

Interstate Commission for Water Coordination in Central Asia	BULLETIN №1(84)	June 2020
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**MINUTES OF THE 78th MEETING OF THE INTERSTATE
COMMISSION FOR WATER COORDINATION (ICWC) OF
THE REPUBLIC OF KAZAKHSTAN, KYRGYZ REPUBLIC,
REPUBLIC OF TAJIKISTAN, TURKMENISTAN AND
REPUBLIC OF UZBEKISTAN**

10 April 2020

Chairman:

Gromov Sergey
Nikolaevich

Vice Minister of Ecology, Geology and Natural
Resources, Republic of Kazakhstan

ICWC members:

Khamraev Shavkat
Rakhimovich

Minister of Water Management, Republic of
Uzbekistan

Shoimzoda Djamshed
Shodi

Deputy Minister of Energy and Water Resources,
Republic of Tajikistan (by attorney)

Baidjanov Guyzgeldi
Nazargeldiyevich

Chairman of the State Committee for Water
Management, Turkmenistan

ICWC executive bodies:

Nazarov Umar
Abdusalomovich

Head, ICWC Secretariat

Kholkhuzhaev Odil
Akhmedovich

Head, BWO Syr Darya

Makhramov Makhmud
Yakhshibayevich

Head, BWO Amu Darya

Dukhovniy Viktor
Abramovich

Director, Scientific Information Center (SIC) of
ICWC

Invited:*Republic of Kazakhstan*

Mirzagaliyev Magzum Maratovich	Minister of Ecology, Geology and Natural Resources, Republic of Kazakhstan
Zhakenov Mukhtar Seyfullaevich	Director, Department of Transboundary Rivers, Ministry of Ecology, Geology and Natural Resources, Republic of Kazakhstan
Zhienbaev Musilim Rysmakhanovich	Deputy Head, Department of Transboundary Rivers, Ministry of Ecology, Geology and Natural Resources, Republic of Kazakhstan
Sagadiev Daniyar Gabitovich	Head, Division of Transboundary Rivers, Department of Transboundary Rivers, Ministry of Ecology, Geology and Natural Resources, Republic of Kazakhstan
Sharip Daniyar Esenuly	Chief Expert, Division of Transboundary Rivers, Department of Transboundary Rivers, Ministry of Ecology, Geology and Natural Resources, Republic of Kazakhstan

Republic of Tajikistan

Abdurazokzoda Daler Abdukhalok	Head, Department of Water and Energy Policy, Science and Technology Development, Ministry of Energy and Water Resources, Republic of Tajikistan
Gafurzoda Tagoymurod Gul	Head, Division of Water Resources, Ministry of Energy and Water Resources, Republic of Tajikistan

Republic of Uzbekistan

Kuchkarov Sharifjon Zikrillayevich	Head, Water Resources and Water Use Division, Ministry of Water Management, Republic of
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Uzbekistan

Akhmadjonov Vokhidjon Director, Information-Analytical and Resource Center, Ministry of Water Management, Republic of Uzbekistan

Turkmenistan

Paschyev
Yanov Durdyevich Head, Water Use Department, State Committee for Water Management, Turkmenistan

Mommadov Begench
Amanovich Head, “Garagumderyasuvkhodjalyk” Association, State Committee for Water Management, Turkmenistan

Regional organizations

Atamuratov Maksudbek
Masharipovich Head, Water Resources Division, BWO Amu Darya

Kenjabayev Shavkat
Makhmudjanovich Deputy Director, SIC ICWC

Kipshakbaev Nariman
Kipshakbaevich Director, Kazakh branch of SIC ICWC

Kenshimov Amirkhan
Kadyrbekovich Head, Water Resources Department of the Executive Board, International Fund for Saving the Aral Sea

Agenda of the 78th meeting of ICWC

1. Results of the use of water withdrawal limits and operation regimes of the reservoir cascades in the Amu Darya and Syr Darya River basins over the non-growing season 2019-2020.
2. Approval of the country water withdrawal limits and forecast operation regimes of the reservoir cascades in the Amu Darya and Syr Darya River basins over the growing season 2020.
3. Measures taken by Parties to ensure additional discharge from reservoirs during the growing season in the Syr Darya River Basin.
4. Implementation of the proposals and initiatives of the Heads of IFAS founder-states voiced at the Summit of the Heads of IFAS founder-states in Turkmenbashi city.
5. Agenda and venue of the next 79th meeting of ICWC.
6. Supplementary items.

Decision on the first item:

1. Take into account information provided by BWO Amu Darya on the results of the non-growing season 2019-2020 in the Amu Darya River basin.

Decisions on the second item:

1. Approve country water withdrawal limits in the Amu Darya and Syr Darya River basins over the growing season 2020 (Annexes 1&2).
2. Take into account forecast operation regimes of the reservoir cascades proposed by BWO Amu Darya and BWO Syr Darya for the Amu Darya (Annex 3) and Syr Darya (Annex 4) River basins over the growing season 2020.
3. The ICWC members agreed, based on more accurate forecasts of water availability, to further review and approve by the end of May the operation regimes of the reservoir cascades for the growing season 2020 in the Amu Darya and Syr Darya River basins.

Decisions on the third item:

1. Take into account information on measures taken to ensure additional discharge from reservoirs during the growing season in the Syr Darya River Basin.

2. To mitigate the situation due to anticipated low water level during the current growing season, the Parties agreed to take measures to ensure the inflow and appropriate water releases from reservoirs of interstate character.

Decisions on the fourth item:

1. Take into account information of SIC ICWC on implementation of the proposals and initiatives of the Heads of IFAS founder-states voiced at the Summit of the Heads of IFAS founder-states (Turkmenbashi city, 24 August 2018).

2. Take into account work of the ICWC executive bodies on implementation of the proposals and initiatives of the Heads of IFAS founder-states voiced at the Summit of the Heads of IFAS founder-states in Turkmenbashi city.

Decisions on the fifth item:

1. Hold the next ordinary 79th meeting of ICWC in Ashgabat. The date of the meeting is to be approved in due course.

2. Propose the following agenda for the next ordinary 79th meeting of ICWC:

1) Results of the use of water withdrawal limits and the operation regimes of the reservoir cascades in the Amu Darya and Syr Darya River basins over the growing season 2020.

2) Approval of the country water withdrawal limits and forecast operation regimes of the reservoir cascades in the Amu Darya and Syr Darya River basins over the non-growing season 2020-2021.

3) Progress on implementation of the proposals and initiatives voiced at the Summit of the Heads of IFAS founder-states in Turkmenbashi city.

4) Agenda and venue of the next ordinary 80th meeting of ICWC.

5) Supplementary items.

Republic of Kazakhstan

S.N.Gromov

Kyrgyz Republic

Republic of Tajikistan

D.Sh.Shoimzoda

Turkmenistan

G.N. Baidjanov

Republic of Uzbekistan

Sh.R.Khamraev

Annex 1

Limits of water withdrawal from the Amu Darya River and water supply to the river delta and the Aral Sea over the growing season 2020

NN	River basin, state	Water withdrawal limits, mcm	
		Total annual (1.10.19 to 1.10 .20)	Including growing season (1.04.20 to 1.10.20)
	Total withdrawal from the Amu Darya River	55,392	39,672
	Of which:		
1	Republic of Tajikistan	9,822	6,952
	From the Amu Darya River to the nominal Kerki gauging station	44,000	31,520
2	Turkmenistan	22,000	15,500
3	Republic of Uzbekistan	22,000	16,020
	Plus:		
4	- water supply to the river delta and Aral Sea, including irrigation water and CDW	4,200	2,100
5	- sanitary and environmental releases to irrigation systems in	800	
	Dashoguz province	150	
	Khorezm province	150	
	Republic of Karakalpakstan	500	
	Total	58,822	41,772

Note: Water withdrawal limits include water for irrigation, industrial, municipal and other needs. If water availability in the basin changes, the limits will be adjusted accordingly.

Limits of water withdrawal of states in the Syr Darya River basin

Water user state	mcm
Republic of Kazakhstan (Dustlik canal)	878
Kyrgyz Republic	246
Republic of Tajikistan	1,905
Republic of Uzbekistan	8,800
Total:	11,829

Forecast operation regime of the Nurek reservoir, mcm

	unit	April	May	June	July	August	September	Total
Volume: beginning of the period	mcm	6,129	6,265	7,185	8,521	10,168	10,568	6,129
Inflow to the reservoir	m ³ /s	467	999	1,382	1,723	1,394	753	
	mcm	1,210	2,676	3,582	4,615	3,734	1,951	17,768
Water releases from the reservoir	m ³ /s	450	668	950	1,202	1,265	757	
	mcm	1,166	1,788	2,462	3,218	3,388	1,961	13,984
Volume: end of the period	mcm	6,265	7,185	8,521	10,168	10,568	10,554	10,554
Accumulation (+) drawdown (-)	mcm	136	920	1,336	1,647	400	-14	4,425

Forecast operation regime of the Tuyamuyun reservoir, mcm

	unit	April	May	June	July	August	September	Total
Volume: beginning of the period	mcm	2,801	2,863	3,514	3,729	4,372	3,979	2,801
Inflow to the reservoir	m ³ /s	610	1,330	1,500	1,985	1,500	680	
	mcm	1,581	3,562	3,888	5,317	4,018	1,763	20,128
Water releases from the reservoir	m ³ /s	586	1,087	1,417	1,745	1,647	967	
	mcm	1,519	2,911	3,673	4,674	4,411	2,506	19,695
Volume: end of the period	mcm	2,863	3,514	3,729	4,372	3,979	3,236	3,236
Accumulation (+) drawdown (-)	mcm	62	651	215	643	-393	-743	435

		April	May	June	July	August	September	Total, mcm
Toktogul reservoir								
Inflow to the reservoir	m ³ /s	266	572	871	750	521	298	
	mcm	689	1,532	2,258	2,009	1,395	772	8,656
Volume: beginning of the season	mcm	11,641	11,201	11,732	12,990	13,954	14,360	
end of the season	mcm	11,201	11,732	12,990	13,954	14,360	14,608	
Water releases from reservoir	m ³ /s	435	373	385	389	368	202	
	mcm	1,128	999	998	1,042	986	524	5,676
including: 1. internal needs of the	m ³ /s	435	373	343	348	327	202	
Kyrgyz Republic	mcm	1,128	999	888	932	876	524	5,346
2. additional releases	m ³ /s			42	41	41		
(energy receipt)	mcm			110	110	110		330
Bakhti Tochik reservoir								
Inflow to the reservoir	m ³ /s	607	487	357	293	302	304	
(Akdjar GS)	mcm	1,574	1,304	925	786	810	787	6,185
Volume: beginning of the season	mcm	3,070	3,518	3,559	3,063	2,284	1,819	
end of the season	mcm	3,518	3,559	3,063	2,284	1,819	2,051	
Water releases from reservoir	m ³ /s	440	450	500	530	430	190	
	mcm	1,140	1,205	1,296	1,420	1,152	492	6,706

Shardara reservoir								
Inflow to the reservoir	m ³ /s	700	600	450	250	200	250	
	mcm	1,814	1,607	1,166	670	536	648	6,441
Volume: beginning of the season	mcm	4,879	5,154	5,144	4,530	2,871	1,439	
end of the season	mcm	5,154	5,144	4,530	2,871	1,439	1,346	
Water releases from reservoir	m ³ /s	530	550	600	720	650	250	
	mcm	1,374	1,473	1,555	1,928	1,741	648	8,719
Discharge into Kyzylkum canal	m ³ /s	57	32	46	106	51	11	
	mcm	147	85	119	285	136	28	800
Water supply to the Aral Sea	m ³ /s	75	70	65	60	60	70	
	mcm	194	187	168	161	161	181	1,053
Charvak reservoir								
Inflow to the reservoir	m ³ /s	245	431	538	394	222	132	
(4 rivers in total)	mcm	635	1,155	1,394	1,055	596	342	5,176
Volume: beginning of the season	mcm	470	708	1,228	1,862	1,985	1,807	
end of the season	mcm	708	1,228	1,862	1,985	1,807	1700	
Water releases from reservoir	m ³ /s	153	237	293	348	289	173	
(water releases from Gazalkent HPP)	mcm	397	634	760	932	773	449	3,947
Andizhan reservoir								
Inflow to the reservoir	m ³ /s	104	189	247	163	45	44	
	mcm	269	505	639	436	120	113	2,083
Volume: beginning of the season	mcm	820	886	1,050	1,275	1,103	748	
end of the season	mcm	886	1,050	1,275	1,103	748	731	
Water releases from reservoir	m ³ /s	78	127	160	227	177	50	
	mcm	203	341	415	608	475	130	2,172

Option 2

		April	May	June	July	August	September	Total, mcm
Toktogul reservoir								
Inflow to the reservoir	m ³ /s	266	572	871	750	521	298	
	mcm	689	1,532	2,258	2,009	1,395	772	8,656
Volume: beginning of the season	mcm	11,641	11,201	11,732	12,990	13,954	14,360	
end of the season	mcm	11,201	11,732	12,990	13,954	14,360	14,608	
Water releases from reservoir	m ³ /s	435	373	385	389	368	202	
	mcm	1,128	999	998	1,042	986	524	5,676
including: 1. internal needs of the	m ³ /s	435	373	343	348	327	202	
Kyrgyz Republic	mcm	1,128	999	888	932	876	524	5,346
2. additional releases	m ³ /s			42	41	41		
(energy receipt)	mcm			110	110	110		330
Bakhri Tochik reservoir								
Inflow to the reservoir	m ³ /s	607	487	357	293	302	304	
(Akdjar GS)	mcm	1,574	1,304	925	786	810	787	6,185
Volume: beginning of the season	mcm	3,070	3,410	3,397	2,992	2,155	1,606	
end of the season	mcm	3,410	3,397	2,992	2,155	1,606	1,754	
Water releases from reservoir	m ³ /s	471	450	440	523	432	200	
	mcm	1,221	1,205	1,141	1,402	1,158	518	6,645
Shardara reservoir								
Inflow to the reservoir	m ³ /s	700	600	450	250	200	250	

	mcm	1,814	1,607	1,166	670	536	648	6,441
Volume: beginning of the season	mcm	4,879	5,154	5,144	4,530	2,871	1,439	
end of the season	mcm	5,154	5,144	4,530	2,871	1,439	1,346	
Water releases from reservoir	m ³ /s	530	550	600	720	650	250	
	mcm	1,374	1,473	1,555	1,928	1,741	648	8,719
Discharge into Kyzylkum canal	m ³ /s	57	32	46	106	51	11	
	mcm	147	85	119	285	136	28	800
Water supply to the Aral Sea	m ³ /s	75	70	65	60	60	70	
	mcm	194	187	168	161	161	181	1,053
Charvak reservoir								
Inflow to the reservoir	m ³ /s	245	431	538	394	222	132	
(4 rivers in total)	mcm	635	1,155	1,394	1,055	596	342	5,176
Volume: beginning of the season	mcm	470	708	1,228	1,862	1,985	1,807	
end of the season	mcm	708	1,228	1,862	1,985	1,807	1,700	
Water releases from reservoir	m ³ /s	153	237	293	348	289	173	
(water releases from Gazalkent HPP)	mcm	397	634	760	932	773	449	3,947
Andizhan reservoir								
Inflow to the reservoir	m ³ /s	104	189	247	163	45	44	
	mcm	269	505	639	436	120	113	2,083
Volume: beginning of the season	mcm	820	886	1,050	1,275	1,103	748	
end of the season	mcm	886	1,050	1,275	1,103	748	731	
Water releases from reservoir	m ³ /s	78	127	160	227	177	50	
	mcm	203	341	415	608	475	130	2,172
Akdjar GS (+)	m ³ /s			83	150	103		112
	mcm			216	402	276		894
Additional water releases from	m ³ /s				80	27		54

Bakhri Tochik (energy receipt or goods exchange)	mcm				214	72		287
Total for Akdjar GS (+)	m ³ /s			83	230	130		148
	mcm			216	616	348		1,180

RESULTS OF THE USE OF WATER WITHDRAWAL LIMITS AND OPERATION REGIMES OF THE RESERVOIR CASCADES IN THE AMU DARYA AND SYR DARYA RIVER BASINS OVER THE NON-GROWING SEASON 2019-2020¹

I. Amu Darya River basin

The actual water availability in the Amu Darya River basin at the nominal Kerki gauging station upstream of Garagumdarya was 74 % of the norm over the non-growing season 2019-2020. The estimations were made taking into account the natural flow in the Vakhsh River and regulation by the Nurek reservoir. In the past non-growing season, this value was 87.8 % of the norm.

The use of the approved water withdrawal limits over the growing season under consideration is as follows (breakdown by state):

Given the current water situation, totally in the basin 102.8 % of the approved water withdrawal limits was used. While the limit was 15,727.6 mcm, the actually used volume amounted to 16,160.4 mcm, of which:

- Republic of Tajikistan actually used 2,795.8 mcm or 97.2 % of the total limit;
- Republic of Uzbekistan actually used 6,585.4 mcm or 103,7 % of the total limit;
- Turkmenistan actually used 6,779.3 mcm or 104.3 % of the total limit.

Water user state	Limits for the non-growing season 2019-2020, mcm	Actual, mcm	%% of limit
Republic of Tajikistan	2,877.6	2,795.8	97.2
Turkmenistan	6,500.0	6,779.3	104.3
Republic of Uzbekistan	6,350.0	6,585.4	103.7
Total	15,727.6	16,160.4	102.8

Over the non-growing season 2019-2020 under review, the use of water limits downstream of the nominal Kerki gauging station, upstream of

¹ Information on the first item of the 78th ICWC Meeting's Agenda; it was presented by Mr. M.Ya.Makhramov, Head of BWO Amu Darya, and Mr. O.A.Kholkhudjaev, Head of BWO Syr Darya

Garagumdaya was 104.1 % of the total limit, of which:

- Republic of Uzbekistan actually used 6,206.7 mcm or 103.8 % of the total limit.
- Turkmenistan actually used 6,779.3 mcm or 104.3 % of the total limit.

River reach Water user state	Limits for the non-growing season 2019- 2020, mcm	Actual, mcm	%% of limit
Downstream of the Kerki nominal GS	12,480.0	12,986.0	104.1
Turkmenistan	6,500	6,779.3	104.3
Republic of Uzbekistan	5,980	6,206.7	103.8

The actual use of the approved water withdrawal limits broken down by river reach is as follows:

- Upper reaches – 97.7 % of the total limit, including 97.2 % in the Republic of Tajikistan and 102.3 % in the Republic of Uzbekistan.
- Middle reaches – 98.3 % of the total limit, including 100.3 % in the Republic of Uzbekistan and 97.1 % in Turkmenistan.
- Lower reaches – 115.6 % of the total limit, including 108.0 % in the Republic of Uzbekistan and 130.4 % in Turkmenistan.

For the non-growing season, water supply to the Amu Darya delta and the Aral Sea was planned to be 2,100 mcm. However, the actual supply was 2,034 mcm or 96.9%.

River reach Water user state	Limits for the non-growing season 2019- 2020, mcm	Actual, mcm	%% of limit
Upper reaches	3,247.6	3,174.5	97.7
Republic of Tajikistan	2,877.6	2,795.8	97.2
Republic of Uzbekistan	370	378.7	102.3
Middle reaches	8,345	8,207.0	98.3
Turkmenistan	5,100.0	4,953.3	97.1
Republic of Uzbekistan	3,245.0	3,253.7	100.3
Lower reaches	4,135.0	4,779.0	115.6
Turkmenistan	1,400.0	1,826.0	130.4
Republic of Uzbekistan	2,735.0	2,953.0	108.0

For the non-growing season, the inflow to the Nurek reservoir was to be 3,829 mcm; however, the actual inflow was 4,267 mcm or 111.4 %. Water releases from the reservoir were planned to be 7,885 mcm; the actual releases were 8,006 mcm or 101.5%. By the end of the non-growing season 2019-2020, water storage in the reservoir was to be 6,511 mcm. The actual volume was 6,129 mcm or 94.1%.

The inflow to the Tuyamuyun reservoir was to be 6,343 mcm; however, the actual inflow was 6,175 mcm or 97.35%. Water releases from the reservoir were planned to be 7,869 mcm, while the actual releases were 8,414 mcm or 106.9%.

By the end of the non-growing season 2019-2020, water storage in the reservoir was planned to be 3,515 mcm; however, the actual storage was 2,801 mcm or 79.7%.

Name		unit	Nurek reservoir	Tutamuyun reservoir
Volume: beginning of the season		mcm	10,571	5,041
Inflow to the reservoir	forecast	mcm	3,829	6,343
	actual	mcm	4,267	6,175
		%%	111.4	97.35
Water releases from reservoir	forecast	mcm	7,885	7,869
	actual	mcm	8,006	8,414
		%%	101.5	106.9
Volume: end of the season	forecast	mcm	6,511	3,515
	actual	mcm	6,129	2,801
		%%	94.1	79.7
Accumulation(+), drawdown(-)	forecast	mcm	-4,060	-1,526
	actual	mcm	-4,442	-2,240
		%%	109.4	146.8

Note: actual water releases from the Nurek reservoir amounted to 101.5 % of the planned ones, while actual inflow was 111.4 % of the forecast.

More detailed information is given in Tables below.

**Analysis of the use of water withdrawal limits in the Amu Darya River basin
over the non-growing season 2019-2020**

Name	Limits for the non-growing season 2019- 2020, mcm	Actual as of 01.04.2020, mcm	%%
Upper Amu Darya Administration	2,877.6	3,174.5	110.3
(Upper reaches)			
of which:			
Tajikistan	2,877.6	2,795.8	97.2
Uzbekistan		378.7	
Middle Amu Darya Administration	8,345.0	8,207.0	98.3
(Middle reaches), of which			
Turkmenistan	5,100.0	4,953.3	97.1
Uzbekistan	3,245.0	3,253.7	100.3
Lower reaches:	4,135.0	4,779.0	115.6
of which:			
Turkmenistan	1,400.0	1,826.0	130.4
Uzbekistan:	2,735.0	2,953.0	108.0
Additionally, sanitary releases, total	800.0	799.7	100.0
including Karakalpakstan	500.0	499.4	99.9
Dashoguz province	150.0	150.7	100.5
Khorezm province	150.0	149.6	99.7
Water withdrawals from the Amu Darya River at nominal Kerki gauging station	12,480.0	12,986.0	104.1
of which:			
Turkmenistan	6,500.0	6,779.3	104.3
Uzbekistan	5,980.0	6,206.7	103.8

**Actual operation regimes of the Nurek and Tuyamuyun reservoirs,
October 2019-March 2020**

Nurek reservoir	unit	Actual						total
		X	XI	XII	I	II	III	
Volume: beginning of the season	mcm	10,571	10,554	9,982	9,054	7,912	6,870	10,571
Inflow to the reservoir	m ³ /s	380	285	241	225	213	272	
	mcm	1,017	739	645	603	533	729	4,267
Water releases from the reservoir	m ³ /s	382	480	545	604	558	471	
	mcm	1,024	1,245	1,460	1,618	1,398	1,262	8,006
Volume: end of the season	mcm	10,554	9,982	9,054	7,912	6,870	6,129	6,129
Accumulation (+), drawdown (-)	mcm	-17	-572	-929	-1,142	-1,042	-741	-4,442

Tuyamuyun reservoir	unit	Actual						total
		X	XI	XII	I	II	III	
Volume: beginning of the season	mcm	5,041	4,992	5,398	4,432	4,478	4,171	5,041
Inflow to the reservoir	m ³ /s	454	461	449	308	296	371	
	mcm	1,216	1,194	1,203	826	742	994	6,174
Water releases from the reservoir	m ³ /s	472	304	810	291	419	882	
	mcm	1,265	789	2,168	780	1,050	2,362	8,414
Volume: end of the season	mcm	4,992	5,398	4,432	4,478	4,171	2,801	2,801
Accumulation (+), drawdown (-)	mcm	-49	405	-965	45	-307	-1,370	-2,240

II. Syr Darya River basin

On 25 September 2019, the forecast data were received from UzHydromet for the non-growing season 2019-2020.

The forecast operation regime of the Toktogul reservoir by Coordination Dispatch Center (CDC) “Energy”, forecast operation schedule of the Andizhan reservoir by the Ministry of Water Management of the Republic of Uzbekistan, and forecast operation schedule of the Shardara reservoir by the Committee for Water Resources of the Republic of Kazakhstan were also provided.

According to the data, the inflow to the upstream reservoirs was expected to be:

- 100 % of the norm to the Toktogul reservoir;
- 87 % to the Andizhan reservoir;
- 101% to the Charvak reservoir.

The total lateral inflow was expected to be within 95 % of the norm.

Totally in the basin, water content was expected to be 96% of the norm.

The forecast operation schedule of the Naryn-Syr Darya reservoir cascades and country water withdrawal limits for the Syr Darya River basin over the non-growing season 2019-2020 were approved by the ICWC members at its 77th meeting in Almaty.

Actual hydrological situation from 1 October 2019 to 31 March 2020 is as follows.

Inflow to upstream reservoirs

Over the non-growing season, the normal inflow to the upstream reservoirs of the Naryn-Syr Darya reservoir cascades is 5,227 mcm (Table 2.1).

According to the forecasts, the inflow was expected to be 5,113 mcm or 98 % of the norm.

The actual inflow to the upstream reservoirs was 5,317 mcm or 104% of the forecast (102% of the norm) (in 2018-2019, the inflow to the upstream reservoirs was 5,384 mcm).

The inflow to the Toktogul reservoir:

- the normal inflow is 2,875 mcm;
- the forecast inflow was to be 2,875 mcm;
- the actual inflow was 3,131 mcm, which is 256 mcm more or 109 % of the forecast (109 % of the norm).

The inflow to the Andizhan reservoir:

- the normal inflow is 938 mcm;
- the forecast inflow was to be 813 mcm;
- the actual inflow was 684 mcm, which is 129 mcm less or 84% of the forecast (73% of the norm).

The inflow to the Charvak reservoir:

- the normal inflow is 1 billion 414 million cubic meters;
- the forecast inflow was to be 1 billion 425 million cubic meters;
- the actual inflow was 1 billion 502 million cubic meters, which is 77 mcm more or 105% of the forecast (106% of the norm).

Lateral inflow

The norm of lateral inflow to the Syr Darya River is 11,138 mcm.

According to the UzHydromet's forecast, lateral inflow was expected to be 10,575 mcm or 95% of the norm.

The actual lateral inflow amounted to 10, 543 mcm, which corresponds to the forecast (95% of the norm) (in 2018-2019, the lateral inflow was 10,860 mcm).

Total inflow

Over the non-growing season, the norm of the total inflow to the Syr Darya River is 16,365 mcm.

According to the forecast, it was expected to be 15,688 mcm or 96% of the norm.

The actual total inflow amounted to 15,860 mcm or 101% of the forecast (97% of the norm) (in 2018-2019, the total inflow was 16,244 mcm).

Water releases from reservoirs

According to the forecast operation schedule of the Naryn-Syr Darya reservoir cascades, 32,879 mcm were to be released from the reservoirs over the non-growing season 2019-2020 (Table 2.2).

The actual water releases from the Naryn-Syr Darya reservoir cascades were 30,170 mcm, which is 2,709 mcm less or 92% of the forecast schedule (in 2018-2019, 32,005 mcm were released from the reservoirs).

- 9,415 mcm were to be released from the Toktogul reservoir; the actual releases were 8,699 mcm or 92%, which is 716 mcm less than the forecast schedule.

- 618 mcm were planned to be released from the Andizhan reservoir; the actual releases were 555 mcm or 90%, which is 63 mcm less than the forecast schedule.

- 2,477 mcm were planned to be released from the Charvak reservoir; the actual releases were 2,465 mcm, which corresponds to the forecast schedule.

- 11,926 mcm were planned to be released from the Bakhri Tochik reservoir; the actual releases were 11,896 mcm, which corresponds to the forecast schedule.

- 8,443 mcm were planned to be released from the Shardara reservoir; the actual releases were 6,555 mcm, which is 1,888 mcm less or 78% of the forecast schedule.

Table 2.1

Inflow to upstream reservoirs

Name	Non-growing season, mcm									
	1 October 2019 to 31 March 2020					1 October 2018 to 31 March 2019				
	norm	forecast	actual	actual/ forecast (%)	actual/ norm (%)	norm	forecast	actual	actual/ forecast (%)	actual/ norm (%)
Inflow to upstream reservoirs										
Toktogul	2,875	2,875	3,131	109	109	2,891	2,804	3,162	113	109
Andizhan	938	813	684	84	73	934	866	784	91	84
Charvak (4 rivers in total)	1,414	1,425	1,502	105	106	1,408	1,340	1,438	107	102
Total	5,227	5,113	5,317	104	102	5,233	5,010	5,384	107	103
Lateral inflow										
Toktogul-Uchkurgan	400	380	399	105	100	398	387	254	66	64
Andizhan-Uchtepe	2,530	2,610	2,681	103	106	2,518	2,518	2,658	106	106
Uchkurgan, Uchtepe – Bakhri Tochik	4,391	4,107	4,223	103	96	4,365	4,396	4,707	107	108
Bakhri Tochik – Shardara	2,971	2,608	2,378	91	80	2,953	2,828	2,376	84	80
Gazalkent- Chinaz (excluding Ugam)	846	870	862	99	102	841	786	865	110	103
Total	11,138	10,575	10,543	100	95	11,075	10,915	10,860	99	98
Overall (total inflow)	16,365	15,688	15,860	101	97	16,308	15,925	16,244	102	100

Table 2.2

Water releases from reservoirs

Reservoir	Water releases, mcm 1 October 2019 to 31 March 2020		Actual/ schedule (%)	Water releases, mcm 1 October 2018 to 31 March 2019		Actual/ schedule (%)
	Operation schedule of NSRC	Actual		Operation schedule of NSRC	Actual	
Upstream reservoirs						
Toktogul	9,415	8,699	92	8,551	8,883	104
Andizhan	618	555	90	603	680	113
Charvak (discharge from Gazalkent HPP)	2,477	2,465	100	2,384	2,482	104
Total:	12,510	11,719	94	11,538	12,045	104
In-stream reservoirs						
Bakhri Tochik	11,926	11,896	100	11,374	12,219	107
Shardara	8,443	6,555	78	7,921	7,741	98
Total:	20,369	18,451	91	19,295	19,960	103
Overall:	32,879	30,170	92	30,833	32,005	104

Water storage in the reservoirs

As of 1 April 2020, water storage is as follows (Table 2.3):

- the scheduled water storage is 20,865 mcm;
- the actual water storage was 20,880 mcm, which corresponds to the forecast schedule (in 2018-2019, the actual storage was 23,080 mcm).

As of 1 April 2020, water storage is as follows in the upstream reservoirs:

- the scheduled water storage is 12,253 mcm;
- the actual water storage was 12,931 mcm, which is 678 mcm more than the forecast schedule (in 2018-2019, the actual storage was 15,080 mcm).

As of 1 April 2020, water storage is as follows in the in-stream reservoirs:

- the scheduled water storage is 8,612 mcm;
- the actual water storage was 7,949 mcm, which is 663 mcm less than the forecast schedule (in 2018-2019, the actual storage was 8 billion cubic meters).

Table 2.3

Water storage in the reservoirs

Reservoir	Water volume, mcm					
	actual as of 1.10.2019	scheduled as of 1.04.2020	actual as of 1.04.2020	Difference (actual- schedule)	actual as of 1.04.2019	Difference (actual 2020 - actual 2019)
Upstream reservoirs						
Toktogul	17,214	10,661	11,641	980	13,563	-1,922
Andizhan	706	902	820	-82	969	-149
Charvak	1,751	690	470	-220	548	-78
Total:	19,671	12,253	12,931	678	15,080	-2,149
In-stream reservoirs						
Bakhri Tochik	2,154	3,418	3,070	-348	2,825	245
Shardara	1,134	5,194	4,879	-315	5,175	-296
Total:	3,288	8,612	7,949	-663	8,000	-51
Overall:	22,959	20,865	20,880	15	23,080	-2,200

Water supply to the states

Over the non-growing season 2019-2020, water was supplied to the user states based on approved limits and submitted requests, without limitations.

- Republic of Kazakhstan: limit - 519 mcm, actual - 505 mcm;
- Kyrgyz Republic: limit - 37 mcm, actual - 26 mcm;
- Republic of Tajikistan: limit - 365 mcm, actual - 31 mcm;
- Republic of Uzbekistan: limit – 2,484 mcm, actual – 2,438 mcm;

Over the non-growing season, the total volume of water supply to the states of the Syr Darya basin actually amounted to 3 billion cubic meters (88 % of the limit).

Table 2.4

Water supply to the states

Water user state	Water withdrawals, mcm October 2019 to 31 March 2020		
	Limit	Actual	%
Republic of Kazakhstan (Dustlik canal)	519	505	97
Kyrgyz Republic	37	26	70
Republic of Tajikistan	365	31	9
Republic of Uzbekistan	2,484	2,438	98
Total	3,405	3,000	88

Inflow to in-stream reservoirs and water supply to the Aral region and the Aral Sea

The inflow to the Bakhri Tochik reservoir was scheduled to be 13,046 mcm in the growing season 2019-2020.

The actual inflow was 12,099 mcm or 947 mcm less than the forecast schedule.

The inflow to the Shardara reservoir was scheduled to be 12,735 mcm.

The actual inflow was 10,347 mcm or 2,388 mcm less than the forecast schedule.

According to the approved forecast schedule, the inflow to the Aral Sea was to be 3,009 mcm.

According to the State Committee for Water Resources of the Republic of Kazakhstan, the actual inflow as measured at the Karateren gauging station was 1,952 mcm or 1,057 mcm less than the forecast schedule.

Table 2.5

Inflow to in-stream reservoirs and water supply to the Aral Sea

Name	1.10.2019 to 31.03.2020 (mcm)				1.10.2018 to 31.03.2019 (mcm)			
	scheduled	actual	actual / schedule (%)	Differ ence (actua l "-" sched ule)	schedul ed	Actual	actual / sched ule (%)	Differ ence (actua l "-" sched ule)
Inflow to in-stream reservoirs								
Inflow to Bakhri Tochik reservoir	13,046	12,099	92	-947	12,448	12,793	103	345
Inflow to Shardara reservoir	12,735	10,347	81	-2,388	12,341	11,524	93	-817
Water supply to the Aral Sea								
Discharge into Arnasay	0	0						
Water supply to the Aral Sea	3,009	1,952	65	-1,057	3,000	2,960	99	-40

Table 2.6

Forecast operation schedule of the Naryn-Syr Darya reservoir cascade approved at the 77th ICWC meeting for the non-growing season 2019-2020

		October	November	December	January	February	March	Total, mcm
Toktogul reservoir								
Inflow to the reservoir	m3/s	237	202	168	159	158	166	
	mcm	635	524	450	426	396	445	2,875
Volume: beginning of the season	mcm	17,214	16,810	15,972	14,691	13,260	11,955	
end of the season	mcm	16,810	15,972	14,691	13,260	11,955	10,661	
Water releases from the reservoir	m3/s	386	524	645	693	679	649	
	mcm	1,034	1,358	1,728	1,856	1,701	1,738	9,415
Bakhri Tochik reservoir								
Inflow to the reservoir	m3/s	495	815	966	937	925	818	
(Akdjar GS)	mcm	1,327	2,114	2,588	2,509	2,318	2,190	13,046
Inflow through CDF	m3/s	20	23	23	26	29	30	
	mcm	54	60	61	70	69	81	396
Volume: beginning of the season	mcm	2,154	2,643	2,836	2,920	2,967	3,080	
end of the season	mcm	2,643	2,836	2,920	2,967	3,080	3,418	
Water releases from the reservoir	m3/s	295	750	950	940	900	700	
	mcm	790	1,944	2,544	2,518	2,255	1,875	11,926
Shardara reservoir								
Inflow to the reservoir	m3/s	281	713	950	970	1,023	906	
	mcm	752	1,848	2,545	2,598	2,564	2,428	12,735
Volume: beginning of the season	mcm	1,134	1,064	1,526	2,558	3,659	4,740	
end of the season	mcm	1,064	1,526	2,558	3,659	4,740	5,194	
Water releases from the reservoir	m3/s	284	517	550	550	581	725	

	mcm	760	1,339	1,473	1,473	1,456	1,941	8,443
Discharge into Kyzylkum canal	m3/s	5	5	5	5	5	5	
	mcm	13	13	13	13	12	13	79
Discharge into the Arnasay depression	m3/s	0	0	0	0	0	0	
	mcm	0	0	0	0	0	0	0
Supply to the Aral Sea	m3/s	111	146	211	259	230	186	
	mcm	296	379	564	694	576	499	3,009
Charvak reservoir								
Inflow to the reservoir	m3/s	109	97	83	73	72	105	
(4 rivers in total)	mcm	292	253	222	196	181	281	1,425
Volume: beginning of the season	mcm	1,751	1,585	1,394	1,173	926	730	
end of the season	mcm	1,585	1,394	1,173	926	730	690	
Water releases from the reservoir	m3/s	170	170	165	165	150	120	
(Releases from Gazalkent HPP)	mcm	455	441	442	442	376	321	2,477
Andizhan reservoir								
Inflow to the reservoir	m3/s	31	50	72	58	43	54	
	mcm	84	130	192	156	109	144	813
Volume: beginning of the season	mcm	706	602	576	728	843	903	
end of the season	mcm	602	576	728	843	903	902	
Water releases from the reservoir	m3/s	70	60	15	15	20	54	
	mcm	188	156	40	40	49	144	618

Table 2.7

Forecast operation schedule of the Naryn-Syr Darya reservoir cascade (1 October 2019 to 31 March 2020)

		October	November	December	January	February	March	Total, mcm
Toktogul reservoir								
Inflow to the reservoir	m3/s	270	211	174	162	173	197	
	mcm	723	547	466	435	434	526	3,131
Volume: beginning of the season	mcm	17,214	17,031	16,184	14,939	13,578	12,466	
end of the season	mcm	17,031	16,184	14,939	13,578	12,466	11,641	
Water releases from the reservoir	m3/s	338	535	637	671	618	505	
	mcm	905	1,388	1,706	1,798	1,549	1,353	8,699
Bakhri Tochik reservoir								
Inflow to the reservoir	m3/s	490	748	920	898	855	686	
(Akdjar GS)	mcm	1,312	1,938	2,464	2,405	2,143	1,838	12,099
Inflow through CDF	m3/s	16	22	24	25	26	29	
	mcm	42	57	65	66	62	78	370
Volume: beginning of the season	mcm	2,154	2,693	2,815	3,198	3,516	3,516	
end of the season	mcm	2,693	2,815	3,198	3,516	3,516	3,070	
Water releases from the reservoir	m3/s	296	754	864	831	898	881	
	mcm	793	1,953	2,314	2,226	2,251	2,359	11,896
Shardara reservoir								
Inflow to the reservoir	m3/s	253	625	805	762	811	680	
	mcm	676	1,621	2,156	2,041	2,031	1,820	10,347
Volume: beginning of the season	mcm	1,134	1,106	1,614	2,570	3,486	4,380	
end of the season	mcm	1,106	1,614	2,570	3,486	4,380	4,879	

Water releases from the reservoir	m3/s	241	450	496	493	439	371	
	mcm	645	1,166	1,329	1,321	1,100	993	6,555
Discharge into Kyzylkum canal	m3/s	1	0	0	0	0	33	
	mcm	4	0	0	0	0	89	93
Discharge into the Arnasay depression	m3/s	0	0	0	0	0	6	
	mcm	0	0	0	0	0	17	17
Supply to the Aral Sea	m3/s	78	67	165	200	161	71	
	mcm	209	172	441	536	403	191	1,952
Charvak reservoir								
Inflow to the reservoir	m3/s	113	95	81	75	80	126	
(4 rivers in total)	mcm	302	245	216	202	200	336	1,502
Volume: beginning of the season	mcm	1,751	1,551	1,267	1,044	784	567	
end of the season	mcm	1,551	1,267	1,044	784	567	470	
Water releases from the reservoir	m3/s	170	186	153	152	145	130	
(Releases from Gazalkent HPP)	mcm	455	482	409	406	364	349	2,465
Andizhan reservoir								
Inflow to the reservoir	m3/s	30	32	40	55	53	50	
	mcm	80	83	108	146	132	134	684
Volume: beginning of the season	mcm	706	575	519	587	714	830	
end of the season	mcm	575	519	587	714	830	820	
Water releases from the reservoir	m3/s	78	53	14	6	6	53	
	mcm	209	136	36	16	15	142	555

APPROVAL OF COUNTRY WATER WITHDRAWAL LIMITS AND FORECAST OPERATION REGIMES OF THE RESERVOIR CASCADES IN THE SYR DARYA AND AMU DARYA RIVER BASINS OVER THE GROWING SEASON 2020²

I. Amu Darya River basin

**Limits of water withdrawal from the Amu Darya River and water supply
to the river delta and Aral Sea over the growing season 2020**

NN	River basin, water user state	Water withdrawal limits, mcm	
		Total annually (1.10.19 to 1.10 .20)	including growing season (1.04.20 to 1.10.20)
	Totally from the Amu Darya River	55,392	39,672
	Of which:		
1	Republic of Tajikistan	9,822	6,952
	From the Amu Darya River to the nominal Kerki GS	44,000	31,520
2	Turkmenistan	22,000	15,500
3	Republic of Uzbekistan	22,000	16,020
	In addition:		
4	- water supply to the River delta and Aral Sea, taking into account water to be released for irrigation and collector- drainage water	4,200	2,100
5	- supply of sanitary and environmental releases to irrigation systems:	800	
	Dashoguz velayat	150	
	Khorezm province	150	
	Republic of Karakalpakstan	500	
	Total	58,822	41,772

² Information on the second item of the 78th meeting of ICWC; it was presented by Mr. M.Ya.Makhramov, Head of BWO Amu Darya, and Mr. O.A.Kholkhudjaev, Head of BWO Syr Darya

Forecast operation regime of the Nurek reservoir, mcm

	unit	April	May	June	July	August	September	Total
Volume: beginning of the season	mcm	6,129	6,265	7,185	8,521	10,168	10,568	6,129
Inflow to the reservoir	m ³ /s	467	999	1,382	1,723	1,394	753	
	mcm	1,210	2,676	3,582	4,615	3,734	1,951	17,768
Water releases from the reservoir	m ³ /s	450	668	950	1,202	1,265	757	
	mcm	1,166	1,788	2,462	3,218	3,388	1,961	13,984
Volume: end of the season	mcm	6,265	7,185	8,521	10,168	10,568	10,554	10,554
Accumulation (+), drawdown (-)	mcm	136	920	1,336	1,647	400	-14	4,425

Forecast operation regime of the Tuyamuyun reservoir, mcm

	unt	April	May	June	July	August	September	Total
Volume: beginning of the season	mcm	2,801	2,863	3,514	3,729	4,372	3,979	2,801
Inflow to the reservoir	m ³ /s	610	1,330	1,500	1,985	1,500	680	
	mcm	1,581	3,562	3,888	5,317	4,018	1,763	20,128
Water releases from the reservoir	m ³ /s	586	1,087	1,417	1,745	1,647	967	
	mcm	1,519	2,911	3,673	4,674	4,411	2,506	19,695
Volume: end of the season	mcm	2,863	3,514	3,729	4,372	3,979	3,236	3,236
Accumulation (+), drawdown (-)	mcm	62	651	215	643	-393	-743	435

II. Syr Darya River basin

Hydromet's forecast

On 5 March 2020, forecasts were received from UzHydromet for the growing season 2020.

In the growing season 2020, water content is expected to be as follows: river basins in the South of the Fergana Valley -90-100 % (95 % on average), in the basins of the Naryn and Chirchik Rivers – 85-95% (90% on average), in the basins of the Akhangaran, Karadarya, rivers in the North of the Fergana Valley – 80-90% (85% on average) of the norm.

On 27 March 2020, the Coordinating Dispatch Center (CDC) “Energy” provided forecast operation regime of the Toktogul reservoir for the growing season 2020.

The forecast operation regimes for the Andizhan and Charvak reservoir and forecast operation regimes for the Shardara reservoir were also provided by the Ministry of Water Management of the Republic of Uzbekistan and the State Committee for Water Resources of the Republic of Kazakshtan, respectively.

According to the forecast data, inflow to the upstream reservoirs is as follows:

- to the Toktogul reservoir - 90 % of the norm;
- to the Andizhan reservoir – 70 % of the norm;
- to the Charvak reservoir – 90 % of the norm.

The total lateral inflow is expected to be 92 % of the norm.

In general, water content in the Syr Darya River basin is forecasted to be 89% of the norm.

Inflow to upstream reservoirs

The norm of inflow to the upstream reservoirs in the Naryn-Syr Darya reservoir cascade is 18,360 mcm for the growing season (Table 2.8).

According to the forecast, the inflow to upstream reservoirs is expected to be 15,915 mcm, which is 2,445 less or 87% of the norm (in 2019, 96 % of the norm).

Inflow to the Toktogul reservoir:

- the norm of inflow is 9,620 mcm;
- the forecast inflow is expected to be 8,656 mcm or 964 mcm less than the norm (90% of the norm).

Inflow to the Andizhan reservoir:

- the norm of inflow is 2,992 mcm;
- the forecast inflow is expected to be 2,083 mcm or 909 mcm less than the norm (70% of the norm).

Inflow to the Charvak reservoir:

- the norm of inflow is 5,748 mcm;
- the forecast inflow is expected to be 5,176 mcm or 572 mcm less than the norm (90% of the norm).

Lateral inflow

The norm of lateral inflow is 11,023 mcm.

The forecast lateral inflow is expected to be 10,147 mcm, which is 876 mcm less or 92 % of the norm (in 2019, 97 % of the norm).

Total inflow

The norm of total inflow in the Syr Darya basin is 29,383 mcm for the growing season.

The forecast total inflow is expected to be 26,062 mcm, which is 3,321 mcm less or 89% of the norm (in 2019, 96% of the norm).

Water storage in the reservoirs

By the beginning of the growing season 2020, water storage is 20,880 mcm, excluding dead storage – 12,917 mcm, which is 2,200 mcm less than in 2019 (Table 2.9).

By the beginning of the growing season 2019, water storage in the reservoirs was 23,080 mcm, excluding dead storage – 15,117 mcm.

The total water volume is 38,979 mcm

(“total forecast inflow” + “total water storage in the reservoirs”)

$26,062 + 12,917 = 38,979$ or 4,280 mcm less than in 2019

In the growing season 2019, the total water volume is 43 billion 259 million cubic meters.

Table 2.8

Forecast inflow in the Syr Darya River basin over the growing season 2020

Reservoir	Growing season, mcm							
	2020			2019				
	norm	forecast	forecast/norm (%)	norm	forecast	forecast/norm (%)	actual	actual/forecast (%)
Inflow to upstream reservoirs								
Toktogul	9,620	8,656	90	9,620	9,332	97	8,806	94
Andizhan	2,992	2,083	70	2,915	2,680	92	1,945	73
Charvak (4 rivers in total)	5,748	5,176	90	5,751	5,464	95	6,240	114
Total:	18,360	15,915	87	18,286	17,476	96	16,991	97
Lateral inflow								
Toktogul – Uchkurgan	1,216	1,144	94	1,216	1,180	97	1,294	110
Andizhan – Uchtepe	2,521	2,211	88	2,529	2,371	94	2,451	103
Uchkurgan, Uchtepe– Bakhri Tochik	3,362	3,159	94	3,368	3,320	99	3,069	92
Bakhri Tochik-Shardara	3,020	2,843	94	3,020	2,846	94	2,855	100
Gazalkent-Chinza (excluding Ugam)	904	790	87	909	949	104	1,068	113
Total:	11,023	10,147	92	11,042	10,666	97	10,737	101
Overall (total inflow):	29,383	26,062	89	29,328	28,142	96	27,728	99

Table 2.9

Reservoir	Water volume, mcm						
	Actual as of 1 April 2020	Actual as of 1 April 2020 (excluding dead storage)		Actual as of 1 April 2019	Actual as of 1 April 2019 (excluding dead storage)	dead storage	Difference (1 April 2020-1 April 2019)
Upstream reservoirs							
Toktogul	11,641	6,141		13,563	8,063	5,500	-1,922
Andizhan	820	670		969	819	150	-149
Charvak	470	44		548	122	426	-78
Total:	12,931	6,855		15,080	9,004	6,076	-2,149
In-stream reservoirs							
Bakhri Tochik	3,070	2,153		2,825	1,908	917	245
Shardara	4,879	3,909		5,175	4,205	970	-296
Total:	7,949	6,062		8,000	6,113	1,887	-51
Overall:	20,880	12,917		23,080	15,117	7,963	-2,200

Water withdrawal limits

Taking into account submitted requests, the following water withdrawal limits for water user states are proposed for the growing season (Table 2.10):

Table 2.10

Country water withdrawal limits in the Syr Darya River basin

Water user state	mcm
Republic of Kazakhstan (Dustlik canal)	878
Kyrgyz Republic	246
Republic of Tajikistan	1,905
Republic of Uzbekistan	8,800
Total:	11,829

Forecast operation schedule of NSRC

Taking into account water storage in the reservoirs and forecast water content, the forecast operation schedule of the Naryn-Syr Darya reservoir cascades is submitted to ICWC for consideration for the period from 1 April to 30 September 2020 (Tables 2.11, 2.12).

Table 2.11

Forecast operation schedule of the Naryn-Syr Darya reservoir cascades (1 April to 30 September 2020) (Option 1)

		April	May	June	July	August	September	Total, mcm
Toktogul reservoir								
Inflow to the reservoir	m ³ /s	266	572	871	750	521	298	
	mcm	689	1,532	2,258	2,009	1,395	772	8,656
Volume: beginning of the season	mcm	11,641	11,201	11,732	12,990	13,954	14,360	
end of the season	mcm	11,201	11,732	12,990	13,954	14,360	14,608	
Water releases from the reservoir	m ³ /s	435	373	385	389	368	202	
	mcm	1,128	999	998	1,042	986	524	5,676
including: 1. internal needs of the	m ³ /s	435	373	343	348	327	202	
Kyrgyz Republic	mcm	1,128	999	888	932	876	524	5,346
2. additional releases	m ³ /s			42	41	41		
(energy receipt)	mcm			110	110	110		330
Bakhri Tochik reservoir								
Inflow to the reservoir	m ³ /s	607	487	357	293	302	304	
(Akdjar GS)	mcm	1,574	1,304	925	786	810	787	6,185
Volume: beginning of the season	mcm	3,070	3,518	3,559	3,063	2,284	1,819	
end of the season	mcm	3,518	3,559	3,063	2,284	1,819	2,051	
Water releases from the reservoir	m ³ /s	440	450	500	530	430	190	
	mcm	1,140	1,205	1,296	1,420	1,152	492	6,706

Shardara reservoir								
Inflow to the reservoir	m ³ /s	700	600	450	250	200	250	
	mcm	1,814	1,607	1,166	670	536	648	6,441
Volume: beginning of the season	mcm	4,879	5,154	5,144	4,530	2,871	1,439	
end of the season	mcm	5,154	5,144	4,530	2,871	1,439	1,346	
Water releases from the reservoir	m ³ /s	530	550	600	720	650	250	
	mcm	1,374	1,473	1,555	1,928	1,741	648	8,719
Discharge into Kyzylkum canal	m ³ /s	57	32	46	106	51	11	
	mcm	147	85	119	285	136	28	800
Water supply to the Aral Sea	m ³ /s	75	70	65	60	60	70	
	mcm	194	187	168	161	161	181	1,053
Charvak reservoir								
Inflow to the reservoir	m ³ /s	245	431	538	394	222	132	
(4 rivers in total)	mcm	635	1,155	1,394	1,055	596	342	5,176
Volume: beginning of the season	mcm	470	708	1,228	1,862	1,985	1,807	
end of the season	mcm	708	1,228	1,862	1,985	1,807	1,700	
Water releases from the reservoir	m ³ /s	153	237	293	348	289	173	
(Releases from Gazalkent HPP)	mcm	397	634	760	932	773	449	3,947
Andizhan reservoir								
Inflow to the reservoir	m ³ /s	104	189	247	163	45	44	
	mcm	269	505	639	436	120	113	2,083
Volume: beginning of the season	mcm	820	886	1,050	1,275	1,103	748	
end of the season	mcm	886	1,050	1,275	1,103	748	731	
Water releases from the reservoir	m ³ /s	78	127	160	227	177	50	
	mcm	203	341	415	608	475	130	2,172

Table 2.12

Forecast operation schedule of the Naryn-Syr Darya reservoir cascades (1 April to 30 September 2020) (Option 2)

		April	May	June	July	August	September	Total, mcm
Toktogul reservoir								
Inflow to the reservoir	m ³ /s	266	572	871	750	521	298	
	mcm	689	1,532	2,258	2,009	1,395	772	8,656
Volume: beginning of the season	mcm	11,641	11,201	11,732	12,990	13,954	14,360	
end of the season	mcm	11,201	11,732	12,990	13,954	14,360	14,608	
Water releases from the reservoir	m ³ /s	435	373	385	389	368	202	
	mcm	1,128	999	998	1,042	986	524	5,676
including: 1. internal needs of the	m ³ /s	435	373	343	348	327	202	
Kyrgyz Republic	mcm	1,128	999	888	932	876	524	5,346
2. additional releases	m ³ /s			42	41	41		
(energy receipt)	mcm			110	110	110		330
Bakhri Tochik reservoir								
Inflow to the reservoir	m ³ /s	607	487	357	293	302	304	
(Akdjar GS)	mcm	1,574	1,304	925	786	810	787	6,185
Volume: beginning of the season	mcm	3,070	3,410	3,397	2,992	2,155	1,606	
end of the season	mcm	3,410	3,397	2,992	2,155	1,606	1,754	
Water releases from the reservoir	m ³ /s	471	450	440	523	432	200	
	mcm	1,221	1,205	1,141	1,402	1,158	518	6,645
Shardara reservoir								
Inflow to the reservoir	m ³ /s	700	600	450	250	200	250	
	mcm	1,814	1,607	1,166	670	536	648	6,441

Volume: beginning of the season	mcm	4,879	5,154	5,144	4,530	2,871	1,439	
end of the season	mcm	5,154	5,144	4,530	2,871	1,439	1,346	
Water releases from the reservoir	m ³ /s	530	550	600	720	650	250	
	mcm	1,374	1,473	1,555	1,928	1,741	648	8,719
Discharge into Kyzylkum canal	m ³ /s	57	32	46	106	51	11	
	mcm	147	85	119	285	136	28	800
Water supply to the Aral Sea	m ³ /s	75	70	65	60	60	70	
	mcm	194	187	168	161	161	181	1,053
Charvak reservoir								
Inflow to the reservoir	m ³ /s	245	431	538	394	222	132	
(4 rivers in total)	mcm	635	1,155	1,394	1,055	596	342	5,176
Volume: beginning of the season	mcm	470	708	1,228	1,862	1,985	1,807	
end of the season	mcm	708	1,228	1,862	1,985	1,807	1,700	
Water releases from the reservoir	m ³ /s	153	237	293	348	289	173	
(Releases from Gazalkent HPP)	mcm	397	634	760	932	773	449	3,947
Andizhan reservoir								
Inflow to the reservoir	m ³ /s	104	189	247	163	45	44	
	mcm	269	505	639	436	120	113	2,083
Volume: beginning of the season	mcm	820	886	1,050	1,275	1,103	748	
end of the season	mcm	886	1,050	1,275	1,103	748	731	
Water releases from the reservoir	m ³ /s	78	127	160	227	177	50	
	mcm	203	341	415	608	475	130	2,172
Akdjar GS (+)	m ³ /s			83	150	103		112
	mcm			216	402	276		894
Additional water releases from the	m ³ /s				80	27		54

Bakhri Tochik reservoir (energy receipt or goods exchange)	mcm				214	72		287
Akdjar GS, total (+)	m ³ /s			83	230	130		148
	mcm			216	616	348		1,180

PROGRESS ON IMPLEMENTATION OF PROPOSALS AND INITIATIVES OF THE HEADS OF IFAS FOUNDER-STATES VOICED AT THE SUMMIT IN TURKMENBASHI ³

General information

On the 24th of August 2018, the city of Turkmenbashi hosted the XII meeting of the Council of Heads of IFAS Founder-States. The Heads of State launched a number of initiatives aimed to address the existing problems in an integrated manner. The implementation of these initiatives was discussed at the ICWC meetings.

At the 77th ICWC meeting, SIC ICWC presented information on implementation of the proposals and initiatives of the Heads of IFAS Founder-States (5-6 November, Almaty). It was decided that ICWC members and its executive bodies should take necessary measures at the national and regional levels for more active implementation of the proposals and initiatives of the Heads of State as reflected in the joint Communiqué of the Council. It appears that importance of the proposals and initiatives voiced by the Presidents requires more concrete decisions from the ICWC members.

Contribution of SIC ICWC to initiatives of the Presidents (information on the work carried out from 06.11.19 to 31.03.20)

1. Automation of operation of gauging stations in the Amu Darya and Syr Darya River basins

SIC *monitors* the water balance in the Amu Darya and Syr Darya river basins *on a ten-day basis* and systematically informs about balance discrepancies in the basins.

The Ministry of Water Management of the Republic of Uzbekistan (Minister Sh. R. Khamraev) and the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan (Vice-Minister S. N. Gromov) were approached to assist in organizing a working group consisting of the representatives of the Ministry of Water Management of Uzbekistan, the Committee for Water Resources of Kazakhstan, UzHydromet and KazHydromet, BWO Syr Darya and SIC ICWC to conduct control hydrometric

³ Information on the third agenda item of the 78th ICWC meeting provided by the Director of SIC ICWC Prof. V.A. Dukhovniy

measurements at the Chinaz –Syr Darya, Boz-Su GS (Uzbekistan) and Kokbulak and Keles GS (Kazakhstan) to determine more precisely the water inflow to Shardara reservoir.

A contract was concluded with BWO Syr Darya for “Studies for clarification of the river balance items of the Syr Darya River and reservoirs at the reaches of the Toktogul reservoir – Uchkurgan hydroscheme – Bakhri Tochik reservoir, Farkhad hydroscheme – Chardara reservoir and development of a computer program”.

Vice-Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan S.N. Gromov was approached to include in the work plan for 2020 the necessary funds to finance the survey of the technical condition of gauging stations and hydraulic structures in the lower reaches of the Syr Darya River and to prepare a feasibility study. Automation of the Syr Darya River basin was discussed at the meeting between the SIC ICWC Director Prof. V.A. Dukhovniy and the Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan M.M. Mirzagaliyev and Vice-Minister S.N. Gromov (05.02.20, Tashkent).

Automation of the Syr Darya and Amu Darya River basins was repeatedly discussed at meetings with the Ministry of Investment and Foreign Trade of the Republic of Uzbekistan (30.11.19, 20.12.19). The report on survey of technical condition of gauging stations in the upper and middle reaches of the Syr Darya River, including the Chirchik River basin, project proposals on “Automation of operation of gauging stations across the Syr Darya River basin”, “Automation of management system on the Amu Darya River basin”, and minutes of the meeting in the Ministry of Water Management of the Republic of Uzbekistan (26.04.19) on the issue of river balance discrepancies in the Amu Darya and the Syr Darya Rivers were provided.

The following project datasheets were prepared and submitted to the UN Multi-Partner Human Security Trust Fund for the Aral Sea region in Uzbekistan (MPHSTF) as part of the second tour of the application process: (1) Automation of operation of a set of hydraulic structures at the Tuyamuyun reservoir on the Amu Darya River; (2) Automation of operation of gauging stations and hydraulic facilities on the Syr Darya River. Materials were submitted to UNESCO, which is to become a partner of the United Nations in this Fund as a prerequisite for the allocation of funds.

2. Establishment of an International Water and Energy Consortium (IWECC)

Building on the speech of the First President of the Republic of Kazakhstan Mr. N.A.Nazarbayev, SIC ICWC together with CDC “Energy”

prepared proposals for submission to the European Bank for Reconstruction and Development to develop the feasibility study for a Water and Energy Consortium or other economic mechanism (e.g. payment for flow regulation, which was earlier intensively discussed in the energy sector) and disseminate it between all ICWC members and bodies. The positive feedback was received only from Kazakhstan.

SIC's proposals on the Water and Energy Consortium, including the establishment of a working group consisting of representatives of the ICWC members, BWO Syr Darya, CDC "Energy" and SIC ICWC for implementation of the planned work program, were sent to the Vice-Minister of Ecology, Geology and Natural Resources of Kazakhstan Mr. S.N. Gromov and discussed with the Minister Mr. M.M. Mirzagaliyev and Vice-Minister Mr. S.N. Gromov.

3. Water diplomacy and IWRM

SIC ICWC:

- developed the Guidelines for Strengthening water cooperation between regional and national state agencies of Central Asia and submitted them to the ICWC members and heads of executive bodies for consideration with the request to organize a working group of the representatives of national agencies and regional organizations for the development of a procedure for enhanced cooperation. No feedback has been received.

- developed and submitted to the members of the Working Group on implementation of integrated water resource management and adaptation to climate change from BWO Amu Darya and BWO Syr Darya: (1) "Proposals for the development of Basin Councils at the BWO Amu Darya and BWO Syr Darya" and their territorial divisions for additions and comments (Ref. No. 153 of 25.07.19). No feedback has been received; (2) the request to develop the "Proposals" based on the proposed sample of the Statute of the Basin Council to prepare (1) draft Statute of Basin Councils; and (2) draft list of Basin Council members. No feedback has been received yet.

4. Water conservation and rational use of water resources

SIC ICWC in cooperation with the University of Würzburg (Germany) developed an online tool for water use efficiency monitoring in Central Asia, - WUEMoCA. The tool allows tracking water use efficiency at district level and promptly plan and adjust water use. The possibilities to further develop the WUEMoCA tool within the framework of the German MFA's initiative "Green Central Asia" were discussed at the meeting with the Ambassador of Germany in Uzbekistan Mr. Gunter Overfeld (26.11.19, SIC ICWC) and voiced at the

Conference “Green Central Asia: Enhancing environment, climate and water resilience” by the Deputy Director of SIC ICWC Dr. D.Ziganshina (28.01.20, Berlin).

As part of strengthening the ICWC activities in the field of “Water Conservation”, currently SIC ICWC undertakes the following work: (1) Review of global experience in water conservation; (2) Analysis of integrated water use data by province in all CA countries using the WUEMoCA tool; (3) Analysis of water productivity by province of the Central Asian states; (4) Preparation of the concept for a competition on water conservation (presented at OSCE in Kazakhstan); (5) Development of guidelines for drafting Water Use Plans, with account of revised water allowance zoning based on the experience of the Fergana Valley.

5. Water accounting

To implement the work plan of the Working Group on Improving Quality and Accuracy of Water Accounting, SIC ICWC prepared the first version of the Technical Guidelines on the matter; those will be disseminated among the Group’s members for final approval. In addition, the implementation of the Korean SmartWater project is monitored at the facilities of the BWO Syr Darya and the Ministry of Water Management of Uzbekistan. The work of this Group (as the work of other Working Groups on the fulfillment of the ICWC Improvement Plan) is hampered by the absence of permanent members of the groups and the fragmented efforts of executive bodies.

6. Preparation of the Regional Program for Rational Use of Water Resources in Central Asia

In line with the proposal of the President of Uzbekistan Mr. Sh.M. Mirziyoyev on the development of the Program, the work was carried out in two directions. The Ministry of Water Management of Uzbekistan has prepared a list of measures to be included in the Regional Program and submitted it to the countries for approval. SIC ICWC proposed that this work to be carried out in a classical way by disseminating first the draft content of the Program and the before developed Diagnostic Report that were to integrate and synchronize efforts of all the countries in the development of the commonly agreed document. SIC also submitted a request to the ICWC members and the heads of its executive bodies to appoint the head and members of the national working group for the work on preparation of the Regional Program for Rational Use of Water Resources in Central Asia (Ref. No. 232 of 28.10.19). No feedback has been received.

At the initiative of the Organization for Economic Cooperation and Development (OECD) and with the financial support from Germany, SIC ICWC prepared the Diagnostic Report on Rational Use of Water Resources in Central Asia as of 2019 to: a) demonstrate changes in the use and management of water and land resources in Central Asia over the past 20 years; b) identify the challenges of future water supply, development trends and needs for long-term rational use of water and irrigated land; c) assess the implementation of the “1998 Fundamental Provisions of Water Management Strategy in the Aral Sea Basin” and recommendations of the 2001 Diagnostic Report.

The Diagnostic Report was prepared with the involvement of high-level experts from all the countries and submitted to the ICWC members and other concerned organizations for comments. The positive feedback was received from Kazakhstan, the Ministry of Water Management of Uzbekistan (with comments) and a number of other organizations. A hard copy of the Report will be distributed during the regular ICWC face-to-face meeting.

The Diagnostic Report can serve a basis for the development of the Regional Program for Rational Use of Water Resources in Central Asia.

The development of the draft Regional Program for Rational Use of Water Resources in Central Asia was proposed by SIC ICWC as one of the research areas of the Central Asian Expert Platform on sustainable development and security (see Point 8).

7. Mitigation of consequences of the Aral Sea catastrophe

SIC took part in the round table on the problems of the Aral Sea within the framework of the past International Conference on the Aral Sea (05.12.19, Tashkent).

In partnership with UNDP/MPHSTF, a research expedition was conducted to study saline lands in the Aral region and the dried Aral Sea bed (September 20 - October 20). The expedition covered 600 thousand ha of the south-western part of the dried seabed. Together with German colleagues from MapTaylor, the ground observation and remote measurement materials are mapped. The preparation is under way for the spring expedition.

The project proposal “Development of water and environment monitoring system in the Aral region and on the dried Aral Sea bed (Karakalpakstan)” was revised and submitted jointly with the International Innovation Center for the Aral Sea Basin under the President of the Republic of Uzbekistan to MPHSTF within the framework of its second call of applications for the Aral region (January 2020). As recommended by UNDP, the project incorporates a

large socio-economic component with an emphasis on employment of local youth and women.

SIC ICWC carries out continuous (once in 2 months) RS-based monitoring of the state of water bodies and wetlands within the Aral Sea and the Aral region. The monitoring results are uploaded on the CAWater-Info Portal. In case of deterioration of situation, relevant ministries are informed via letters.

8. Scientific cooperation

To implement the initiative of the President Mr. Sh.M.Mirziyoev on joint interdisciplinary research on the platforms of SIC ICWC and SIC ICSD, the work continued on the establishment of a Central Asia Expert Platform for water security, sustainable development and regional integration. In this context, the following work has been done:

- Draft Agreement on Cooperation between SIC ICWC and SIC ICSD was prepared and sent to the Director of SIC ICSD for review and approval (Ref. No. 254 of 18.11.19).

- SIC ICWC had meetings with

- Mr. S.R. Ibatullin, head of the initiative group for the promotion of the idea of the Expert Platform, which defined a program of further actions and priority topics for joint work within the Expert Platform, including: (1) Preparation of the draft Regional Program for Rational Use of Water Resources in Central Asia proposed by the President of the Republic of Uzbekistan Mr. Sh.M. Mirziyoev; (2) Feasibility study for the Water and Energy Consortium proposed by the first President of Kazakhstan Mr. N.A. Nazarbayev (16.01.20, Shymkent);

- Mr. Marton Krasznai, Director of the Corvinus Center for Central Asia Research, on the involvement of the Platform members in the work on financial and economic rationale behind sustainable water sector.

- Opportunities to support and develop the Expert Platform and carry out priority research within the framework of the German MFA's initiative "Green Central Asia" were discussed at the meeting with the Ambassador of Germany in Uzbekistan Mr. Gunter Overfield (26.11.19, SIC ICWC) and voiced at the Conference "Green Central Asia: Enhancing environment, climate and water resilience" (28.01.20, Berlin).

9. Development of ASBP-4

SIC ICWC prepared and submitted to EC IFAS proposals and comments (copy to the ICWC Members and Executive Bodies) to the project proposals

finalized by IFAS EC together with experts for inclusion in ASBP-4 (Ref. No. 248 of 12.11.19) and for consideration at the 3rd meeting of the RWG on Development of ASBP-4 (25-26.11.19, Ashgabat). SIC ICWC was not invited to the meeting. According to the Final document of the 3rd RWG meeting, 34 project proposals in the following areas were agreed upon: Integrated Water Resource Use (14); Environment (12); Socio-economic (6); Institutional and Legal Improvement of IFAS (2). EC IFAS was to submit the draft ASBP-4 to the countries for approval through diplomatic channels in the first ten-day of December 2019 for further approval by the IFAS Board.

10. Reform of IFAS

SIC ICWC prepared and submitted to EC IFAS notes and proposals on the institutional and legal improvement of IFAS (Ref. No. 240 of 01.11.19) for consideration at the 3rd meeting of RWG on the Institutional and Legal Improvement of IFAS on 27 November 2019 in Ashgabat. SIC ICWC did not participate in the event. According to the Final document of the meeting, proposals were presented only by the Republic of Kazakhstan and Republic of Uzbekistan at the meeting. The RWG members were recommended to submit country proposals to EC IFAS in accordance with the agreed stages by April 1, 2020.

ANALYSIS OF HYDROLOGICAL CONDITIONS IN THE SYR DARYA AND AMU DARYA RIVER BASINS OVER THE NON-GROWING SEASON 2019-2020⁴

1 Syr Darya River basin

The actual inflow to the upstream reservoirs in the Syr Darya basin (Toktogul, Andizhan, and Charvak reservoirs) was 5.32 km³ during the non-growing season. Inflow to the Toktogul reservoir was 3.13 km³ or 109 % of the forecast. Inflow to the Andizhan reservoir was 16 % lower than expected, while inflow to the Charvak reservoir was 5 % higher than the forecast. The actual total water releases from the upstream reservoirs were 11.72 km³. This is 6 % less than planned according to BWO Syr Darya schedule (12.51 km³).

The total lateral inflow in the reach from the Toktogul reservoir to the Shardara reservoir, including discharges from the Karadarya and Chirchik rivers, was 9.59 km³. This is 1.8 times more than the total inflow to the upstream reservoirs.

By the end of the non-growing season, 12.93 km³ were accumulated in the upstream reservoirs, including 11.64 km³ in the Toktogul reservoir or 109 % of the BWO Syr Darya's scheduled amount, 0.82 km³ (91 %) in the Andizhan reservoir, and 0.47 km³ (68 %) in the Charvak reservoir. The Toktogul reservoir discharged water in the amount of 5.57 km³, the Charvak reservoir was drawn down by 1.28 km³, whereas the Andizhan reservoir accumulated water in the amount of 0.11 km³.

During the non-growing season, the inflow to the Bakhri Tochik reservoir amounted to 12.1 km³, which is 0.95 km³ less than scheduled by BWO Syr Darya. Water releases from the reservoir were 11.9 km³, which is 0.03 km³ less than scheduled by BWO Syr Darya. The accumulation of water in the reservoir amounted to 3.07 km³. Unrecorded inflow to the reservoir was found in the amount of 0.36 km³.

During the non-growing season, water withdrawal from the Naryn and the Syr Darya rivers in the reach up to the Shardara reservoir was 3.03 km³, of which: the Kyrgyz Republic – 0.03 km³, the Republic of Tajikistan – 0.03 km³,

⁴Prepared by A.Sorokin and I.Ergashev from SIC ICWC

the Republic of Kazakhstan (through the Dustlik canal) – 0.5 km³, and the Republic of Uzbekistan – 2.44 km³. Water availability was uneven by state, river reach and in time (Table 1.1).

The difference between the actual water supply and the water limit was from -26 % (2nd ten-day of February) to 65 % (1st ten-day of December) in the Toktogul-Bakhri Tochik reach and from -51% (3rd ten-day of December) to 9 % (2nd ten-day of March) in the Bakhri Tochik-Sharadara reach (Table 1.4).

Water losses were recorded in the amount of 4.74 km³ in the Toktogul-Shardara reach; this is 26% of the regulated flow (estimated by the balance method). To compare, losses amounted to 3.72 km³ in the same reach during the non-growing season 2018-2019.

During the non-growing season 2019-2020, the inflow to the Shardara reservoir was 10.35 km³ or 2.39 km³ less than scheduled by BWO Syr Darya. By the end of the season, the reservoir accumulated water to 4.88 km³ (94 %). Unrecorded inflow in the amount of 0.06 km³ was found. The discharge from the Shardara reservoir amounted to 6.66 km³ (75 %), including: 6.55 km³ into the river; 0.09 km³ into the Kzylkum canal; and, 0.02 km³ into Arnasay.

The actual water supply to the Aral Sea was 1.16 km³, according to the KazHydromet's data, while the Kazakh Committee for Water Resources shows 1.95 km³.

Tables 1.2 and 1.3 show the river's main course balance and the water balance of reservoirs, respectively.

Table 1.1

**Water availability in the Syr Darya River basin countries for the non-growing season
2019-2020**

№	Water user	Water volume, km ³		Water availability, %	Deficit(-), surplus (+), km ³
		Limit/ schedule	Actual	Season	Season
1	Total water withdrawal	3.41	3.00	88	-0.41
2	Water withdrawal by country:				
	Kyrgyz Republic	0.037	0.03	70	-0.01
	Republic of Uzbekistan	2.48	2.44	98	-0.05
	Republic of Tajikistan	0.37	0.03	8	-0.34
	Republic of Kazakhstan	0.52	0.50	97	-0.01
3	By river reach				
3.1	Toktogul reservoir – Uchkurgan hydroscheme	1.37	1.29	95	-0.07
	of which:				
	Kyrgyz Republic	0.03	0.03	87	-0.004
	Republic of Tajikistan	0.09	0.03	36	-0.055
	Republic of Uzbekistan	1.25	1.24	99	-0.013
3.2	Uchkugran hydroscheme – Bakhri Tochik hydroscheme	0.25	0.16	63	-0.090
	of which:				
	Kyrgyz Republic	0.01	0.00	0	-0.007
	Republic of Tajikistan	0.07	0.00	0	-0.069
	Republic of Uzbekistan	0.17	0.16	92	-0.014
3.3	Bakhri Tochik hydroscheme – Shardara reservoir	1.79	1.55	86	-0.25
	of which:				
	Kyrgyz Republic	0.52	0.50	97	-0.01
	Republic of Tajikistan	0.21	0.00	0	-0.21
	Republic of Uzbekistan	1.06	1.04	98	-0.02
4	Inflow to the Shardara reservoir	12.74	10.35	81	-2.39
	Discharge into Arnasay	0.40	0.02	4	-0.38
5	Water supply to the Aral Sea (Karateren gauging station)	3.00	1.95	65	-1.05

Table 1.2

Syr Darya River's main course water balance for the non-growing season 2019-2020

№	Balance item	Water volume, km ³		Deviation (actual- plan)
		Forecast/pl an	Actual	
1	Inflow to the Toktogul reservoir	2.87	3.13	0.26
2	Lateral inflow in the reach of Toktogul reservoir – Shardara reservoir (+)	9.67	9.59	-0.08
	of which:			
2.1	<i>Discharge from the Karadarya River</i>	1.66	1.75	0.09
2.2	<i>Discharge from the Chirchik River</i>	1.05	0.84	-0.21
2.3	<i>Lateral inflow from CDF and small rivers</i>	6.97	7.00	0.03
3	Flow regulation by reservoirs: recharge (+) or diversion (-) of flow	5.23	5.36	0.13
	of which:			
3.1	<i>Toktogul reservoir</i>	6.54	5.57	-0.97
3.2	<i>Bakhri Tochik reservoir</i>	-1.31	-0.20	1.11
4	Regulated flow (1+2+3)	17.78	18.08	0.31
5	Water withdrawal at the Toktogul – Shardara reach (-)	-3.41	-3.00	0.41
6	Water losses (-) or unrecorded inflow to the main course (+) in the Toktogul-Shardara reach	-1.63	-4.74	-3.10
6.1	<i>Including % of the regulated flow</i>	9	26	
7	Inflow to the Shardara reservoir	12.74	10.35	-2.39
8	Flow regulation by the Shardara reservoir: recharge (+) or diversion (-) of flow	-3.81	-3.68	0.12
9	Releases from Shardara reservoir into the river	8.93	6.66	-2.26
10	Supply to the Aral Sea (Karateren GS)	3.00	1.95	-1.05

Table 1.3

Water balance of the Syr Darya River basin reservoirs for the non-growing season 2019-2020

№	Balance item	Water volume, km ³		Deviation (actual–plan)
		Forecast/plan	Actual	
1	Toktogul reservoir			
1.1	Inflow to the reservoir	2.87	3.13	0.26
1.2	Water volume in the reservoir:			
	- beginning of the season (1 October 2019)	17.21	17.214	0.00
	- end of the season (1 April 2020)	10.66	11.641	0.98
1.3	Water releases from the reservoir	9.42	8.70	-0.72
1.4	Unrecorded inflow (+) or losses (-)	-0.01	-0.006	0.007
	Including % of inflow to the reservoir	0	0	0
1.5	Flow regulation: recharge (+) or diversion (-) of flow	6.54	5.57	-0.97
2	Andizhan reservoir			
2.1	Inflow to the reservoir	0.81	0.68	-0.13
2.2	Water volume in the reservoir:			
	- beginning of the season (1 October 2019)	0.71	0.71	0.00
	- end of the season (1 April 2020)	0.90	0.82	-0.08
2.3	Water releases from the reservoir	0.62	0.55	-0.06
2.4	Unrecorded inflow (+) or losses (-)	0.00	-0.02	-0.02
	Including % of inflow to the reservoir	0	2	2
2.5	Flow regulation: recharge (+) or diversion (-) of flow	-0.20	-0.13	0.07
3	Charvak reservoir			
3.1	Inflow to the reservoir	1.43	1.50	0.08
3.2	Water volume in the reservoir:			
	- beginning of the season (1 October 2019)	1.75	1.75	0.00
	- end of the season (1 April 2020)	0.69	0.47	-0.22
3.3	Water releases from the reservoir	2.48	2.47	-0.01
	Unrecorded inflow (+) or losses (-)	-0.01	-0.32	-0.31
	Including % of inflow to the reservoir	1	21	20
3.5	Flow regulation: recharge (+) or diversion (-) of flow	1.05	0.96	-0.09
4	Bakhri Tochik reservoir			
4.1	Water inflow to the reservoir from the river	13.05	12.10	-0.95
4.2	Lateral inflow	0.300	0.372	0.07
4.3	Water volume in the reservoir:			
	- beginning of the season (1 October 2019)	2.15	2.15	0.00
	- end of the season (1 April 2020)	3.42	3.07	-0.35
4.4	Water releases from the reservoir	12.04	11.91	-0.12
	of which:			

№	Balance item	Water volume, km ³		Deviation (actual– plan)
		Forecast/ plan	Actual	
	- releases into the river	11.93	11.90	-0.03
	- water withdrawal from the reservoir	0.11	0.02	-0.09
4.5	Unrecorded inflow (+) or losses (-)	-0.05	0.36	0.40
	Including % of inflow to the reservoir	0	3	3
4.6	Flow regulation: recharge (+) or diversion (-) of flow	-1.31	-0.20	1.11
5	Shardara reservoir			
5.1	Water inflow to the reservoir from the river	12.74	10.35	-2.39
5.2	Lateral inflow	0.0	0.0	0.00
5.3	Water volume in the reservoir:			
	- beginning of the season (1 October 2019)	1.13	1.13	0.00
	- end of the season (1 April 2020)	5.19	4.88	-0.31
5.4	Water releases from the reservoir	8.93	6.66	-2.26
	of which:			
	- discharge into Arnasay	0.40	0.02	-0.384
	- water releases into the river	8.44	6.55	-1.89
	- water withdrawal from the reservoir	0.08	0.09	0.01
5.5	Unrecorded inflow (+) or losses (-)	0.25	0.06	-0.19
	Including % of inflow to the reservoir	2	1	1
5.6	Flow regulation: recharge (+) or diversion (-) of flow	-3.81	-3.79	0.01
	Total flow regulation by reservoirs: inflow (+) or diversion (-)	2.28	2.41	0.13
	Total unrecorded inflow (-) or losses (+)	0.19	0.08	-0.10

Table 1.4

Deviation of actual water supply from limit in the Syr Darya River basin over the non-growing season 2019-2020

Indicator	Unit	October			November			December			January			February			March			Per season	
		I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III		
Toktogul-Bakhri Tochik reach																					
Total water withdrawal, of which:	Limit	m ³ /s	188	182	162	80	39	19	5	11	31	67	73	76	87	76	101	194	213	226	1,613
	Actual	m ³ /s	152	157	143	82	58	24	7	19	30	54	67	70	70	56	88	161	195	212	1,451
	Deviat.	%	-19	-14	-11	3	48	27	49	65	-3	-19	-7	-8	-20	-26	-13	-17	-8	-6	-10
Kyrgyz Republic	Limit	m ³ /s	9	7	7	1	1	1	0	0	0	0	0	0	0	0	0	4	5	7	37
	Actual	m ³ /s	5	4	4	3	2	2	1	0	0	0	0	0	0	0	0	1	3	2	26
	Deviat.	%	-41	-37	-45	116	219	213										-77	-43	-66	-30
Tajikistan	Limit	m ³ /s	23	20	20	12	0	0	0	0	0	0	0	0	6	8	10	22	25	28	154
	Actual	m ³ /s	5	5	4	4	5	1	0	0	0	0	0	0	0	0	1	2	3	4	30
	Deviat.	%	-78	-76	-81	-63									100	100	-88	-90	-87	-84	-80
Uzbekistan	Limit	m ³ /s	157	155	135	67	38	19	5	11	31	67	73	76	81	68	91	168	184	191	1,423
	Actual	m ³ /s	142	147	136	75	51	22	6	18	29	54	67	69	69	56	87	158	189	205	1,395
	Deviat.	%	-10	-5	1	12	32	16	35	63	-4	-19	-8	-8	-15	-18	-4	-6	3	8	-2
Bakhri Tochik-Shardara reach																					
Total water withdrawal, of which:	Limit	m ³ /s	149	143	140	85	75	66	66	81	96	54	74	113	130	153	163	158	146	153	1,794
	Actual	m ³ /s	115	111	110	75	71	61	56	53	47	46	53	96	130	141	145	155	160	143	1,549
	Deviat.	%	-23	-22	-21	-12	-6	-9	-15	-35	-51	-14	-28	-15	0	-8	-11	-2	9	-7	-14
Kazakhstan	Limit	m ³ /s	0	0	0	0	0	0	15	30	50	5	40	80	85	100	95	45	25	25	519
	Actual	m ³ /s	0	0	0	0	0	0	0	0	0	1	17	55	90	105	108	95	70	44	505
	Deviat.	%							100	100	100	-82	-59	-31	6	5	14	111	180	77	-3
Tajikistan	Limit	m ³ /s	36	30	27	16	6	0	0	0	0	0	0	0	0	8	22	32	32	35	214
	Actual	m ³ /s	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Deviat.	%	-97	-	-	-	-									-	-	-	-	-	-100

				100	100	100	100									100	100	100	100	100	
Uzbekistan	Limit	m ³ /s	113	113	113	69	69	66	51	51	46	49	34	33	45	45	46	81	89	93	1,061
	Actual	m ³ /s	114	111	110	75	71	61	56	53	47	45	37	40	40	36	36	60	90	99	1,043
	Deviat.	%	-	-	-7.6	6.0	10.1	4.9	12.1	3.9	8.2	10.2	34.3	25.3	27.1	32.1	25.6	-2.4	-2.5	19.9	0

2 Amu Darya River basin

The actual water content in the Amu Darya River at the nominal Atamyrat gauging station (upstream of intake to Garagumdarya) was 10.4 km³, which is 0.8% more than scheduled by BWO Amu Darya.

Inflow to the Nurek reservoir was 4.3 km³ (111 % of the forecast), while water releases from the reservoir were 8.01 km³ (102 % of that scheduled by BWO Amu Darya). The river received additional 3.74 km³ through drawdown of the Nurek reservoir. The reservoir was drawn down to 6.13 km³ by the end of season.

In the reservoirs of Tuyamuyun hydroscheme, the water accumulation plan has not been achieved – by the 1st of April the actual water volume was lower than the scheduled one by 0.75 km³ and totaled 2.8 km³. Failure to fulfill the accumulation plan is explained by lower inflow to the in-stream reservoir than was expected – flow at the Bir-Aral section was estimated at 6.94 km³ (95 % of the forecast). Water releases from TMHS also were higher than scheduled by BWO Amu Darya – 8.41 km³ (107 %). Water losses at the Bir-Ata – Tuyamuyun g/s reach (discrepancy calculated by the balance method) amounted to 0.76 km³ or 11 % of river flow at Bir-Ata g/s.

The established limit of water withdrawal in the basin was 103 % used; water withdrawal was 16.16 km³, including 12.99 km³ downstream of the Atamyrat gauging station (starting from the intake to Garagumdarya).

Water availability for states changed from 97 % to 104 % (Table 2.1). The available water supply was 98 % in the upper reaches (up to Garagumdarya intake), 98 % in the middle reaches (from nominal Atamyrat g/s to TMHS), and 116 % (130 % - Turkmenistan, 108 % - Uzbekistan) in the lower reaches. Water deficit was 82 million m³ (3 %) in the Republic of Tajikistan, while it was not observed in the Republic of Uzbekistan and Turkmenistan.

The difference of actual water supply and the established water limit changed from -15 % to 22 % in the Nurek-Tuyamuyun reach and from -83% (2nd ten-day of November) to 3,081 % (1st ten-day of January) in the Tuyamuyun-Samanbay reach (Table 2.4).

Water losses in the nominal Atamyrat-Bir-Ata reach were insignificant and amounted to 0.46 km³ (3 % of river flow at the nominal Atamyrat g/s). Water losses in the Tuyamuyun-Samanbay reach amounted to 2.03 km³ (34 % of river flow at Tuyamuyun g/s). The total open-channel losses in middle and lower reaches amounted to 2.49 km³ or 24 % of river flow plus losses in TMHS reservoirs 2.49+0.76=3.25 km³ or 31 % of river flow at the nominal Atamyrat

gauging station.

The established limits of environmental water releases into canals in the Amu Darya lower reaches were 100% used; the water supply was 0.8 km³. According to the Uzbek Hydromet's data, 2.03 km³ were delivered to the Aral region and the Aral Sea or 97 % of planned water delivery.

Tables 2.2 and 2.3 show the river's main course balance and the water balance of reservoirs, respectively.

Table 2.1

**Water availability in the Amu Darya River basin countries
for the non-growing season 2019-2020**

№	Water user	Water volume, km ³		Water availability, %	Deficit (-), surplus (+), km ³
		Limit/schedule	Actual	Season	Season
1	Total water withdrawal	15.73	16.16	103	0.433
2	Water withdrawal by state:				
	<i>Kyrgyz Republic</i>	-	-	-	-
	<i>Republic of Tajikistan</i>	2.88	2.80	97	-0.08
	<i>Turkmenistan</i>	6.50	6.78	104	0.28
	<i>Republic of Uzbekistan</i>	6.35	6.59	104	0.24
3	Downstream of the Atamyrat reach	12.48	12.99	104	0.51
	of which:				
	<i>Turkmenistan</i>	6.50	6.78	104	0.28
	<i>Republic of Uzbekistan</i>	5.98	6.21	104	0.23
4	By river reache				
	Upper reaches	3.25	3.17	98	-0.07
	of which:				
	<i>Kyrgyz Republic</i>	-	-	-	-
	<i>Republic of Tajikistan</i>	2.88	2.80	97	-0.08
	<i>Republic of Uzbekistan, Surkhandarya</i>	0.37	0.38	102	0.01
	Middle reaches	8.35	8.21	98	-0.14
	of which:				
	<i>Turkmenistan</i>	5.10	4.95	97	-0.15
	<i>Republic of Uzbekistan</i>	3.25	3.25	100	0.01
	Lower reaches	4.13	4.78	116	0.64
	of which:				
	<i>Turkmenistan</i>	1.40	1.83	130	0.43
	<i>Republic of Uzbekistan</i>	2.73	2.95	108	0.22
5	Sanitary and environmental releases into canals within lower reaches	0.80	0.80	100	0.00
	Including:				
	<i>Turkmenistan</i>	0.15	0.15	100	0.00
	<i>Republic of Uzbekistan</i>	0.65	0.65	100	0.00
6	Supply to the Aral region and the Aral Sea	2.1	2.03	97	-0.07

Table 2.2

**The Amu Darya River's main course water balance
for the non-growing season 2019-2020**

Balance item	Water volume, km ³		Deviation (actual- plan)
	Forecast/ plan	Actual	
1. Water content in the Amu Darya River - non-regulated flow at Atamyrat g/s nominal*	10.32	10.41	0.083
2. Flow regulation by the Nurek reservoir: recharge (+) or diversion (-) of flow	4.06	3.74	-0.32
3. Water withdrawal in the middle reaches (-)	-8.35	-8.21	0.14
4. Return CDF (+) in middle reaches	1.24	1.46	0.22
5. Water losses (-) or unrecorded inflow to the main course (+)	0.04	-0.46	-0.50
% of flow at the nominal Atamyrat GS	0	3	3
6. Flow at the Bir-Ata GS	7.31	6.94	-0.37
7. Water releases from TMHS (including water diversion from the reservoir)	7.87	8.41	0.55
8. Water withdrawa in lower reaches, including from TMHS (-)	-4.13	-4.78	-0.64
9. Return CDF (+) in lower reaches	0.00	0.00	0.00
10. Emergency and environmental water releases into canals (-)	-0.80	-0.80	0.00
11. Runoff losses (-) or unrecorded inflow to the main course (+)	-1.73	-2.03	-0.30
% of flow in the Tuyamuyun GS reach	30	34	4
12. Supply to the Aral region and the Aral Sea (Samanbay GS)	1.21	0.80	-0.41
TOTAL losses:	-1.69	-2.49	-0.80
<i>% of water content</i>	16	24	8

*Minus water withdrawals in upper reaches (Tajikistan and Surkhandarya province)

Table 2.3

**Water balance of the reservoirs in the Amu Darya River basin
for the non-growing season 2019-2020**

Balance item	Water volume, km ³		Deviation (actual- plan)
	Forecast/ plan	Actual	
1 Nurek reservoir			
2.1 Inflow to the reservoir	3.83	4.27	0.44
2.2 Water volume in the reservoir:			
– beginning of the season (1 October 2019)	10.57	10.55	-0.02
– end of the season (1 April 2020)	6.51	6.13	-0.38
2.3 Water releases from the reservoir	7.89	8.01	0.12
2.4 Lateral inflow (+) or water losses (-)	0.21	-0.68	-0.89
<i>% of the inflow to the reservoir</i>	6	16	10
2.5 Flow regulation: recharge (+) or diversion (-) of flow	4.06	3.74	-0.32
2 Reservoirs of TMHS			
2.1 River flow at Bir-Ata GS	7.31	6.94	-0.37
2.2 Water volume in the reservoirs:			
– beginning of the season (1 October 2019)	5.04	5.04	0.00
– end of the season (1 April 2020)	3.52	2.80	-0.78
2.3 Water release from the hydroscheme	7.87	8.41	0.55
of which:			
– release to river	5.71	5.89	0.18
– water diversion	2.16	2.52	0.36
2.4 Unrecorded inflow (+) or water losses (-) <i>including %of inflow to the reservoir</i>	-0.93	-0.76	0.17
	13	11	-2
2.5 Flow regulation: recharge (+) or diversion (-) of flow	0.56	-1.04	-1.60
TOTAL losses (-), unrecorded inflow (+)	-0.72	-1.44	-0.72

Table 2.4

Deviation of actual water supply from limit in the Amu Darya River basin over the non-growing season 2019-2020

Indicator	Unit	October			November			December			January			February			March			Per season	
		I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III		
Nurek-Tuyamuyun reach																					
Total water withdrawal, of which:	Limit	m ³ /s	891	873	829	721	683	547	469	528	528	580	616	628	660	774	844	957	1,044	1,030	11,593
	Actual	m ³ /s	998	869	817	710	640	561	570	600	622	636	628	626	674	677	755	813	886	873	11,381
	Deviat.	%	12	0	-1	-1	-6	3	22	14	18	10	2	0	2	-13	-11	-15	-15	-15	-2
Tajikistan	Limit	m ³ /s	238	230	210	206	206	190	146	138	132	128	128	134	143	162	193	222	238	237	2,878
	Actual	m ³ /s	291	248	234	194	142	148	150	144	148	175	149	134	149	153	149	161	188	218	2,796
	Deviat.	%	23	8	11	-6	-31	-22	3	4	13	37	17	0	4	-5	-23	-27	-21	-8	-3
Turkmenistan	Limit	m ³ /s	395	384	360	295	260	230	219	211	205	210	230	246	275	359	406	483	527	516	5,100
	Actual	m ³ /s	432	380	359	301	296	249	241	230	226	231	251	260	287	292	346	386	437	437	4,953
	Deviat.	%	9	-1	0	2	14	8	10	9	10	10	9	6	4	-19	-15	-20	-17	-15	-3
Uzbekistan	Limit	m ³ /s	258	259	258	220	217	127	104	179	191	242	258	248	242	253	245	252	279	278	3,615
	Actual	m ³ /s	275	241	224	215	202	164	179	226	248	230	228	232	238	231	261	266	261	218	3,632
	Deviat.	%	6	-7	-13	-2	-7	29	72	26	30	-5	-12	-6	-1	-9	7	5	-6	-22	0
Tuyamuyun-Samanbay reach																					
Total water withdrawal, of which:	Limit	m ³ /s	381	312	199	132	141	130	152	144	110	10	14	17	195	351	495	677	707	578	4,135
	Actual	m ³ /s	367	301	212	85	23	37	204	552	597	318	103	86	107	175	401	605	673	578	4,779
	Deviat.	%	-4	-4	6	-35	-83	-72	35	284	442	3,081	637	415	-45	-50	-19	-11	-5	0	16
Turkmenistan	Limit	m ³ /s	175	115	10	0	0	0	0	7	10	10	14	17	115	180	210	253	263	236	1,400
	Actual	m ³ /s	196	82	26	5	3	0	85	238	247	142	57	51	67	91	140	202	224	219	1,826
	Deviat.	%	12	-29	157					3,296	2,369	1,317	307	206	-41	-50	-33	-20	-15	-7	30
Uzbekistan	Limit	m ³ /s	206	197	189	132	141	130	152	137	100	0	0	0	80	171	285	424	444	343	2,735
	Actual	m ³ /s	172	219	186	80	20	37	120	314	350	176	46	35	39	85	261	403	449	359	2,953
	Deviat.	%	-16	11	-2	-39	-85	-72	-21	130	250				-51	-50	-9	-5	1	5	8

SARDOBA DAM COLLAPSE

The Sardoba reservoir was built in 2010-2017 to supply irrigation water to six districts of Syrdarya and Djizzak provinces. The total reservoir capacity is 974 mcm, with useful capacity of 922 mcm. The reservoir perimeter is 42 km; the dam length is 28 km, the area — 6,800 ha. The water depth of the reservoir is 28.8 meters. The maximum dam height is 33 meters, with maximum water level of 30 meters.





On the 1st May at about 5:55 a.m., a water leak occurred in the wall of the sixth picket of the dam at the Sardoba reservoir in Syrdarya province.





The flood damaged settlements and crops in the Sardoba, Akaltyn and Mirzaabad districts. Buildings, roads, and communications were damaged. More than 90 thousand people were evacuated from 22 villages in three districts; 56 people were hospitalized; 4 people died.





Water was spilled into the Abay Canal in the Akaltyn district and then into the Arnasay lake system in Djizzak province. The gates were also opened so that water could flow to the irrigation canal network. As a result, border collectors were filled with water in the Maktaaral district of Turkestan province, with water flooding 10 villages in the district. More than 31.6 thousand people were evacuated.



According to Mr. Turganbek Ospanov, Deputy Head of the Turkestan Provincial Department for Agriculture, the preliminary damage in Kazakhstan from the dam breach amounted to 404 million tenge (US \$955,000). He also noted that 3.6 thousand ha of crops were flooded. The most affected areas are Zhenis, Zhanaturmys and Zhantaksai villages in rural districts of Zhanazhol and Enbekshi. It was found out that 85% of the flooded area was under cotton; the rest – under alfalfa and corn.

NASA published images of the situation before and after the collapse of the dam at the Sardoba reservoir. Images acquired on May 8, 2020, with the Operational Land Imager (OLI) on Landsat 8 show where that water ultimately collected in Uzbekistan and Kazakhstan. For comparison, NASA also published the image of the same area on April 22, before the dam failure.



Satellite image on 8 May



Satellite image on 22 April

According to the initial estimates of the Ministry of Emergency Situations of Uzbekistan, 8 kindergartens, 16 schools, 7 medical institutions, 1 college, 7 cemeteries, 3 mosques, 13 national bridges, 52 km of roads, 1 dekhkan market were damaged. The natural disaster caused partial damage to 99 multi-storey residential buildings.

In April 2020, the construction of a small hydropower plant began at the reservoir, with a capacity of 10.7 MW and annual production of 41.1 million kWh. It is planned to be completed by the end of 2022.



Sources (in Russian): kazakh-zerno.net, podrobno.uz, gazeta.uz,
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