viruses and any remaining solid particles. The water that passes through is then disinfected with chlorine, and while the end result is probably still not drinkable, it's clean enough to use to flush the toilets in the block or irrigate crops. And finally, the solid waste can be recovered for its nutrients, including nitrogen and phosphorus, and used to fertilize crops and gardens. The first generation of the NEWgenerator was installed for communities in India in 2016. Units will soon be installed in South Africa.

Plenty of past projects have tried to clean up the sewage situation in developing countries. The Loowatt turns human waste into biogas and fertilizer, a Bristol team fitted a urinal with a microbial fuel cell to produce "pee power," and the Nano Membrane Toilet is a waterless design that burns solid waste to produce fertilizer and electricity[35].

Engineers at the University of California, Riverside have developed a new way to recover almost 100 percent of water from highly concentrated salt solutions. The system will alleviate water shortages in arid regions and reduce concerns surrounding high salinity brine disposal, such as hydraulic fracturing waste. While reverse osmosis is the most common method of removing salt from seawater, wastewater, and brackish water, it is not capable of treating highly concentrated salt solutions. One way to treat brine is membrane distillation, a thermal desalination technology in which heat drives water vapor across a membrane, allowing further water recovery while the salt stays behind. However, hot brines are highly corrosive, making the heat exchangers and other system elements expensive in traditional membrane distillation systems. Furthermore, because the process relies on the heat capacity of water, single pass recoveries are quite low (less than 10 percent), leading to complicated heat management requirements. To improve on this, the researchers developed a self-heating carbon nanotube-based membrane that only heats the brine at the membrane surface[36].

Information Dissemination

Using data from NASA, Pakistan's water research agency is sending rain forecasts to 10,000 farmers, helping them to irrigate more efficiently and increase their crop yields. The text messages (or SMS) are sent by the Pakistan Council of Research in Water Resources (PCRWR), a government agency that carries out water research. Weekly information to farmers through text messages tells them how much water their crops need and sends them weather forecasts[37].

Other innovations

India unveils anti-smog cannon in fight against Delhi pollution. The cannon blasts water droplets at high speed to flush out air pollutants. The cannon – designed to combat dust on mining and construction sites – costs roughly $31,000[38].

By 2020, scientists from the Climate and Environmental Physics Laboratory of the Ural Federal University named after B. N. Yeltsin in cooperation with colleagues from several institutes of the Russian Academy of Sciences, as well as from France, Germany, and Japan will develop a **verification model, which will forecast climate change in the Russian Arctic zone in the nearest 50 years**. Research is based on monitoring network of isotopic tracer of water cycle. The ultimate goal is to provide accurate data on how the climate will change in the nearest decades in the Siberia's Arctic zone: how the surface temperature, rainfall pattern, and temperature in the permafrost at depths down to 7 meters will change[39].

[35] www.ecocommunity.ru/news.php?id=37832
[36] http://uznature.uz/?q=ru/node/2980
[37] www.eco-business.com/news/satellites-and-sms-help-pakistans-farmers-with-smart-irrigation/
[38] https://politros.com/society/107474/
[39] https://www.znak.com/2017-02-20/vosem_regionov_rossii_riskuyut_uyti_pod_vodu_cherez_50_let_prognoz_uralskih_uchenyh (in Russian)

10.2. An Interactive Map of Best Practices on Water, Land and Energy Use and Environmental Protection in Central Asia

In 2017, an interactive map of best practices on water, land and energy use and environmental protection in Central Asia was developed. This online resource contains information on successful application of approaches, technology, models, techniques, instruments, and other tools that have proven to be effective in the use of water, land, and energy resources and in the protection of environment in Central Asia.

Best practices were selected based on their proven effectiveness in addressing current issues, sustainability, social significance and usefulness, scale of implementation and replication potential. The interactive map is scaled for 5 Central Asian countries: Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. The map gives access to four spheres of practices: water resources, land resources, energy resources, and the environment. Each sphere comprises its own set of tools. The user may modify and update existing data and input new data.

The interactive map was developed by SIC ICWC under Project "Promoting dialogue for conflict prevention related to water nexus in Central Asia (CAWECOOP)" implemented by CAREC and financed by European Union.

The map is available at
http://riverbp.net/innovation/map-best-practices/en/base/index

Section 11

Key Water Developments

11.1. America

The USA and Mexico sign a deal. "Extension of Cooperative Measures and Adoption of a Binational Water Scarcity Contingency Plan in the Colorado River Basin" is the official name of the international water-sharing deal signed on September 27, 2017. Minute 323, as it's been more informally dubbed, is an extension of the Minute 319 deal put in place in 2012. The new deal suggests spending millions of dollars on conservation and environmental projects and drawing up plans to deal with any shortages amid drought and climate change until 2026. The United States pledged to invest $31.5 million in water conservation projects in Mexico, such as lining irrigation ditches with concrete to reduce leaks and upgrading irrigation equipment to use less water. The water saved would be divided among the two nations and environmental projects. The agreement allows Mexico to store some of its share of the river water in Lake Mead in the United States if it cannot use it immediately. Mexico can withdraw it later, subject to some conditions.

Source:
https://www.ibwc.gov/Files/Minutes/Min323.pdf

In 2017, the eight Amazon Countries approved the first Strategic Action Program for Integrated Water Resources Management in the Amazon Basin, through which Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela committed to protecting the largest river basin in the world, discharging 6.6 billion m^3/year of water into the ocean. Based on a shared Vision and Transboudary Diagnosis Analysis of the basin, achieved through a wide-ranging process of public participation and scientific research, this Program offers collective responses to address the ongoing degradation of water resources, land and biodiversity and strengthens the capacity of the communities to adapt to extreme hydro-climatic events. Three Strategic Lines of Action – Strengthening Integrated Water Resources Management, Institutional Adaptation to Climate Change and Variability, and Knowledge Management – set the agenda for the regional cooperation, which comprises, among others, the implementation of regional monitoring systems (hydro-meteorological, water quality, erosion and sediment transport, climate change vulnerability); institutional capacity building, planning and management; adaptation to climate change (early warning systems, forecasting and risk management); protection and sustainable use of resources (including groundwater); and data sharing, knowledge and awareness raising. The Program will be implemented in the framework of the Amazon Cooperation Treaty Organization (ACTO), with the support from UN Environment and the Global Environment Facility (GEF).

Source: Amazon Cooperation Treaty Organization

11.2. Africa

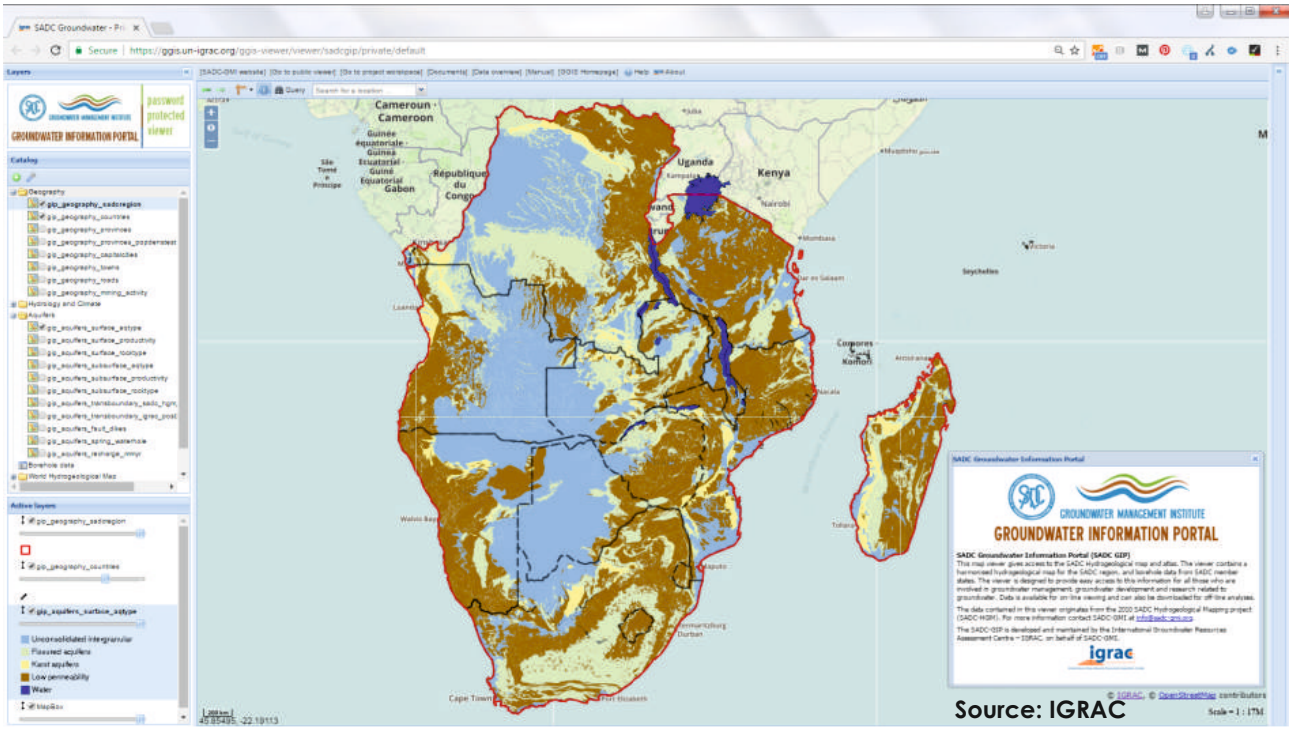
A dispute between Egypt and Ethiopia regarding the impact of the Grand Ethiopian Renaissance Dam continued throughout the year. The dam is expected to turn Ethiopia into the largest energy exporter in Africa. Egyptian President Abdel-Fattah el-Sissi, for the second time, delivered a stern warning to Ethiopia over a dam it is building after the two countries along with Sudan failed to approve a study on its potential effects. Ethiopia is finalizing construction of the Grand Ethiopian Renaissance Dam, its first major dam on the Blue Nile, and will eventually start filling the giant reservoir behind it to power the Africa's largest hydroelectric dam. Egypt fears that this will cut into its water supply, destroying parts of its precious farmland and squeezing its population of 94 million people, who already face water shortages. El-Sissi has sought to foster better ties with sub-Saharan Africa, especially fellow Nile basin countries, insisting that while his country needs its full share of the river's waters, it is ready to help them with their economic development.

Source:
https://www.usnews.com/news/world/articles/2017-11-18/egypt-warns-ethiopia-nile-dam-dispute-life-or-death

Groundwater Information Portal for the Southern African Development Community (SADC-GIP) was developed. It is a map-based information system providing web-access to the harmonized SADC Hydrogeological Map and Atlas. The portal is commissioned by the SADC Groundwater Management Institute (www.sadc-gmi.org) and developed and maintained by the

International Groundwater Resources Assessment Centre (www.un-igrac.org). Next to SADC hydrogeological info, SADC-GIP portal gives access to other groundwater relevant maps like the WHYMAP Global Groundwater Vulnerability Map to Floods and Droughts and IGRAC's Map of Transboundary Aquifers of the World. In the future, the portal may be expanded with more groundwater relevant maps, data and documents. The portal provides a service to professionals, scientists and other stakeholders in SADC member states who are involved in groundwater management, groundwater development and research on groundwater or related fields. Users can browse maps and underlying data online and can create overlays of different maps to obtain new insights. Maps and data can also be made available for download for further analyses off-line. The SADC-GIP is one of the groundwater information management portals which IGRAC has developed over the years to facilitate and promote international sharing of information and knowledge required for sustainable groundwater resources development and management worldwide.

See further at: https://www.un-igrac.org/ggis



Source: IGRAC

11.3. Asia

Afghanistan

Following the 2015 census, the population of Afghanistan exceeded 32 million people. Its territory covers 652,864 square kilometers. All rivers, excluding the Kabul flowing into the Indus, are continental. The largest rivers are the Amu Darya flowing along the northern border, the Harirud used for irrigation, and the Helmand, which along with the Farakhrud, Khashrud, and Kharutrud Rivers flows into the Sistan depression and forms the Hamun lake system. The rivers are mainly fed by glacial melt water. Lowland rivers have high flow in spring and dry out in summer. Mountain rivers possess significant hydropower potential. In many areas, groundwater is the only source of water and irrigation.

In July 2017, the Ministry of Energy and Water said it was working hard to implement plans to **build 20 large and medium-sized dams in the country**. According to them, at least 15 dams are currently under construction and 15 other dam projects are being worked on. According to MoEW, they are also preparing to start working on the Kafkan, Tirpol and Pashdan dam projects in Herat, along the Harirud River. Work for building a 10-megawatt solar power plant has started in Afghanistan's southern province of Kandahar[40].

[40] http://www.outlookafghanistan.net/national_detail.php?post_id=18565

The Ministry also informed that the government plans to **build 22 water canals** within the next five years in provinces in the north and northeastern parts of Afghanistan. Costing $76 million, the project will irrigate more than 70,000 hectares of land in Kunduz, Baghlan, Badakhshan, Takhar and Bamiyan provinces. More than 7.5 million hectares of land is suitable for agriculture; however, 30% is not used due to lack of irrigation water.[41]

WB will contribute $233 million to Afghanistan over the next five years in order to improve the living conditions of Afghans. The aid will go towards improving agriculture, energy, infrastructure and natural resources in Afghanistan, as well development of private sector in order to help boost economic growth.[42]

The Ministry of Agriculture, Irrigation and Livestock (MAIL) plans to establish centers for agriculture services in 250 districts of the country with European Union (EU)'s support over the next two years. They could provide farmers with services in spheres of agriculture and livestock extension and products.[43]

The signing ceremony of a European Union (EU)-funded project, aimed at assisting the Afghan government to **assess agriculture production systems and to strengthen institutional capacity**, was convened by the Afghan Agriculture, Irrigation and Livestock Ministry (MAIL). The 2.5 million Euros project has been developed by the United Nations' Food and Agriculture Organization FAO. Designed for three years, the overall objective of the project is to improve monitoring and analysis of agricultural production systems to support agricultural policies and food security in the country. The National Agro-Ecological Zoning and Land Resources Information Management System will be established in Afghanistan to highly support agriculture policy and investment conditions to achieve sustainable agricultural development for food security, under climate change. The purpose of AEZ, as carried out for complex rural land-use planning, is to identify areas with similar sets of potentials and constraints for optimum land utilization for agriculture development.[44]

TAPI. The gas pipeline Turkmenistan-Afghanistan-Pakistan-India (TAPI) will bring to the budget of Afghanistan one billion dollars per year as transit fees and would allow the country to create 12 thousand new jobs, stressed the foreign Minister of Turkmenistan Mr. Rashid Meredov at the 7th conference of regional economic cooperation on Afghanistan (RECCAVII).[45]

CASA-1000. Two Indian companies, KEC International Limited and Kalpataru Power Transmission Limited (KPTL), will build Afghanistan's part of the CASA-1000 Project. An agreement on construction of Afghanistan's section of CASA-1000 power transmission line was signed by representatives of Afghan National Power Company Da Afghanistan Breshna Sherkat and two companies.[46]

One Belt-One Road. Afghanistan intends to actively participate in the Chinese One Belt-One Road Initiative. For this purpose, a range of infrastructure projects is implemented. Those include energy and transport projects, including the construction of automobile and railway roads, which would connect Northern and Western provinces in Afghanistan. The primary investment for the One Belt One Road project has been estimated at more than $40 billion. Thanks to its unique geographic location, Afghanistan may become an important chain in the Trans-European Economic Corridor, which will boost economic development of the country.[47]

Water and Environment Issues in China **

Environmental degradation has become the main threat to social stability in China and coping with the former is a matter of nation's survival. In this context, in recent years China sharply tightened environmental control and took radical steps to change the system of relations between the society and environment known as "building an ecological civilization". The review of water and environmental developments in China provided by Dr. E.A. Simonov is given below.[48]

[41] http://afghanistan.ru/doc/114126.html
[42] http://www.outlookafghanistan.net/national_detail.php?post_id=19544
[43] https://www.pajhwok.com/en/2017/08/21/agriculture-services-centers-planned-250-districts-mail
[44] http://www.pajhwok.com/en/2017/01/31/eu-project-monitor-afghan-agri-system-signed
**) Material provided by E.A.Simonov, Rivers without Boundaries Coalition
[45] http://afghanistantoday.ru/hovosti/afganistan-budet-poluchat-tapi-1
[46] https://eadaily.com/ru/news/2017/12/22/afganskiy-uchastok-lep-casa-1000-postroyat-indiyskie-kompanii
[47] http://afghanistan.ru/doc/108820.html
[48] Full version of the review in Russian is available on http://www.cawater-info.net/library/rus/inf/50.pdf

13th Five-Year Plan and 19th Communist Party Congress. In its 13th Five-Year Plan for Economic and Social Development (2016-2020) China proposes a program of future reforms, among the objectives of which is building "a moderately prosperous society" by the end of 2020.[49] The Plan defines environment as one of the 5 measurements of progress of the society in China, while environmental protection and restoration as one of development targets. At the 19th Communist Party Congress on 18-24 October 2017, it was confirmed that building the ecological civilization[50] is one of the five basics for socialistic community with Chinese specificity. Xi Jinping announced the demand for "speeding up reform of the system for developing an ecological civilization and building a beautiful China" among 13 principles of the socialism with Chinese characteristics:[51] *"We must establish and practice the philosophy that lucid waters and lush mountains are invaluable assets, uphold the basic national policy for energy conservation and environmental protection, treat the ecological environment as we treat life, coordinate the systematic management of mountains, waters, forests, fields, lakes, and prairies... build a beautiful China, create a good production and living environment for the people, and contribute to global ecological safety."*

Legislation and its implementation. Since 2014, systematic work has been carried out to improve environmental legislation and tighten control. In 2017, several important laws were adopted.

The Environmental Protection Tax Law of China will come into force on January 1, 2018. It stipulates the collection of environmental tax, whereas pollutant discharge fee will be abolished. Environmental pollution will be taxed, including: 1) air pollution; 2) water pollution; 3) solid wastes; and 4) noise production. For water pollutants, tax rate will range from 1.4 to 14 yuan per pollution equivalent. Regions have the right to fix the tax themselves, depending on the state of environment and development level.[52] Up to 50 billion yuan (about $7.68 billion) could be collected annually from the new tax, according to estimates from Xinhuanet analysts.

The *"Pilot reform in ecological damage compensation"* came into effect in 2017 to scale up the pilot reform to the whole country.

In 2018, the *Water Pollution Prevention and Control Law* adopted on June 2017, 2017 will come into force.[53] It focuses on agricultural water pollution; fertilizer pollution standards are introduced; protection of drinking water sources is strengthened; discharge of wastewater in those sources is severely punished. By this law, illegal discharge of pollutants is subject to a maximum fine of 1 million yuan and the prosecution of reoccurrence. The government and party leaders will be assigned "river chiefs" and take personal responsibility for their status.[54] 200 thousand "river chiefs" were already assigned; and, assignment is "lake chiefs" is still in process.[55]

Enforcement of tightened environmental legislation is challenging not only for Chinese manufacturers but also for transnational corporations, which transferred production to China.[56] From January to November, China investigated over 35,600 violations of environmental protection laws and regulations, up more than 102 percent year-on-year.[57] In January 2018, the Ministry of Environment Protection (MEP) announced that more than 2,000 large industrial clusters developed centralized treatment systems by the end of 2017, and more than 2,000 automated devices to control water pollution were installed. This means that 90% of the action plan for water pollution prevention has been completed. However, in distant provinces, such as Xinjiang, Qinghai, and Yunnan, this accounts for less than 60% of the required norm.[58]

[49] 13th Five-Year Plan for Economic and Social Development of China
[50] I.P.Glazyrina, E.A.Simonov "Ecological civilization" of China: new challenges or new prospects for Russia? -pp. 374-394. Russian Far East: problems of development – connecting territories / edited by V.A.Kryukova and V.V.Kuleshova – Novosibirsk: Institute of Economics and Industrial Engineering within the Siberian Branch of the Russian Academy of Sciences, 2017. – 484 p. ISBN 978-5-89665-321-9 http://lib.ieie.su/docs/2017/Vostok_Rossii/Vostok_Rossii_problemy_osvoenija.pdf
[51] Opinion: What does 'Xi's Thought' mean for the environment? 24/11/2017 https://www.chinadialogue.net/article/show/single/en/10235-Opinion-What-does-Xi-s-Thought-mean-for-the-environment-
[52] https://cnlegal.ru/china_taxation/china_ecology_tax_2017/
[53] http://shj.mep.gov.cn/zhgl/201606/W020160612567773435682.pdf
[54] https://ecologynow.ru/news/s-2018-goda-v-kitae-s-zagrazneniem-vody-budut-borotsa-po-novomu
[55] http://www.globaltimes.cn/content/1083456.shtml
[56] https://thediplomat.com/2017/12/china-cleans-up-its-act-on-environmental-enforcement/
[57] http://russian.people.com.cn/n3/2018/0102/c31516-9310443.html
[58] http://china.caixin.com/2018-01-23/101201587.html?mc_cid=c28c5ac708&mc_eid=d5273b7004

Reform of the State Council. Reformation of the whole state governance system was also considered in the "Policy of developing an ecological civilization". The preparatory process was underway in 2016-2017. In mid-March 2018, during the 13th National People's Congress of the People's Republic of China, the plan was approved to reorganize ministries and agencies.[59] It changes the structure of government from "sectoral" to "functional" one, with greater focus on environment.

China establishes absolutely new Ministry of Natural Resources (MNR), which, among other things, will be responsible for management, reproduction, and protection of natural resources, establishment and implementation of territorial planning system, and creation of paid basis for natural resource use. MNR, which absorbs the State Forestry and Grassland Administration, will be responsible for all special protection territories and water areas, which previously were under control of 11 agencies.

At the same time, the Ministry of Environment Protection is restructured into the Ministry of Ecological Environment (MEE), receiving the widest range of supervisory and punitive power both over new MNR and other agencies. Climate is also under the control of MEE.[60]

Although the Ministry of Water Resources remains, it loses many research/monitoring functions and registration of water use rights in favor of MNR. It also transfers to MEE the function of river basin water quality management and all matters related to regulation of waste discharge. MEE has also the honorable duty to restore and protect environment in the area of the Three Gorges Dam project and South-North Water Diversion project. Anyway, details and consequences of the reform are still unclear even for the initiators.

The National Development and Reform Commission (NDRC) manages funds for implementation of river-basin management measures of all abovementioned ministries, besides it has obligation to supervise assessment of risks related to overseas investment into projects that may affect transboundary waters and make decisions whether these projects go ahead. Criteria and procedures for evaluation of "restricted" projects are being developed by the NDRC now.

Hydropower

The 13th Five-Year Plan sets that hydropower development will be strictly aligned with more important tasks of environment protection and well-being of population.

The detailed plan of China's hydropower development shows that development of hydropower capacity on large rivers will be reduced twice as compared to the 12th Five-Year Plan. Districts with extensive hydropower development will be reduced to two ones located on the South-Western part of the country. Plans to develop small HPPs are hardly considered (their construction is forbidden or suspended due inefficiency in many provinces). The plan focuses on integrated energy system planning and the need to develop basin hydropower development plans. Now the task of HPPs and PSPs is to balance the development of new RES generating electricity from sun and wind. New installation of conventional hydropower is expected to be "only" 43 GW in the 13th Five-Year Plan and 40 GW in the 14th Five-Year Plan, whereas pumped-storage hydro new is expected to add 13 GW and 50 GW, respectively. However, manufacturing of giant "gigawatt turbine" is still a priority of power engineering industry, probably, to support overseas projects.

In 2017, energy production by hydropower increased by 0.5%, and its share amounted to 17% in the total energy generation. During 2017, additional 10 GW of hydropower were commissioned (increased by 2.7% during the year) – lowest growth among main types of energy generation. However increase in conventional hydropower documented by IRENA is even smaller - 7,3 GW. The big challenge is the so-called "stranded capacities" in the Yunnan province, particularly in the Mekong river basin. Despite the construction of large power transmission lines to export energy to the Eastern coast of China, energy generated by the Yunnan HPPs is not in demand, as the local authorities in the East support their local energy producers. In this context, in 2017 plans were accelerated to export electricity to neighboring countries, such as Myanmar, Bangladesh and others. This can significantly alter the plans of those countries regarding their own construction of HPPs.

[59] http://www.straitstimes.com/asia/east-asia/npc-2018-chinas-new-more-powerful-environment-ministry-will-prevent-systemic
[60] http://chinawaterrisk.org/resources/analysis-reviews/two-sessions-five-highlights-for-water/

Energy generation in China, 2017, billion kWh per year

Type	Generation 2017	Annual growth, %
HPP	1,190	0.5
Wind plant	270	21
Solar plant	65	34
Nuclear power station	248	16
Thermal power station	4,633	5.1
Total	6,495	5.9

data by Energy.net и Statistical Bureau of China

In a campaign to improve environmental conditions in 11 key river basins (Yangtze, Huanghe, etc) the authorities ordered decommissioning of "illegal" and "harmful" small hydropower plants, which in the first year led to closure of at least several hundred power plants, located in protected areas or sensitive river stretches.[61] One high-profile case in Sichuan province involved demolition of an illegally-constructed hydropower station located inside the buffer zone of the ancient Dujiangyan Irrigation System, a protected UNESCO World Heritage Site and the world's oldest fully operational hydraulic engineering project.[62] While decommissioning so far affected small portion of China's 77 000 small hydropower plants, all remaining have been ordered to follow more stringent environmental regulations than before. Thus Guangdong, Jiangxi, Gansu, Chongqing and other provinces (cities) have issued guidelines for the environmental flow management downstream of the dam, putting forward specific requirements on design and introduction of ecological flow facilities, optimization of dispatch operations and other non-engineering measures. Fujian Province has installed ecological flow monitoring devices in key river basins and introduced ecological flow monitoring to the local government's performance evaluation.

Dujiangyan community members celebrating the demolition of the Shengxing power station in Sichuan Province. The banner reads "We will protect you forever, Dujiangyan World Heritage Site!" Photo by Peng Wei IR

Transboundary cooperation: Lancang-Mekong Cooperation Mechanism

Chapter 31 of the 13th Plan on strengthening water security includes "well-planned steps to develop and harness the water of cross-border river basins, and deepen cross-border water cooperation with neighboring countries" among three tasks.

In 2015-2017, China focused on the Mekong River basin, where the Mekong River Commission (MRC) has been operating for many decades. MRC includes four countries in the lower basin: Vietnam, Thailand, Cambodia, and Laos. MRC was funded through European aid agencies and was not significantly integrated in the decision-making systems of the region's countries. China chose to have only observer status in MRC. Unfortunately, MRC failed not only to prevent substantial negative impacts of gigantic reservoirs developed by China in the upper reaches[63] of Mekong but also could not dissuade other countries to construct new HPPs on the main channel (e.g. Xayaburi dam in Laos,) and tributaries (e.g. Lower Sesan dam in Cambodia,). Seeing inefficiency of MRC, donors sharply reduced funding.

In 2015, China invited all Mekong basin countries to participate in the **Lancang-Mekong Cooperation Mechanism** (LMCM), which is a part of the Chinese "One Belt-One Road" initiative and aimed at supporting regional integration. Water resource management, which was initial common theme, took a second place, yielding to issues of development of infrastructure, establishment of development funds, simplification of transboundary cooperation, etc. China pledged $10 billion to the partner countries for the purposes of joint projects. In November 2015, the first Foreign Ministers meeting was organized; in March 2016, the first LMCM Summit was held on Hainan Island.[64]

[61] http://www.euronews.com/2018/08/31/dam-nation-big-state-projects-spared-in-chinas-hydro-crackdown
[62] https://www.internationalrivers.org/blogs/435/china-shows-its-commitment-to-protecting-domestic-rivers-cultural-heritage
[63] https://phys.org/news/2017-01-chinese-hydropower-considerably-season-decreased.html
[64] http://www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1350039.shtml

Shortly before the Summit, China organized an ostentatious water discharge from its reservoirs in Yunnan province; this step was called as a "measure to mitigate the drought consequences" in Vietnam. This step was taken to demonstrate the readiness of China to use Mekong water resources "for the common good". However, due to poor scientific planning and lack of warning in advance, this action had many negative consequences and was reasonably criticized by experts and activists. In October 2016, Chinese Ministry of Water Resources in cooperation with MRC launched the report "Joint Observation and Evaluation of the Emergency Water Supplement from China to the Mekong River"[65] justifying this discharge. Thus, within its first year LMCM demonstrated its advantage over old cooperation mechanisms in the region and capacity to pursue regional cooperation policy in favor of China.

In 2017, this policy was extended and strengthened. China in cooperation with other basin countries organized the study of river rapids on the main channel to develop navigation from the Yunnan province to the sea. China proposes to blast all main rapids that hinder the passage of large ships. In Beijing, a Lancang-Mekong Environmental Cooperation Center was opened. Chinese companies received new concessions and contracts in Cambodia and other basin countries.

In the beginning of January 2018, the 2nd Lancang-Mekong Cooperation (LMC) Leaders' Meeting was held in Cambodia. Co-chair of the meeting Chinese Premier Li Keqiang made five proposals to facilitate cooperation in the basin: 1) develop a Five-Year Plan of Action on Lancang-Mekong Cooperation (2018-2022); 2) strengthen cooperation on (transfer from China) industrial capacity, such as construction of hydropower facilities, etc.; 3) expand cooperation in agriculture; 4) increase cooperation on human resources and staff exchange; and 5) facilitate cooperation on health issues. At the meeting, the Five-Year Action Plan on Lancang-Mekong Cooperation (2018-2022)[66] was adopted and the "Phnom Penh Declaration" was signed. Thus, the LMCM tests new approaches to managing transboundary basins by China, where more equitable multilateral mechanisms cede ground to the Sino-centric model for basin management.

Developments in other Asian countries and transboundary basins

The 3rd Asia-Pacific Water Summit that was held on 11-12 December in Yangon, Myanmar focused on addressing water security issues. Since its establishment in 2006 on the occasion of the 4th World Water Forum, this network aims at building capacity and strengthening cooperation in the water sector and achieving MDGs and SDGs in the Asia-Pacific region.

China starts the construction of the World's second largest hydropower station on the Jinsha River, the upper section of the Yangtze. With a total installed capacity of 16 million kilowatts, the project is expected to generate more than 60 billion kilowatt hours of electricity per year, equal to about two-thirds of Beijing's electricity consumption in 2015. The power will be generated in 2021 and the plant will become fully operational by the end of 2022.

Dams and Mining Destabilizing the Mekong. The drastic reduction in sediment flow in the Mekong River is threatening the stability of the delta and the livelihoods of millions of people who depend on its resources, says a new study by UNESCO and the Stockholm Environment Institute (SEI).

The study attributes reduction in sediment flow to infrastructure development, mostly dams, riverbed mining, climate change and land use change in the Mekong region.

If all the dams proposed for the Lower Mekong Basin are developed – including the planned or ongoing 11 mainstream dams – it

[65] http://www.mrcmekong.org/assets/Publications/Final-Report-of-JOE.pdf
[66] http://www.chinadaily.com.cn/a/201801/11/WS5a56cd04a3102e5b17374295.html

could prevent up to 94 percent of the river's sediment load from being transported downstream, the study warns.

This will lead to loss of nutrients vital for the basin's fisheries and for soil fertility in the floodplains along the entire basin, especially the Tonle Sap in Cambodia and the Mekong delta in Vietnam.[67]

Additionally, scientists reiterated their concerns over water security in the Mekong delta, recognizing the HPP construction in the upper Mekong and plans of Thailand, Laos, and Cambodia as the main threats.

In 2017, India and Pakistan resumed talks on controversial Kishenganga and Rattle hydropower projects. In November 2016, WB set up a Court of Arbitration to look into Pakistan's concerns about the designs of the Kishenganga and Rattle hydroelectric power projects. India claimed that participation of the World Bank was in favor of Pakistan; while the latter believes India's plans to build three other projects (Pakal Dul, Lower Kalnai and Miyar) in the Indus basin violate the Indus Water Treaty.

While the issues remained unresolved, 2017 negotiations seem to be more meaningful than earlier. The World Bank, which is also a signatory of the Indus Water Treaty,will continue to work with both countries to resolve the issues in an amicable manner.

Both countries and the World Bank appreciated the discussions and reconfirmed their commitment to the preservation of the Treaty, which survived three wars between the countries.[68]

[67] https://www.asianscientist.com/2017/12/in-the-lab/dams-mining-mekong-delta/
[68] https://treaties.un.org/doc/Publication/UNTs/Volume%20419/volume-419-I-6032-English.pdf

11.4. Europe

Russia: Water Resources and Year of Ecology[69]

The year 2017 was proclaimed as the Year of Ecology in Russia. It was intended to achieve aims and objectives laid out in the "Principles of the State Policy in the area of ecological development of the Russian Federation up to 2030"[70] and the State Program "Environmental Protection for 2012-2020."[71] The Year of Ecology was dedicated to introduction of new waste management system and advanced feasible technologies, protection of the Baikal nature area, conservation of water and forest, development of nature reserve system, and preservation of biodiversity.

The following events were organized in the course of the Year of Ecology:

In August 2017, "The Volga River Conservation and Pollution Prevention" program was approved. By 2025, it is planned to reduce discharge of polluted wastewater by at least 80%. It is also planned to modernize and construct treatment facilities at least at 200 enterprises in 17 regions. As part of the project, laboratories are to be organized to control wastewater content and quantity in the first and second category sites that impact the natural environment to a larger extent.

Construction of new biological treatment facilities and reconstruction of existing ones resulted in the reduction of pollutants discharged into water bodies by 42 tons per year. Dozens of water bodies (lakes, ponds, and small rivers) were subjected to environmental rehabilitation; for instance, these are the water bodies of the Volga-Akhtuba floodplain, Tatarstan, Moscow province and many others. As part of the nationwide campaign on cleaning water sites and their banks, more than 10 thousand water bodies were cleaned of 15,200 m³ of wastes. Volunteer clean-up, outreach campaigns, scientific events, and marathons were organized in Lake Baikal. In August, the President of Russia held a meeting on preservation of Lake Baikal and development of the Baikal nature area, when it was decided to prolong relevant federal target program. The efforts are made to restore the environment damaged by operation of the Baikal pulp and paper mill. The Lake Baikal Protection Program includes 33 measures. The total budget of the projects is 475.6 billion

[69] Material provided by Prokhorova N.B., Federal State Budgetary Institution 'Russian Research Institute of Integrated Water Management and Protection'
[70] Available at http://kremlin.ru/events/president/news/15177
[71] Available at http://pravo.gov.ru/proxy/ips/?docbody=&nd=102349927&

roubles, including 112.79 billion roubles in 2017. 99 billion roubles will be allocated for "Protection of water bodies" and 130 billion roubles for "Protection of Baikal and Prebaikal territory".[72]

In the context of severe drought in the Baikal basin, on 27 December 2017 the Government of the Russian Federation adopted a new Decree #1667, which permits raising and lowering water level in the lake in 2018-2020 lower or higher the thresholds established by law in 2001. This decision is again reasoned by a need to ensure water diversion for TPP and energy generation by the Angara hydropower cascade belonging to En+/Evrosibenergo Group.

In November 2017, En+ Group conducted IPO (initial public offering) on the London Stock Exchange. The Rivers without Boundaries Coalition was actively involved in the discussion of risks in the process of IPO. The final IPO prospectus prepared by En+ indicates that the company will strive to reduce its impact on the ecosystem of Lake Baikal. However, in all Russian media, En+ strongly denies any responsibility for the lake's state.[73]

Control over hazardous industries in 2017

284,000 tons reduced
of pollutant emissions and discharge

220,000 facilities
included in the inventory of the Rosprirodnadzor as the facilities with negative impact

63 agreements
on transition of 47 companies to more ecologically friendly technologies under supervision of Rosprirodnadzor

139 billion roubles
total amount of contracts

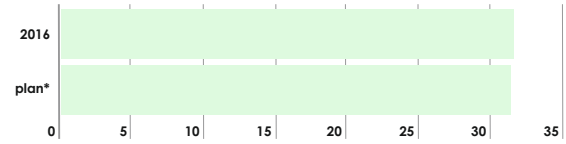
35% of measures
by the end of 2017, 64 out of 179 measures planned under the agreements were completed

11 agreements
with companies were closed by the end of 2017

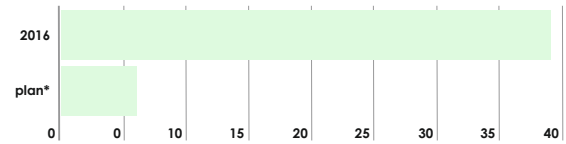
Source: Rosprirodnadzor, Minprirody

Results anticipated from the implementation of agreements:

Emissions, mln ton/year



Untreated wastewater, mln m³/day



Date of completion of contracts between companies and Rosprirodnadzor

Source: Rosprirodnadzor, Minprirody

Major events on the occasion of the Year of Ecology:

On 18-20 April, **XIV International Scientific and Practical Symposium and Exhibition "Clean Water of Russia-2017"** was organized by Russian Research Institute of Integrated Water Management and Protection in **Yekaterinburg**. More than 350 researchers and executive officers, representatives of scientific and educational institutions, enterprises, and community organizations involved in environmental protection, use and management of water resources, experts from the European Center for River Restoration (Finland, Italy, and Netherlands), representatives of Armenia, Azerbaijan, Uzbekistan, Kyrgyzstan, and Belarus took part in the symposium. The main topic of the Symposium 2017 was the "Implementation of the Water Strategy of the Russian Federation for a period up to 2020".[74]

On 27-30 June, the first All-Russian Water Congress **"Water Resources of Russia for Sustainable Development, Environmental Security and Public Health"** was organized in Moscow. It gathered more than 1000 participants from 67 regions of Russia, as well as from Azerbaijan, Israel, Ukraine, and Belarus. The Congress provided a platform for inter-agency and inter-disciplinary dialogue in developing a comprehensive policy of sound water use in all economic sectors, which will contribute to

[72] http://ecoyear.ru/
[73] Report of RWB for 2017
[74] http://wrm.ru/cwr2017/

efficient implementation of the Environmental Security Strategy of Russia until 2025 in part of protection, preservation and improvement of water bodies. The Congress was concluded with the adoption of Resolution.[75]

The day of Lake Baikal was celebrated in Russia on 10th of September.[76]

On 13-16 September, the **All Russian Scientific and Practical Conference "Environment of cooling ponds of power stations"** was held in Chita. The Conference was aimed to address problems of the impact of power stations on aquatic ecosystems, watercourses, and environment and make relevant decision in this field, as well as identify potential for joint research, development, and projects.[77]

On 2-7 October, the **All-Russian Scientific and Practical Conference "Water Resources: New Challenges and Solutions"** was held in Sochi, with participation of more than 120 scientists and experts. The pressing scientific issues related to reliable and environmentally friendly water use, better water quality and ecosystems, efficiency of water management and protection, and water security were discussed during the Conference.[78]

On 12-14 December, the **International Scientific and Practical Forum and Exhibition "ECOTECH" and V All-Russian Congress on environmental protection** were organized in Moscow. The event aimed at summarizing results of the Year of Ecology, including transition to circular economy and other pressing issues.[79]

In 2017, the Federal Agency for Water Resources accomplished the following work. Within the framework of the Federal target program "Development of the water sector of the Russian Federation in 2012-2020", financing of measures was continued to ensure guaranteed water supply in the Krasnodar Territory, Republic of Adygeya, Tambov province, Perm Territory, and Penza province. Two projects were implemented: "Reconstruction and improvement of the technical condition of the Krasnodar reservoir facilities" and "Reconstruction of the Neberdjaev reservoir". They allowed supplying 302,000 people with water. As to conservation and improvement of ecological status of water bodies and improvement of water quality, the efforts for restoration and environmental rehabilitation were made on 19 water bodies (including on the Gorkov, Krasnodar, Uglich, Ivankovsk, and Pyalov multi-purpose reservoirs) in 17 regions of Russia; two projects on environmental rehabilitation were also developed. Work was completed on 8 water bodies located in 8 regions of Russia and occupying about 170 ha. Additionally, 50 km of river channels were cleaned to improve sanitary state of water bodies. Through budget funds allocated for major construction, work was conducted on 45 sites; construction was completed on 12 sites totaling 25.2 km, including the most significant "Embanking the right bank of the Volga River in Volgograd" along 2.9 km and "Construction and reconstruction of protective hydraulic facilities in the Nikolaevka village, Jewish Autonomous Province" on 8.25 km.[80]

Developments in Other European Countries and Transboundary Basins

The Italian Ministry for the Environment, Land and Sea organized the **International Summit on "Water and Climate: Meeting of the Great Rivers of the World"**, from 23 to 25 October 2017 in Rome, Italy. This international summit was organized in partnership with UNECE, INBO, the Global Alliances for Water and Climate and Aquamadre. It gathered representatives of the largest river basins (more than 30 basins) from more than hundred countries of the world. It gathered 45 delegations from 5 continents, including 100 contributors and high-level participants from the European Commission, major UN agencies, international financial institutions, and the Union for the Mediterranean. The work of the Summit was organized around four major topics, which were presented in high-level panels and widely discussed among participants: improvement of knowledge on climate change adaptation; management of water resources and aquatic ecosystems in the context of climate change; public participation and involvement of private sector in climate change adaptation at the basin level; and financial mechanisms for

[75] https://raww.ru, https://watercongress.ru/assets/images/resources/66/rezolyucziya-kongress-2017.pdf
[76] http://voda.mnr.gov.ru/news/detail.php?ID=424511
[77] https://www.vesti.ru/doc.html?id=2932538&cid=17
[78] http://www.wrm.ru/news/show.php?id=634
[79] http://ecoyear.ru/2017/12/itogi-ekoteh-rossiya-ekologicheskij-lider-mira/
[80] 2017 Report of the Federal Agency for Water Resources

adaptation to climate change at the basin level. At the end of the discussions, the priority recommendations were formulated for reporting to COP23 and other relevant Forums.[81]

International Commission for the Protection of the Rhine (ICPR), supported by the engineering consultant HKV, developed the instrument **"ICPR FloRiAn (Flood Risk Analysis)"** aimed at evaluating the effect of measures to reduce flood risk and at estimating the future evolution of flood risk. ICPR FloRiAn is GIS based and covers the main stream of the Rhine. Flood maps are the basis for the tool. In addition to the quantification of economic flood risk, modules are developed for quantifying the consequences of risk for human health, to the environment and to culture heritage. In short, the main instrument consists of three interacting calculation modules (Model Builders) resulting in an overall damage or risk assessment.

The ICPR uses this tool to assess risk reduction and evolution along the Rhine from 1995 up to now as well as to carry out regular reviews of the impacts of measures on flood risk reduction for the Flood risk management plan of the international Rhine River Basin. Calculations made with the help of ICPR FloRiAn proved the reduction of flood risks by 25% between 1995 and 2020. The instrument is applicable to other river basins. In 2017, external users (i.e. beyond ICPR) performed first test calculations with the tool.

The issue of low flows in the Rhine River Basin. In recent years there has been a shift in the Rhine River basin from looking not only at consequences of floods but also towards low flows. During the last decades, several low flow periods occurred with severe impacts not only on the river itself but also on different uses of the Rhine. The Rhine states are therefore paying increased attention to this topic and so the ICPR has put in place an international group of low water experts which began its work in early 2017. The Expert group "Low water" analysed the trend of low water since the beginning of the 20th century, examined past low flow events and classified them in return periods. In addition, the ICPR investigated the various consequences of low water for different uses of the Rhine and inventoried national low water management measures. This will be the subject of a report to be published in mid-2018. Moreover, the Expert group "Low water" is currently working on setting up a low water monitoring network or system. The International Commissions for the Protection of the Moselle and the Saar (ICPMS) are already testing such a system on the main tributary of the Rhine, the Moselle.

In parallel, the ICPR and two other "Rhine commissions" (the International Commission for the Hydrology of the Rhine basin and the Central Commission for the Navigation of the Rhine) have organised the international symposium "Low flows in the Rhine catchment" on 20-21 September 2017 in Basel (Switzerland). In a nutshell, one of the main outcomes of the workshop is that low flows in the Rhine are not worse than 100 years ago but are nowadays affecting numerous – more or less vulnerable - uses (navigation, industry, agriculture, energy production, etc.). On top of that, scientists expect more frequent summer low flow events in the future, occurring together with higher water temperatures, indicating possible impacts on aquatic ecosystems and the need for further exchanges between water users to improve resilience in the Rhine catchment.

Source: www.iksr.org

11.5. Middle East

India & Israel: Cooperation on water management

Even advanced countries around the world and states like California are noticing Israel's success in the field of water management and recycling.

For example, in the US, the state of California is currently suffering from a severe water crisis, primarily as a result of inefficient and failed water management in agriculture. Water recycling in agriculture in California is five per cent only, whereas in Israel this rate is 85 per cent.

To resolve the above issues and further deepen the bilateral cooperation, during Prime Minister's Modi visit, the two MoU's were signed between: the Ministry of Drinking Water and

[81] http://www.minambiente.it/water-and-climate-summit

Sanitation of India and the Ministry of National Infrastructure, Energy and Water Resources of the State of Israel on National Campaign for Water Conservation in India and Government of Uttar Pradesh and the Ministry of National Infrastructure, Energy and Water Resources of the State of Israel on State Water Utility Reform in India.[82]

Turkey's plans to construct 22 new dams in the South Anatolia region have already sparked concern of its neighbors. Officials of the Department of Environmental Protection of Iran criticized Turkey for the reckless construction of giant dams, which leads to the drying up of the rivers. According to environmentalists, one of the dams called Ataturk is the largest dam in the world, which was built on the Euphrates River. Its volume is 48 billion cubic meters, which is equivalent to the volume of one hundred Iranian dams.

If to sum up all the dams built by Turkey on the Euphrates, it measures to 100 billion cubic meters of water. If Turkey succeeds in constructing the Ilisu dam on the Tigris, with a volume of 10.4 billion cubic meters, then a real water crisis will erupt.

In other words, 100 percent of the water from the Euphrates River and 60 percent of the water from the Tigris River will be blocked; nothing will come to the lands of Syria and Iraq. This will have an adverse impact not only on agriculture, but also on environment, particularly, wetlands and situation in the countries in general.[83]

11.6. Australia

In 2017, Basin plan evaluation was held for one of the river basins of Australia – the Murray–Darling Basin. It is a complex, diverse and dynamic system. It is constantly changing in response to the influences of people, climate and the way water is used for production, communities and the environment.

The Basin Plan aims to find a balance between the water needs of all Basin users, including communities, industries and the environment. It has been five years since the Basin Plan was established to recover 3,200 GL of water for the environment out of the total water use of 13623 GL or implement projects that would lead to "equivalent" outcomes. It's time to check how implementation is going.

The 2017 Basin Plan Evaluation covers all elements of implementation, from water planning and management, to recovery and use of water for the environment. At this early stage of the Basin Plan's implementation, there are some good signs that the plan is working and on track in many areas. Progress was found to be lagging in a few important areas, including water resource plans and compliance regimes.[84]

At the same time, in November 2017 a group of scientists assessed water reforms in the Murray-Darling Basin, since the historic National Water Initiative was signed in 2004 and the Murray-Darling Basin Plan was adopted in 2012. Since then, nearly $8 billion of taxpayers' money has been spent largely to address the chronic over-allocation of water in the river systems of the Murray-Darling Basin.

Overall, the review finds there has been significant progress (the initiative aims to restore the health of river systems in a way that promotes economic prosperity while using less water) since 2004, but this progress has slowed to a trickle since the Basin Plan was adopted in 2012 as a result of strong political pressure.

Only one quarter of the water recovered so far has been acquired since the Basin Plan was adopted, while the cost of water recovery has doubled.Without major changes in implementation, it is almost certain that the Basin Plan will fail.

Particularly, it is proposed to rebuild trust with greater transparency (i.e. improved water accounting), guarantee recovery of the full 3,200 GL, ensure that water recovered achieves measurable improvements to the river system, a regional development package that puts communities at the center of reform, and prepare for the prospect of a future with less water.[85]

[82] https://economictimes.indiatimes.com/news/economy/agriculture/india-israel-cooperation-on-water-management/articleshow/61767010.cms
[83] http://www.waterpolitics.com/2017/07/26/why-turkish-dams-could-push-the-region-toward-new-conflict/
[84] https://www.mdba.gov.au/basin-plan-roll-out/2017-basin-plan-evaluation
[85] http://wentworthgroup.org/wp-content/uploads/2017/12/Wentworth-Group-Review-of-water-reform-in-MDB-Nov-2017-Review-Report.pdf

11.7. Rivers of the world and nature rights

This year, the Earth Overshoot Day falls on August 2 – the date when humanity's annual demand on nature exceeds what Earth can regenerate over the entire year. It is calculated using the following formula: planet's biocapacity / humanity's ecological footprint) x 365. This means that for the remaining months of 2017 the humanity will use resources on "credit" – continuing reducing natural resource reserves accumulated over the past years and emitting more carbon dioxide into the atmosphere. The first "ecological debt" was recorded on December 29, 1970 – resource deficit then was only two days. It is coming earlier each year: in 2000 – beginning of October, 2013 – August 20, 2014 – August 19, 2015 – August 13, and 2016 – August 8. But if business continues as usual, the world would be using the resources equivalent to two Earths by 2030, with Earth Overshoot Day moving up on the calendar to the end of June.[86]

In 2017, four rivers have been given the status of legal persons: the Whanganui River in New Zealand, the Ganges and Yamuna Rivers in India, and the Rio Atrato, in Colombia. Giving nature legal rights means the law can see "nature" as a legal person, thus creating rights that can then be enforced.[87]

On July 19, 2017, the UN Secretary-General "Harmony with Nature" report was published. The report draws on contributions to the seventh interactive dialogue on Harmony with Nature, held on 21 April 2017, that address Earth jurisprudence, the 2030 Agenda for Sustainable Development, trends in the implementation of Earth-centered law and a range of initiatives and achievements in law, policy, education and public engagement relating to Earth jurisprudence during the period 2016-2017.[88]

Excerpts from the report concerning national legislation granting rights of Nature:

28-31. On 10 November 2016, the Constitutional Court of Colombia recognized the Atrato River and its basin and tributaries as having rights. The Atrato River, which is in the Chocó region of Colombia, has suffered from illegal mining that has led to both environmental and humanitarian crises and to litigation to defend the rights of the river and of Tierra Digna-supported local communities. … In his analysis of the ruling of the Constitutional Court, Mr. Echeverría noted that the Court took an ecocentric and biocultural perspective and that environmental justice required that they must allow Nature to be subject to rights. In applying its decision, the Court took a step forward in the jurisprudence towards the constitutional protection of one of the most important sources of biodiversity in Colombia: the Atrato River. For Judge Jorge Iván Palacio, who ruled in favor of granting rights to the Atrato River, his conclusion was as obvious as it was difficult: they must save the planet from man himself.

32. In another example, Mexico City adopted a new constitution in early 2017 that addressed the rights of Nature in paragraphs 2 and 3 of its article 13, which stated that the right to the preservation and protection of Nature would be guaranteed by the authorities of Mexico City. In addition, article 13 indicated that a secondary law would be passed to recognize and regulate the protection of the rights of Nature, as formed by all its ecosystems and species, as a collective entity with collective rights. The result will be that citizens of Mexico City will be able to enforce fundamental rights on behalf of Nature. The Constitution of the State of Guerrero similarly recognizes in its article 2 the rights of Nature.

33-35. In March 2017, the parliament of New Zealand granted the Whanganui River legal status as a person, consistent with negotiations between the Government of New Zealand and Whanganui Iwi that formally began in 2009 and moved to the signing of the Whanganui River deed of settlement in 2014. The legislation recognizes the deep spiritual connection between the Whanganui Iwi and its ancestral river and creates a strong platform for the future of the Whanganui River. The river's interests will now be represented jointly by a member appointed by the Maori community and one appointed by the Government.

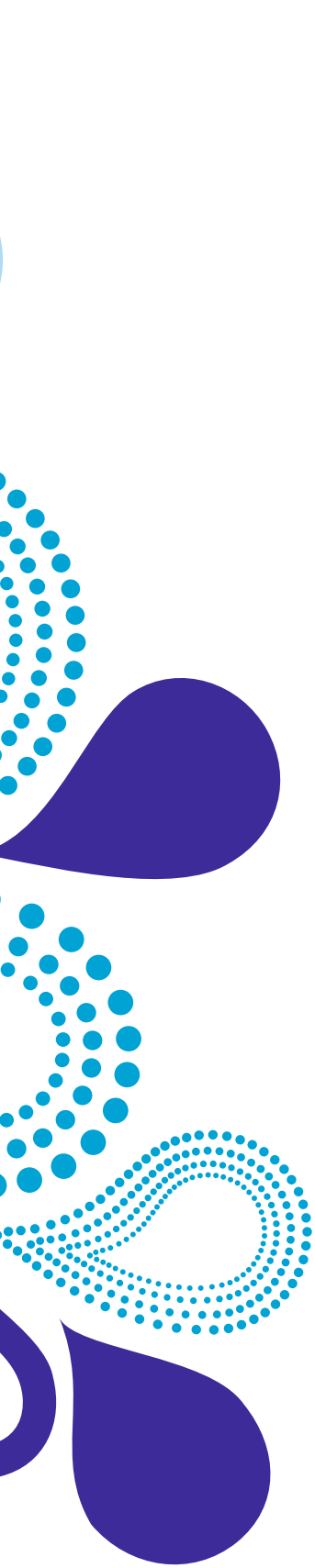
36. On 20 March 2017, the High Court of Uttarakhand, India, granted the Ganga and

[86] https://www.overshootday.org/
[87] http://www.globalwaterforum.org/2017/11/26/new-legal-rights-for-rivers/
[88] http://www.harmonywithnatureun.org/chronology/

Yamuna Rivers legal personhood status. The High Court ordered that two government officials in charge of cleaning and rejuvenating the river as well as the Advocate General of Uttarakhand act as the "legal parents" of the holy rivers and work as the human face to protect, conserve and preserve them and their tributaries. The High Court further stated that those officers would be bound to uphold the status of the two rivers and promote their health and well-being.

37. On 30 March 2017, the High Court of Uttarakhand also granted the Himalayan Gangotri and Yamunotri glaciers, including waterfalls, meadows, lakes, dales, forests, wetlands, grasslands and springs, the status of legal persons for their survival, safety, sustenance and resurgence. Judges Rajiv Sharma and Alk Singh observed that past generations had handed over Mother Earth to humans in its pristine glory and humans were morally bound to hand over the same Mother Earth to the next generation. The High Court directed that the rights of those legal entities should be equivalent to the rights of human beings and the injury or harm caused to those bodies should be treated as injury or harm caused to human beings.

38. In Ecuador, where the nation's Constitution was amended to include rights of Nature in 2008, judicial decisions in at least five cases have recognized those rights and a number of regulatory actions have enforced that provision. The Plurinational State of Bolivia has enacted two national laws that address the rights of Nature, and Argentina and Brazil also have trends in that regard.



Section 12

Thematic Reviews

12.1. China's Belt and Road Initiative: Green Developments and Water-Management Projects Simonov E.A.[90]

The state of river basins and transboundary water politics to a great extent depends on "out of water box" economic and political processes and trends. For the Eurasian continent[91] such a framework process that concerns all resource development and use aspects is the China's Belt and Road Initiative (BRI), which was launched in 2013 and includes the Silk Road Economic Belt and the Maritime Silk Road. The idea of BRI stemmed from the socio-economic and environmental situation in China and the revision of country's foreign policy priorities. In terms of internal situation, BRI allows China to accelerate growth of its economically weak western provinces and to solve problems related to excess industrial capacities and environmental degradation.

Among foreign policy reasons of BRI promotion is the China's intention for regional economic cooperation and closer relations with states in the region in economic, political and humanitarian fields; often interpreted as a "new model of globalization" as opposed to western models. At present, 25 initiative-specific funds and banks concentrate more than $1 trillion. Besides infrastructure and industrial investments, BRI also includes projects in education, international telecommunication, culture, standardization and simplified trade rules.

More than 100 countries and international organizations expressed their willingness to support and join the initiative. One of the landmark agreements signed was a Joint Statement of Russia and China on Cooperation in Harmonization of the Eurasian Economic Union and the Silk Road Economic Belt. Nevertheless, during last 3 years many officials, scholars and social activists have been expressing concerns regarding excessive environmental, social and other risks of the BRI which require special joint measures to prevent and mitigate them.[92]

In the resulting document of the first International Belt and Road Forum, which took place on 14-15 May 2017 in Beijing, leaders of 30 countries emphasized «the importance of economic, social, fiscal, financial and environmental sustainability of projects, and of promoting high environmental standards» in the course of cooperation.[93]

In 2017, the PRC's leadership made a major step in this direction issuing a framework Guidance to deal with such risks. In this context, given review addresses "greening of BRI" and water-management projects planned or built as part of the Initiative.

12.1.1. Green directions of the BRI

The logic of the BRI green policy is "to ensure the leading role of green development with environmental protection as the support", including extension of environmental goods and services trade. The starting point of green development is considered to be the PRC's domestic policy for promoting ecological civilization, which was recognized at the 19th National Congress of the Communist Party of China (CPC) in October 2017 as one of the five pillars of building the socialistic society with Chinese characteristics[94] (see Section China).

[90] See full text in SIC's Information Bulletin No.50 http://www.cawater-info.net/library/rus/inf/50.pdf. The English version of this chapter has been updated by the author.

[91] Hereinafter, the term Eurasia means the continent rather than a certain political (as in RF's documents) or economic and geographical (as in PRC's statistics) grouping of countries.

[92] E.A.Shvarts, E.A.Simonov. Hit the road! International Politics and Society Journal. Friendrich Ebert Stiftung. June 2017, http://www.ipg-journal.io/rubriki/ehkologija-i-ustoichivoe-razvitie/statja/show/v-put-290/

[93] http://kremlin.ru/supplement/5188

[94] "Creating ecological civilization" (Integrated Reform Plan for Promoting Ecological Progress. September2015. http://english.gov.cn/policies/latest_releases/2015/09/22/content_281475195492066.htm. Also detailed description in the UNEP's book Green is Gold web.unep.org/greeneconomy/research-reports/green-gold-strategy-and-actions-chinas-ecological-civilization; Glazyrina I.P., Simonov E.A. "China's ecological civilization: new challenges or new prospects for Russia?", pp. 374-394. East Russia: space development issues / edited by V.A.Kryukov and V.V.Kuleshov. – Novosibirsk: Izdatelstvo IEOPP CO RAN, 2017. – 484 p.ISBN 978-5-89665-321-9 http://lib.ieie.su/docs/2017/Vostok_Rossii/Vostok_Rossii_problemy_osvoenija.pdf

Guidance on Promoting Green Belt and Road and other developments

The China Ministry of Environmental Protection (MEP), Ministry of Foreign Affairs, National Development and Reform Commission and Ministry of Commerce in April 2017 issued a promising "Guidance on Promoting Green Belt and Road".[95] MEP also published The "Belt and Road Ecological and Environmental Cooperation Plan". The Plan describes policy implementation and includes 25 specific pilot projects, with some of which already started by MEP.[96]

Importantly, this new policy relates "Policy on Cooperation on Transfer Overseas of China's Production Capacity and Equipment Manufacturing"[97] with ecological carrying capacities of recipient regions. The China Academy of Sciences has already started a number of projects with neighboring countries on mapping ecosystem vulnerabilities to various impacts. A sizeable proportion of documents address general "green standards", "mechanisms of green financing", "cooperation platforms" (research, official, for non-profit organizations and businesses), as well how to push businesses to engage in environmentally responsible investments and information disclosure to the society. As early as in 2017, several new guiding documents were issued for banks and investment companies abroad.

The Framework Guidance on Promoting Green Belt and Road is well in line with dozens of specific guiding documents on environmental and social responsibility issued over 2013-2016 by different agencies. Normative development continued in 2017. For instance, in August, the Chinese Government issued "Guidelines on Overseas Investments", which strictly limits investments into the projects that would not meet local ecological standards or promote outdated technologies.

In 2017 Chinese overseas investments decreased from $170 to $120 billion (almost by 30%) due to attempts of the Government to prevent capital outflow, reduce investment risks and improve quality of cooperation projects and their relevance to stated priorities. BRI related investments decreased in 2017 by 1% only but this calculation excludes all developed European countries. Analysts predict re-growth of overseas investments of PRC in the next few years.

Role of international standards and agreements

BRI and its "greening" should be considered in the framework of programs and conventions of UNECE and initiatives of European Partnership, Eurasian Economic Union, etc. Although China pays more and more attention to environmental risks of its investments and to environmental and social aspects of its companies' behavior abroad, and also has substantial capacity of its own normative acts, those domestic measures cannot substitute international standards and conventions.

For example, the China's task to "build jointly the Green Silk Road" cannot be fulfilled without tools of strategic environmental assessment (SEA) and transboundary environmental impact assessment (EIA). The need for such assessments was underlined in the Guidance on Promoting Green Belt and Road, and it is the subject of one pilot project in the Belt and Road Ecological and Environmental Cooperation Plan.

Nevertheless, China does not attempt to join the Espoo Convention and its Kiev Protocol on SEA that are open and already serve as the main regulatory framework for transboundary EIA and SEA within Pan-European space, which Silk Road Economic Belt crosses.

It is imperative that China, given its new role of the global economic leader, fully explores and uses accumulated experience, tools (including UNECE multilateral environmental agreements) and mechanisms for greening economic development and protecting ecological interests of concerned parties. However, such process will be slow unless partner countries - parties to those conventions - clearly express their support to it. For Eurasian countries, Pan-European conventions could become a valuable safeguard from possible mistakes and risks in cooperating with the PRC.

[95] MEP, MFA, Ministry of Commerce and NDRC PRC. "Guidance on Promoting Green Belt and Road ". 24 April 2017(https://eng.yidaiyilu.gov.cn/zchj/qwfb/12479.htm)
[96] MEP PRC. "The Belt and Road Ecological and Environmental Cooperation Plan". May 2017, https://eng.yidaiyilu.gov.cn/zchj/qwfb/13392.htm.
[97] This policy has been adopted in 2015 to identify a set of priority sectors for transfer/promotion overseas. By the end of 2017, this policy is used by the Ministry of Commerce of PRC as synonym for "overseas direct investments to non-financing sectors".

Lack of information and understanding of risks in neighboring states

Currently, the key problem in greening BRI is unpreparedness and lack of information among counterparts in participating countries such as governments, research institutions, businesses, and community organization, rather than actions of Chinese actors (which are under tight government pressure for all-round "greening" and reduction of other risks) or non-participation of PRC in international conventions.

New 'green' documents require early reflection and application in the context of cooperation of neighboring states with China. Particularly:

- Prevention of 'ecological dumping' (lowering environmental and social standards) when planning cooperation under BRI and competition for Chinese investment in BRI context;
- Formulation of projects for cooperation and harmonization of spatial planning in border regions in line with the objectives of green development;
- Utilization of innovative green production technologies and algorithms in Eurasian countries;
- Adoption of green financing standards in funds responsible for development of bilateral cooperation with China;
- Inclusion of assessments and measures for protection of ecosystem services and biodiversity in joint forestry, water management and development projects in other sectors;
- Creation of ecological networks/systems of protected natural areas as an important preventative tool in planning development along the Silk Road;
- Adoption of strategic environmental assessment procedures in planning economic corridors of BRI and other large investment schemes;
- Adoption of high environmental standards for transboundary river basin management.

12.1.2. BRI structure and place of water relations and projects in this structure

China announced the development of six economic corridors under BRI.[98] Three of them cross Central Asian countries. Only in case of the China-Mongolia-Russia Economic Corridor the parties formulated a formalized Development Program,[99] but its objectives related to green development and environmental safeguards are not appropriately integrated into planning and implementation of the Program and its projects.

Transboundary water resources management and related cooperation is not explicitly included in any of well-known official BRI documents, although existing documents cover cooperation matters in navigation, aquaculture, agricultural production, pollution prevention, wastewater treatment technology export, joint environment monitoring and common databases, wetland protection, climate adaptation and other aspects related to water management.

Hydropower and other water engineering projects are also important directions to promote Chinese technologies abroad. Some Chinese experts think that the reason for absence of water management in BRI documents is that the latter were prepared without explicit participation of the PRC's Ministry of Water Resources due to interdepartmental barriers. One may also suppose that this is due to hypersensitivity of neighboring countries to the China's role in transboundary basin management and because MWR and upper agencies do not have a common water cooperation strategy.

Current concerns about transboundary basins are reinforced by Guidelines on Overseas

[98] For detailed description see the brochure on first results of BRI issued in May 2017: Building the Belt and Road: Concept, Practice and China's Contribution. www.yidaiyilu.gov.cn/wcm.files/upload/CMSydylyw/201705/201705110545004.pdf
[99] http://minpromtorg.govrb.ru/rus-ch-mn.pdf

Investments recently issued by National Development and Reform Commission, where investments that address transboundary water resources are recognized as the most risky and thus requiring additional review and permissions. This would hold far-reaching consequences for all water-related undertakings in BRI.

However, the fact that there is no specific water strategy does not imply inaction. On the contrary, BRI, in our opinion, has a potential to change radically China's transboundary water policy.[100] We believe that given shift of industrial overcapacity to neighboring countries, China's interest in ensuring sustainable water supply in those territories and reducing transboundary water-related conflicts is growing. Moreover, cooperation in transboundary basins, first of all, will result in better monitoring of transboundary waters and sharing databases and analysis systems, with China's decisive role. This is more evident in 2016-2017 in the Láncāng Jiāng-Mekong basin, where China, being previously as observer and "bogey", has become the coordinator of cooperation mechanism and, actually, the leader of development planning processes (see Section China).

Water and energy projects along the Silk Road and associated risks

Where it is possible, Chinese entities are eager to participate in water infrastructure projects in other countries under the banner of BRI. First, nowadays, no providers of water and energy engineering and equipment in the world can compete on scale and diversity of services with Chinese companies supported by state-bank loans. Second, although no formal list of BRI projects either exists or is being planned, for Chinese companies the BRI label means better chances for promotion and domestic financing.

In 2017, most Chinese water-related private and public overseas investments were in agriculture, hydropower, urban development and infrastructure, which imply massive export of flood protection, water supply/sewerage and treatment systems. Besides, China invested in development of inland waterways, water supply of industrial parks and large enterprises, and water-based tourism.

Water is a prominent topic in activities of the Asian Infrastructure Investment Bank (AIIB), where China, with its 26 % of capital, undoubtedly dominates.[101] By end of 2017, 22 already financed projects include reconstruction of HPPs in Pakistan and Tajikistan, flood protection in Philippines, repair of old dams in Indonesia, and establishment of two intermediary funds that can also finance water projects. By February 2018, the list of projects under evaluation included only 10 projects, such as irrigation projects in India and Indonesia, controversial Nenskra HPP in Georgia, and "climate" project for flood control in Sri Lanka.

Despite such diverse water projects portfolio, the AIIB has very limited pool of experts for project assessment and supervision. Strategic documents adopted by the Bank were discussed intensively with the public. Particularly, upon proposition by the international coalition "Rivers without Boundaries", the AIIB's Socio-ecological framework policy has included a sentence on a need for protection and restoration of wetlands' ecosystem services as the first-priority alternative to creation of new infrastructure.[102] In 2017, when non-governmental organizations discussed the AIIB's Energy Sector Strategy, the detailed analysis of opportunities and risks of financing hydropower projects was produced by request of one of Bank's regional directors.[103] As a consequence, the strategy included recommendation on assessment of basin-wide hydropower plans prior to making decisions on a project. However, most water projects with Chinese participation are financed by state "policy" banks of China; however, there is no publicly available information on the rules and procedures of decision making inside these banks.

According to the non-profit organization (NGO) "International Rivers", HPP account for most waterworks facility/dam projects that Chinese companies build abroad, including bulk of large dams. According to the NGO's data, in 2006-2017, Chinese companies signed contracts for construction of more than 266 HPPs with the total capacity of 130 GW, from which 76 GW are BOT-contracts under where Chinese companies own the plants during first decades of their operation. Thus, in 2017, more than 14 contracts were signed with the total

[100] BRI's implications for water governance were analyzed in details in case of the Amur River Basin. See Eugene Simonov, Eugene Egidarev, Intergovernmental Cooperation on the Amur River Basin Management in the 21st Century. International Journal of Water Resources Development, Special issue "Hydropolitics and Conflict Management in Transboundary River Basins: China and its Neighbors". https://doi.org/10.1080/07900627.2017.1344122

[101] Five largest co-founders in terms of investments: China, India, Russia, Germany, and Republic of Korea.

[102] https://www.aiib.org/en/policies-strategies/_download/environment-framework/20160226043633542.pdf

[103] https://www.researchgate.net/publication/322386465

capacity of 25 GW (however, these figures include contracts on Diamer-Bhasha HPP in Pakistan and Budhi Gandaki HPP in Nepal that were canceled at the end of the year).[104]

In general as anticipated, there is slow decrease in the number and annually installed capacity of hydropower projects world-wide, as most investments in renewable energy go to solar and wind sources. However, the role of China in this sector is still overwhelming with its companies and banks participating in 55% of all hydropower installed and for 75% of the global investment in hydropower in 2017.[105] We must mention that in installation of wind and especially solar China's global leadership is even more pronounced in 2017.

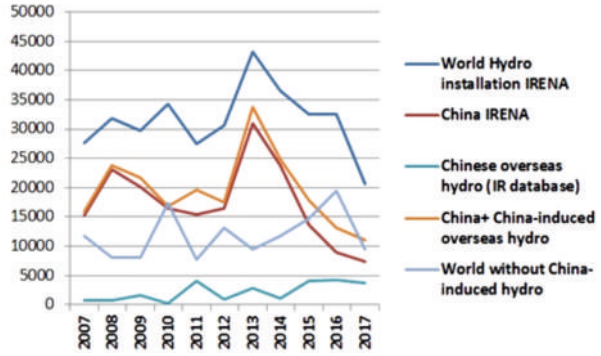


Figure shows 10-year dynamics of global hydropower installation (in MW)

China's hydropower projects by region

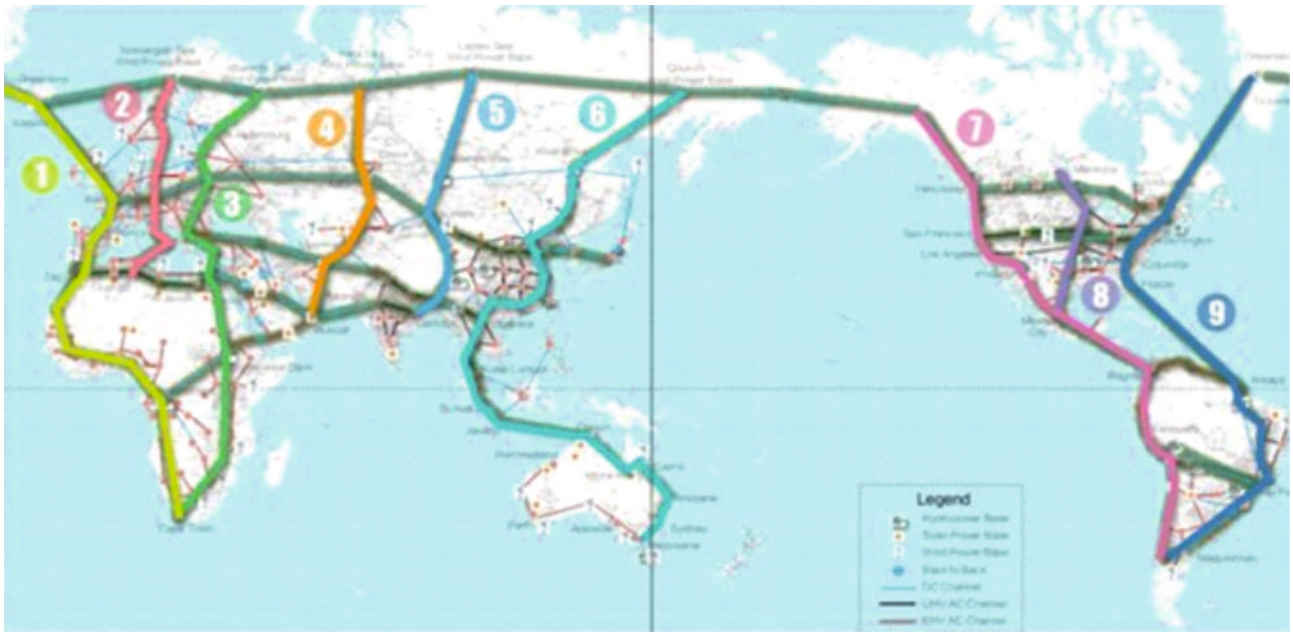
Region	Total of Hydropower Capacity (MW)	Number of Hydropower Projects	Total of BOT Hydropower Capacity (MW)	Number of BOT Hydropower Projects
Asia (SE)	63,444	180	56,622	63
Asia (S)	26,822	26	14,219	6
Africa	21,210	65	500	3
Latin America	9,631	27	906	2
Europe	5,984	25	3,922	6
Asia (Central)	2,151	9		
Middle East	558	2		
Oceania	180	1		
Pacific	59	3		

Source: Stephanie Jensen-Cormier. Reflections on Chinese Companies' Global Investments in the Hydropower Sector between 2006-2017[106]

The public global database on China-built dams developed by International Rivers[107] includes only a dozen of projects in countries of the former USSR. Although the figures are indeed small, the reality is more robust, since many local projects escape global inventories. For instance, despite the fact that Chinese hydropower constructers virtually left Russia in view of unfavorable economic and political environment, pulp and paper mill "Polyarnaya" (Xingbang Goji) with 100% Chinese capital by 2018 completed construction of a reservoir on Amazar River - the first tributary of the Amur River.[108] This is the first relatively large dam (up to 18 m high) in the Russian history built in the sole interests of Chinese investors, with severe violations of regulations and without environmental impact assessment and public consultations. It will damage local stock of red-listed endangered fishes and may effectively halt any fishing activities by local people in Mogochinsky region of Zabaikalsky Province.

The Chinese Plan on Global Energy Interconnection (GEI) as part of BRI is the most illustrative example of intended systemic

[104] Detailed report on Chinese investments in renewable energy sources in 2017 is the interesting alternative source of information.
[105] Statistics Confirm: Chinese Industry is the Engine of the Global Hydropower Boom. www.transrivers.org/2018/2211/
[106] www.internationalrivers.org/blogs/435/reflections-on-chinese-companies%E2%80%99-global-investments-in-the-hydropower-sectorbetween-2006
[107] www.internationalrivers.org/sites/default/files/attached-files/public_chineseoverseasdams_may2017.xls
[108] www.researchgate.net/publication/322231581



Backbone transmission lines of GEI (Global Energy Interconnection, GEIDCO 2018)

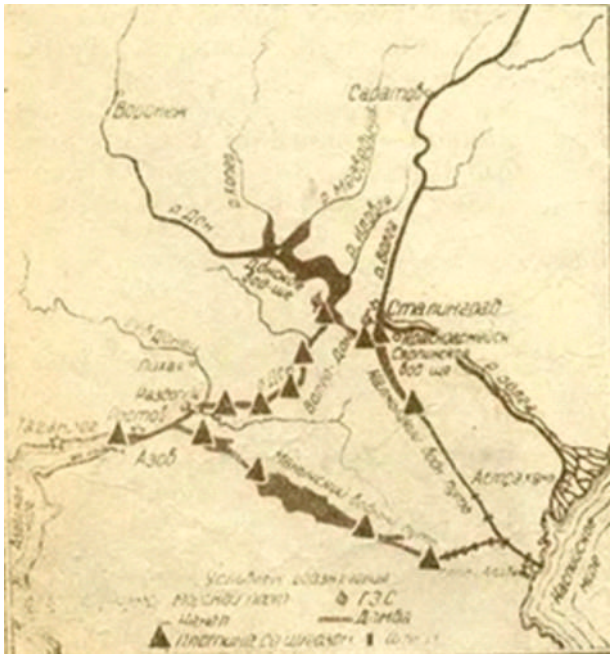
cooperation in the field of technology and export of industrial capacity that could have a strong impact on energy and water management sectors. For implementation of this initiative an international non-profit organization was established - Global Energy Interconnection Development and Cooperation (GEIDCO), with headquarter in Beijing and partners from Russia, Japan, Korea and many other countries.[109]

A volume authored by the GEIDCO Chairman Mr. Liu Zhenya[110] describes in detail advantages of global energy interconnection but keeps silence on risks. When building global interconnection in 2030-2050, renewable energy sources will fail to fully replace coal, nuclear and large hydropower generation and those types of power plants will be perpetuated when connected by super-grid. It should be taken into account that most hydropower and nuclear projects are viewed by GEIDCO as environmentally friendly. The GEI creates opportunities for transmission of power over large distances, i.e. consumers will stay far from environmental and social impacts of energy generation (that occur even in case of wind and solar power). The global interconnection also means unified technical standards and the strongest influence of grid owners on their formation. In October 2016, the IEC International Electro-technical Commission in cooperation with the State Grid Corporation of China issued a White Paper on Global Energy Interconnection[111], which was the first step of such standardization. GEI is hardly the first attempt by international corporations to create super-grids. For instance, the power transmission line CASA-1000 has been under development for a decade in Central Asia. This transmission line is to connect old and new large hydropower projects in Kyrgyzstan and Tajikistan with consumers in Pakistan and Afghanistan. Anticipating considerable negative impacts from the GEI environmental groups and indigenous communities came up with explicit requests to subject super-grid schemes to strategic environmental assessments at the earliest stages of design.[112]

Beyond endeavors in energy sector, China's BRI water-related projects are less studied and more difficult to trace. Most visible but not numerous are proposed navigation projects, many of which dates back to the past century or even more. For example, in 2017 we see the fiasco of Nicaragua Canal, which was intended by a private Chinese company as an alternative to Panama Canal, but encountered massive protest of local communities, legal obstacles, concerns about massive loss of biodiversity as well as political instability in the country. Another on-going effort is feasibility study for blasting rapids on Mekong river with a

[109] www.geidco.org
[110] Liu Zhenya. Global Energy Interconnection. – M.: Izdatelskiy dom MEI, 2016. – 512 p. (in Russian)
[111] www.iec.ch/whitepaper/pdf/iecWP-globalenergyinterconnection.pdf
[112] China's SUPERGRIDS-PROMISE OR CURSE FOR GREEN DEVELOPMENT? Presentation at the 2018 conference of AASA. www.researchgate.net/publication/326250744

view of developing a commercial waterway from China to Thailand and Vietnam, which also is confronted by locals and may lead to substantial biodiversity losses. Closer to Central Asia there is unceasing effort by Kazakhstan to cooperate with China and Russia to open access to the sea, for example, through Eurasia Canal from Caspian to Black Sea. The project makes little economic sense for Russia, whose territory it should cross, so consultations go on for years without tangible results, despite extensive diplomatic efforts of Kazakhstan and China.



Most water infrastructure megaprojects have long history of wishful thinking: Precursor of "Eurasia"-Manych Canal Scheme 1938

In theory, investments in agriculture, including modern efficient irrigation systems, could be the most useful BRI component in many countries of Eurasia. Apparently, Chinese companies lease overseas much smaller area of agricultural land than was feared before[113], and nominally, the greatest area is leased in Russia (1+ million hectares). However, in Eurasia Chinese companies leasing land rarely invest into expensive new irrigation systems and modernization of water-use in agriculture, or at least such facts are absent in documents available to us. In Africa, there are multiple incidents when Chinese engineering firms win contracts for new reservoirs and canals for agriculture in projects commissioned by local governments. The official "BRI Strategy for Cooperation in Agriculture" does not mention cooperation in water management.[114] In contrast to many other BRI documents, this Strategy has never been officially translated into English, which probably shows that China's officials do not want to draw too much public attention to this sphere. That is understandable given that lease of agricultural land by Chinese has been trigger for mass-protests in Russia, Kazakhstan and some other countries in 2015-16. Nevertheless, cooperation in agriculture and related water infrastructure projects under the BRI is still likely to experience long-term increase in most countries of Eurasia due to objective need to modernize agricultural production and adapt to climate change.

The last, probably most positive, trend to mention is aggressive attempt of China to claim its fair share of global market in water treatment and related urban water management systems. This industry sector is listed a part of "environmental industry" and according to the 13th 5-year plan and other policy documents China encourages export of these technologies. Recently Chinese companies signed contracts for construction of large wastewater treatment facilities in many cities of Eurasia from Belgrade[115] to Ulaan Baatar.[116]

When China has a lead in planning cooperative relationships, BRI-related cooperation in water sector may be framed as a very comprehensive exercise. China-Pakistan Economic Corridor Long Term Plan (CPEC LTP)[117] is a striking example of a desire to cover all aspects of cooperation in water sector. It includes clauses on:

- comprehensive planning of water resources and river basin plans, improving the capability of Pakistan to coordinate the planning of water resources development and utilization, conservation and protection, flood and drought prevention and disaster relief;
- preparatory work of major projects to accelerate the hydropower development process;

[113] E. Gooch and F. Gale China's Foreign Agriculture Investments, ERS, April 2018. www.ers.usda.gov/publications/pub-details/?pubid=88571
[114]《共同推进"一带一路"建设农业合作的愿景与行动》www.yidaiyilu.gov.cn/wcm.files/upload/CMSydylgw/201705/201705161031001.pdf
[115] https://watermagazine.ru/novosti/za-rubezhom/20791-kitajskaya-kompaniya-postroit-v-belgrade-ochistnye-sooruzheniya-kanalizatsii.html
[116] www.oananews.org/print/502623
[117] CPEC's Long Term Plan (LTP) 2017-2030. www.cpecinfo.com/cpec-news-detail?Id=ndywnw==

- construction of water-saving modern agricultural zones, and increase the development and remediation of medium- and low-yielding land to achieve efficient use of resources, strengthen drip irrigation technology for water efficiency;
- development of comprehensive agricultural production capacity, construction of agricultural water conservancy (reservoirs) and facilities for processing agricultural products ;
- improving water resources operation and management, strengthen development of pastoral areas in desert, and promote application of remote sensing technology in natural resource management;
- applying international and China's new urbanization concepts to the municipal construction of the node cities along the CPEC, such as the construction of the public transport system and water supply and drainage systems;
- actively research comprehensive development of coastal tourism within the CPEC coverage;
- cooperate in fisheries.

These plans are still mostly on paper, while practical cooperation in CPEC goes on in more narrowly defined directions like construction of 3 hydropower plants (Karot, Dasu and Neelum-Jehlum). Nevertheless, the CPEC plan shows the widest spectrum of water-related aspirations of China in BRI economic corridor development.

China's water projects in Central Asia

Central Asia is the key region on the Silk Road and water management issues are central for development of this region. Official Chinese media often publishes articles about the positive role of China in regulation of water issues in the Aral Sea Basin. Some of these publications stress that China should play it safe when investing in water projects in the CA countries to avoid breaking the fragile peace.[118] Nevertheless, the growth of expectations and agreements on participation of Chinese companies and banks in construction of water infrastructure in CA was observed throughout 2017.

In Kazakhstan, it was reported on plans to construct small hydropower along the Shelek River (HPP – 1, 2, 19, and 29) in Almaty province. The partners are the Kazakh AO Samruk-Energo and China Water Electric Co. Ltd. The latter also applies for construction of "compensatory" Kerbulak HPP on the Ili River.[119] As part of shift of industries from China to Kazakhstan in its Eastern Kazakhstan province, three investment projects will be implemented and include construction of two Turgusun HPPs. The initiator of this construction is the Kazakh TOO EcoEnergy with the support of Chinese OAO TBEA. The cost of construction of Turgusun HPP-2 is $50 million, while the third station will cost $250 million. Hydropower plant capacity will be 20 and 90 MW, respectively; while the average annual generation will be 64 and 328 million kWh, respectively.[120] However, Kazakh officials responsible for water management did not confirm that any of abovementioned projects can go ahead any time soon.

The national irrigation development program in Kyrgyzstan is financed partially through a grant of China government[121], but there is no evidence about Chinese financing of hydropower in the republic.

As part of the program on transfer of China's production over-capacities offshore, more than 7 cement factories were built in Tajikistan and, evidently, their product was used in its large-scale hydropower development program. Some Chinese firms are sub-contractors at Rogun Hydro construction site, with TBEA Co. building essential transmission lines, while Dongfang Electric announced they could supply generators for the 2nd stage of its construction.

In May 2017, the PRC's leadership promised multibillion loans to Uzbekistan for irrigation and hydropower projects.[122] In particular, funds of the Export-Import bank of PRC are expected to be used for construction of Pskem HPP (400 MW). So far Chinese firms are involved only in renovation of several old hydropower plants. Selection of Uzbekistan as the first candidate for large water investments is likely just the

[118] Institute for Central Asian Studies, Lanzhou University. www.globaltimes.cn/content/1041521.shtml
[119] http://today.kz/news/ekonomika/2017-10-03/751481-energetika-i-mashinostroenie-vo-chto-investiruet-kitaj-v-almatinskoj-oblasti/
[120] http://today.kz/news/ekonomika/2017-05-19/742506-vyiplavim-med-i-obuzdaem-reki---predpriyatiya-s-kitajskimi-investitsiyami-v-vko/
[121] http://cbd.minjust.gov.kg/act/view/ru-ru/100162
[122] www.eurasianet.org/node/83611

beginning of systematically increasing China's influence on Aral Sea Basin management and hydro-engineering investments in the region.

BRI's suspended water projects

2017 showed several examples where "Chinese" hydropower projects promoted under the BRI were canceled or frozen. The reasons are different, but in general illustrate great vulnerability of large water infrastructure projects in transboundary basins.

Notwithstanding close cooperation between China and Pakistan, inclusion of large HPP along the Indus River into the Program of China-Pakistan Economic Corridor[123] has encountered many obstacles. Those were related, in particularly, with the Indus Treaty (signed between Pakistan and India with the WB's mediation), status of Kashmir, and demands for close control from the Chinese side over progress in dam construction. Given high political risks and conditions for corruption in such projects, the Chinese officials wanted to get maximal control over the projects. This did not suit Pakistan, which, finally, terminated cooperation with PRC in construction of the largest Diamer-Bhasha dam.[124]

Despite unprecedented pressure from PRC side for reversal of frozen construction of large-scale hydropower projects on the Ayeyarwady River (first of all Mytsone dam), Myanmar announced in 2017 that construction on large-scale hydropower projects would be stopped as the country undertook a strategic assessment of the energy sector, according to outcomes of which those projects did not fit well in the short-term development prospects.[125] In Myanmar, there are a dozen of "pending" large hydropower projects with Chinese investment in the basins of Salween and Irrawaddy rivers and more than 40 other planned hydropower projects with Chinese involvement. Official negotiations on possible export to Myanmar and Bangladesh of energy from stranded hydropower capacities in Chinese Yunnan province started in 2017.[126]

The third widely discussed case of slowing down hydropower projects along the Silk Road is the termination of contract with Chinese Gezhouba Company on construction of large 1200 W Budhi-Gandaki HPP in upper Ganges basin.[127] The contract was canceled by the Nepal Government on the ground that it was rewarded without tendering and on disadvantageous for the country terms. In December, Nepal got "tit-for-tat response" from Three Gorges Corporation claiming that it would leave the newly established joint company for 700 MW West Seti hydropower if the Nepalese government did not make tariffs more favorable for the company.

In Mongolia, the USD 1 billion loan of China Exim Bank, intended initially for the Egiin-Gol Hydropower Plant in the Baikal Lake Basin (China Gezhouba Construction Company), was redirected for other projects, including large transmission line to Gobi, wastewater treatment plant in the capital Ulaan Baatar, as well as projects in education and road construction.[128]

Sudden attempt by the Hanergy Holding Co. to revive the Hinggan hydropower project on the transboundary Amur River was halted in 2017.[129] That company also co-owns one of pending hydropower dam project in Myanmar on the Salween River. The Hong Kong Court convicted the head of the Hanergy Holding of fraud, and he was banned from heading Hong Kong businesses for 8 years that seemingly rules out further attempts to initiate large-scale projects under BRI.

Those are only most well-known cases of terminating water and energy projects under BRI. As a whole, a large share of hydropower projects on which China has signed agreements with recipient countries are dormant projects, investments in which have not been made for years or which are undergoing preliminary studies that can end up in project rejection.

In conclusion:

The China's BRI Initiative may become a promising area of international cooperation for the Central Asian countries, if its projects are based on interests of CA countries and are

[123] http://pc.gov.pk/uploads/cpec/LTP-Web-Document26-12-2017-final.pdf; www.cpecinfo.com/cpec-news-detail?id=NDYwNw==
[124] www.globaltimes.cn/content/1040956.shtml
[125] "Pakistan, Nepal, Myanmar Back Away From Chinese Projects," Voice of America, December 4, 2017. www.voanews.com/a/threecountries-withdraw-from-chinese-projects/4148094.html.
[126] www.stimson.org/content/letters-mekong-mekong-power-shift-emerging-trends-gms-power-sector
[127] www.transrivers.org/2017/2116/
[128] www.transrives.org/2017/1922/
[129] www.transrivers.org/2017/1925/

subject to regulation and oversight of investments in line with the norms and principles of international law and best practices.

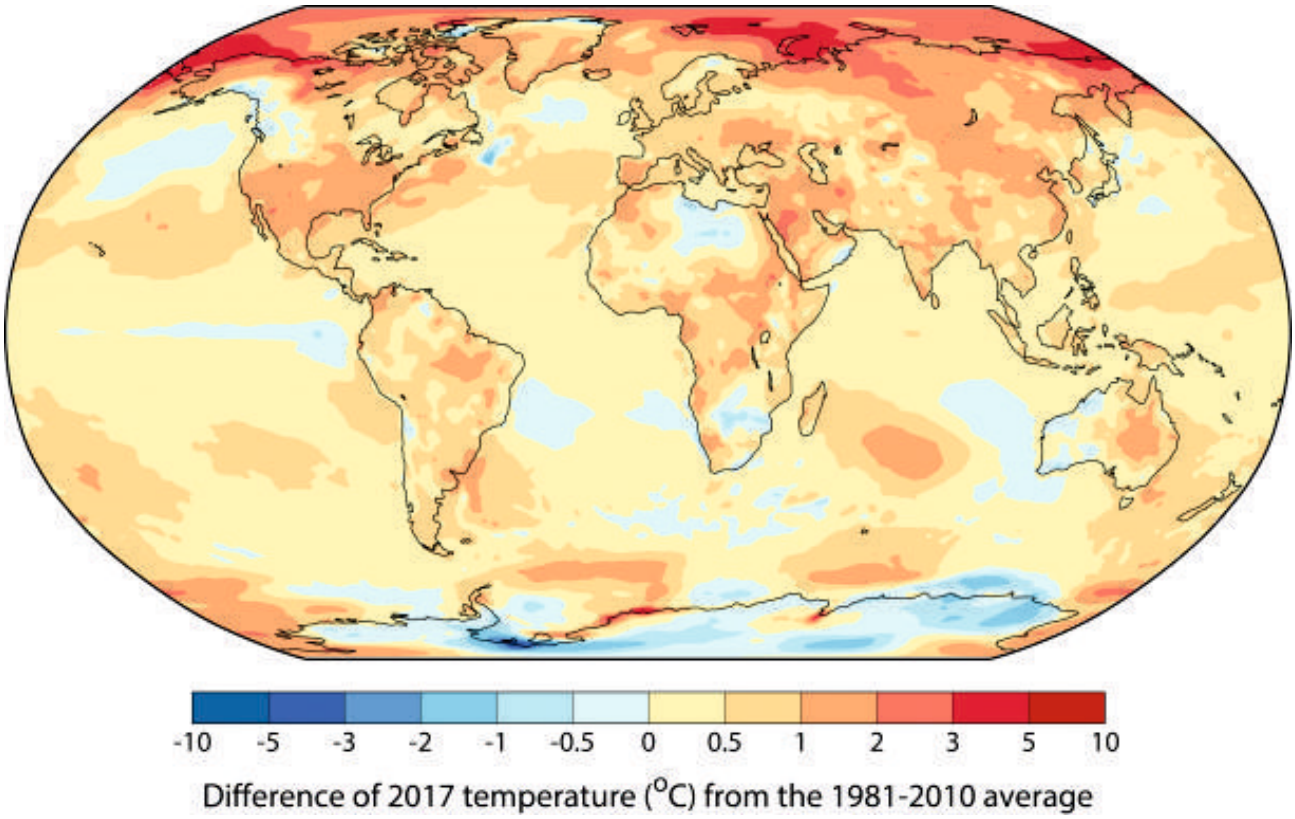
According to many experts, best prospects for cooperation with CA countries are in food production, water and environmental security. In the sphere of agriculture and food processing, CA countries can develop real competitive projects[130], while in environmental field there is scope for development of a cooperation mechanisms in science and green technology transfer.[131]

At the same time, there are multiple examples of water, energy and agricultural projects undertaken under BRI, implementation of which was terminated and/or suspended in view of high risks, weaknesses of strategic planning, and disagreements between riparian countries of transboundary basins.

Cooperation on "greening BRI" proposed by China in 2017 is an important chance for countries in the region to reduce risks and increase effectiveness of joint projects. This would require from the countries to study new Chinese approaches to green development and draft their own relevant project proposals and mechanisms of green development to take full advantage of Green BRI policies.

It is also important to keep in mind that BRI is only one– although most ambitious – process of integration in the Eurasia continent. Therefore, its success will depend on sound harmonization with other integration processes, while meeting the national interests of concerned countries, and on effective utilization of the mechanisms of international conventions (e.g. UNECE conventions) that are already recognized in the region.

12.2. Climate Change



[130] Syroyezhkin K. Silk Road Economic Belt opens new opportunities for Kazakhstan // Web-site of the Central Communications Service of Kazakhstan. July 18, 2015. URL: http://ortcom.kz/ru/news/ekonomicheskiio-poyas-shelkovogo- uti-otkroet-novievozmojnosti-dlya-kazahstana--ekspert.6838

[131] Frolova I.Yu., senior researcher, Sector of Asia, Central Asia and Middle East, RISS. China's Project "Silk Road Economic Belt: development, challenges, and prospects. National Strategy Issues No 5 (38) 2016. http://library.asue.am/open/art4637.pdf

2017 was the warmest year without an El Niño. According to WMO, the global average surface temperature in 2017 was approximately 1.1° Celsius above the pre-industrial era. 2015, 2016 and 2017 have been confirmed as the three warmest years on record. 2016 still holds the global record, whilst 2017 was the warmest year without an El Niño, which can boost global annual temperatures. The long-term temperature trend is far more important than the ranking of individual years, and that trend is an upward one. Seventeen of the 18 warmest years on record have all been during this century, and the degree of warming during the past three years has been exceptional. The warmth in 2017 was accompanied by extreme weather in many countries around the world. WMO will issue its full Statement on the State of the Climate in 2017 in March 2018.[132]

Youth filed their constitutional climate lawsuit against the U.S. government. In 2017, this unique case called *Juliana v.* U.S. continued. 21 American youths from 9 to 20 years old filed a class action lawsuit against the U.S. government. Their complaint asserts that, through the government's affirmative actions that cause climate change, it has violated the youngest generation's constitutional rights to life, liberty, and property, as well as failed to protect essential public trust resources.[133]

In September 2017, the Intergovernmental Panel on Climate Change has agreed the outline of its Sixth Assessment Report (AR6), which will all be delivered in 2021. The next step for the IPCC is to invite nominations through Governments for authors from among the international research community, who will prepare the report.[134]

2017 marked 10 years since opening the debates in the UN Security Council on the links between energy, security and climate. Since then, the climate related threats to security has become more evident and, therefore, have been addressed at the Council's meeting more frequently. Resolution 2349 adopted in May 2017, on the Lake Chad basin region, recognized the adverse effects of climate change among other factors on the stability of the region. On 30 October 2017, during the SC briefing, the Secretary General told how poverty and climate change contributed to humanitarian crisis in Sahel.[135] (See also Security Council).

Paris Climate Agreement

170 countries have already ratified the Paris Agreement, which came into force less than a year ago – a modern record for such a global treaty. Many nations have drawn up and are now moving to implement their national climate action plans under the Paris Agreement. Some areas are advancing quickly: new evidence indicates that global growth in renewable energy like wind and solar is doubling every 5.5 years.[136]

Uzbekistan has joined the Paris Agreement on climate change. The signing ceremony took place on the 19th of April at the UN headquarters in New York.[137]

U.S. withdraws from the Paris Agreement. On 4 August 2017, the UN Secretary–General received a communication from the Permanent Representative of the United States of America expressing the intention of the United States to exercise its right to withdraw from the Paris Agreement. Analysts state that abolishment of climate change actions was one of major campaign promises of Donald Trump. He told that the so-called Clean Power Plan adopted during presidency of Barack Obama in 2014–2015 hampered American industry with its excessive environmental requirements that imposed high costs to coal, automobile and oil-and-gas corporations. The plan stipulated 25% reduction of greenhouse gases in the U.S. According to UN, the decision by the United States to withdraw from the Paris Agreement is a major disappointment for global efforts to reduce greenhouse gas emissions and promote global security.[138]

Major global climate change related events

The international EECCA NWO conference "Challenges of river basin management in the context of climate change" was held on 18-19

[132] https://public.wmo.int/en/media/press-release/wmo-confirms-2017-among-three-warmest-years-record
[133] Our children's trust. Juliana v. U.S. Climate Lawsuit. www.ourchildrenstrust.org/us/federal-lawsuit/
[134] public.wmo.int/en/media/news/ipcc-agrees-outlines-of-sixth-assessment-report
[135] www.securitycouncilreport.org
[136] www.unenvironment.org/news-and-stories/story/two-years-after-paris-one-planet-summit-aims-galvanize-new-action-climatec
[137] www.gazeta.uz/ru/2017/04/20/paris-agreement/
[138] www.un.org/sg/en/content/sg/note-correspondents/2017-08-04/note-correspondents-paris-climate-agreement

May in Moscow. The conference brought together researchers and experts from Russia, Belarus, Moldova, Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, France, Switzerland, and Ausitra.

23rd Conference of the Parties (COP 23) to the UN Framework Convention on Climate Change was successfully held on 6-17 November. As long as during two weeks Bonn was in the focus of world diplomacy and climate change. COP 23 presided by the Government of Fiji was attended by more than 27,000 participants.[139]

One Planet Summit was held on 12th of December. It was to promote new initiatives in the context of climate change. The President of the French Republic, Mr. Emmanuel Macron, the World Bank President Mr. Jim Yong Kim and the UN Secretary-General Antonio Guterres drew attention to the global critical environmental situation by gathering together the leaders of international community and concerned parties all over the world. Major focus was put on mobilization of public and private funding in support and for speeding up of our common efforts in fighting climate change.

The third **Planetary Security Conference** was held on 12-13 December and resulted in the adoption of the Hague Declaration on Planetary Security. The declaration presents climate change as the key factor global insecurity and conflict and sets an Agenda for Action, which includes: creating an institutional home for climate security; coordinating migration and climate change responses; promoting urban resilience; supporting three climatic hotspots (Lake Chad, Maly, and Iraq).[140]

Events in the countries of Central Asia

A **Central Asian Regional Glaciological Center** was established after the president of the Republic of Kazakhstan, Nursultan Nazarbayev, ratified an agreement in March 2016 between his country and UNESCO. The center is located in Almaty and has the objective to both contribute to the research of glaciology and improve the scientific understanding of the impacts of climate change on glaciers and the water cycle in the region. As stated by UNESCO, the center will improve coordination of research projects and information sharing between regional institutions currently working on glaciers. Moreover, it will aim to increase the capacities of Central Asian specialists in the field of glaciology.[141]

The conference presenting the **National communication of the Republic of Kazakhstan** to the UN Framework Convention on Climate Change was held on **29th of November in Astana**. According to the calculations shown in the national communication, even under non-extreme climate change scenario, by 2050 water resources in upland basins of Kazakhstan may increase on average by 7%, while those in lowland rivers may decrease by 3.8%. Thus, increase of water in south and east of Kazakhstan, where rivers are fed by glaciers, may lead to intensification of mudflows and landslides. While in the lowland area in western, northern and central Kazakhstan desertification processes could be observed because of reduction of runoff. Additionally, according to UNDP's forecasts, grain yields may decrease to 40% by 2050.

On 17-18 April, a regional workshop on climate change in CA was organized in **Almaty** by CAREC, USAID, WB and IFAS as part of the CAMP4ASB Project. The workshop heard from international consultants from AbtAssociates engaged by USAID for presentation of recent major climate-related changes in global policy since the adoption of the Paris Agreement, as well as of those opportunities that are opened before the CA countries in application of the Agreement's mechanisms. Representatives of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan reported on progress in adaptation to climate change.

A regional Central Asian meeting to inform the public on issues related to climate change and security in the region was held on **27th of March in Almaty**.

International forum "Climate change and water cooperation in the context of sustainable development in Central Asia" was organized by the State Committee for Environmental Protection and Land Resources of Turkmenistan and CAREC on **5-7 June in Ashkhabad**. The objective was to enhance overall dialogue on environmental protection between public agencies, international community, academia

[139] www.cop-23.org/
[140] www.planetarysecurityinitiative.org
[141] http://glacierhub.org/2017/11/30/new-glaciological-center-kazakhstan-tackle-glacier-retreat-region/

and businesses in CA for consolidation of joint efforts and elaboration of a common vision of sustainable development in the region.

The sixth meeting of the EU – CA Working Group on Environment and Climate Change was held on **10th of July in Astana**. The participants discussed such matters as strengthening of regional cooperation in environment, water management and climate change, leveraging of international financing for infrastructure and climate projects, and the related needs of CA countries for capacity building and training.

In August 2017, the Center on Climate Finance was established **in Kyrgyzstan**. The key objectives of the Center are mobilizing financing and investments from the Green Climate Fund and international organizations and promoting investments, projects and programs in the field of climate change.

On 18th of August UNDP and the State Committee for Environmental Protection and Land Resources together with national partners discussed in **Ashkhabad** results of the project "Addressing climate change risks to farming systems in Turkmenistan at the national and community level" funded by the Adaptation Fund.

12.3. Sustainable Development Goals: Reviewing Progress

In September 25, 2015, the UN member countries adopted the 2030 Agenda for Sustainable Development. It includes the 17 interconnected Sustainable Development Goals, supported by 169 specific targets. A system of 230 global indicators was adopted in March 2016 to monitor SDGs. The countries were expected to create their own system of monitoring through regular comparison of statistics with 230 indicators. Yet none of CA countries has established such system.

According to UN report[142], implementation of SDGs in Central Asia can be described as follows:

- Water load in CA exceeds threshold by 60% indicating to high probability of water scarcity in the future.
- By 2016, the CA countries achieved substantial progress on most indicators of SDGs, thus quickly progressing to better indicators in achieving SDGs and reducing existing lag behind. Nevertheless, the countries face serious challenges, though in varying degrees, in achieving SDGs; significant lags in degree of achieving exist in most cases (Table 1).
- SDG 6 (water) is the only goal set as a national priority in all CA countries. It is followed by SDG 7 (energy), SDG 9 (infrastructure), and SDG 13 (climate) (Table 2).
- Virtually all CA countries adopted national strategies or programs for sustainable development and, in general, harmonized their national goals with SDGs.

[142] The Sustainable Development Goals Report (UN, 2017); Achieving the Sustainable Development Goals in North and Central Asia (UNESCAP, 2017); UNECE Background paper «Promoting innovation in Central Asia – shaping new markets» (SPECA, 2017)..

Table 1. Indicators of SDGs achievement in CA countries

	Sustainable Development Goals					
1.	No poverty					
2.	Zero hunger					
3.	Good health and well-being					
4.	Quality education					
5.	Gender equality					
6.	Clean water and sanitation					
7.	Affordable and clean energy					
8.	Decent work and economic growth					
9.	Industry, innovation and infrastructure					
10.	Reduced inequalities					
11.	Sustainable cities and communities					
12.	Responsible production and consumption					
13.	Climate action					
14.	Life below water	n.a.	n.a.	n.a.	n.a.	n.a.
15.	Life on land					
16.	Peace, justice and strong institutions					
17.	Partnerships for the goals					

Note:

	SDG achievement, and is assigned to a country on a given SDG only if all the indicators under the goal are rated Green
	Yellow
	Orange
	and Red indicate increasing distance from SDG achievement.

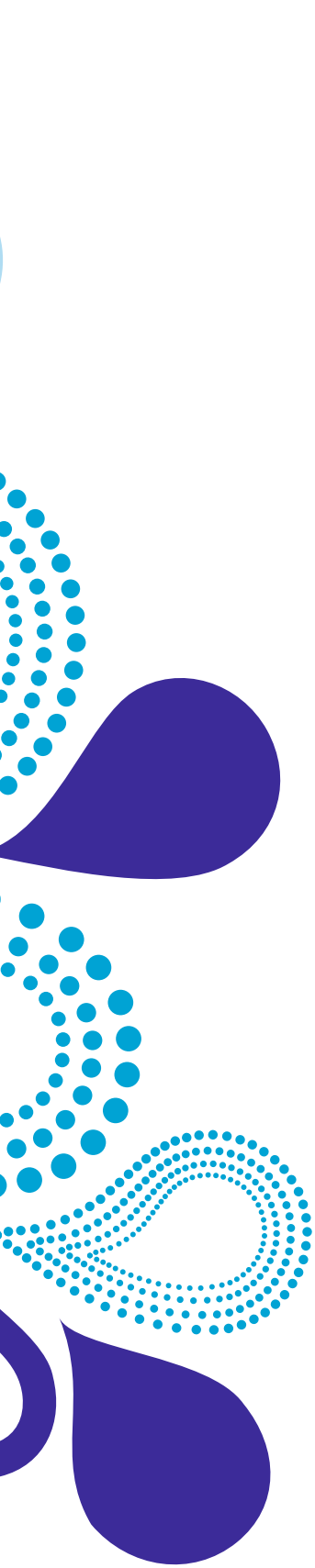
Source: SDG Index and Dashboards Report 2017 prepared by Bertelsmann Stiftung and Sustainable Development Solutions Network.

Table 2. SDGs set by CA countries as national priorities

Sustainable Development Goals		SDGs set as national priorities				
						
1.	No poverty					
2.	Zero hunger					
3.	Good health and well-being			X		
4.	Quality education	X		X		
5.	Gender equality	X	X	X		
6.	Clean water and sanitation	X	X	X	X	X
7.	Affordable and clean energy	X	X	X		X
8.	Decent work and economic growth		X	X		
9.	Industry, innovation and infrastructure	X	X		X	X
10.	Reduced inequalities		X	X		
11.	Sustainable cities and communities					
12.	Responsible production and consumption		X	X		
13.	Climate action	X	X		X	X
14.	Life below water	X			X	
15.	Life on land		X		X	X
16.	Peace, justice and strong institutions			X		
17.	Partnerships for the goals	X	X	X		

Source: Report on preparation to implementation of SDGs in the SPECA sub-region (author: A.Aljanova, UNECE consultant), March 2017.

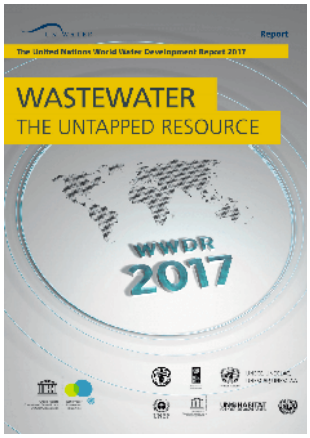
Source: Implementation of Sustainable Development Goals in the SPECA region. (author: A.Aljanova, UNECE consultant), Dushanbe, Tajikistan, 6 December 2017.



Section 13

Publications in 2017

World Water Development Report



Publisher: UN-Water

Published: 2017

URL: http://www.unwater.org/publication_categories/world-water-development-report/

UN-Water released the United Nations World Water Development Report 2017 "Wastewater: the untapped resource". It calls for a quantum shift to see wastewater as a resource rather than a problem in a world where water is increasingly scarce but demand for it is growing.

In a world where demands for freshwater are continuously growing, and where limited water resources are increasingly stressed by overabstraction, pollution and climate change, neglecting the opportunities arising from improved wastewater management is nothing less than unthinkable in the context of a circular economy, concludes the report.

The Future of Food and Agriculture – Trends and Challenges

Publisher: UN Food and Agriculture Organization (FAO)

Published: 2017

URL: http://www.fao.org/3/a-i6583e.pdf

A new FAO study seeks to contribute a common understanding of the major long-term trends and challenges that will determine the future of food security and nutrition, rural poverty, the efficiency of food systems, and the sustainability and resilience of rural livelihoods, agricultural systems and their natural resource base. FAO's assessment of prevailing trends suggests that in order to realize the vision of a world free from hunger and malnutrition, transformative change in agriculture and food systems are required worldwide. In FAO's view, there are 10 key challenges that need to be addressed if we are to succeed in eradicating hunger and poverty, while making agriculture and food systems sustainable. Those challenges include the uneven demographic expansion that will take place in the coming decades, the threats posed by climate change, the intensification of natural disasters and upsurges in transboundary pests and diseases, and the need to adjust to major changes taking place in global food systems.

Strategic Work of FAO for Sustainable Food and Agriculture

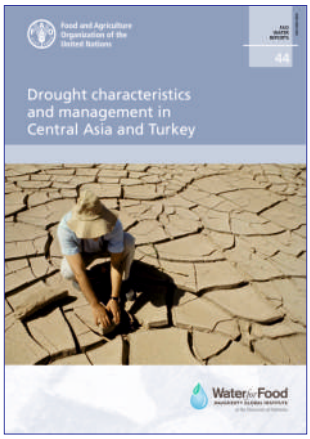
Publisher: UN Food and Agriculture Organization (FAO)

Published: 2017

URL: http://www.fao.org/3/b-i6488r.pdf

The vision of FAO for sustainable food and agriculture is one where food is nutritious and accessible for everyone and one where natural resources are managed in a way that maintain ecosystem functions to support current as well as future human needs. In this regard, FAO has developed 5 key principles in this direction.

Drought Characteristics and Management in Central Asia and Turkey



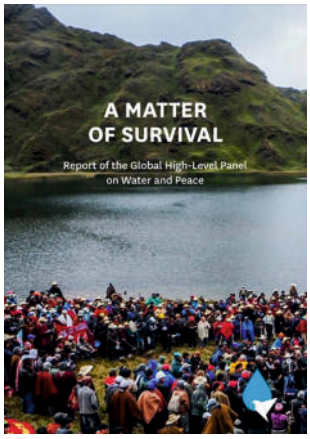
Publisher: FAO, Water for Food Institute, University of Nebraska-Lincoln, USA

Published: 2017

URL: http://www.fao.org/3/a-i6738e.pdf

The report assesses the occurrence and impacts of drought, the current policies underlying drought management as well as the mitigation measures and responses adopted in Central Asia and Turkey, with a focus on Agriculture Sector. It is part of a series of similar studies carried out in different regions and countries of the world, with the objective of shedding light on drought effects, sensitizing policy-makers for the much needed paradigm shift to pro-active drought management planning and providing guidance for the development of such policies. The studies are carried out by FAO, in collaboration with the Water for Food Institute, University of Nebraska-Lincoln, USA, as a direct contribution to FAO's Strategic Objective "Increasing the resilience of livelihoods to threats and crises".

A matter of survival



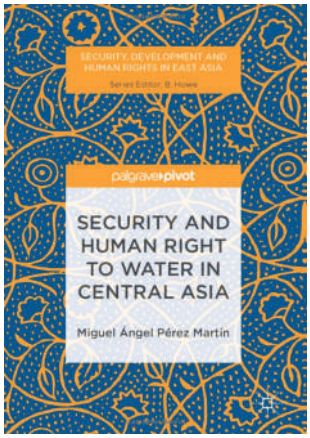
Publisher: Geneva Water Hub

Published: 2017

URL: https://www.genevawaterhub.org/resource/matter-survival

A report of the Global High-Level Panel on Water and Peace has been launched in Geneva, Switzerland. It tries to generate extensive international awareness of water resources and their proper management. Authored by the 15-member panel, the report indicated that the global water challenge was not only about development and human rights but also peace and security. The report makes six main recommendations: improve transparency by better information-sharing; improve multi-stakeholder platforms; explore the development of a code of conduct for the private sector; develop a set of global standards for infrastructure development that affects water resources such as mines or dams; create a special facilitator on intersectoral conflict; and invest in tertiary education on water resource management.

Security and Human Right to Water in Central Asia



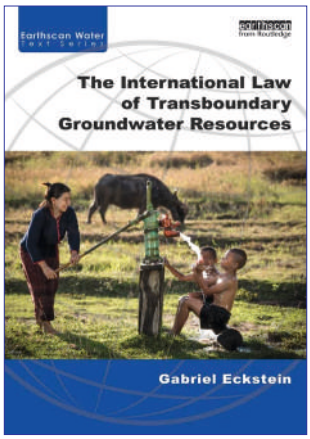
Author: Miguel Angel Perez Martin

Published: 2017

URL: http://www.palgrave.com/de/book/9781137540041

The new book by Miguel Angel Perez Martin highlights the importance of water resources in historical, political, economic and social events in Central Asian societies. It analyzes the current risks and threats arising from a mismanagement of water resources in Central Asia (Amu Darya basin) through the different dimensions of human security (environmental, economic, social and political) and its impact on the human right to water and sanitation. But the most outstanding feature of this book is to introduce, within the field of security, the human right to water and sanitation as one possible of the central pillars of international peace and security in Central Asia. It identifies the various actors involved in water issues and their relations in terms of conflicts, paying particular attention to multilateral security organizations (NATO, SCO, and CSTO). And it investigates whether international security organizations and security policies have been effective in addressing water conflicts in the region.

The International Law of Transboundary Groundwater Resources



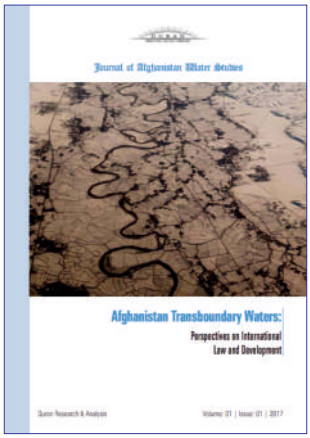
Author: Gabriel Eckstein

Published: 2017

URL: https://www.routledge.com/The-International-Law-of-Transboundary-Groundwater-Resources/Eckstein/p/book/9781138842991

This book provides a comprehensive review of the state of international law as it applies to transboundary groundwater resources and aquifers. The main focus is on recent developments and the emerging international law for transboundary aquifers as reflected in the practice of states and the work of the UN International Law Commission, UN Economic Commission for Europe, and International Law Association.

Afghanistan Transboundary Waters: Perspectives on International Law and Development



Authors: Muhammad Daud Rezaee, Dr. John F. Shroder, Sherjan Ahmadzai, Dr. Glen Hearns, Mir Sayed Shah Danish and Najib Rahman Sabory

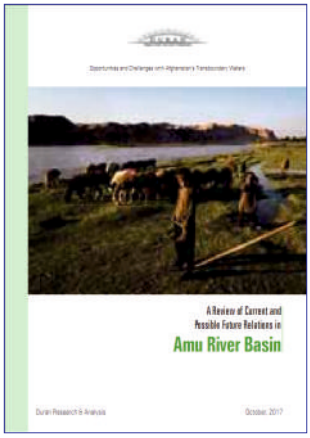
Published: 2017

URL: http://afghanwaters.net/en/journal-of-afghanistan-water-studies/

Duran Research & Analysis is proud to present the first issue of the first volume of the Journal of Afghanistan Water Studies, a first of its kind, which comprises academic analysis with policy implications, mostly developed by Afghan experts of the field. These efforts can increase the availability of useful and easily accessible material on the subject for Afghan policy makers in the government, policy analysts and researchers in the civil society sector, and the academia.

This issue of the Journal of Afghanistan Water Studies, a small endeavor in contributing to knowledge base development on Afghanistan's transboundary water resources, includes analysis on topics such as the UN Water Conventions and Afghanistan, role of water in regional dynamics, hydro-cognizance, water security and hydropower.

Opportunities and Challenges with Afghanistan's Transboundary Waters: Review of Current and Possible Future Relations in the Amu River Basin



Author: S.Hassani, edited by Dr. Glen Hearns

Published: 2017

URL: http://afghanwaters.net/en/a-review-of-current-and-possible-future-relations-in-amu-river-basin/

The aim of this paper is to familiarize the reader with the key elements associated with Transboundary Rivers in Afghanistan and their implications on policy development. The report synthesizes knowledge and different perspectives of many experts working in the area of Transboundary Rivers. In doing so, it attempts to advance the main points of convergence of opinions in the form of recommendations and highlights those areas where more work is needed to build a common vision. This paper elucidates the primary challenges should a developing country like Afghanistan anticipate dealing with its transboundary waters. The challenges range from political matters to technical issues. Finally, the paper presents the conclusion and recommendations on the transboundary waters in the country as a whole, and on transboundary waters of the Panj-Amu Basin in particular.

Irrigated Agriculture in Uzbekistan: Is there a Water Supply Reserve for Sustainable Development?

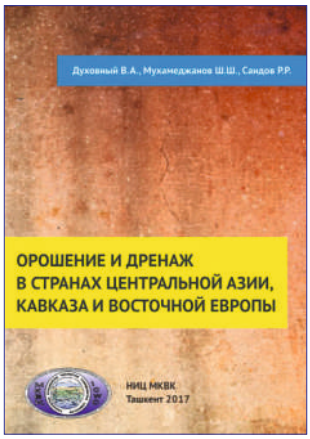
Publisher: SIC ICWC

Published: 2017

URL: http://www.cawater-info.net/library/rus/irrigation_agriculture_uzbekistan.pdf

Irrigated agriculture is vital for livelihoods in the Central Asian region, particularly in Uzbekistan. In arid climate, it serves as a basis for food security, well-being of rural population, land productivity, as well as for agroindustry that is under rapid development.

Irrigation and Drainage in Eastern Europe, Caucasus, and Central Asia



Authors: V.A.Dukhovniy, Sh.Sh.Mukhamedjanov, R.R.Saidov

Published: 2017

URL: http://www.cawater-info.net/library/rus/irrigation_drainage_eecca.pdf

This publication was firstly presented during the 2nd World Irrigation Forum (6-12 November 2016, Chiang Mai, Thailand) organized by the International Commission on Irrigation and Drainage. The publication provides information on water, land, and irrigation potential in the EECCA countries.

Collection of Selected Agreements on Water Resource Management in the Amu Darya Basin

Publisher: SIC ICWC

Published: 2017

URL: http://www.cawater-info.net/library/rus/amudarya_2017.pdf

The publication comprises key multi- and bilateral agreements between the Central Asian states, including Afghanistan, on the Amu Darya basin.

«Challenges of River Basin Management in the Context of Climate Change

Publisher: SIC ICWC

Published: 2017

URL: http://www.eecca-water.net/file/eecca_papers_collection_vol_10_2017.pdf

This collection comprises the papers that describe the state-of-the-art in research and activities aimed at mitigation of climate change effects in Eastern Europe, Caucasus, and Central Asia.

Transboundary Cooperation in Central Asia – Security, Stability, and Prosperity of the Region: Proceedings of the International Conference

Publisher: Kazakh National Agrarian University and ED IFAS

Published: 2017

URL: http://www.cawater-info.net/library/rus/conference_almaty_sep2017.pdf

Proceedings of the International Scientific and Practical Conference "Transboundary Cooperation in Central Asia – Security, Stability, and Prosperity of the Region" (7-8 September 2017) are published on the occasion of the 25th anniversary of the Interstate Commission for Water Coordination in Central Asia and the preparatory process to the 8th World Water Forum (March 2018, Brazil).

The publication offers academic research results grouped in: Section 1. Water conservation and integrated water resources management; Section 2. Land reclamation and irrigated agriculture; Section 3. Agricultural water use, flooding of pastures, and use of renewable energy; and Section 4. Agro-ecology and environment protection in the water sector, safety of hydraulic facilities, and prevention of emergency situations in the context of climate change.

Collection of Scientific Papers of SIC ICWC, Issue 16

Publisher: SIC ICWC

Published: 2017

URL: http://www.cawater-info.net/library/rus/sb_tr_16.pdf

This collection presents the results of research work undertaken by the experts of SIC ICWC in 2016-2017.

Collection of Scientific Papers on the occasion of the 25th Anniversary of the Interstate Commission for Water Coordination in Central Asia

Publisher: SIC ICWC

Published: 2017

URL: http://icwc-aral.uz/25years/pdf/25_icwc_scientific_papers.pdf

The Scientific Information Center of ICWC published this collection of scientific papers on the occasion of the 25th anniversary of the Interstate Commission for Water Coordination in Central Asia.

One Belt-One Road Initiative

Publisher: SIC ICWC

Published: 2017

URL: http://www.cawater-info.net/library/rus/inf/49.pdf

This publication highlights possible impacts of the China's "One Belt-One Road" Initiative on water resources in Central Asia.

The Aral Sea and Prearalie/edited by Prof. V.A.Dukhovniy

Publisher: Baktria press

Published: 2017

URL: http://icwc-aral.uz/25years/pdf/aral.pdf

This publication summarizes materials of thematic research in the Aral Sea and Prearalie carried out by experts of SIC ICWC jointly with partners from Holland, Belgium, and Russia in 1992-2015.

Introduction to the Water Sector

Author: Dukhovniy V.A. .

Published: 2016

The book is dedicated to the theme of water. "There is no other element which is so many faceted and vital for human activity". The book describes emergence and development of water governance and management and addresses the role of water for food and energy security, socio-economic development and environment, and, particularly, for evolution of civilizations. It also discusses ethical issues related to water, climate change, and many other challenges that water professionals have to deal with. It concludes that "Having become a leading direction for human survival, the water profession required multidisciplinary approaches comprising economy, ecology, sociology, law, and ethics, and, eventually, this transformed it into an integral part of geopolitics".

Section 14

Central Asia Water Awards

Awards on the Occasion of the 25th Anniversary of ICWC

On the occasion of the 25th anniversary of ICWC in Central Asia, and in line with the decision of the 72nd ICWC meeting (24.11.2017), the title "Honorary member of ICWC" was awarded to:

1) Kokhir Rasulzoda, Prime-Minister of the Republic of Tajikistan;

2) Islam Abishev, Chairman of the Committee for Water Resources, Republic of Kazakhstan;

3) Shavkat Khamraev, Deputy Minister of Agriculture and Water Resources, Republic of Uzbekistan;

4) Khamid Khasanzoda, Deputy Director of the Agency for Land Reclamation and Irrigation, Republic of Tajikistan;

5) Begench Mommadov, Head of Water Use Department, Ministry of Agriculture and Water Resources, Turkmenistan;

6) Ismat Eshmirzoev, former Minister of Land Reclamation and Water Resources, Republic of Tajikistan.

Additionally, during the Central Asian International Scientific and Practical Conference "The 25 years of Water Cooperation in Central Asia: Lessons Learnt and Future Outlook" (**23-24 November**, Tashkent), the awards were presented for diligent work and strong contribution to international and regional water cooperation to specialists of country water sectors in the Aral Sea basin. More than 100 people were awarded in total.[143]

Breastplate "For contribution to saving the Aral Sea"

In 2017, the Executive Directorate of IFAS (ED IFAS) in Kazakhstan awarded honorary breastplates to 37 prominent scientists and experts, who made significant contribution to the development of water sector and international cooperation. The award ceremony took place during the first International Aral Forum for Sustainable Development (**30-31 May**, Kyzylorda) and the International Scientific and Practical Conference "Transboundary Cooperation in Central Asia – Security, Stability, and Prosperity of the Region" (**7 September, Almaty**).

List of awardees:

1. Uzakbay Karamanuly Karamanov – former Executive Director of IFAS and Premier Minister of Kazakhstan
2. Krymbek Yeleuuly Kusherbaev – Akim (mayor) of the Kyzylorda province, Republic of Kazakhstan
3. Berdibek Mashbekuly Saparbaev – former Akim of the Kyzylorda province
4. Kudaybergen Sarjanov – former Minister of Fishery of Kazakh Soviet Socialistic Republic
5. Nariman Kypshakbayuly Kipshakbaev – former Minister of Water Resources and Land Reclamation of the Republic of Kazakhstan
6. Almabek Nurushuly Nurushev – former Director of IFAS
7. Aytbay Kusherbaev – former Akim of the Aral district
8. Abdimanap Kutjanov – Head of Provincial Water Resources Administration, honored worker of Kazakhstan
9. Saylaubay Zhubatyrov – Journalist, publicist-environmentalist, member of the Union of the writers of Kazakhstan

[143] *See details on:* http://sic.icwc-aral.uz/releases/rus/321.htm

10. Viktor Stepanovich Morozov – Veteran of water sector, Kazakhstan
11. Vitaliy Mironovich Shek – Veteran of water sector, Kazakhstan
12. Anatoliy Dmitrievich Ryabtsev – former Chairman of the Committee for Water Resources of the Republic of Kazakhstan, veteran of water sector
13. Serikbay Smayyluly Smayylov – Veteran of water sector
14. Nirio Isida – honorary professor of the Kiyoto University
15. Nikolay Vasilyevich Aladin – Doctor of biological sciences, professor, head of the Hydrobilogy Laboratory, Zoological Institute, Russian Academy of Sciences
16. Philip Micklin – professor of the Western Michigan University
17. Medet Ospanuly Ospanov – former Director of ED IFAS in Kazakhstan (2009-2016)
18. Zauresh Zhansultankyzy Alimbetova – Director of the "Barsakelmes" nature reserve
19. Dauletyar Aymagambetuly Bayalimov – EC IFAS member – representative of Kazakhstan, Veteran of IFAS
20. Tulegen Tajibayuly Sarsembekov – Veteran of water sector, former Chairman of the Committee for Water Resources of Kazakhstan
21. Adilkhan Karlykhanuly Karlykhanov – Head of the Aralo-Syr Darya Basin inspection
22. Seylbek Shaukhamanuly Shaukhamanov – former Akim of the Kyzylorda province, prominent statesman and politician
23. Sagit Rakhmatullauly Ibatullim – former Chairman of EC IFAS (2008-2013)
24. Amirkhan Kadyrbekuly Kenshimov – Veteran of water sector, head of Water Resource Department, ED IFAS in Kazakhstan
25. Tlektes Isabayuly Espolov – Rector of KazNAU, D.Eng.Sc, professor
26. Viktor Abramovich Dukhovniy – SIC ICWC Director
27. Boriy Botirovich Alikhanov – Deputy Speaker – Leader of the Deputy Group of Eco-movement, Chairman of the Committee on the issues of Ecology and Environment Protection of the Legislative Chamber
28. Dosjan Abdreshovich Nurbatyrov – Veteran of IFAS, head of Department of Socio-economic Issues, ED IFAS in Kazakhstan
29. Abdijamil Karimuly Nurpeisov – People's Writer of Kazakhstan, winner of the State Award of USSR
30. Lidiya Yakovlevna Kurochkina – Doctor of biological sciences, professor, biobotanist-desertologist
31. Aytkul Baygazievna Samakova – Director, member of Board of Directors, Joint Stock Company "Export Insurance Company "KazakhExport"
32. Kuanyshkali Rakhmanberdievich Shapshanov – Veteran of labor
33. Marat Erdauletovich Kurmanbaev – Head of the Environment Department in the Kyzylorda province
34. Bigali Abdikeruly Katupov – Honorary Citizen of the Aral district, former akim of the Aral district (1992-1996)
35. Najmadin Turkbenuly Musabaev – former Akim of the Aral district (2004-2013)

36. Akhmedulla Umbetov – Veteran of labor

37. Slamjan Eskhozovich Isabekov – Head of Kyzylorda branch of ED IFAS in Kazakhstan

Source: Executive Directorate of IFAS in Kazakhstan

Awards to employees of the water sector in Kyrgyzstan

According to the Resolution of the President of the Kyrgyz Republic of **14 November 2017** #256, the Director General of the Department of Water Resources and Land Reclamation (DWRLR) Mr. Tashtanaliev Kokumbek Zhumagulovich was awarded with the Honorary Order "Dank" (Order of Glory) for significant contribution to the socio-economic development of the country and strengthening of economy of the Kyrgyz Republic.[144]

A range of employees of DWRLR was also awarded with:

- Certificate of Merit of the Government of the Kyrgyz Republic
- Certificate of Merit of the Ministry of Agriculture, Food Industry and Land Reclamation of the Kyrgyz Republic
- Breastplate "Excellence in Agriculture".[145]

Awards to employees of the water sector in Uzbekistan

According to the Resolution of the President of the Republic of Uzbekistan "On awarding a group of compatriots on the occasion of the Day of Agricultural Workers for their significant contribution to the sector" of **7 December 2017**, honorary titles, orders and medals were awarded for years of dedicated service in agriculture, weighty contribution to boosting crop production, improving well-being of our people, strengthening economy and export potential, achieving food security, and successful implementation of reforms and state programs in the agrarian sector:

Title "Honored Irrigator of the Republic of Uzbekistan"

Shavkat Rakhimovich Khamraev – Deputy Minister of Agriculture and Water Resources

Botir Rakhimov – Head of Basin Irrigation System Administration Amu-Kashladaryo, Kashkadarya province

Order "Fidokorona khizmatlar uchun" ("For selfless service")

Umid Valievich Abdullaev – Technical Director of the UzGIP Liability Limited Company

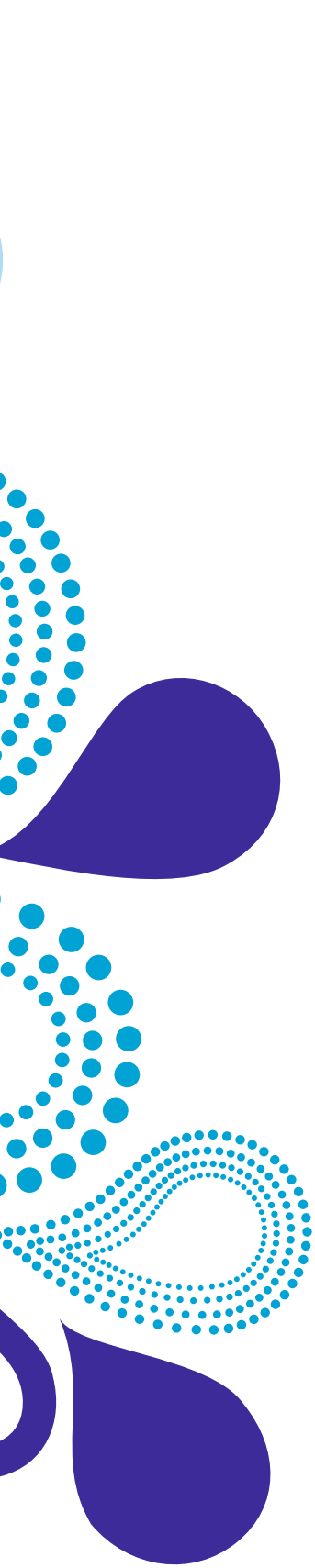
Order "Mekhnat shukhrati" ("Labor Glory")

Marat Fakhrievich Nadjimov – Director General of the Uzsuvloyikha Joint-stock company

Bakhodir Kuchkarovich Ruziboev – Director of the UzGIP Liability Limited Company

and others (168 people in total).[146]

[144] http://water.kg/index.php/ru/item/510-pozdravlyaem-generalnogo-direktora-dvkhim-s-poluchenie-ordena-dank
[145] *Details:* http://water.kg/index.php/ru/item/513-spisok-poluchivshikh-nagrady
[146] *Details:* http://uza.uz/ru/documents/o-nagrazhdenii-v-svyazi-s-dnem-rabotnikov-selskogo-khozyayst-09-12-2017



Section 15

Global Risks 2018

In January 2018, the World Economic Forum published its Global Risks Report 2018, 13th Edition. The report shares the perspectives of global experts and decision-makers on the most significant risks that face the world – cautions that we are struggling to keep up with the accelerating pace of change. It highlights numerous areas where we are pushing systems to the brink, from extinction-level rates of biodiversity loss to mounting concerns about the possibility of new wars. The key messages of the report are provided below.

The authors highlight that humanity has become remarkably adept at understanding how to mitigate conventional risks that can be relatively easily isolated and managed with standard risk-management approaches. But we are much less competent when it comes to dealing with complex risks in the interconnected systems that underpin our world, such as organizations, economies, societies and the environment.

Environmental risk has grown. Cybersecurity risks are also growing. Attacks against businesses have almost doubled in five years. Whereas the global economy has improved (according to IMF, global GDP growth was 3.6% for 2017 against 3.2% in 2016), 53% of countries have seen an increase in income inequality. Societal polarization increases the risk of conflicts. Political confrontation is growing, particularly of right-wing forces. The trend towards increasingly personalized power takes place (Trump, China, Japan, Russia, Turkey, Saudi Arabia, and Philippines).

Expectations of respondents for 2018:

- 93% of respondents expect worsening of "political or economic confrontations between major powers";
- 79% of respondents expect state-on-state military conflict;
- 78% of respondents expect regional conflicts;
- 73% of respondents is sure about erosion of multilateral trading rules and agreements;
- 67% of respondents assume the loss of confidence in collective security alliances; and
- 58% of respondents is sure in erosion of global policy coordination on climate change.

Extreme weather events in the first half of 2017 caused the most deaths in 8 cases. 76% of the 31.1 million people displaced during 2016 were forced from their homes as a result of weather-related events. 2016 and 2017 were among the three hottest years on record. Biodiversity loss occurred at mass-extinction rates. A record 29.7 million hectares of tree cover was lost in 2016. This loss was about 50 percent higher than in 2015. Air pollution is getting worse. According to WHO, more than 90% of the world's population live in areas with levels of air pollution that exceed WHO guidelines. In November 2017, air pollution in Delhi reached more than 11 times the WHO guideline levels. The Lancet Commission on Pollution and Health estimated the overall annual cost of pollution to the global economy at US$4.6 trillion, equivalent to around 6.2% of output. Plastic waste in the world's water is approximately 8 million tons every year.

The growing urgency of acting to halt climate change was demonstrated in 2017 with the news that emissions of CO2 had risen for the first time in four years, bringing atmospheric concentrations of CO2 to 403 parts per million, compared with a pre-industrial baseline of 280 parts per million. Researchers suggest that the capacity of two major CO2 absorbers – oceans and tropical forests – to absorb have declined, with dramatic decline of capacity in tropical forests.

The risk that political factors might disrupt efforts to mitigate climate change was highlighted last year when President Trump announced plans to withdraw the United States from the Paris Agreement. However, many US businesses, cities and states have pledged to help deliver on the country's emissions reduction targets. In November 2017 the managers of Norway's sovereign wealth fund recommended divesting from oil and gas shares, and in December the World Bank announced a moratorium after 2019 on financing upstream oil- and gas-related investments.

Headline economic indicators suggest the world is finally getting back on track after the global crisis that erupted 10 years ago – pickup in GDP growth rates, increase in stock markets, and increased creditworthiness of central banks. However, this relatively upbeat picture masks numerous concerns: waviness of price and economic indices, high spikes in the stock market. Bond valuations are even more dramatic. In mid-2017, around $ US 9 trillion worth of bonds were traded with a negative yield. This showed their real cost. Consequently, the value of European finance papers has also

dropped. This resulted in economic decline in the countries connected with USA and Great Britain.

On the other hand, growing black-market prices of residential houses in large cities up to the pre-crisis level in combination with new financial rapidly increasing tools, such as cryptocurrency Bitcoin (which increased in value by around 1200% in 2017) threatens with "explosion" of real market. Recessions accompanied by credit contractions and huge loan arrears of pre-crisis period resulted in debt of non-financial sector (governments and non-financial companies) totaled US$135 trillion in 2016, up from US$80 trillion in 2007. China's banking sector has ballooned to hold assets valued at US$33 trillion, or 3.1 times the country's annual output. Arguably, these figures understate the full extent of the country's potential fragilities.

The governors of the European Central Bank, given the forecast of Chinese capital in the world bank system, caution that the collapse of Chinese financial system would entail the collapse of global financial market. China can deploy vast resources to protect its economy, but most emerging economies may face crisis and fall under sway of USA and any other world financial institutes.

Technological advances undoubtedly lead to improved financial and economic efficiency. However, they pose the risk of reduced employment. At the same time, the complex food system is becoming more vulnerable to sudden supply shocks, such as extreme weather, crop diseases, political instability or different transboundary constraints related to water availability. Here, particular attention should be paid to reduction of food losses while processing, transporting, and overcoming climate shocks. Greater involvement of artificial intelligence through the Internet of Things (IoT) makes information exchange more universal and more subjected to unauthorized interference, including malicious interference. There is a possibility of losing controllability. Digital technologies put a wider public under pressure. Thus, strict regulation of and rate setting on the use of artificial intelligence products are needed. Otherwise, humanity will be paralyzed. Cyber risk is increasing faster than cyber security; this leads to misinformation, communication breakdown, and loss of controllability.

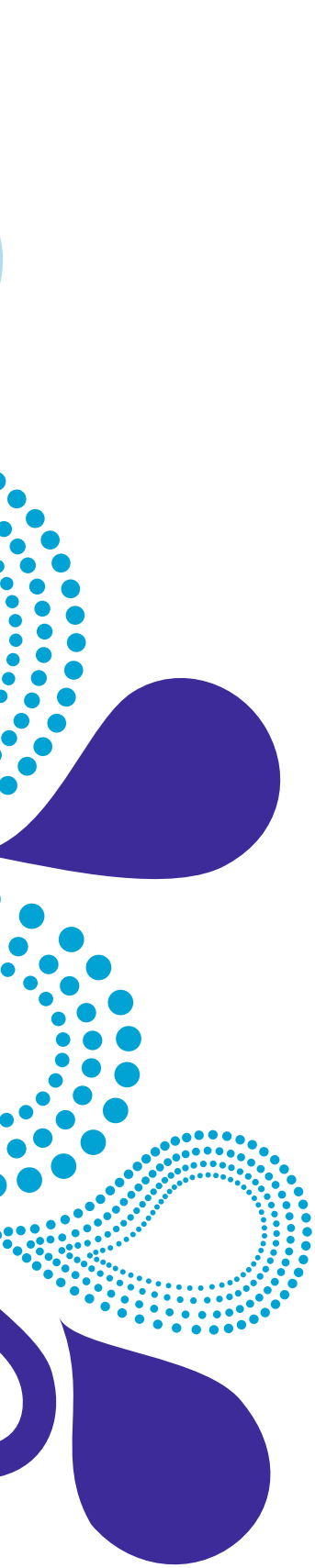
At a time of global geopolitical uncertainty, the twin forces of national identity and self-determination are growing in disruptive capacity. Already this is leading to violence and constitutional instability, at times spurred on by foreign powers. Examples include states expelling ethnic or religious minorities, national minorities attempting to secede and nation-states extricating themselves from international constraints on their sovereignty. A deepening of disputes over cultural and political borders would trigger widening clashes, potentially causing regional domino effects as states and sub-state actors mobilize in defence of or opposition to the status quo. This instability is long-standing and hard to be resolved. Stronger promotion and protection of equal cultural and political rights within states, same as the fostering of links between states, would demonstrate successful examples of constitutional innovation.

In fact, large infrastructure plans, such as under the China's Belt and Road Initiative (BRI), which spans more than 60 countries, China Pakistan Economic Corridor, and Bangladesh-China-India-Myanmar Economic Corridor were to foster peaceful relations by creating new links and patterns of cooperation. However, the ambitiousness of some of these plans has raised concerns that they might exacerbate rather than prevent tension. The geostrategic interdependence they create – both through the physical presence of assets and people on the ground and through patterns of increased indebtedness, which is a potential source of vulnerability for lower income countries in particular – are more durable and difficult to unwind than mere trade agreements. This raises questions about potential implications if relationships between corridor partners were to sour in the future.

Another risk factor is associated with the youth unemployment, which has increased worldwide since 2014. Although unemployment in USA under Donald Trump sharply decreased from 20% to 15%, this indicator exceeds 20-25% in the Arab world and the European Union.

Finally, the report, among six societal crises, highlights water crisis as "a significant decline in the available quality and quantity of fresh water, resulting in harmful effects on human health and economic activity".

The Global Risks Report 2018 is available at:
http://www3.weforum.org/docs/WEF_GRR18_Report.pdf



Section 16

2018 Calendar of Events

January

24-25 January – Central Asian Climate Change Conference, Almaty, Kazakhstan

31 January-1 February – Workshop "Transboundary Water Management Adaptation in the Amu Darya River Basin to Climate Change and Future Challenges: Tools and Recommendations", Tashkent, Uzbekistan

February

6-7 February – Global workshop "Moving forward transboundary water cooperation: building on its benefits", Geneva, Switzerland

14-15 February – Central Asian Citizens Forum towards the 8th World Water Forum, Dushanbe, Tajikistan

March

7 March – Joint meeting of the Implementation Committee under the UNECE Water Convention and Compliance Committee under the Protocol on Water and Health, Geneva, Switzerland

8-9 March – 9th meeting of the Implementation Committee under the UNECE Water Convention, Geneva, Switzerland

14 March – World Rivers Day

15 March – 1st consultation meeting of the Heads of Central Asian states, Astana, Kazakhstan

18-23 March – 8th World Water Forum, Brasilia, Brazil

22 March – World Water Day

22 March – Launch of the International Decade for Action "Water for Sustainable Development" 2018-2028, New York, USA

24-25 March – International Scientific and Practical Conference "Water for sustainable development in Central Asia" dedicated to the beginning of the International Decade for Action "Water for Sustainable Development" 2018-2028, Dushanbe, Tajikistan

26 March – Aral Sea Day

April

15 April – International Conference "A drop of water – a grain of gold", Ashgabat, Turkmenistan

24-25 April – Regional consultation workshop "Towards a strategic guidance on climate change and adaptation in the Central Asian Mountain Regions", Almaty, Kazakhstan

30 April-10 May – Conference on climate change, Bonn, Germany

May

- **2-4 May** – 8th ICID Asian Regional Conference, Kathmandu, Nepal
- **7-9 May** – WMO Global Conference "Prosperity through Hydrological Services", Geneva, Switzerland
- **22 May** – International Day of Biological Diversity
- **22-23 May** – International Scientific and Practical Conference "Improving efficiency, reliability and security of hydraulic facilities", Tashkent, Uzbekistan
- **29-30 May** – 13th meeting of the Working Group on IWRM, Geneva, Switzerland

June

- **5-8 June** – Central Asian International Environmental Forum "Strengthening cooperation on environment and sustainable development in Central Asia", Tashkent, Uzbekistan
- **7-8 June** – International Conference "Joint efforts to mitigate consequences of the Aral Sea catastrophe: new approaches, innovative solutions, investments", Tashkent, Uzbekistan
- **20-22 June** – International High-Level Conference on the International Decade for Action "Water for Sustainable Development" 2018-2028, Dushanbe, Tajikistan
- **25-26 June** – Regional hands-on training on equitable access to water and sanitation, Geneva, Switzerland

August

- **12 August** – Caspian Sea Day
- **12-17 August** – ICID International Conference, Saskatoon Saskatchewan, Canada
- **26-31 August** – 28th World Water Week "Water, Ecosystems, and Human Development", Stockholm, Sweden

September

- **September 16-21** – IWA World Water Congress and Exhibition (IWA), Tokyo, Japan

October

- **October 2-4** – Asian Water Forum 2018: Information, Innovation, and Technology, Manila, Philippines
- **10-12 October** – 8th session of the Meeting of the Parties to the Water Convention, Astana, Kazakhstan

November

26-27 November – Meeting of the Global Network of Basins working on climate change

December

4-5 December – Sanitation Workshop under the Protocol on Water and Health, Geneva, Switzerland

4-6 December – Tenth meeting of the Conference of the Parties to the UNECE Industrial Accidents Convention, including risk assessment seminar, Geneva, Switzerland

List of Abbreviations

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
ALRI	Agency of Land Reclamation and Irrigation at the Government of Tajikistan
ASBmm	Aral Sea Basin model
ASBP	Action Program to assist the countries of the Aral Sea Basin
BISA	Basin Irrigation System Administration
BRI	Belt and Road Initiative
BWO	Basin Water Organization
CAREC	Regional Environmental Centre for Central Asia
CDW	Collector-drainage water
CIS	Commonwealth of Independent States
CMC ICWC	Coordination Metrology Center of ICWC
CSTO	Collective Security Treaty Organization
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	Eastern Europe, Caucasus, and Central Asia
EECCA NWO	Network of the Eastern Europe, Caucasus, and Central Asia Water Management Organizations
EIA	Environmental impact assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
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
IDB	Islamic Development Bank
IFAS	International Fund for Saving the Aral Sea
INBO	International Network of Basin Organizations
ISA	Irrigation System Administration
IWAC	International Water Assessment Center
IWRM	Integrated Water Resource Management
IWRA	International Water Resources Association

JICA	Japan International Cooperation Agency
MAWR	Ministry of Agriculture and Water Resources (Uzbekistan, Turkmenistan)
NASA	National Aeronautics and Space Administration
NGO	Non-governmental organization
NHMS	National Hydrometeorological Services
OECD	Organization for Economic Cooperation and Development
OIC	Organization of Islamic Cooperation
OSCE	Organization for Security and Co-operation in Europe
RCH	Regional Center of Hydrology at EC IFAS
SCO	Shanghai Cooperation Organization
SDC	Swiss Agency for Development and Cooperation(agency for international cooperation of the Federal Department of Foreign Affairs)
SDG	Sustainable Development Goals
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
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	UN General Assembly
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
UNIDO	United Nations Industrial Development Organization
UNRCCA	United Nations Regional Center for Preventive Diplomacy for Central Asia
UNSC	UN Security Council
UPRADIK	Amu Darya Inter-Republican Canals Division
USAID	United State Agency for International Development
WB	World Bank
WCA	Water Consumer Association
WHO	World Health Organization
WMO	World Meteorological Organization
WWC	World Water Council