# ANALYSIS OF THE WATER SITUATION IN THE AMUDARYA AND SYRDARYA RIVER BASINS FOR THE NON-GROWING SEASON 2013-2014

## 1. Syrdarya River Basin

The actual inflow to the upstream reservoirs of the Syrdarya River Basin (Toktogul, Andijan and Charvak) for the non-growing season came to 5.04 $km^3$, or 102.83% of the predicted inflow. So far, this is the lowest showing of the last four non-growing seasons. During the non-growing season 2010-2011, the actual inflow came to 6.44 $km^3$, and during the non-growing seasons of 2011-2012 and 2012-2013 came to 5.53 $km^3$ and 5.33 $km^3$, respectively. The actual release from the reservoirs was 12.51 $km^3$, and this was also comparatively higher than that in the previous years (11.41 $km^3$ in 2010-2011, 12.23 $km^3$ in 2011-2012, and 11.98 $km^3$ in 2012-2013).

The total lateral inflow at the section from to the Toktogul reservoir to the Shardara reservoir, including the discharges along the Karadarya and Chirchik rivers, came to 10.59 $km^3$. That figure was twice the total inflow to the upstream reservoirs. In the non-growing season 2011-2012, the ratio of the total lateral inflow to the inflow volume was 1.6 and came to 8.88 $km^3$.

By the end of the non-growing season, 10.39 $km^3$ of water, including 9.01 $km^3$ in the Toktogul reservoir, or 87.6% of the forecast was accumulated in the upstream reservoirs. This is 2.4 $km^3$ lower than the average of the past 23-year period coming to 12.8 $km^3$.

For the past 23 years (1991-1992 – 2013-2014), the average annual inflow to the Toktogul reservoir came to 12.97 $km^3$, including 3.17 $km^3$ during the non-growing seasons. Inflow during the non-growing season 2013-2014 came to 2.89 $km^3$, i.e. less than the average volume by 0.28 $km^3$ for the past 23-year period.

The average volume of release from for the Toktogul reservoir during the non-growing season of the past 23-year period is estimated to be 8.15 $km^3$. During the non-growing season 2013-2014, 9.79 $km^3$ of water was released (see Table 1.4); this was 1.64 $km^3$ larger than the average volume of releases for the past 23-year period. That was the reason for which the Toktogul reservoir failed to maintain the water volume by the beginning of the growing season 2014 at the average level for the past 23-year period (i.e. 11 $km^3$).

The water withdrawal during the non-growing season came to 5.418 $km^3$, in particular: 0.03 $km^3$ for the Kyrgyz Republic; 0.023 $km^3$ for the Republic of Tajikistan; 0.445 $km^3$ for the Republic of Kazakhstan (through the canal Dustlik), and 2.63 $km^3$ for the Republic of Uzbekistan. It should be noted that in the territory of the Republic of Uzbekistan water transit was made for hydraulic cleaning of main canals in the amount of 1.788 $km^3$, and additionally 0.5 $km^3$ of water was delivered to the Golodnaya Steppe to eliminate flood situation.

Water supply to the riparian countries as well as to river reaches was unequal and instable in time (see Table 1.1 and the data given on the website www.cawater-info.net/analysis/).

Water inflow to the Shardara reservoir during the non-growing seasons of 2013-2014 came to 12.71 $km^3$, which is higher than the predicted volume by 0.14 $km^3$. During the non-growing season 2012-2013, the inflow was 12.15 $km^3$, which was more than the predicted one by 0.78 $km^3$.

The actual volume of the water discharge from the Shardara reservoir to rivers was 9.48 $km^3$, and the total release came to 9.94 $km^3$.

The actual volume of water delivery to the Aral Sea came to 3.23 $km^3$.

Table 1.1

Water availability in the Syrdarya River basin countries for the non-growing season 2013-2014

| № | Water user | Water volume, km$^3$ | | Water availability, % | Deficit (-), surplus (+) km$^3$ |
|---|---|---|---|---|---|
| | | Limit/ scheduled | Actual | Season | Season |
| 1 | Total water withdrawal | 5.388 | 5.418 | 101 | 0.03 |
| 2 | Water withdrawal with a breakdown by countries: | | | | |
| | Kyrgyz Republic | 0.037 | 0.033 | 90 | -0.004 |
| | Republic of Tajikistan | 0.179 | 0.023 | 13 | -0.157 |
| | Republic of Kazakhstan | 0.400 | 0.443 | 111 | 0.043 |
| | Republic of Uzbekistan | 4.772 | 4.918 | 103 | 0.146 |
| | Including: *limit* | *2.484* | *2.630* | *106* | *0.146* |
| | *water transit* [1] | *1.788* | *1.788* | *100* | *0.000* |
| | *additionally*[2] | *0.500* | *0.500* | *100* | *0.000* |
| 3 | Water withdrawal with a breakdown by river sections | | | | |
| 3.1 | Toktogul reservoir – Uchkurgan hydroscheme | 1.91 | 1.93 | 101 | 0.02 |
| | *In particular:* | | | | |
| | *Kyrgyz Republic* | 0.030 | 0.031 | 102 | 0.001 |

[1] According to the BWO "Syrdarya", in addition to the water supplied for leaching and irrigation within the limits set, water was also additionally supplied for hydraulic cleaning of main canals from silting. The volume of water taken for the cleaning of main canals can be classified as water transit because the water did not flow to fields and was discharged back into the river. The total water transit volume was 1.788 km$^3$.

[2] According to the BWO "Syrdarya", a threat of overfilling of the Shardara reservoir arose and the coastal territory and buildings in an area of the Chinaz town were submerged because of large inflow in February. To undertake joint efforts in these circumstances, the Kazakh and Uzbek parties agreed to establish a joint working commission involving representatives of the both parties and the BWO "Syrdarya". Having examined the situation by visiting the Kayrakkum reservoir, the area of the Chinaz town and the canal Dustlik in February 10-13, the Commission offered to take immediate measures. In order to prevent aggravation of the flooding situation, 500 mln m$^3$ of water was additionally supplied to Uzbek canals and distributed among the irrigation networks of the Golodnaya Steppe.

| № | Water user | Water volume, km$^3$ | | Water availability, % | Deficit (-), surplus (+) km$^3$ |
|---|---|---|---|---|---|
| | | Limit/ scheduled | Actual | Season | Season |
| | *Republic of Tajikistan* | 0.047 | 0.014 | 29 | -0.033 |
| | *Republic of Uzbekistan* | 1.833 | 1.887 | 103 | 0.054 |
| | Including: *limit* | *1.252* | *1.306* | 104 | 0.054 |
| | *water transit* | *0.581* | *0.581* | 100 | 0.000 |
| 3.2 | Uchkurgan hydroscheme – Kayrakkum hydroscheme | 0.22 | 0.35 | 160 | 0.133 |
| | *In particular:* | | | | |
| | *Kyrgyz Republic* | 0.007 | 0.003 | 40 | -0.004 |
| | *Republic of Tajikistan* | 0.043 | 0.004 | 8 | -0.040 |
| | *Republic of Uzbekistan* | 0.323 | 0.348 | 108 | 0.025 |
| | Including: *limit* | *0.171* | *0.196* | *115* | *0.025* |
| | *water transit* | *0.152* | *0.152* | *100* | *0.000* |
| 3.3 | Kayrakkum hydroscheme – Shardara reservoir | 1.55 | 3.11 | 201 | 1.56 |
| | *In particular:* | | | | |
| | *Kyrgyz Republic* | 0.400 | 0.443 | 111 | 0.04 |
| | *Republic of Tajikistan* | 0.089 | 0.005 | 6 | -0.08 |
| | *Republic of Uzbekistan* | 2.616 | 2.683 | 103 | 0.07 |
| | Including: *limit* | *1.061* | *1.128* | *106* | *0.067* |
| | *water transit* | *1.055* | *1.055* | *100* | *0.000* |
| | *additionally* | *0.500* | *0.500* | *100* | *0.000* |
| 4 | Inflow to the Shardara reservoir | 12.57 | 12.71 | 101 | 0.14 |
| 5 | Discharge to Arnasay | 0.00 | 0.12 | | 0.12 |
| 6 | Water supply to the Aral Sea (gauging station Karateren) | 1.96 | 3.23 | 165 | 1.27 |

**Table 1.2**

Syrdarya River channel water balance for the non-growing season 2013-2014

| № | Item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | predicted/ planned | actual | |
| 1 | Inflow to the Toktogul reservoir | 2.83 | 2.89 | 0.06 |
| 2 | Lateral inflow at the river reach Toktogul reservoir-Shardara reservoir (+) | 3.32 | 10.59 | 7.28 |
| | *In particular:* | | | |
| 2.1 | *Release to the Karadarya river* | 1.61 | 1.65 | 0.03 |
| 2.2 | *Release to the Chirchik river* | 1.71 | 1.28 | -0.42 |
| 2.3 | *Lateral inflow by CDF[3] and small rivers* | | 7.66 | 7.66 |
| 3 | Flow control in the reservoirs: water addition (+) or withdrawal (-) | 3.84 | 5.34 | 1.50 |
| | *In particular:* | | | |
| 3.1 | *Toktogul reservoir* | 5.74 | 6.90 | 1.15 |
| 3.2 | *Kayrakkum reservoir* | -1.91 | -1.56 | 0.35 |
| 4 | Regulated flow (1+2+3) | 9.98 | 18.82 | 8.84 |
| 5 | Water withdrawal at the Toktogul-Shardara (-) section | 5.39 | 5.42 | 0.03 |
| 6 | Water losses (-) or unrecorded inflow to the channel (+) at the Toктogul-Shardara section | 7.98 | -0.69 | -8.67 |
| 6.1 | *Including % of the regulated flow* | -80 | 4 | |
| 7 | Inflow to the Shardara reservoir | 12.57 | 12.71 | 0.14 |
| 8 | Flow regulation in the Shardara reservoir: water addition (+) or withdrawal (-) | -4.31 | -2.77 | 1.54 |
| 9 | Water release from the Shardara reservoir to the river | 8.18 | 9.48 | 1.30 |
| 10 | Water discharge to the Kyzyklum canal (-) | 0.08 | 0.34 | 0.26 |
| 11 | Discharge to Arnasay (-) | 0.00 | 0.12 | 0.12 |

[3] CDF stands for collector & drainage network.

| № | Item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | predicted/ planned | actual | |
| 12 | Water consumption in lower reaches: algebraic sum of water withdrawal (-), lateral inflow (+), and losses (-) | -6.22 | -6.25 | -0.03 |
| 13 | Water supply to the Aral Sea (gauging station Karateren) | 1.96 | 3.23 | 1.27 |

**Table 1.3**

Water balance of the Syrdarya River basin reservoirs for the non-growing season 2013-2014

| № | Water balance item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | predicted/ planned | actual | |
| **1** | **Toktogul reservoir** | | | |
| 1.1 | Inflow to the reservoir | 2.831 | 2.892 | 0.06 |
| 1.2 | Water volume in the reservoir: | | | |
| | - at the beginning of the season (October 1, 2013) | 15.916 | 15.916 | 0.00 |
| | - at the end of the season (April 1, 2014) | 10.169 | 9.009 | -1.16 |
| 1.3 | Release from the reservoir | 8.564 | 9.788 | 1.22 |
| 1.4 | Unrecorded water inflow (+) or losses (-) | -0.014 | -0.010 | 0.004 |
| | Including % of the inflow to the reservoir | -0.5 | -0.4 | 0.13 |
| 1.5 | Flow regulation: water addition (+) or withdrawal (-) | 5.747 | 6.897 | 1.15 |
| **2** | **Andijan reservoir** | | | |
| 2.1 | Inflow to the reservoir | 0.780 | 0.800 | 0.02 |
| 2.2 | Water volume in the reservoir: | | | |
| | - at the beginning of the season (October 1, 2013) | 0.564 | 0.565 | 0.00 |
| | - at the end of the season (April 1, 2014) | 0.701 | 0.788 | 0.09 |
| 2.3 | Release from the reservoir | 0.655 | 0.582 | -0.07 |
| 2.4 | Unrecorded water inflow (+) or losses (-) | 0.012 | 0.006 | -0.01 |

| № | Water balance item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | predicted/ planned | actual | |
| | Including % of the inflow to the reservoir | 1.5 | 0.7 | -0.81 |
| 2.5 | Flow regulation: water addition (+) or withdrawal (-) | -0.137 | -0.218 | -0.08 |
| **3** | **Charvak reservoir** | | | |
| 3.1 | Inflow to the reservoir | 1.291 | 1.347 | 0.06 |
| 3.2 | Water volume in the reservoir: | | | |
| | - at the beginning of the season (October 1, 2013) | 1.507 | 1.507 | 0.00 |
| | - at the end of the season (April 1, 2014) | 0.718 | 0.591 | -0.13 |
| 3.3 | Release from the reservoir | 2.00 | 2.14 | 0.13 |
| 3.4 | Unrecorded water inflow (+) or losses (-) | -0.08 | -0.13 | -0.05 |
| | Including % of the inflow to the reservoir | -5.88 | -9.49 | -3.60 |
| 3.5 | Flow regulation: water addition (+) or withdrawal (-) | 0.789 | 0.788 | 0.00 |
| **4** | **Kayrakkum reservoir** | | | |
| 4.1 | Inflow to the reservoir | 12.31 | 13.698 | 1.38 |
| 4.2 | Lateral inflow | 0.300 | 0.231 | -0.07 |
| 4.3 | Water volume in the reservoir: | | | |
| | - at the beginning of the season (October 1, 2013) | 1.51 | 1.51 | 0.00 |
| | - at the end of the season (April 1, 2014) | 3.42 | 3.48 | 0.06 |
| 4.4 | Release from the reservoir | 10.60 | 12.37 | 1.77 |
| | *In particular:* | | | |
| | *- release to the river* | 10.56 | 12.37 | 1.81 |
| | *-water withdrawal from the reservoir* | 0.043 | 0.001 | -0.042 |
| 4.5 | Unrecorded water inflow (+) or losses (-) | -0.10 | 0.41 | 0.51 |
| | Including % of the inflow to the reservoir | -0.8 | 3.0 | 3.82 |
| 4.6 | Flow regulation: water addition (+) or withdrawal (-) | -1.909 | -1.56 | 0.35 |

| № | Water balance item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | predicted/ planned | actual | |
| **5** | **Shardara reservoir** | | | |
| 5.1 | Inflow to the reservoir | 12.57 | 12.71 | 0.14 |
| 5.2 | Lateral inflow | 0.0 | 0.0 | 0.00 |
| 5.3 | Water volume in the reservoir: | | | |
| | - at the beginning of the season (October 1, 2013) | 0.999 | 0.999 | 0.00 |
| | - at the end of the season (April 1, 2014) | 5.219 | 4.127 | -1.09 |
| 5.4 | Release from the reservoir | 8.27 | 9.94 | 1.67 |
| | In particular: | | | |
| | - discharge to Arnasay | 0.00 | 0.12 | 0.122 |
| | - release to the river | 8.18 | 9.48 | 1.30 |
| | - water withdrawal from the reservoir | 0.08 | 0.34 | 0.26 |
| 5.5 | Unrecorded water inflow (+) or losses (-) | -0.09 | 0.36 | 0.44 |
| | Including % of the inflow to the reservoir | -0.7 | 2.8 | 3.49 |
| 5.6 | Runoff regulation by the reservoirs: water addition (+) or withdrawal (-) | -4.31 | -2.77 | 1.54 |
| | Total flow regulation by the reservoirs: water addition (+) or withdrawal (-) | 0.18 | 3.14 | 2.95 |
| | Total unrecorded inflow (+) or water losses (-) | -0.27 | 0.64 | 0.90 |

**Table 1.4**

Inflow to and release from the Toktogul reservoir during the period of 1991-2014

| № | Hydrologic year | Inflow, mln m$^3$ | | | Release, mln m$^3$ | | |
|---|---|---|---|---|---|---|---|
| | | Non-growing season | Growing season | Annual | Non-growing season | Growing season | Annual |
| 1 | 1991-1992 | 2 777 | 8 923 | 11 700 | 5 094 | 6 545 | 11 639 |

| № | Hydrologic year | Inflow, mln $m^3$ | | | Release, mln $m^3$ | | |
|---|---|---|---|---|---|---|---|
| | | Non-growing season | Growing season | Annual | Non-growing season | Growing season | Annual |
| 2 | 1992-1993 | 3 028 | 10 599 | 13 628 | 6 106 | 4 565 | 10 671 |
| 3 | 1993-1994 | 3 097 | 12 417 | 15 513 | 7 433 | 6 730 | 14 163 |
| 4 | 1994-1995 | 3 073 | 8 063 | 11 137 | 8 237 | 6 288 | 14 525 |
| 5 | 1995-1996 | 2 647 | 10 211 | 12 858 | 8 124 | 6 220 | 14 344 |
| 6 | 1996-1997 | 3 022 | 8 104 | 11 126 | 8 373 | 6 032 | 14 405 |
| 7 | 1997-1998 | 2 596 | 11 527 | 14 123 | 7 171 | 3 700 | 10 872 |
| 8 | 1998-1999 | 3 229 | 11 074 | 14 303 | 7 981 | 5 065 | 13 046 |
| 9 | 1999-2000 | 3 552 | 8 935 | 12 487 | 8 802 | 6 493 | 15 295 |
| 10 | 2000-2001 | 3 390 | 9 282 | 12 672 | 8 377 | 5 939 | 14 316 |
| 11 | 2001-2002 | 3 084 | 13 502 | 16 585 | 7 634 | 3 637 | 11 271 |
| 12 | 2002-2003 | 3 505 | 12 179 | 15 684 | 8 504 | 4 882 | 13 386 |
| 13 | 2003-2004 | 3 779 | 10 859 | 14 638 | 8 698 | 6 237 | 14 935 |
| 14 | 2004-2005 | 3 501 | 10 341 | 13 842 | 9 049 | 5 172 | 14 222 |
| 15 | 2005-2006 | 3 221 | 9 468 | 12 689 | 9 042 | 5 279 | 14 320 |
| 16 | 2006-2007 | 3 049 | 8 911 | 11 960 | 9 538 | 5 857 | 15 395 |
| 17 | 2007-2008 | 2 491 | 7 415 | 9 906 | 9 726 | 4 405 | 14 131 |
| 18 | 2008-2009 | 2 654 | 10 676 | 13 330 | 5 842 | 4 441 | 10 282 |
| 19 | 2009-2010 | 3 956 | 15 244 | 19 200 | 6 924 | 5 445 | 12 370 |
| 20 | 2010-2011 | 3 896 | 9 888 | 13 783 | 8 000 | 5 714 | 13 714 |
| 21 | 2011-2012 | 3 408 | 8 992 | 12 401 | 9 730 | 4 685 | 14 415 |
| 22 | 2012-2013 | 2 949 | 8 827 | 11 776 | 9 201 | 4 167 | 13 368 |
| 23 | 2013-2014 | 2 892 | | 2 892 | 9 788 | | 9 788 |
| **Average for 23 years** | | **3 165** | **10 247** | **12 967** | **8 147** | **5 341** | **13 255** |

## 2 Amudarya River Basin

The actual water content of the Amudarya river at the gauging station Atamyrat (upstream to the water intake into Garagumdarya) was 10.38 $km^3$, which was less than the scheduled one by the BWO "Amudarya" by 13%. For the past three years, the growing trend of the actual water availability was recorded, i.e. water availability during the non-growing season 2010-2011 came to 11.19 $km^3$, and 13.33 $km^3$ and 15.53 $km^3$ in 2011-2012 and 2012-2013 respectively. In that season, water availability dramatically decreased in comparison to the previous season by 5.15 $km^3$.

The fixed water withdrawal limit in the Amudarya river basin was 88.7% used; the total water withdrawal came to 13.91 $km^3$, including 11.43 $km^3$ downstream the Atamyrat GS (starting from the water intake into Garagumdarya).

Water supply was different from country to country and from one river reach to another one (see Table 2.1, as well as data on the website www.cawater-info.net/analysis/). Total water deficit came to 11.3 %, in particular: 25.8%in the Republic of Tajikistan; 8.5 %Republic of Uzbekistan; and 7.7 %in Turkmenistan,.

By the end of the season, up to 6.24 $km^3$ of water was accumulated in the Nurek reservoir and 2.67 $km^3$ in the Tuyamuyun Hydroscheme (TMHS) reservoirs (according to the schedule by the BWO "Amudarya", 2.66 $km^3$). So far, this is the lowest showing of the last four years, because since the non-growing seasons of 2010-2011 through 2012-2013 the water volume accumulated by the beginning of the growing season was 3.13 $km^3$, 3.28 $km^3$ and 3.54 $km^3$, respectively. The volume of the inflow to the Nurek reservoir and the volume of releases from it have not changed and came to 3.54 $km^3$; average long-term inflow came to 3.5 $km^3$; the inflow volume was 8 $km^3$; and the release volume during the current growing season was 7.87 $km^3$.

Addition of water to the river flow because of the releases from the Nurek reservoir came to 4.32 $km^3$.

Unrecorded water inflow to the TMHS reservoirs came to 2.66 $km^3$. Water losses at the river section from the Tyuyamuyun gauging station to the Samanbay gauging station came to 3.9 $km^3$ or 53% of the river flow at the Tyuyamuyun gauging station, and 0.14 $км^3$ or 1% upstream TMHS. Such dramatic rise in water losses at the river section from the Tyuyamuyun gauging station to the Samanbay gauging station caused dramatic reduction of water supply to Priaralie and Aral Sea, which received 0.94 $km^3$ of water or 45% of the plan.

Thus, the actual total water losses from the river channel and reservoirs came to 2.41 $km^3$, or 16% of the river flow at the Atamyrat gauging station.

The quota fixed for the sanitary and environmental releases to the Amudarya river downstream canals was 100% used; water supply came to 0.8 $km^3$.

Table 2.1

Water availability in the Amudarya river basin countries for the non-growing season 2013-2014

| № | Water user | Water volume, km$^3$ | | Water availability, % | Deficit (-), surplus (+), km$^3$ |
|---|---|---|---|---|---|
| | | Limit/ scheduled | Actual | Season | Season |
| 1 | Total water withdrawal | 15.68 | 13.91 | 88.7 | -1.77 |
| 2 | Water withdrawal with a breakdown by countries: | | | | |
| | *Kyrgyz Republic* | - | - | - | - |
| | *Republic of Tajikistan* | 2.83 | 2.10 | 74.2 | -0.73 |
| | *Turkmenistan* | 6.50 | 6.00 | 92.3 | -0.50 |
| | *Republic of Uzbekistan* | 6.35 | 5.81 | 91.5 | -0.54 |
| 3 | Atamyrat GS downstream* | 12.48 | 11.43 | 91.6 | -1.05 |
| | *In particular:* | | | | |
| | *Turkmenistan* | 6.50 | 6.00 | 92.3 | -0.50 |
| | *Republic of Uzbekistan* | 5.98 | 5.43 | 90.8 | -0.55 |
| 4 | Water withdrawal with a breakdown by river sections: | | | | |
| | Upper reach | 3.20 | 2.48 | 77.5 | -0.72 |
| | *In particular:* | | | | |
| | *Kyrgyz Republic* | - | - | - | - |
| | *Republic of Tajikistan* | 2.83 | 2.10 | 74.2 | -0.73 |
| | *Republic of Uzbekistan, Surkhandarya province* | 0.37 | 0.38 | 103.0 | 0.01 |
| | Middle reach | 8.35 | 7.92 | 94.9 | -0.43 |
| | *In particular:* | | | | |
| | *Turkmenistan* | 5.10 | 4.81 | 94.3 | -0.29 |
| | *Republic of Uzbekistan* | 3.24 | 3.11 | 95.8 | -0.14 |
| | Lower reach | 4.14 | 3.51 | 84.9 | -0.63 |
| | *In particular:* | | | | |

| № | Water user | Water volume, km$^3$ | | Water availability, % | Deficit (-), surplus (+), km$^3$ |
|---|---|---|---|---|---|
| | | Limit/ scheduled | Actual | Season | Season |
| | *Turkmenistan* | 1.40 | 1.19 | 84.9 | -0.21 |
| | *Republic of Uzbekistan* | 2.74 | 2.32 | 84.9 | -0.41 |
| 5 | Sanitary and environmental releases to downstream canals | 0.80 | 0.80 | 100 | 0.00 |
| | *In particular:* | | | | |
| | *Turkmenistan* | 0.150 | 0.150 | 100 | 0.00 |
| | *Republic of Uzbekistan* | 0.650 | 0.650 | 100.0 | 0.00 |
| 6 | Water supply to the Aral Sea and Priaralie | 2.1 | 0.94 | 44.7 | -1.16 |

* After deduction of water withdrawal at the upper reach (Tajikistan and Surkhandarya province of Uzbekistan)

Table 2.2

The Amudarya River channel water balance for the non-growing season 2013-2014

| № | Channel water balance item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | Predicted/ Planned | Actual | |
| 1 | Water content in the Amudarya river: unregulated flow at the section of Atamyrat GS (reference) | 11.99 | 10.38 | -1.60 |
| 2 | Flow regulation in the Nurek reservoir: water addition (+) or water withdrawal (-) | 4.50 | 4.32 | -0.18 |
| 3 | Water withdrawal in the middle reach (-) | -8.35 | -7.92 | 0.43 |
| 4 | Return CDF in the middle reach (+) | 1.33 | 1.03 | -0.31 |
| 5 | Water losses (-) or unrecorded inflow to the channel (+) | -2.45 | -1.17 | 1.28 |
| | *% of the regulated flow* | 15 | 8 | -6.92 |
| 6 | Inflow to TMHS (Bir-Ata GS) | 7.02 | 6.64 | -0.38 |
| 7 | Flow regulation at TMHS: water addition (+) or water withdrawal (-) | -0.21 | 2.50 | 2.72 |
| 8 | Water losses in (-) and lateral inflow (+) to the TMHS reservoirs | -1.6 | 2.7 | 4.24 |
| | *% of inflow* | 23 | -40 | -62.6 |

| № | Channel water balance item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | Predicted/ Planned | Actual | |
| 9 | Releases from TMHS (including water withdrawal from the reservoir) | 6.8 | 6.5 | -0.33 |
| 10 | Lower reach water withdrawal, including withdrawal from TMHS (-) | 4.14 | 3.51 | -0.63 |
| 11 | Return CDF in the lower reach (+) | 0.00 | 0.00 | 0.00 |
| 12 | Emergency and environmental water releases to canals (-) | 0.80 | 0.80 | 0.00 |
| 13 | Water losses (-) or unrecorded inflow to the channel (+) | 0.2 | -3.9 | -4.12 |
| | *% of the flow at the section of Tuyamuyun GS* | -5 | 53 | 57.90 |
| 14 | Water supply to the Aral Sea and Priaralie | 2.10 | 0.94 | -1.16 |
| | **TOTAL** losses: | -3.81 | -2.41 | 1.40 |
| | *% of water content in the river* | 23 | 16 | -6.72 |

* After deduction of water withdrawal at the upper reach (Tajikistan and Surkhandarya province of Uzbekistan)

Table 2.3

Water balance of the Amudarya river basin's reservoirs for the non-growing season 2013-2014

| № | Channel water balance item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | Predicted/ Planned | Actual | |
| **1** | **Nurek reservoir** | | | |
| 1.1 | Inflow to the reservoir | 3.94 | 3.55 | -0.39 |
| 1.2 | Water volume in the reservoir: | | | |
| | - at the beginning of the season (October 1, 2013) | 10.56 | 10.56 | 0.00 |
| | - at the end of the season (April 1, 2014) | 6.00 | 6.24 | 0.24 |
| 1.3 | Release from the reservoir | 8.43 | 7.87 | -0.56 |
| 1.4 | Lateral inflow (+) or water losses (-) | -0.06 | 0.00 | 0.06 |
| | *Including % of inflow to the reservoir* | -1.58 | 0.00 | 1.58 |
| 1.5 | Flow regulation: water addition (+) or water withdrawal (-) | 4.50 | 4.32 | -0.18 |

| № | Channel water balance item | Water volume, km$^3$ | | Deviation (actual-planned) |
|---|---|---|---|---|
| | | Predicted/ Planned | Actual | |
| **2.0** | **TMHS reservoirs** | | | |
| 2.1 | Inflow to TMHS | 7.02 | 6.64 | -0.38 |
| 2.2 | Water volume in the reservoirs: | | | |
| | - at the beginning of the season (October 1, 2013) | 4.03 | 2.51 | -1.52 |
| | - at the end of the season (April 1, 2014) | 2.66 | 2.67 | 0.00 |
| 2.3 | Release from TMHS | 6.81 | 9.14 | 2.34 |
| | in particular: | | | |
| | - release to the river | 4.85 | 7.32 | 2.47 |
| | - water withdrawal | 1.96 | 1.82 | -0.14 |
| 2.4 | Unrecorded inflow (+) or water losses (-) | -1.58 | 2.66 | 4.24 |
| | *Including % of inflow to the reservoir* | 23 | -40 | -62.59 |
| 2.5 | Flow regulation: water addition (+) or water withdrawal (-) | -0.21 | 2.50 | 2.72 |
| | **TOTAL** flow regulation by the reservoirs: water addition (+) or withdrawal (-) | 4.29 | 6.82 | 2.54 |
| | **TOTAL** losses (-), unrecorded inflow (+) | -1.64 | 2.66 | 4.30 |