ANALYSIS OF WATER MANAGEMENT SITUATION IN THE SYR DARYA AND AMU DARYA RIVER BASINS FOR THE GROWING SEASON 2025 [1]

1 Syr Darya River Basin

During the growing season, the actual inflow to the upper reservoirs of the Syr Darya River basin (Toktogul, Andijan, Charvak) was 14.47 km^3 or 88 % of the forecast, 78 % of the norm (18.5 km^3) and 3.76 km^3 less than in the growing season 2024. Total lateral inflow to the Naryn and Syr Darya Rivers amounted to 5.7 $км^3$ in the reaches up to the Chardara reservoir (4.8 km^3 less than during the growing season 2024), including 0.9 km^3 from the Karadarya River (Uchtepa g/s), 0.21 km^3 from the Chirchik (Chinaz-Chirchik g/s) and 4.6 km^3 refers to return flow and flow from small rivers.

Water accumulation in the upper reservoirs (Toktogul, Andijan, Charvak) was 10.3 km^3 by the beginning of the growing season. By the end of the growing season, the water volume was 13.5 km^3 in the upper reservoirs, i.e. water accumulation was 3.2 km^3

The inflow to the Toktogul reservoir[2] from the Naryn River reached 9.1 km^3, which is 0.2 km^3 less than the forecast and 93% of the norm (9.8 km^3). Discharge from the reservoir amounted to 6.2 km^3, which is 0.26 km^3 (5%) more than scheduled by BWO Syr Darya. The total water withdrawal from the Naryn River made up 2.9 km^3 (inflow – water releases: 9.1 – 6.2 = 2.9). This is 15% lower than scheduled by BWO Syr Darya.

In the Bakhri Tojik reservoir, the water volume was 3.5 km^3 at the beginning of the growing season and 1.6 km^3 by the end of the growing season. Inflow to the Bakhri Tojik was 5.7 km^3, and total water releases amounted to 7.1 km^3, including 6.5 km^3 of water discharged into the river. Analysis of Bakhri Tojik operation shows that reservoir accumulated 0.5 km^3 more water than planned by BWO and, accordingly, water releases from the reservoir into the river were 0.2 km^3 more than scheduled.

Total water withdrawal from the Naryn and Syr Darya rivers in reaches up to Shardara reservoir amounted to 9.3 km^3 or 78% of the limit. During the growing season 2025, the water withdrawal was 2.6 km^3 less than planned limits approved at the ICWC meeting.

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[1] Prepared by SIC ICWC based on data from BWO Syr Darya and BWO Amu Darya. Authors: A. Nazariy, A. Sorokin, I. Ergashev

[2] Data on the Toktogul reservoir are based on calculations.

The total water withdrawal was 0.64 km^3 for Kazakhstan (from the Dustlik canal), 0.2 km^3 for the Kyrgyz Republic, 1.45 km^3 for Tajikistan, and 7.01 km^3 for Uzbekistan.

In the Shardara reservoir the water volume was 4.6 $км^3$ at the beginning of the growing season and 0.4 km^3 by the end of the growing season. Inflow to the Shardara reservoir amounted to 2.7 km^3 or 73% of the plan. The discharge from the Shardara reservoir amounted to 4.3 km^3.

According to the Committee for Regulation, Protection and Use of Water Resources of the Ministry of Water Resources and Irrigation of the Republic of Kazakhstan, water supply to the Aral Sea and the Aral Sea region (Karateren g/s) was 0.59 km^3 in the growing season.

Water use in the lower reaches of the Syr Darya (including water withdrawal plus water losses and minus lateral inflow) is estimated at 2.7 km^3, which is 55% less than the plan.

Table 1.1

Indicators of available water supply for the riparian countries in the Syr Darya River Basin, growing season 2025

Water user	Water volume, km^3	
	BWO schedule / Limit	Actual
1 Total water withdrawal (in the reach up to the Shardara reservoir)	11.88	9.30
2 By state:		
– *Kyrgyz Republic*	0.27	0.19
– *Republic of Uzbekistan*	8.80	7.01
– *Republic of Tajikistan*	1.91	1.45
– *Republic of Kazakhstan*	0.91	0.64
3 By river reach		
3.1 Toktogul reservoir. – Uchkurgan hydroscheme	3.99	3.24
Including:		
– *Kyrgyz Republic*	0.21	0.11
– *Republic of Tajikistan*	0.24	0.12
– *Republic of Uzbekistan*	3.55	3.02
3.2 Uchkurgan hydroscheme – Bakhri Tojik reservoir	1.05	1.01
Including:		
– *Kyrgyz Republic*	0.06	0.08
– *Republic of Tajikistan*	0.45	0.49
– *Republic of Uzbekistan*	0.54	0.43
3.3 Bakhri Tojik reservoir – Shardara reservoir	6.84	5.05
Including:		
– *Republic of Kazakhstan*	0.91	0.64
– *Republic of Tajikistan*	1.22	0.84
– *Republic of Uzbekistan*	4.71	3.56
4 In addition:		
– Inflow to the Shardara reservoir	3.69	2.70
– Discharge into Arnasay	0.00	0.12
– Water supply to the Aral Sea and Aral Sea region [3]	0.98	0.59

[3] According to the data of the Committee for Regulation, Protection and Use of Water Resources of the Ministry of Water Resources and Irrigation of the Republic of Kazakhstan

Table 1.2

Water balance of the Syr Darya River in the growing season 2025

Balance item	Water volume, km^3		Deviation (plan-actual)	
	Fore-cast/plan	Actual	km^3	%
1 Inflow to the Toktogul reservoir	9.34	9.12	0.21	2
2 Lateral inflow in the Toktogul reservoir – Shardara reservoir reach (+)	8.31	5.73	2.58	45
Including:				
– *Disharge from the Karadarya river (Uchtepa g/s)*	0.95	0.90	0.05	5
– *Discharge from the Chirchik river (Chinaz-Chirchik g/s)*	1.00	0.21	0.78	370
– *Lateral inflow from CDN and small rivers*	6.36	4.62	1.74	38
3 Flow regulation by reservoir: recharge (+) or diversion of flow (-)	-2.38	-2.22	-0.16	7
Including:				
– *Toktogul reservoir*	-3.45	-2.97	-0.48	16
– *Bakhri Tojik reservoir*	1.07	0.75	0.32	42
4 Regulated flow (1+2+3)	15.27	12.64	2.63	21
5 Water diversion in the Toktogul – Shardara reach (-)	-11.88	-9.30	-2.58	28
6 Inflow to the Shardara reservoir	3.69	2.70	0.99	37
7 Water releases from Shardara reservoir (into the river and water withdrawal)	5.84	3.29	2.55	77
8 Water use (-) downstream of Shardara reservoir (water withdrawal - lateral inflow + losses)	-4.87	-2.70	-2.16	80
9 Water supply to the Aral Sea and Aral Sea region	0.98	0.59	0.39	65

Table 1.3

Reservoir water balance in the Syr Darya River basin for the growing season 2025

Balance item	Water volume, km^3		Deviation (plan-actual)	
	Fore-cast/plan	Actual	km^3	%
1.Toktogul reservoir				
1.1 Inflow to the reservoir	9.34	9.12	0.21	2
1.2 Water volume in reservoir:				
– beginning of the season (1 April 2025)	8.45	8.45	0.00	0
– end of the season (1 October 2025)	11.90	11.37	0.53	5
1.3 Water releases from the reservoir	5.89	6.15	-0.26	4
1.4 **Flow regulation:** recharge (+) or diversion of flow (-)	-3.45	-2.97	-0.48	16
2. Andijan reservoir				
2.1 Inflow to reservoir	2.27	1.93	0.34	18
2.2 Water volume in reservoir:				
– beginning of the season (1 April 2025)	1.20	1.20	0.00	0
– end of the season (1 October 2025)	1.11	0.79	0.32	40
2.3 Water releases from reservoir	2.35	2.31	0.04	2
2.4 **Flow regulation:** recharge (+) or diversion of flow (-)	0.08	0.38	0.30	
3. Charvak reservoir				
3.1 Inflow to reservoir	4.80	3.42	1.38	40
3.2 Water volume in reservoir:				
– beginning of the season (1 April 2025)	0.66	0.66	0.00	0
– end of the season (1 October 2025)	1.80	1.37	0.43	31
3.3 Water releases from reservoir	3.64	3.11	0.54	17
3.4 **Flow regulation:** recharge (+) or diversion of flow (-)	-1.15	-0.31	-0.84	268
4 Bakhri Tojik reservoir				
4.1 Inflow to reservoir	5.23	5.74	-0.51	9
4.2 Lateral inflow	0.28	0.142	0.14	97
4.3 Water volume in reservoir:				
– beginning of the season (1 April 2025)	3.50	3.50	0.00	0
– end of the season (1 October 2025)	1.77	1.55	0.22	14
4.4 Water releases from reservoir	6.88	7.13	-0.25	3
including:				
– *water releases into the river*	6.30	6.49	-0.19	3
– *water withdrawal from the reservoir*	0.58	0.64	-0.06	9
4.5 **Flow regulation:** recharge (+) or diversion of	1.07	0.75	0.32	42

Balance item	Water volume, km^3		Deviation (plan-actual)	
	Fore-cast/plan	Actual	km^3	%
flow (-)				
5 Shardara reservoir				
5.1 Inflow to reservoir	3.69	2.70	0.99	37
5.2 Lateral inflow	0.00	0.00	0.00	
5.3 Water volume in reservoir:				
– beginning of the season (1 April 2025)	4.56	4.56	0.00	0
– end of the season (1 October 2025)	1.00	0.43	0.58	134
5.4 Water releases from reservoir	6.67	4.29	2.38	55
Including:				
– *discharge into Arnasay*	0.00	0.12	-0.12	100
– *water releases into the river*	5.84	3.29	2.55	77
– *water withdrawal from the reservoir*	0.83	0.88	-0.06	6
5.5 **Flow regulation:** discharge (+) or diversion of flow (-)	2.15	0.59	1.56	263
TOTAL flow regulation by reservoirs: recharge (+) or diversion of flow (-)	-1.30	-1.56	0.26	17

2 Amu Darya River Basin

For the period from April to September, the actual water content in the Amu Darya River [4] at "nominal Kerki" g/s (upstream of water intake to Garagumdarya) was 43.64 km^3, which is 1.01 km^3 more than expected by BWO Amu Darya.

Inflow to Nurek HPP amounted to 17.22 km^3 and was more than the projected flow by 2.44 km^3. Water releases from the reservoir were 13.57 km^3, which is 2.57 km^3 more than scheduled by BWO Amu Darya. Diversion of river flow through accumulation of water in the Nurek reservoir amounted to 3.65 km^3 (Table 2.3).

Based on data from Darganata g/s, inflow to the Tuyamuyun hydroscheme (TMHS) was 17.94 km^3, which exceeded the expected inflow by 0.07 km^3. As a result, 3.60 km^3 more water was accumulated in the reservoirs of TMHS during the growing season, which is 0.05 km^3 more than planned. Water releases from TMHS were 0.71 km^3 less than planned, totaling 15.35 km^3.

In the current water management situation, the established water withdrawal limit for the Amu Darya River basin was covered by 86% (Table 2.1). The total water withdrawal was 34.20 km^3, including 27.55 km^3 - downstream of Kerki g/s (starting from water intake to Garagumdarya). The average water availability was 83% for Tajikistan, 92% for Turkmenistan, and 82% Uzbekistan in the growing season.

From April to September, water supply to the Aral Sea region and the Aral Sea amounted to 0.99 km^3 (flow of the Amu Darya River at Samanbay g/s plus discharge from CDN) or 47% of BWO Amu Darya forecast schedule.

[4] Flow of the Amu Darya (upstream of water intake to Garagumdarya) based on non-regulated flow at Nurek HPP (excluding consideration of Vakhsh River flow regulation).

Table 2.1

Indicators of available water supply for the countries of the Amu Darya River Basin from April to September 2025

Water user	Water volume, km^3		Water availability, %
	Limit/ schedule	Actual	Season
1. Total water withdrawal	**39.72**	**34.20**	**86**
2. Breakdown by states:			
Kyrgyz Republic	-	-	-
Republic of Tajikistan	7.0	5.8	83
Turkmenistan	15.5	14.2	92
Republic of Uzbekistan	17.2	14.2	82
3. Downstream of nominal Kerki g/s	**31.520**	**27.55**	**87**
including:			
Turkmenistan	15.5	14.2	92
Republic of Uzbekistan	16.0	13.4	83
4. By river reach:			
Upper reaches	**8.203**	**6.66**	**81**
Including:			
Kyrgyz Republic	-	-	-
Republic of Tajikistan	7.00	5.84	83
Surkhandarya province, Uzbekistan	1.20	0.82	68
Middle reaches	**16.207**	**15.85**	**98**
including:			
Turkmenistan	10.47	10.41	99
Republic of Uzbekistan	5.73	5.44	95
Lower reaches	**15.313**	**11.69**	**76**
including:			
Turkmenistan	5.03	3.78	75
Republic of Uzbekistan	10.285	7.91	77
5. Additionally:			
Emergency-environmental flow to canals in the lower reaches	0	0	
including:			
Turkmenistan	0	0	
Republic of Uzbekistan	0	0	
Water supply to the Aral Sea region and the Aral Sea **	2.10	0.99	47

***)** nominal Kerki g/s (upstream of water intake to Garagumdarya)

**) including discharge from CDN

Table 2.2

Water balance of the Amu Darya River from April to September 2025

Balance item	Water volume, km^3		Deviation (actual-plan)	
	Fore-cast/plan	actual	km^3	%
1. Water content in the Amu Darya River – unregulated flow in nominal Kerki section*	42.63	43.64	1.01	2
2. Flow regulation by the Nurek reservoir: recharge (+) or diversion of flow (-)	-3.78	-3.65	0.13	4
3. Water withdrawal in the middle reaches (-)	-16.21	-15.85	0.35	2
4. Return flow in the middle reaches (+)	0.94	0.70	-0.24	34
5. River flow at Darganata g/s	17.87	17.94	0.07	0
6. Water releases from TMHS (including water diversion from the reservoir)	16.06	15.35	-0.71	5
7. Water withdrawal in the lower reaches, including water diversion from TMHS (-)	-15.31	-11.69	3.62	31
8 Supply to the Aral Sea region and the Aral Sea (Samanbay g/s)	1.00	0.36	-0.64	179

* Amu Darya River flow (upstream of water intake to Garagumdarya) based on non-regulated flow at the Nurek HPP (excluding Vakhsh River flow regulation).

Table 2.3

Reservoir water balance in the Amu Darya River Basin from April to September 2025

Balance item	Water volume, km^3		Deviation (actual-plan)	
	Fore-cast/plan	Actual	km^3	%
1 Nurek reservoir				
1.1. Inflow to the reservoir	14.77	17.22	2.44	14
1.2. Water volume in the reservoir:				
– beginning of the season (1 April 2025)	6.18	6.18	0.00	0
– end of the season (1 October 2025)	10.53	10.50	-0.03	0
1.3. Water releases from the reservoir	11.00	13.57	2.57	19
1.4. **Flow regulation:** recharge (+) or diversion of flow (-)	-3.78	-3.65	0.13	4
2 Reservoirs of TMHS				
2.1 River flow at Darganata g/s	17.87	17.94	0.07	0
2.2 Water volume in the reservoirs:				
– beginning of the season (1 April 2025)	3.81	3.81	0.00	0
– end of the season (1 October 2025)	3.56	3.60	0.05	1
2.3 Water releases from the hydroscheme	16.06	15.35	-0.71	5
including:				
– water releases into the river	11.19	11.34	0.15	1
– water withdrawal	4.87	4.01	-0.86	22
2.4 **Flow regulation:** recharge (+) or diversion of flow (-)	-6.68	-6.60	0.09	1