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ANALYSIS OF WATER MANAGEMENT SITUATION WITHIN THE AMUDARYA AND SYRDARYA RIVER BASINS FOR THE NONVEGETATION PERIOD OF 2010/2011

1 Syrdarya River Basin

The actual inflow to the upstream reservoirs of the Syrdarya River Basin (Toktogul, Andijan and Charvak without Ugam River) for the nonvegetation period was 6.44 km3 or 101% predicted inflow. To this water volume additional releases from the upstream reservoirs accumulated during vegetation period were 5.0 km^3 that is 0.28 km^3 less the predicted one. Actual release from them for the nonvegetation period was 11.41 km^3 that is 1.8% less the predicted one.

The total lateral inflow to Naryn and Syrdarya up to the Shardara reservoir, including releases to the Karadarya and Chirchik rivers amounted 11.9 km^3; this gave possibility to increase the regulated available water resource of the basin up to 20 km^3.

At the end of nonvegetation period, 17.57 km^3 of water was accumulated in the upstream reservoirs, including 15.4 km^3 or 107.5% of the predicted one - in the Toktogul reservoir.

For the past five years mean annual inflow to the Toktogul reservoir amounted to 13.41 km^3, including 3.22 km^3 for nonvegetation period. Inflow for nonvegetation period 2010-2011 was 3.9 km^3 or 0.67 km^3 more than the mean annual one for 5 years.

For last 5 years the mean annual releases from the Toktogul reservoir for nonvegetation period amounted to 8.02 km^3. The same 8.0 km^3 of water was released for nonvegetation period 2010-2011 (Table 1.4).

The total water withdrawal from Syrdarya river amounted to 4.82 km^3 or 155% of planned one, including for: Kyrgyz Republic - 0.026 km^3, Republic of Tajikistan - 0.069 km^3, Republic of Uzbekistan - 4.33 km^3, Republic of Kazakhstan (through the Dustlik canal) - 0.400 km^3.

Water supply was unequal for the states and river sites and was not stable during the time (see Table 1.1, and also data on the website: www.cawater-info.net/analysis/).

Obligations on water delivery to the Shardara reservoir was implemented on 82.6%; actual inflow to the reservoir for nonvegetation period 2010-2011 amounted to 14.14 km^3 but the planned inflow had to be 17.12 km^3.

Water releases to Arnasay amounted to 0.197 km^3. The planned water delivery to the Aral Sea and Piaralie was implemented on 199%; actual water delivery amounted to 5.18 km^3 (data of Uzhydromet) compared to the plan of 2.60 km^3.

Water consumption downstream the Shardara reservoir amounted to 4.5 km^3.

Actual channel losses calculated by the balance method at the Toktogul-Shardara section amounted to 1.0 km^3 or 5% of the regulated flow of the Syrdarya River (Table 1.2).

Analysis of reservoirs' water balances in the Syrdarya basin (Table 1.3) has revealed the nonregistered inflow to the Andijan and Kairakkum reservoirs with the total volume of 0.04 km^3. In the Toktogul, Charvak and Shardara reservoirs the total water losses were 0.36 km^3.

Table 1.1

Indicators of water availability for the countries in the Syrdarya river basin for nonvegetation period 2010-2011

Water user	Water volume, km^3		Water availability, %		Water deficit, km^3	
	Limit/ schedule	Actual	Season	Min ten-day *)	Limit/schedule	Total ten-day**)
1. Total withdrawal	3.100	4.824	155.6	66.3	1.72	-0.10
2. By state:						
Kyrgyz Republic	0.037	0.026	69.4	0.0	-0.01	-0.02
Republic of Uzbekistan	2.484	4.330	174.3	74.1	1.85	-0.09
Republic of Tajikistan	0.179	0.069	38.4	14.7	-0.11	-0.12
Republic of Kazakhstan	0.400	0.400	100	0.0	0.00	-0.09
3. By section:						
Toktogul reservoir - Uchkurgan waterworks facility	1.329	1.750	131.7	66.7	0.42	-0.08
Including:						
Kyrgyz Republic	0.030	0.024	79.4	0.0	-0.006	-0.014
Republic of Tajikistan	0.047	0.064	136.6	41.1	0.017	-0.015
Republic of Uzbekistan	1.252	1.662	132.8	68.2	0.410	-0.060
Uchkurgan waterworks facility – Kairakkum waterworks facility	0.222	0.257	115.9	18.4	0.035	-0.040
Including:						
Kyrgyz Republic	0.007	0.002	27.9	0.0	-0.005	-0.006
Republic of Tajikistan	0.043	0.000	0.0	0.0	-0.043	-0.043
Republic of Uzbekistan	0.171	0.255	149.0	22.4	0.084	-0.019
Kairakkum waterworks facility – Shardara reservoir	1.550	2.817	181.8	9.8	1.27	-0.08
Including:						
Republic of Kazakhstan	0.400	0.400	100	0.0	0.00	-0.09
Republic of Tajikistan	0.089	0.005	5.4	0.0	-0.08	-0.08
Republic of Uzbekistan	1.061	2.413	227.5	12.8	1.35	-0.06
4. Additionally:						
Inflow to the Shardara	17.120	14.142	82.6	55.6	-2.98	-3.37

Water user	Water volume, km^3		Water availability, %		Water deficit, km^3	
	Limit/ schedule	Actual	Season	Min ten-day *)	Limit/schedule	Total ten-day**)
reservoir						
Release to Arnasay	0.000	0.197				
Water delivery to the Aral Sea and Prearalie	2.603	5.18	199.1			

*) minimal registered water availability for ten-days period
**) Sum of minimal registered water deficits for ten-day periods; partially or fully covered by water surplus in the season up to the value of "deficit for the season"

Table 1.2

Syrdarya river channel balance for nonvegetation period 2010-2011

Item	Water volume, km^3		Deviation (actual-plan)
	expected/plan	actual	
1 Inflow to the Toktogul reservoir	3.75	3.90	0.14
2 Lateral inflow at the Toktogul reservoir – Shardara reservoir section (+)	11.90	11.90	0.00
Including:			
Release along the Karadarya river	1.93	2.04	0.11
Release along the Chirchil river	1.91	1.44	-0.47
Lateral inflow from CDF[1] and small rivers	8.06	8.42	0.36
Streamflow regulation by reservoirs: adding to runoff (+) or removal from runoff (-)	5.05	4.18	-0.86
Including:			
Toktogul reservoir	5.17	4.10	-1.06
Kayrakkum reservoir	-0.12	0.08	0.20
4 Regulated runoff (1+2+3)	20.70	19.98	-0.72
5 Water withdrawal at the Toktogul – Shardara section (-)	3.10	4.82	1.72
6 Runoff losses (-) or unaccounted inflow to the channel (+) at the Toктogul – Shardara section	0.48	1.01	0.53
Including % of regulated runoff	2.33	5.08	
7 Inflow to the Shardara reservoir	17.12	14.14	-2.98
8 Runoff regulation by the Shardara reservoir addition to runoff (+) or withdrawal (-)	-6.183	-4.980	1.20
9 Water release from the Shardara reservoir	11.02	9.64	-1.38
10. Water release to the Kzylkum canal (-)	0.08	0.28	0.19
11 Release to Arnasay (-)	0.00	0.20	0.20
12 Amount of water used in the lower reaches: algebraic sum of withdrawal (-), lateral inflow (+), water losses (-)	-8.42	-4.45	3.96

[1] CDF-collector-drainage flow

Item	Water volume, km^3		Deviation (actual-plan)
	expected/plan	actual	
13 Water delivery to the Aral Sea and Prearalie	2.60	5.18	2.58

Table 1.3

Water balance of reservoirs in the Syrdarya river basin for nonvegetation period 2010-2011

Water balance item	Water volume, km^3		Deviation (actual-plan)
	expected/ plan	actual	
1. Toktogul reservoir			
1.1 Inflow to the reservoir	3.755	3.896	0.14
1.2 Water volume in the reservoir:			
- at the beginning of season (1 October 2009)	19.509	19.509	0.00
- at the end of season (31 March 2010)	14.329	15.398	1.07
1.3 Water release from the reservoir	8.922	8.000	-0.92
1.4 Unaccounted inflow (+) or water losses (-)	-0.01	-0.01	0.006
Including % of inflow to the reservoir	-0.3	-0.2	0.16
Streamflow regulation: adding to runoff (+) or removal from runoff (-)	5.167	4.104	-1.06
2. Andizhan reservoir			
2.1 Inflow to the reservoir	1.176	1.143	-0.03
2.2 Water volume in the reservoir:			
- at the beginning of season (1 October 2009)	1.419	1.419	0.00
- at the end of season (31 March 2010)	1.734	1.427	-0.31
2.3 Water release from the reservoir	0.859	1.144	0.29
2.4 Unaccounted inflow (+) or water losses (-)	0.00	0.01	0.01
Including % of inflow to the reservoir	-0.2	0.8	0.95
2.5 Streamflow regulation: adding to runoff (+) or removal from runoff (-)	-0.317	0.001	0.32
3. Charvak reservoir			
3.1 1 Inflow to the reservoir	1.443	1.401	-0.04
3.2 Water volume in the reservoir:			
- at the beginning of season (1 October 2009)	1.858	1.858	0.00
- at the end of season (31 March 2010)	1.456	0.747	-0.71
3.3 Water release from the reservoir	1.84	2.262	0.43
3.4 Unaccounted inflow (+) or water losses (-)	-0.01	-0.25	-0.24
Including % of inflow to the reservoir	-0.66	-17.86	-17.20
3.5 Streamflow regulation: adding to runoff (+) or removal from runoff (-)	0.392	0.861	0.47
4. Kairakkum reservoir			
4.1 Inflow to the reservoir	13.412	13.369	-0.04
4.2 Lateral inflow	0.437	0.255	-0.18
4.3 Water volume in the reservoir:			
- at the beginning of season (1 October 2009)	3.38	3.379	0.00
- at the end of season (31 March 2010)	3.42	3.331	-0.09
4.4 Water release from the reservoir	13.73	13.703	-0.03
Including:			

Water balance item	Water volume, km^3		Deviation (actual-plan)
	expected/ plan	actual	
- release to the river	13.64	13.65	0.01
- water withdrawal from the reservoir	0.09	0.05	-0.03
4.5 Unaccounted inflow (+) or water losses (-)	-0.08	0.03	0.11
Including % of inflow to the reservoir	-0.6	0.2	0.83
4.6 Streamflow regulation: adding to runoff (+) or removal from runoff (-)	-0.120	0.078	0.20
5. Shardara reservoir			
5.1 Inflow to the reservoir	17.120	14.142	-2.98
5.2 Lateral inflow	0.0	0.0	0.00
5.3 Water volume in the reservoir:			
- at the beginning of season (1 October 2009)	1.043	1.043	0.00
- at the end of season (31 March 2010)	5.281	4.973	-0.31
5.4 Water release from the reservoir	11.10	10.11	-0.99
Including:			
- release to Arnasay	0.000	0.197	0.197
- release to the river	11.02	9.64	-1.38
- water withdrawal from the reservoir	0.083	0.276	0.19
5.5 Unaccounted inflow (+) or water losses (-)	-1.78	-0.10	1.67
Including % of inflow to the reservoir	-10.4	-0.7	9.66
5.6 Streamflow regulation: adding to runoff (+) or removal from runoff (-)	6.016	4.033	-1.98
TOTAL: Streamflow regulation: adding to runoff (+) or removal from runoff (-)	11.14	9.08	-2.06
TOTAL: Unaccounted inflow (+) or water losses (-)	-1.88	-0.32	1.56

Table 1.4

Inflow to and release from the Toktogul reservoir for 2006-2011

Hydrologic year	Inflow, million m3			Release, million m3		
	Nonvege-tation period	Vegeta-tion period	Year	Nonvegetation period	Vegetation period	Year
2006-2007	3157	8911	12068	9538	5857	15395
2007-2008	2505	7371	9876	9726	4408	14134
2008-2009	2672	9876	12548	5884	5748	11632
2009-2010	3898	15244	19142	6965	5445	12410
2010-2011	3896			8000		
Average for 5 years	3226	10350	13408	8023	5365	13393

2 Amudarya River Basin

The actual water content of the Amudarya river at the Atamyrat gauging station (GS) (upstream to the water intake into Garagumdarya) amounted to 11.19 km3 that is 19.7% less than the expected (planned) one of BWO "Amudarya".

In the current water management situation, 93.9% of established water withdrawal limit in the Amu Darya River Basin was used, and the total water withdrawal amounted to 14.74 km^3, including 12.13 km^3 down the Atamyrat GS (starting from the water intake into Garagumdarya).

Water supply was unequal for the states, river sites (see Table 2.1, and also data on the website: www.cawater-info.net/analysis/). The total water deficit amounted to 6% only, including within the Republic of Tajikistan - 20%, the Republic of Uzbekistan - 1%, Turkmenistan - 5%.

At the end of season only 6.0 km^3 of water was stored in the Nurek reservoir as was planned by the BWO "Amudarya", and in the TMHS reservoirs - 3.16 km^3 or less than the planned one by 1.3 km^3 (see Table 2.3). The total additional water volume to the river flow due to Nurek and Tuyamuyun reservoirs drawdown amounted to 4.84 km^3.

There are no water losses and unaccounted inflow to the Nurek reservoir.

The water losses in the TMHS reservoirs amounted to 2.2 km^3 (28.4% of water inflow) and in the Tuyamuyun-Samanbay section - 0.57 km^3 or 9.7% of water flow at the Tuyamuyun hydropost. Water losses in the river section upstream the TMHS amounted to 1.4 km^3.

Total actual water losses from river channel and reservoirs amounted to 4.14 km^3 or about 26% of river flow at the Atamyrat GS what is near the calculated (planned) ones.

The set limit of sanitary-environmental water releases into the canals in Amudarya lower reaches was used by 99%; water delivery amounted to 0.79 km^3. Water delivery to the Aral Sea and Prearalie amounted to 1.48 km^3 or 118.2% of planned flow (see Table 2.2).

Table 2.1

Indicators of water availability for the countries in the Amudarya river basin for nonvegetation period 2010-2011

Water user	Water volume, km^3		Water availability, %		Deficit, km^3	
	limit/ schedule	actual	Season	Min ten-day *)	Limit/schedule	Total ten-day**)
1. Total withdrawal	15.70	14.74	93.9	63.8	-0.96	-1.94
2. By countries:						
Republic of Kyrgyzstan	-	-	-	-	-	-
Republic of Tajikistan	2.85	2.28	80.1	41.8	-0.57	-0.67
Turkmenistan	6.50	6.17	95.0	72.0	-0.33	-0.61
Republic of Uzbekistan	6.35	6.28	98.9	56.0	-0.07	-1.01
3. Down the Atamyrat GS ***)	12.48	12.13	97.2	66.4	-0.35	-1.38
Including:						
Turkmenistan	6.50	6.17	95.0	72.0	-0.33	-0.61
Republic of Uzbekistan	5.98	5.96	99.7	60.1	-0.02	-0.91
4. By sections:						
Upper reaches	3.22	2.60	80.9	41.9	-0.62	-0.70
Including:						
Republic of Kyrgyzstan	-	-	-	-	-	-
Republic of Tajikistan	2.85	2.28	80.1	41.8	-0.57	-0.67
Surkhandarya,Uzbekistan	0.37	0.32	86.9	0.0	-0.05	-0.10
Middle reaches	8.35	8.05	96.5	72.8	-0.30	-0.64
Including:						
Turkmenistan	5.10	4.70	92.2	60.7	-0.40	-0.64
Republic of Uzbekistan	3.24	3.35	103.1	74.0	0.10	-0.21
Lower reaches	4.13	4.09	98.8	33.8	-0.05	-0.81
Including:						
Turkmenistan	1.40	1.47	105.0	81.4	0.07	-0.07
Republic of Uzbekistan	2.74	2.62	95.6	10.3	-0.12	-0.81
5. Additionally:						
Sanitary-environmental water releases into canals of lower reaches	0.80	0.79	99.0	-	-0.01	-
Including:						
Turkmenistan	0.15	0.15	100	-	0.0	-
Republic of Uzbekistan	0.65	0.64	98.4	-	-0.01	-
Water delivery to the Aral Sea and Prearalie	2.10	2.48	118.2	-	0.38	-

*) minimal registered water availability for ten-day period

**) Sum of minimal registered water deficits for ten-day periods; partially or fully covered by water surplus within the season up to the value "deficit for the season"

***) Atamyrat hydropost conditional (upstream to the water intake into Garagumdarya)

Table 2.2

Amudarya river's channel balance for nonvegetation period 2010-2011

Item	Water volume, km^3		Deviation (actual-plan)
	expected/ plan	actual	
1 Water content of the Amudarya river at the g/s Atamyrat conditional *	13.94	11.19	-2.75
2 Runoff regulation by the Nurek reservoir: addition to runoff (+) or withdrawal (-)	4.54	4.54	0.00
3 Water withdrawal of middle course (-)	8.35	8.05	-0.30
4 Return CDF in the middle course (+)	0.60	1.34	0.74
5 Runoff losses (-) or unaccounted inflow to the channel (+)	-0.37	-1.40	-1.03
% of runoff in the section of g/s Atamyrat conditional	2.6	12.4	9.8
6 Inflow to the Tuyamuyun hydroscheme (TMHS)	10.36	7.62	-2.74
7 Runoff regulation by TMHS reservoirs: addition to runoff (+) or withdrawal (-)	-0.08	0.31	0.38
8. Water losses in TMHS (-), lateral inflow (+)	-1.24	-2.17	-0.93
% of inflow	-12.0	-28.4	-16.4
9. Release from TMHS (including water withdrawal from reservoir)	10.29	7.93	-2.36
10 Downstream water withdrawal, including withdrawal from the TMHS (-)	4.13	4.09	-0.05
11 Return CDF in the downstream (+)	0.00	0.00	0.00
12 Sanitary-environmental water releases into downstream canals (-)	0.80	0.79	-0.01
13 Runoff losses (-) or unaccounted inflow to the channel (+)	-3.26	-0.57	
% of runoff in the section of g/s Tuyamuyun	-39.5	-9.7	
14 Water delivery to the Aral Sea and Prearalie	2.10	2.48	0.38
15 TOTAL: runoff losses (-) or unaccounted inflow to the channel (+)	-4.87	-4.14	
16 % of regulated runoff	-26.4	-26.3	

* after deduction of water withdrawal in the upper reaches (Tajikistan, Surkhandarya province)

Table 2.3

Water balance of reservoirs in the Amudarya river basin for nonvegetation period 2010-2011

Items	Water volume, km^3		Deviation (actual-plan)
	expected/ plan	actual	
1. Nurek reservoir			
1.1 Inflow to the reservoir	3.48	3.82	0.35
1.2 Water volume in the reservoir:			
- at the beginning of the season (1 October 2010)	10.54	10.54	0.0
- at the end of the season (31 March 2011)	6.0	6.0	0.0
1.3 Release from the reservoir	8.02	8.36	0.35
1.4 unaccounted inflow (+) or water losses (-)	0.0	0.0	0.0
% of inflow to the reservoir	*0.0*	*-0.03*	*-0.03*
1.5 Runoff regulation: addition to runoff (+) or withdrawal (-)	4.54	4.54	0.0
2. TMHS reservoirs			
2.1 Inflow to **TMHS**	10.36	7.62	-2.74
2.2 Water volume in the reservoirs:			
- at the beginning of the season (1 October 2010)	5.63	5.63	0.0
- at the end of the season (31 March 2011)	4.46	3.16	-1.30
2.3 Release from waterworks facility	10.29	7.93	-2.36
Including:			
- release to the river	8.24	5.85	-2.40
- water withdrawal	2.05	2.08	0.03
2.4 unaccounted inflow (+) or water losses (-)	- 1.24	- 2.17	-0.92
Including: % of inflow to the reservoir	*-12.0*	*-28.4*	*-16.43*
2.5 Runoff regulation: addition to runoff (+) or withdrawal (-)	-0.08	0.31	+0.38
TOTAL runoff regulation by reservoirs: addition to runoff (+) or withdrawal (-)	4.46	4.84	+0.38

ANALYSIS OF WATER MANAGEMENT SITUATION WITHIN THE AMUDARYA AND SYRDARYA RIVER BASINS FOR VEGETATION PERIOD OF 2011

1 Syrdarya River Basin

The actual inflow to the upstream reservoirs of the Syrdarya River Basin (Toktogul, Andijan and Charvak without inflow from the Ugam river) for vegetation period was 16.99 km^3 or 114% predicted inflow (the planned schedule of BWO "Syrdarya"). The upstream reservoirs took 3.82 km^3 of the flow of Naryn, Karadarya and Chirchik rivers that is less than the planned one by 0.14 km^3. Owing to the increased inflow to the upstream reservoirs the actual release from them for vegetation period was 12.90 km3 that exceeds the planned one by 19%.

Before the beginning of vegetation period, 19.5 m^3 of water was accumulated in the Toktogul reservoir owing to 4.14 m^3 withdrawn from the Naryn river, and the conditions for further over-year regulation have been created.

The total lateral inflow to Naryn and Syrdarya rivers (at the reach of the river before the Shardara reservoir) calculated by the balance method (data of BWO "Syrdarya") amounted 7.86 km^3.

At the end of vegetation period, 21.40 km^3 of water or 99% of the planned one was accumulated in the upstream reservoirs including 1.18 km^3 - in the Charvak reservoir and 0.67 km^3 - in the Andizhan reservoir.

The total water withdrawal from the Naryn and Syrdarya rivers up to the Shardara reservoir amounted to 10.67 km^3 including: the Kyrgyz Republic - 0.18 km^3; the Republic of Tajikistan - 1.45 km^3; the Republic of Uzbekistan - 8.43 km^3; the Republic of Kazakhstan (through the Dustlik canal) - 0.61 km^3.

The withdrawn water volume for vegetation period 2011 was less by 1.07 km^3 (9%) than the planned limit in 2010. Water supply was unequal for the states, as well for river sites (see Table 1.1, and also data on the website: www.cawater-info.net/analysis/water/).

Attention is needed to the fact that over the past 5 years (2006-2007 ... 2010-2011) the average annual inflow to the Toktogul reservoir amounted to 13.5 km^3, including 10.26 km^3 for vegetation periods. The water inflow for vegetation period of 2011 amounted to 9.9 km^3 that is less the average inflow over the past 5 years by 0.37 km^3.

Over the past 5 years the average volume of releases from the Toktogul reservoir for vegetation period is estimated at 5.34 km^3. During vegetation period of 2011 there was 5.71 km^3 of released water, which is more than the scheduled release of BWO “Syrdarya” by 0.68 km^3 (see Table 1.4).

According to our estimates, the releases from the Toktogul reservoir for vegetation period amounted to 5.5...6.0 km^3 in line with irrigation needs of the basin in the

normal years and should allow (under stable operation of Naryn HPS cascade) achieving stable water delivery to the canals in the Fergana Valley.

The obligations on water delivery to the Kairakkum reservoir were fulfilled by 135%; water inflow to the reservoir amounted to 6.78 km^3 as compared to 5.0 km^3 of the scheduled water inflow of BWO "Syrdarya".

Water availability of the Syrdarya middle reaches depends on releases from the Kairakkum reservoir, which can limit water delivery into canals in the middle reaches even during normal periods if it operates under the power-producing mode. During vegetation period 2011, the lowest water availability, which was calculated using the limits of 2010, was observed in some ten-day periods in June-July 2011 (Tajikistan - up to 70%; Uzbekistan - up to 60%, Kazakhstan - up to 30%).

The total releases from the Kairakkum reservoir for vegetation period 2011 amounted to 8.26 km^3, including releases into the river of 7.87 km^3.

Monthly releases from the Kairakkum reservoir were more than the scheduled ones of BWO "Syrdarya"; and the total releases for vegetation period amounted to 3.3 km^3! At the end of vegetation period the reservoir's water volume decreased to 1.5 km^3. In spite of this, the total water availability of the river site "Kairakkum-Shardara" amounted to 84%, that is 14% less than water availability of the Fergana Valley.

Water inflow to the Shardara reservoir amounted to 2.73 km^3 or 19% less than the scheduled one of BWO "Syrdarya". It is the result of decreased lateral inflow and releases into the Chirchik river as compared to the scheduled one. Balance calculations indicated to water losses at the river section "Kairakkum-Shardara"; they amounted to 1.2 km^3 when the lateral inflow was 1.4 km^3.

Water releases from the Shardara reservoir amounted to 6.35 km^3, including 5.62 km^3 into the river.

Analysis of reservoirs' water balances (Table 1.3) has revealed the nonregistered inflow to the Andizhan reservoir in the amount of 0.02 km^3. The total water losses of the Toktogul, Charvak, Kairakkum and Shardara reservoirs amounted to 1.0 km^3.

According to Kazhydromet (g/s Karateren), water delivery to the Aral Sea and Prearalie amounted to 1.57 km^3 that is less than the scheduled one of BWO "Syrdarya" by 0.33 km^3. Water volume used in the lower reaches (algebraic sum of withdrawal, lateral inflow, and losses) amounted to 4 km^3.

Table 1.1

Water availability in the Syrdarya River basin's countries for vegetation period 2011

Water user	Water volume, km^3		Water availability, %		Deficit (-), surplus (+) km^3	
	limit/ schedule*	actual	season	min for ten-day **)	season	total for ten-day ***)
1. Total water withdrawal	11,75	10,67	90,9	68,30	-1,07	-1,70
2. By countries:						
Republic of Kyrgyzstan	0,25	0,18	72	31,25	-0,07	-0,07
Republic of Uzbekistan	8,80	8,43	96	70,82	-0,37	-1,20
Republic of Tajikistan	1,90	1,45	76	22,67	-0,45	-0,47
Republic of Kazakhstan	0,79	0,61	77	23,00	-0,19	-0,24
3. By river reaches						
3.1 Toktogul reservoir – Uchkurgan hydroscheme	3,95	3,95	100,0	78,74	0,00	-0,30
of which:						
Republic of Kyrgyzstan	0.16	0.13	81	38.89	-0.03	-0.04
Republic of Tajikistan	0.24	0.10	42	26.56	-0.14	-0.14
Republic of Uzbekistan	3.55	3.72	105	79.73	0.17	-0.23
3.2 Uchkurgan hydroscheme – Kayrakkum hydroscheme	1.08	1.06	98.7	75.51	-0.01	-0.08
of which:						
Republic of Kyrgyzstan	0.08	0.05	62	13.57	-0.04	-0.04
Republic of Tajikistan	0.45	0.52	115	21.17	0.07	-0.03
Republic of Uzbekistan	0.54	0.50	92	71.63	-0.05	-0.06
3.3 Kayrakkum hydroscheme – Shardara reservoir	6.72	5.66	84.2	56.97	-1.06	-1.37
of which:						
Republic of Kazakhstan	0.79	0.61	77	23.00	-0.19	-0.24
Republic of Tajikistan	1.22	0.84	67	21.62	-0.38	-0.39
Republic of Uzbekistan	4.71	4.22	89	60.56	-0.49	-0.95
4. In addition:						
Inflow to the Shardara reservoir	3.36	2.73	81.3	22.6	-0.63	-1.69
Discharge to Arnasai	0.00	0.00	0.00	0.00	0.00	0.00
Water supply to the Aral Sea and Prearalie	1.802	1.57	87.3	0.00	-0.23	0.00

*) Limits for vegetation period 2010

**) Minimum value recorded in the ten-day period

***) Total water deficit by ten-day periods; covered by surplus water during the season

Table 1.2

Syrdarya River channel water balance for vegetation period 2011

Items	Water volume, km^3		Deviation (actual-plan)
	expected/plan	actual	
1 Inflow to the Toktogul reservoir	9.2	9.9	0.7
2 Lateral inflow to the river reach Toktogul reservoir – Shardara reservoir (+)	8.25	7.86	-0.39
of which:			
Discharge along the Karadarya river	0.79	2.02	1.23
Discharge along the Chirchik river	0.58	0.38	-0.20
Lateral inflow by CDF[2] and small rivers	6.88	5.46	-1.42
3 Runoff regulation by reservoirs addition to runoff (+) or withdrawal (-)	-4.49	-3.26	1.24
of which:			
Toktogul reservoir	-4.16	-4.17	-0.02
Kayrakkum reservoir	-0.34	0.92	1.25
4 Regulated runoff (1+2+3)	12.94	14.49	1.54
5 Water withdrawal at the Toktogul – Shardara (-) site	-11.75	-10.67	1.07
6 Runoff losses (-) or unaccounted inflow to the channel (+) at the Toктogul – Shardara site	-2.16	1.08	3.25
Including % of regulated runoff	-16.7	7.5	24.18
7 Inflow to the Shardara reservoir	3.36	2.73	-0.63
8 Runoff regulation by the Shardara reservoir addition to runoff (+) or withdrawal (-)	3.36	3.62	0.259
9 Water release from the Shardara reservoir to the river	5.52	5.62	0.105
10 Diversion to Kyzylkum canal (-)	-1.21	-0.73	0.473
11 Discharge to Arnasai (-)	0.00	0.00	0.000
12 Amount of water used in the lower reaches: algebraic sum of withdrawal (-), lateral inflow (+), losses (-)	3.71	4.05	0.334
13 Water supply to the Aral Sea and Priaralie	1.80	1.57	-0.229

[2] CDF-collector-drainage flow

Table 1.3

Water balance of the Surdarya River basin's reservoirs for vegetation period 2011

Items	Water volume, km^3		Deviation (actual-plan)
	expected/plan	actual	
1. Toktogul reservoir			
1.1 Inflow to the reservoir	9.2	9.9	0.70
1.2 Water volume in the reservoir:			
- at the beginning of the season (April 1, 2010)	15.398	15.398	0.00
- at the end of the season (October 1, 2010)	19.500	19.541	0.04
1.3 Release from the reservoir	5.035	5.714	0.68
1.4 Unaccounted inflow (+) or water losses (-)	-0.05	-0.03	0.02
% of inflow to the reservoir	-0.01	0.00	0.00
1.5 Runoff regulation: addition to runoff (+) or withdrawal (-)	-4.102	-4.143	-0.04
2. Andizhan reservoir			
2.1 Inflow to the reservoir	1.582	2.988	1.41
2.2 Water volume in the reservoir:			
- at the beginning of the season (April 1, 2010)	1.427	1.427	0.00
- at the end of the season (October 1, 2010)	1.016	0.672	-0.34
2.3 Release from the reservoir	1.982	3.763	1.78
2.4 Unaccounted inflow (+) or water losses (-)	-0.01	0.02	0.03
% of inflow to the reservoir	-0.01	0.01	0.01
2.5 Runoff regulation: addition to runoff (+) or withdrawal (-)	0.411	0.755	0.34
3. Charvak reservoir			
3.1 Inflow to the reservoir	4.117	4.108	-0.01
3.2 Water volume in the reservoir:			
- at the beginning of the season (April 1, 2010)	0.747	0.747	0.00
- at the end of the season (October 1, 2010)	1.014	1.182	0.17
3.3 Release from the reservoir	3.83	3.42	-0.41
3.4 Unaccounted inflow (+) or water losses (-)	-0.02	-0.25	-0.23
% of inflow to the reservoir	0.00	-0.06	-0.06
3.5 Runoff regulation: addition to runoff (+) or withdrawal (-)	-0.267	-0.435	-0.17
4. Kayrakkum reservoir			
4.1 Inflow to the reservoir	5.005	6.782	1.78
4.2 Lateral inflow	0.295	0.173	-0.12
4.3 Water volume in the reservoir:			
- at the beginning of the season (April 1, 2010)	3.33	3.33	0.00
- at the end of the season (October 1, 2010)	3.08	1.53	-1.55
4.4 Release from the reservoir	5.00	8.26	3.27
of which:			
- release to the river	4.51	7.87	3.36
-water withdrawal from the reservoir	0.48	0.39	-0.09
4.5 Unaccounted inflow (+) or water losses (-)	-0.56	-0.50	0.06
% of inflow to the reservoir	-0.11	-0.07	0.04
4.6 Runoff regulation: addition to runoff (+) or withdrawal (-)	0.256	1.802	1.55

Items	Water volume, km^3		Deviation (actual-plan)
	expected/plan	actual	
5. Shardara reservoir			
5.1 Inflow to the reservoir	3.361	2.734	-0.63
5.2 Lateral inflow	-	-	-
5.3 Water volume in the reservoir:			
- at the beginning of the season (April 1, 2010)	4.973	4.973	0.00
- at the end of the season (October 1, 2010)	1.071	1.118	0.05
5.4 Release from the reservoir	6.72	6.35	-0.37
of which:			
-discharge to Arnasai	0.00	0.00	0.00
- release to the river	5.52	5.62	0.10
- water withdrawal from the reservoir	1.205	0.732	-0.47
5.5 Unaccounted inflow (+) or water losses (-)	-0.54	-0.24	0.31
% of inflow to the reservoir	-0.16	-0.09	0.08
5.6 Runoff regulation: addition to runoff (+) or withdrawal (-)	3.902	3.855	-0.05
TOTAL runoff regulation: addition to runoff (+) or withdrawal (-)	0.20	1.83	1.63
TOTAL losses (-), unaccounted inflow (+)	9.2	9.9	0.70

Table 1.4

Inflow to and release from the Toktogul reservoir for 2006-2011

n	Hydrologic year	Inflow, million m3			Release, million m3		
		Nonvegetation period	Vegetation period	Year	Nonvegetation period	Vegetation period	Year
1	2006-2007	3157	8911	12068	9538	5857	15395
2	2007-2008	2505	7371	9876	9726	4408	14134
3	2008-2009	2672	9876	12548	5884	5748	11632
4	2009-2010	3898	15244	19142	6965	5445	12410
5	2010-2011	3896	9888	13783	8000	5714	13714
	Average for 5 years	3226	10258	13483	8023	5434	13457

2 Amudarya River Basin

The actual water content of the Amudarya river at the Atamyrat conditional G/S (upstream to the water intake into Garagumdarya) amounted to 32.3 km^3 or less than expected one (according to the BWO "Amudarya" schedule) by 2.3 km^3 and less than the normal one by 30% (Table 2.2). At the same time, water inflow to Nurek HPS was 4.3 km^3 more than the predicted one! Therefore the release from the reservoir amounted to 12.4 km^3 or higher than the planned one by 3.6 km^3.

In the current water management situation only 7.06% of water withdrawal limit for the canals in the Amu Darya River Basin was used; the total water withdrawal amounted to 27.9 km^3, including 28.72 km^3 downstream the Atamyrat GS (starting from the water intake into Garagumdarya). Water supply was unequal for the states and river sites (see Table 2.1, and also data on the website: www.cawater-info.net/analysis/water/).

At the end of the season, Nurek reservoir accumulated 10.54 km^3 of water, but TMHS reservoir's water volume decreased to 2.36 km^3 (Table 2.3). The total river water withdrawal for filling in the Nurek and Tuyamuyun reservoirs amounted to 6.57 km^3.

Water losses assessed by water balance method (by using the CAREWIB river channel balance model) for the river section “G/S Atamyrat (conditional) – TMHS” amounted to 4.2 km^3 or 13% of flow at G/S Atamyrat (conditional). Water losses for the river section “TMHS - up to boundary of water delivery to the Aral Sea and Prearalie” amounted to 4.3 km^3 or 35% of inflow to TMHS.

There are no water losses in the Nurek reservoir; but for Tyuyamuyun reservoir they amounted to 2.84 km^3.

As a whole, water losses in the Amudarya river basin amounted to 8.5 km^3 or 26% of water content (Atamyrat G/S) or less by 3.1 km^3 (10%) than the calculated (planned by the BWO "Amudarya") ones. At the beginning of nonvegetation period 2011-2012, the water situation is very complex: only Nurek reservoir has the optimal water volume, the usable storage of the TMHS reservoirs is very low and amounted to 0.1-0.2 km^3. The usable storage of intersystem reservoirs (Talimardjan, Tudakul, Kuyumazar) amounted to 0.53 km^3 at the beginning of nonvegetation period; the usable storage of these reservoirs could be increased by 0.7-1.5 km^3 during high-water years.

The needed water volume wasn't delivered to the lakes in Prearalie because of low water content and water losses (water availability 20-25%).

The flow at the Samanbay G/S amounted to 0.207 km^3; if consider water releases from the collector and drainage network, the Aral Sea and Prearalie received 0.523 km^3 of water.

Table 2.1

Water availability in the Amudarya River basin countries for vegetation period 2011

Water user	Water volume, km³		Water availability, %		Deficit (-), surplus (+) km³	
	limit/ schedule ****	actual	season	Min for ten-day*)	season	Total for ten-day **)
1. Total water withdrawal	39.54	27.90	70.6	59.0	-11.64	-11.75
2. By countries:						
Republic of Kyrgyzstan	-	-	-	-	-	-
Republic of Tajikistan	6.82	6.08	89.2	55.7	-0.74	-0.80
Turkmenistan	15.50	10.55	68.1	52.7	-4.95	-4.95
Republic of Uzbekistan	17.22	11.27	65.4	47.3	-5.95	-6.16
3. Downstream of g/s Atamyrat ***)	31.52	20.96	66.5	53.3	-10.56	-10.66
of which:						
Turkmenistan	15.50	10.55	68.1	71.9	-4.95	-4.95
Republic of Uzbekistan	16.02	10.41	65.0	46.0	-5.61	-5.80
4. By river reaches:						
Upper reaches	8.02	6.94	86.5	60.9	-1.08	-1.11
of which:						
Republic of Kyrgyzstan	-	-	-	-	-	-
Republic of Tajikistan	6.82	6.08	89.2	55.7	-0.74	-0.80
Surkhandarya, Uzbekistan	1.20	0.86	71.7	60.0	-0.34	-0.36
Middle reaches	16.21	12.94	79.9	60.3	-3.26	-3.26
of which:						
Turkmenistan	10.47	7.81	74.6	55.0	-2.66	-2.66
Republic of Uzbekistan	5.74	5.13	89.4	67.9	-0.61	-0.73
Lower reaches	15.31	8.02	52.4	27.4	-7.30	-7.52
of which:						
Turkmenistan	5.03	2.74	54.5	32.2	-2.29	-2.33
Republic of Uzbekistan	10.29	5.28	51.3	22.6	-5.01	-5.20
5. In addition:						
Emergency-environmental releases to downstream canals	0.0	0.0				
of which:						
Turkmenistan	0.0	0.0				
Republic of Uzbekistan	0.0	0.0				
Water supply to the Aral Sea and Prearalie (without CDF)	2.10	0.52	24.9			

***)** Minimum value recorded in the ten-day period

****)** Total water deficit by ten-day period; covered by surplus water during the season

*****)** gauging station Atamyrat (conditional) – Amudarya river section upstream of Garagumdarya

****) Limits are agreed but not adopted by ICWC

Table 2.2

The Amudarya River channel water balance for vegetation period 2011

Items	Water volume, km^3		Deviation (actual-plan))
	expected/plan	actual	
1 Water content of the Amudarya River – natural runoff in the section of g/s Atamyrat (tentative)	34.68	32.33	-2.35
2 Runoff regulation by Nurek reservoir: addition to runoff (+) or withdrawal (-)	-3.85	-4.54	-0.69
3 Water withdrawal in the middle reach (-)	-13.7	-12.94	0.76
4 Return CDF in the middle reach (+)	1.37	1.44	0.07
5 Runoff losses (-) or unaccounted inflow to the channel (+)	-1.14	-4.20	-3.06
% of runoff in the section of g/s Atamyrat (tentative)	-3	-13.0	-10.0
6 Inflow to Tuyamuyun hydroscheme (TMHS)	17.36	12.09	-5.27
7 Runoff regulation by TMHS reservoirs: addition to runoff (+) or withdrawal (-)	-0.15	-0.80	-0.65
8 Losses in TMHS reservoirs (-), lateral inflow (+)	-2.98	-2.84	0.14
% of inflow	-17	-23	-6.0
9 Releases from TMHS (including water withdrawal from reservoir)	14.53	10.02	4.51
10 Downstream water withdrawal, including withdrawal from the TMHS (-)	-13.02	-8.02	-5.0
11 Return CDF in the lower reach (+)	0.00	0.00	0.00
12. Sanitary-environmental water releases into downstream canals (-)	0.00	0.00	0.00
13 Runoff losses (-) or unaccounted inflow to the channel (+)	-1.31	-1.48	-0.17
% of runoff in the section of g/s Tuyamuyun	-13	-21	-8.0
14 Water supply to the Aral Sea and Prearalie (without CDF)	0.2	0.52	+0.32
TOTAL losses:	-5.43	-8.52	-3.09
% of water content in the river	-16	-26	-10.0

* after deduction of the upstream water withdrawal (Tajikistan, Surkhandarya province)

Table 2.3

Water balance of the Amudarya River basin's reservoirs for vegetation period 2011

Items	Water volume, km^3		Deviation (actual-plan)
	expected/plan	actual	
1. Nurek reservoir			
1.1 Inflow to the reservoir	12.65	16.97	4.32
1.2 Water volume in the reservoir:			
- at the beginning of the season (April 1, 2011)	6.00	6.00	0.00
- at the end of the season (October 1, 2011)	9.85	10.54	0.69
1.3 Release from the reservoir	8.80	12.44	3.64
1.4 Lateral inflow (+) or water losses (-)	0.00	0.00	0.00
% of inflow to the reservoir	0.00	0.00	0.00
1.5 Runoff regulation: addition to runoff (+) or withdrawal (-)	-3.85	-4.53	-0.68
2. TMHS reservoirs			
2.1 Inflow to the hydroscheme	17.36	12.09	5.27
2.2 Water volume in the reservoirs:			
- at the beginning of the season (April 1, 2011)	3.16	3.16	0.00
- at the end of the season (October 1, 2011)	3.01	2.36	0.65
2.3 Release from the hydroscheme	14.53	10.05	-4.48
of which:			
- release to the river	9.86	6.97	-2.89
- water withdrawal	4.67	3.08	1.59
2.4 Lateral inflow (+) or water losses (-)	-2.98	-2.84	0.14
% of inflow to the reservoir	-17	-23	-6
2.5 Runoff regulation: addition to runoff (+) or withdrawal (-)	-2.83	-2.04	0.79
TOTAL runoff regulation by reservoirs: addition to runoff (+) or withdrawal (-)	-6.68	-6.57	-0.11
TOTAL losses (-), unaccounted inflow (+)	-2.9	-2.84	-0.06

«EUROPE-INBO 2011» - 9th INTERNATIONAL CONFERENCE ON THE CURRENT AND FUTURE IMPLEMENTATION OF THE EUROPEAN WATER FRAMEWORK DIRECTIVE AND GENERAL ASSEMBLY OF THE MEDITERRANEAN NETWORK OF BASIN ORGANIZATIONS (MENBO)

(Oporto, Portugal, 27-30 September 2011)

All events were held at the Ipanema Park Hotel well suitable for both plenary and parallel sessions.

According to the general program of all events, in the first day, the parallel sessions of the Board of Governors of MENBO and CEENBO were held.

SIC ICWC took part in the CEENBO meeting as a permanent observer. The meeting was chaired by Mrs. Atanaska Tuntova (Bulgaria), newly elected President (March, 2011) for 2 years. Together with other representatives from the Central and Eastern Europe countries the meeting was attended by Mrs. Daniela Radulescu (Romania), CEENBO permanent technical secretary; Mr. Jean-François Donzier (France), INBO permanent technical secretary; and Mrs. J. Mongellaz, Director of the International Office for Water in France. The current and future activities of CEENBO and collaborative project initiatives within EC's calls for proposal were discussed. We have suggested developing IWRM at the basin level, giving consideration to both water quality and water quantity management, and strengthening work on adaptation to expected climate change in view of capitalizing on potential extension of crop's vegetation period. Considering general thematic directions of EC and our involvement into European process, the application of WFD should be initiated in our region what could strengthen the leading position of Uzbekistan.

The meeting of the INBO Bureau (SIC ICWC is a member of INBO) was held in the same day. The meeting was held under the chairmanship of the President Mohamed Salem Ould Merzoug (he was elected at the General Assembly of INBO in January 2010 in Dakar, Senegal). The meeting was attended by representatives from all countries and organizations which are members of INBO, as well as by Mr. Jean-François Donzier (Permanent secretary of INBO), who presented the report on current and future activities of INBO. He spoke of an international conference in Tashkent on preparation to the 6th World Water Forum which was attended by a number of participants and considered a range of topics, about the work of our Russian-speaking network for dissemination of IWRM experience gained worldwide. Prof. Dukhovny V.A., Permanent technical secretary of the Network for Eastern Europe, Caucasus and Central Asian water management and land reclamation organizations, has informed about network's objectives and tasks aimed at building capacities of water specialists through sharing information, developing policies and training, and finally, initiating collaborative projects at the national and regional level.

The main sessions of the conference begun with an official opening ceremony, at which representatives of local administration, heads of Portuguese and Spanish water organizations, co-chairman of the International Water Forum in Istanbul, the presidents of MENBO, SEENBO, INBO, and technical secretaries of INBO and our EECCA network took part. Prof. Dukhovny V.A. has evaluated the INBO activity and informed about SIC ICWC activity and determined a range of network's tasks for addressing issues of transboundary river basin management. An importance of the Charter of Global Water Security proposed by Academician Mr. Polad-Zade P.A., President of EECCA Network, and approved by the Tashkent Conference was especially emphasized. The Charter's content is based on the ancient tradition of deepest respect to water as a holly thing. The Charter was disseminated among a number of organizations worldwide and comments were received from the American, Asian, Russian and Turkish colleagues, who approved it as a whole and made some interesting and useful remarks.

Five round tables were organized at the Conference:

1 - Water and Energy: the dilemmas, costs and benefits;

2 - Cooperation with the neighboring Countries, non-member of the European Union, for the application of the WFD principles and methods;

3 - Water Governance in Transboundary River Basins: Strategic cooperation and twinning among Water Authorities;

4 - Adapt to long term challenges linked to climate change and prevent extreme phenomena;

5 - Develop new knowledge and know-how on river hydro-morphology, restoration and protection of water ecosystems.

The Water Users Council of Tajo river basin (Portugal) and its Spanish partner demonstrated interesting experience of joint work at the session on transboundary waters. These both organizations overcame simultaneously the users' desire to increase water use and have developed step-by-step the plans on implementation of sustainable river basin development in line with the WFD.

Mrs. Omina Islamova and Mr. Olivier Magnin, representatives of SDC, took part in the conference. Their report was dedicated to effectiveness of SDC activity in Uzbekistan; they demonstrated potential benefits that could be got by Uzbekistan from all-round implementation of IWRM.

On the final day, the summary reports on the five round tables were discussed, as well as the preparation to 6th World Water Forum. Finally, the INBO Declaration, where our suggestions were included as well, was adopted.

Director SIC ICWC
Prof. Dukhovny V.A.

TOWARDS THE UN CONFERENCE ON SUSTAINABLE DEVELOPMENT (RIO +20): WATER COOPERATION ISSUES

The Prepcom conference "Towards the UN Conference on Sustainable Development (RIO +20): Water Cooperation Issues" was organized in Dushanbe, Tajikistan on 19-20th October by the Government of the Republic of Tajikistan and the UN Department of Economic and Social Affairs (DESA) in cooperation with UN-Water, UNDP and OSCE missions in Tajikistan.

The working languages were English and Russian; simultaneous translation was provided.

The objective of the Dushanbe conference is to discuss current issues and challenges in water cooperation that will be later included in the concept note and the program of the thematic session on water cooperation in the framework of the Conference Rio+20.

The water cooperation theme meant water cooperation for adequate access to water, for peace and security, sustainable development and environmental stability.

At the conference also various aspects of strengthening cooperation and dialogue to address water issues and its inclusion into the program of thematic meeting within the Conference RIO+20 were discussed; the experience on water cooperation in some regions of the world (except the ASB) was demonstrated; the recommendations on effective approaches and mechanisms for joint use of water resources in the transboundary river/lake basins and the draft final document on thematic session to be held within the Conference RIO+20 were prepared.

Mr. Murodali Alimardon (Deputy Prime-Minister of the Republic of Tajikistan) opened the conference. Mrs. Laila Moshiri, acting as the UN permanent coordinator/UNICEF representative, made a welcome keynote.

The opening remarks were made by: Ms. Kenza Robinson (Secretary, "UN-Water"), Mr. Ivar Vikki (Ambassador, Head of OSCE Center in the Republic of Tajikistan), Mr. Joji Tokeshi (ADB Country Director, Chair of the Donors Coordination Council), Dr. Jean-Francois Donzier (Director General, International Office for Water, Permanent Secretary of International Network of Basin Organizations).

Presentations were made after lunch. There were not presentations of representatives of water ministries and departments from the ASB countries.

1st day. Presentations:

- Role of IFAS in cooperation among the ASB countries (Saghit Ibatullin, Chairman of EC IFAS);
- Achieving MDGs in the EECCA countries through the National Policy Dialogue within the EU Water Initiative (Ms. Gulnara Roll, EUWI Coordinator, United Nations Economic Commission for Europe);

- Water cooperation within ORASECOM (Mr. Lenka Tamae, ORASECOM Executive Secretary);
- Cooperation on transboundary waters in the Arab region (Ms. Chahra Ksia, the Head of the Center on studying water resources and the Arab waters security, League of Arab States);
- Transboundary water allocation among India and Bangladesh: Ganges Water Agreement (Dr. Redjay Karim, Director of Consulting Company "BETS", Bangladesh);
- INBO's view on modern approaches to basin management and tools for support, creation and strengthening of Basin Organizations (Dr. Jean-Francois Donzier, Permanent Secretary of International Network of Basin Organizations)

2d day. Presentations:

- Women involvement into water cooperation improvement (Ms. Alice M. Bauman-Dentener, President of the "Women for Water Cooperation");
- Water Vision of the Organization of the Islamic Cooperation and contribution of OIC to water issues (Dr. Razley Mokhd Nordin, Director General, Science and Technology Department, OIC);
- Sustainable Development, Water Cooperation and Biological Resources issues of the Caspian Sea - the most rich sea in the world (Prof. Nicolay Aladin, Head of the Laboratory, Institute of Zoology, Russian Academy of Sciences);
- Economic Aspects of Water Cooperation: Central Asia case study (Mr. Anvar Kamolidinov, Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan);
- Ratification of the Alpine Convention: Switzerland case study (Mr. Jon Marco Church, UN Regional Center on Preventive Diplomacy in Central Asia);
- FFEM-EECCA project on strengthening potential in data management for assessment of transboundary water resources in the EECCA countries (Ms. Mannon Cassara, International Office for Water).

Then participants analyzed a Declaration document, in which out of 24 items the two ones (18th and 21st) were taken from the SIC ICWC report submitted to the conference organizers earlier:

“Item18. Increased collection of hydrological, hydrogeological and meteorological data, as well assessment and extension of potentials; those potentials should be strengthened, including within implementation of the Global Framework for Climate Services (GFCS). Improving water resources management and understanding hydrological cycle through cooperation in joint observations and research, as well promotion of knowledge sharing, building capacities and transfer of technologies. The governments of riparian countries should take appropriate measures to support monitoring of water resources and information networks across all river basins.

Provisions for joint monitoring, information sharing and public participation, as well as mutual assistance in case of emergencies, are also crucial.

Item 21. Transboundary water cooperation should be based on regional and international agreements and should be applied in all countries including within existing mechanisms and situations of water diplomacy. There is consensus among the majority of riparian countries that transboundary agreements should be specific and should ensure institutional mechanisms for cooperation, including measures for implementation of water resources/ecosystems management and protection".

The participants expressed their gratitude to the Government of Tajikistan for organization of the Conference, the warm reception and generous hospitality. Also gratitude was expressed to the UN institutions, headquarters and country groups, including "UN-Water", as well to other regional and international organizations for their assistance and support provided.

D.A.Sorokin

WATER RESOURCES INFORMATION MANAGEMENT IN CENTRAL ASIA

(Meeting report and opinion of a participant)

The meeting dedicated to information management in Central Asia and organized by UNECE jointly with German Agency GIZ was held on 7 December 2001 in Almaty. The most papers are available on the UNECE website except those which weren't submitted in written form.

The meeting was opened by the Chairman of the Executive Committee IFAS, Mr. S.R. Ibatullin, who stressed the importance of openness, accessibility and reliability of information as one of the fundamental principles of successful cooperation on transboundary rivers between countries in order to improve and strengthen water resources management in the Aral Sea Basin.

The aim of this meeting as defined by the organizer of the meeting, Mr. B. Libert (UNECE), was to initiate new information-based approaches - "how to go together" - based on the already proven possibility to work together. He stressed the need for political support of the information process and the great interest of all water specialists in the information exchange development. In conclusion, he cited the CAREWIB system as proof of successful information activities and appealed countries and regional organizations to develop it further.

The fundamental direction of information activities was very clearly reflected in the report of IFAS's Adviser responsible for this section of ASBP-3, Mr. K. Ballyev. The tasks that are urgent from the perspective of participants involved in transboundary

cooperation and should be in focus of donors were highlighted in that report of EC IFAS. The representative of the French International Office for Water, Mr. *Paul Haener* informed the participants about the project of the French Development Agency aiming to create a metadatabase of EECCA's information systems. This project will harmonize different databases with each other, create a catalog of data and arrange information systems.

All the participants were interested and waited for the report of the Regional Director of SDC, Mr. Laurent Guye - "SDC involvement in the information sector in the future". He began his speech by saying that the future is not clear in general. According to the External Review conducted by Mr. Siegfried T. by the order of SDC, the developed information system CAREWIB has a lot of data which aren't used by decision-makers. Then, the Mr. Siegfried's program, which was included in the meeting's proceedings, was introduced by the following critical notes:

- Information exchange currently is developed under conditions of deteriorating relations between the states (???);
- Afghanistan is not involved in cooperation between the countries;
- Infrastructure is being deteriorated throughout the water sector;
- Soil salinity is increasing;
- Water resources quality is deteriorating.

The note of Mr. Siegfried was disseminated by SDC for a week prior to the meeting. At the same time, this note was followed by a message of Mr. Laurent Guye that given note does to reflect the SDC's opinion. All the more strange was the presentation of this note as the SDC platform.

Mr. Abdullaev I. presented very interesting report on behalf of GTZ. He demonstrated how the German team found approaches to support implementation of pilot projects in the 5 countries in the region through small information projects. He emphasized that the main principle of GIZ is not involvement of foreign professionals to information exchange but rather of local specialists capitalizing on their experience, knowledge and data. Using SIC ICWC methods and, to a certain degree, software of CAREWIB, they managed to create the pilot database for 5 irrigation systems in the Central Asian countries.

Mr. Reinhard Bodemeyer presented another work of GTZ dedicated to the information system on land resources management in Central Asia. It must be noted that though the donors as a rule declare a need to open information and blame CAREWIB for insufficient openness of its information, they themselves don't open their information about projects for anybody: to get such information you need passwords, preliminary registration, etc.

Mr. Denisov N. presented a new environmental information system (SEIS), which is developing in Europe and, as he supposes, will be developed in the countries of Central Asia.

Mrs. Daryl Fields presented the World Bank's new approaches to linking water and energy information and modeling. Finally, Mr. O. Ryaskov, USAID representative, presented the principles of the regional energy information system.

S. Shivareva, Director of the Regional Hydrometeorological Center, presented successful work of RHC on consolidation of data of five different hydrometeorological services and information products, which should be linked with CAREWIB. She told about assessment of information potentials in Central Asia by the commission organized by IFAS. Her report indeed was to be a keynote report of the seminar. This report provided a broad and comprehensive evaluation of information capacities and real information efforts undertaken by all organizations in Central Asia. That evaluation is based on the work of 19 experts involved in the IFAS working group, and on survey of 261 representatives of water management, environmental, energy, social, and political organizations. The report emphasized the high value and need for further development of the information field with the assistance of the national hydro-meteorological services under umbrella of RHC and with development of a special site. She asked to transform CAREWIB from the information tool of water management organizations into the information and analytical tool for the whole water-environment-energy community, with involvement (besides ICWC) of other regional groups. Practically, it was the only report, which contained comparison between information needs and current information capacities on the basis of which future information projects must be developed.

As follows from the reports of Messrs. Haener, Denisov, Mrs. Fields and others (except for the report of Abdullayev, GIZ), all the reporters told about their needs in development of their projects and their provision with data but not about the development of real Central Asian information space. It is very strange. Because it turns that the around-water projects get priority among donors as opposed to Central Asian countries.

That is why presentations of national water management organizations, including Deputy Chairman of the State Committee on Water Resources of Kyrgyzstan, as well of regional organizations - BWO "Syrdarya", BWO "Amudarya", ICSD - were in dissonance to the above mentioned speeches and advocated a need to strengthen and further develop CAREWIB and harmonize it with other information systems: of hydrometeorological services, water quality organizations and energy organizations.

As a participant of the meeting, I am proud of our work with SDC and colleagues, because if there had been no CAREWIB, nothing could be discussed. Now we have information about water and land in the region, about world experience, as well the generalized data for the region and some areas, albeit with some flaws, but there is no information hunger in the region and this is important. Nevertheless, critics had to admit that CAREWIB "enriched the scarce information landscape in Central Asia". But they did not notice the main thing - ICWC elaborated a common methodological approach to formation of regional and national databases on the basis of 'information sieve', which is used successfully (somewhere - better, somewhere -worse) in all five countries in the region. Kyrgyzstan can be considered as an example, where our

suggestions on software, interface and formats for data collection and processing are used outside the Aral Sea basin.

Registration and approval of ICWC is required only for access to 10% of information on the CAWater-Info portal. As to openness of information, we aim to show an example of openness: all the projects implemented by SIC ICWC's staff are accessible on our website, including work plans, minutes of workshops, our methods and guides, etc. Moreover, most manuals are translated into 5 national languages. We found nothing of the kind on the websites of WB, ADB, and UN. At best, these sites contain the project lists, main themes and expected outcomes.

The External Review by Mr. Siegfried was very subjective. The External Review was implemented by a person, who has never been occupied with water resources management and did not understand that water resources management requires practical tested methods and approaches rather than theoretical ones. Also water management needs a lot of information and knowledge not only about water but about land, environment, law, economy, finance and many others. Nevertheless, the External Review had also a positive effect. It evoked strong encouragement of our portal and approaches to dissemination of knowledge from the side of all participants of the survey conducted by the working group of IFAS, against unfair criticism of SIC ICWC. None from 268 respondents said that we were doing useless work. On the contrary, all the respondents like people who are seeking water in desert have required more and more information because our site covers only 57% of their needs and therefore 50% of required information needs to be added. The survey didn't cover the audience, which is in most need for knowledge and information, such as WUAs, farmers and lower chain users. However, they need a new information stratum being produced by collaborative efforts of water-technologists, irrigation experts, agronomists from our side and climatologists from hydrometeorological services.

In the region the interest to water is increasing because people understand that their future strongly depends on water. In this context, were are thankful to Mr. B.Libert, who not only organized popularization of information theme in the region as a whole but also wrote in his comments versus the External Review: «We believe that in the difficult circumstances of Central Asia and with a relatively modest budget, the project has made considerable achievements. Comparing internationally, even when taking into account Western European countries, CAREWIB with all its problems and draw-backs has contributed significantly to the access of information in the region. Hard work of a technically advanced staff has made it possible to establish a unique system at a relatively low cost. CAREWIB outputs are quite unique, especially with the background of the deteriorating management and information exchange in the region overall."

What are we doing now? As far back in 2004, at the meeting of donors (ADB, WB, USAID, SDC and ICWC) the goal of improving the Aral Sea Basin management was clearly defined by Mr. Guy Le Moigne, the Keynote Speaker, as "developing shared efforts to hydrosolidarity in the basin” through:

- raising public awareness and participation by providing broad information and attracting attention of key stakeholders with the aim to develop social recognition of needed joint actions;
- forecasting scenarios which demonstrate further difficulties;
- assisting leading institutional structures to play their role in development of moral principles of water management and use".

All follow-up activity of CAREWIB was aimed to solving these problems by means of expanding the knowledge base and by involvement of UNESCO-IHE in our work on future development scenarios, widely covered in the published results of modeling. Currently the Aral Sea Basin model as demo and game versions is being prepared for public use in the next half year.

When decision-support system (DSS) is being prepared, a clear understanding that it is not only a basin model is necessary. Because DSS should link all water hierarchical levels. Information deficit has arisen already within the "IWRM-Fergana" project and "WPI-PL" project. Together with water management organizations of 5 regions in the three countries we try to satisfy information requirements by issuing monthly bulletins in hard copy. But firstly their quantity and access is limited and, secondly, recommendations for ten-day periods are needed besides monthly recommendations. We already have provided Kashkadarya, Samarkand, Bukhara and Khorezm provinces with our methods and software. Further, we are going to cover Djalalabad and South Kazakhstan provinces. Information demand is increasing and the regional information system and especially national ones have to be developed to satisfy this demand. We are ready to deliver our know-how developed during our activity to all interested parties on the basis of collaboration like we did this with ICSD, RHC and others.

Mr. Ibatullin began his speech by saying about transparency. In principle, if there is a good will, there would be no problem with obtaining information as such. The problem lays in exchange of information on water quality and in accuracy of water discharge data. The gauging stations on the Syrdarya river are supposedly break down and data from G/S Kyzylkishlak and Akdjar, as well as from all gauging stations on the Amudarya river are not received. Therefore, we call to continue already started automation of gauging stations that is implemented successfully along the Syrdarya river with support of SDC but didn't start yet along the Amudarya river.

Finally, one can summarize as follows:

- Today CAREWIB is the only 90% open information system, which is accessible for wide circles of users;
- Not only database but also knowledge base need to be extended (legislation aspects);
- Owing to RHC's activity and a good will of EC IFAS, activities towards coordination of hydrometeorological services and water management organizations have been started, as well as coordination with ICSD. This process should be strengthened because it allows increasing our capacities for harmonization of databases and, at the same time, for comparing data of national water organizations and BWOs;

- We are ready to collaborate with the French project in part of identifying information flows, metadata and IS structuring;
- We are thankful to GIZ for support and cooperation which we would like to develop and strengthen;
- Now we have access to database of NASA and we can do a lot, notably regarding assessment of situation with water use, water losses and water availability. We need only money and equipment.

Prof. V.A. Dukhovny

LEGAL AND INSTITUTIONAL SUPPORT FOR CREATION OF SHARED INFORMATION SYSTEM (NETWORK) AND DATABASE OF THE ARAL SEA BASIN AND MONITORING OF ASBP-3

(**Area: ASBP-3-4.3.1**)

(report by Ballyev K. at the UNECE workshop "Water information management in Central Asia", Almaty, 7 December 2011)

Information access and exchange is one of the key tools for development of efficient and fruitful regional cooperation, but lack of information about water and land use and socio-economic situation in the Aral Sea Basin became bottleneck for operative and long-term decision-making on transboundary water resources management and appropriate water policy implementation.

Information network needs to be developed at the regional and national level, including:

- Improving the model-analytical tools, including on-line data analysis.
- Improving IFAS's portals to broaden the disseminated data and analytical information on water-land and environment problems in Central Asia.
- Issuing and disseminating the printed publications on water&land and environment problems.
- Improving institutional structure of information service in the Central Asian countries.
- Preparing the integrated information about environment situation, predictions of probable consequences of human activity, and recommendations on selecting ways of safe development in the region for the decision-support systems.

The main task of ASBP-3-4.3.1 will be to find opportunities for the development and institutionalization of cooperation with the IFAS's executive bodies and informational support to the development and implementation of ASBP-3. One of the new practical

tasks will be to increase the range and quantity of information products originally created for the Aral Sea basin to embrace the Central Asia as a whole (in areas outside the ASB). To this end, it will be needed to develop cooperation further with organizations, projects and local authorities in Central Asia and outside.

In the current difficult socio-economic situation in Central Asia, water use and management undergo positive changes at both on-farm level and irrigation system/basin level and adapt to current development trends. The above-mentioned direction of the ASBP-3 contributes to this development by creating informativeness, openness, involvement of public and community organizations, as well as by disseminating certain rules and tools for information exchange in all collaborating countries.

An important factor is the transboundary surface waters in the Aral Sea Basin. The national hydrometeorological services in the region are responsible for monitoring of surface waters. The final stage of monitoring should include assessment of surface water resources in the current conditions and in the future. However, due to financial difficulties experienced by all NMHSs in the region, as well as due to lack of coordination, the final stage of monitoring is not carried out. The last issue of Water Resources Inventory "Long-term data on the regime and resources of surface waters", which included hydrological data up to 1980, was published 30 years ago. And the monograph "Surface Water Resources of the USSR", which provided data on regimes of rivers, lakes and other water bodies, was published 40 years ago. For last 40 years, the long-term hydrological data series was accumulated and gives possibility to evaluate long-term regime of water bodies caused by climate change and human activities.

Implementation of water management measures to mitigate the Aral crisis is impossible because of lack of the current and prospective assessment of surface water resources in the Aral Sea Basin. Tajikistan and Kyrgyzstan, where most of the Aral Sea Basin’s runoff (80%) is formed, are interested in using the available water resources for hydropower generation but the downstream countries - Kazakhstan, Turkmenistan and Uzbekistan - are going to continue using these resources for irrigation. At the same time, the upstream countries are interested in maximum water releases during the winter when electricity demand is very high but the downstream countries need the same maximum water releases during summer for irrigation.

Increasing water consumption, which is linked to population growth and intensive development of the region's economies, aggravate the situation. The expected decrease of runoff in the near future due to climate change makes this problem even more acute. These factors necessitate regional assessment of the long-term surface runoff in the Aral Sea Basin in the light of climate change and economic activity in the region.

Further development of information exchange in the water-environment sphere in the region will be focused on improving the participatory principle for all stakeholders and works based on unified methodical approaches and technical tools. Modern information technologies give possibility to set-up the differentiated access to certain

sections of information system, hence the copyrights of information suppliers will not be violated and some data bases will be protected against free viewing.

Further development of Information Network at the regional and national level

Further implementation of ASBP-3 involves the following:

- Involving all stakeholders of Central Asia into the Information Network
- Including data of Afghanistan (GIS-layers and, if possible, data of regular observations) within the Aral Sea Basin into the Information Network
- Feeding regional and national databases with new information needed for modeling and GIS
- Organizing spatial visualization of provincial statistics in database through GIS-interface

Improving the modeling-analytical tool, including on-line data analysis:

The followings are going to be implemented:

Developing, finalizing and testing the analytical tool of Information System, including:

- game models for the Aral Sea Basin management (ASB-mm);
- water balance model for river site (site selection and solving tasks on flow distribution, taking into account the lateral inflow, channel losses calculation)
- assessment and forecast of the lateral inflow;
- assessment of water content in the rivers of the Amudarya/Syrdarya river basins based on analogues of climatic and hydrologic parameters of hydrologic series, using data of NHMSs;
- operative forecast of return flow and lateral inflow assessment of non-productive water losses in the river bed;
- analysis of socio-economic consequences in economic sectors related to water management.

Development of computer models and user interfaces for online solution of typical tasks of water resources management and assessment:

- Model of reservoir with hydropower (selection of object and solution of tasks on flow regulation by reservoir, calculation of water deficit, HPS operation modes, including power generation, etc.)
- Model for assessment of hydrochemical composition of Amudarya / Syrdarya rivers (selection of gauging stations, river section, input of hydrochemical data, assessment of salt-water balance [mg-eq.], data validation, etc.)

Issuing and dissemination of publications on water&land and environmental problems:

- Publishing popular thematic, graphic and cartographic information about the most popular and actual water-environmental problems in the region (including training of regional organizations in preparation of such information)
- Publishing EC IFAS bulletins, ICWC and ICSD bulletins, other periodic publications of EC IFAS, SIC ICWC, SIC ICSD and all the partners
- Publication of monographs, brochures, collected papers etc. provided by all partners
- Digitization and publication of rare and old books, maps etc. related to the ASB problems, available in the archives of the partners
- Checking existing materials and preparing new ones on water resources in Central Asia with the aim to propagandize the portal and global information systems too (WaterWiki and others)
- Studying the needs of farmers, WUAs, agricultural producers for information contained in the Information System and on the portal and the possibilities to deliver it to them (agro-bulletins, satellite images of crops, etc.)

Improving institutional structure of water information service in Central Asian:

- Improving "institutional" structure of IFAS
- Expanding the geographical coverage (Afghanistan)
- Building capacities of executive bodies (EC IFAS, SIC ICWC, SIC ICSD, BWOs, RHC, NHMS)
- Improving the support structure (cooperation with donors and international organizations)
- Cooperating with other data provides (CACILM, UNDP, etc.)

Preparing integrated information about environmental situation, forecasts of probable consequences of human activity, and recommendations on selecting ways of safe development in the region for decision-support systems.

The planned eco-information system should be directed towards integrated use of environmental monitoring results and providing transformation of raw measurements into the data format suitable for making of decisions that contribute to sustainable development of Central Asian countries.

FOURTH MEETING OF THE TASK FORCE ON TARGET SETTING AND REPORTING ON THE PROTOCOL ON WATER AND HEALTH OF THE UN CONVENTION ON TRANSBOUNDARY WATERCOURSES AND LAKES

(Tbilisi, Georgia, 19-20 October 2011)

Organizers: UNECE, WHO, National Water Partnership of Georgia.

The meeting was attended by experts from the following countries: Armenia, Azerbaijan, Belarus, Croatia, Finland, France, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Lithuania, Norway, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovenia, Switzerland, Tajikistan and Ukraine.

Representatives of the following international organizations and non-governmental organizations (NGOs) were also present: Regional Office for Europe of the World Health Organization (WHO/Europe), ECO-TIRAS International Environmental Association of River Keepers, Global Water Partnership for Caucasus and Central Asia (GWP CACENA), IPO Ecoproject Partnership, Regional Environmental Center (REC) Caucasus, WaterLex, Women in Europe for Common Future (WEFC).

The opening of the meeting was marked by the signature of a Memorandum of Understanding between UNECE and the Ministry of Environment of Georgia, setting the basis for the National Policy Dialogue (NPD) on Integrated Water Resources Management in Georgia under the European Union (EU) Water Initiative, facilitated by UNECE.

The Deputy Chairman of the Parliament of Georgia, Mr. Tsereteli, opened the meeting.

After adoption of the Agenda, Mr. Pierre Studer was assigned to chair the Task Force upon the Swiss proposal.

The following topics were considered during the meeting:

1. Progress since the second session of the Meeting of the Parties;
2. Review of general progress in setting targets and target dates and challenges encountered by Parties which have not yet set their targets;
3. Specific challenges in setting targets and target dates;
4. Setting targets in specific areas of work under the Protocol;
5. Measures to achieve targets and target dates;
6. Assessing progress towards the objectives of the Protocol;
7. Future work of the Task Force on Target Setting and Reporting for 2011-

2013.

Regarding 1st item: The secretariat provided information on the first sub-regional workshop held in Belarus in April 2011 with representatives from the Republic of Moldova, Ukraine, Belarus and the Russian Federation.

One of the main conclusions of this workshop is as follows: "Setting targets is also a political exercise, not only a technical one. The key task of the Protocol is involvement of decision makers at higher political level and also the representatives of civil society...".

Similar sub-regional workshops were planned by UNECE in the Caucasus and Central Asia in 2012 and 2013 thanks to Finnish financing.

Regarding 2nd item: Several countries reported on the progress in target setting. Progress is observed in Georgia (set up of Steering Committee and establishment of draft targets), Romania (continuation of process in targets setting), Armenia (progress towards ratification of the Protocol), Portugal (request to government to nominate focal points), Azerbaijan (new small scale water supplies, construction of waste water treatment facilities), France (definition of targets based on a large consultation process). The representatives of Norway and Ukraine presented the difficulties and challenges regarding the target setting process.

The 3d item was divided into some sub-items:

A. Building cross-sectoral cooperation

Establishment of coordination groups in Moldova, Hungary, Lithuania and Kyrgyzstan was reported.

B. How to set targets and which targets to set

The secretariat provided a brief overview on the status of setting targets as revealed from the first reporting exercise. Areas in which all Parties have set targets are the following: quality of drinking water supplied, reduction of water-related diseases, access to drinking water and access to sanitation. It was noted that in the area of reduction of water-related disease, regretfully no target linked to direct health intervention (e.g. vaccination) had been set. It was noted that target setting was delayed everywhere and cost benefit analysis had been very rarely carried out.

C. How to ensure public participation in target setting

Many countries reported that provisions on public participation were included into the Protocol but only some reports contain information on public contribution. Success in this area was achieved in Moldova and Belarus.

The 4th item was also divided into sub-items:

A. Surveillance of water-related diseases

It was noted that Central Asia and Caucasus, particularly Tajikistan, Turkmenistan, and Azerbaijan, have high rates of mortality from rotavirus infections. It was calculated that 40% of all hospitalizations worldwide are due to rotavirus infections. The incidence of severe rotavirus infections is highest where water and sanitation

standards are lowest. Rotavirus Surveillance Networks were established in Armenia, Azerbaijan, Georgia, the Republic of Moldova, Tajikistan and Ukraine with the assistance of WHO/Europe, with the objective to prepare the decision-making on the introduction of the rotavirus vaccine. Armenia, Georgia and the Republic of Moldova were planning to introduce the vaccine in 2012 through support by the Global Alliance for Vaccination and Immunization (GAVI). Tajikistan was planning introduction in 2013-2015. It is difficult to prove interrelations between water quality and water-related diseases without reliable statistics. The representative of Kyrgyzstan has emphasized that rural communities in Central Asian countries need a support to implement the plan on water security.

B. Small-scale water supplies and sanitation

Health issues in the majority of countries were linked to small scale water supplies.

C. Equitable access to water and sanitation

A representative of France presented the work conducted on equitable access to water and sanitation, which was developed on the basis of a questionnaire. Three meetings of the expert group and a workshop were held in July 2011 in Geneva. A best practices document resulted from this work is being finalized and will be presented to the fourth meeting of the Working Group on Water and Health. The Guidance would be launched at the sixth World Water Forum in Marseille in March 2012. The focus of the work on equitable access was on three dimensions, namely geographical disparities, vulnerable and marginal groups, and population with limited access.

D. Water supply and sanitation in extreme weather events

A representative from the Republic of Moldova informed that research and statistical data show a correlation between water quality and climate change, namely regarding the incidence of floods and droughts. He explained that work had started to develop preventive measures to adapt to climate change.

Regarding 5th item “Measures to achieve targets and target dates”: A representative from the Republic of Moldova provided information on the process of deciding upon the target settings and target dates. The preparation of a national action plan is now foreseen, including the estimate of the associated costs, which should become a part of the National Environment and Health Action Plan to be adopted through a government order.

During debates on the 6th item a representative from WHO presented the WHO and UNICEF Joint Monitoring Programme on Water Supply and Sanitation (JMP) and the Global Annual Assessment of Drinking Water and Sanitation (GLAAS). JMP provides information on the access to improved water supply and sanitation facilities. She explained the process of global JMP report development and emphasized the need for harmonization of national classifications with JMP definitions and capacity building activities. GLAAS is a new initiative of UN Water led by WHO, launched in 2008. GLAAS uses the JMP information adding other data to describe the enabling environment in the water and sanitation sector, including policy sector, institutional structure, human resources capacity and financial flows. It should provide added value

to sanitation and drinking-water monitoring efforts towards achieving the MDGs. The latest GLAAS survey was carried out in 57 countries, and 12 external support agencies. The report had been published in 2010. The GLAAS recommendations were reflected in high level meeting commitments on Sanitation and Water for All.

Regarding the last item: the secretariat informed that should it be decided to hold the next meeting of the Task Force in Geneva, the dates of 11-12 July 2012 had been provisionally reserved. Proposals to host future meetings of the Task Force should be brought to the attention of the secretariat because the majority of participants noted that the Target Group meetings need to be continued in the sub-regions.

The complete version of the report can be downloaded here:

www.unece.org/fileadmin/DAM/env/documents/2011/wat/TF/4th_TF/Report_TF_4th_meeting_Rus_final.pdf

Yu. Kamalov

ACTIVITY UNDER THE PROJECT “WATER PRODUCTIVITY IMPROVEMENT AT PLOT LEVEL”

To develop a reliable, demand-driven, equitable water distribution, it is important to develop an adequate water supply at all levels of water hierarchy, as well as distribution structure at the institutional and organizational levels like that, which was developed within the framework of the IWRM project. However, today to overcome water problems one needs to improve water use efficiency at field level, where water wastage is observed everywhere. Exactly adequate irrigation management at the field level will not only reduce the negative impact on the environment, but will result in stable high crop yields, thereby encouraging the farmers to use water more efficiently.

For this purpose in 2008 the "Water Productivity Improvement at Plot Level" (WPI-PL) project was initiated under financial support of SDC in Central Asia , aiming to use efficiently irrigation water at the field by improving on-farm (that is field) water management, thus preventing the adverse effects of water-logging, salinization and soil erosion on environment. The objective of the project is building capacities of various actors of the agricultural innovation system through the establishment of strategic alliances for transferring basic education ideas and already adapted technologies related to improving water use to farmers. New concept and strategy based on innovation cycle and proposed by SDC was adopted in the WPI-PL project for the first time in practices of international projects.

Eighteen key partners (two major partners in form of Association of IWMI and SIC, as well as 16 national partners - organizations that are selected to ensure implementation of project objectives in the field) are involved into the project. These are research organizations, information centers and consulting services (distributors) that already

have experience in consulting, as well as sufficient technical, organizational and structural capacities in order to arrange processing and transfer of knowledge to farmers.

The project is implemented in three republics in the Fergana Valley - Kyrgyzstan, Uzbekistan and Tajikistan. Twenty six pilot sites proposed by the national partners jointly with the regional group were adopted, including 6 in Kyrgyzstan, 5 in Tajikistan, 15 in Uzbekistan. As of 2011, the WPI-PL project area embraces 34,201 farms on 228903 hectares.

By present, the following results have been achieved under WPI-PL:

1) New system of international project implementation based on the partnership of various organizations which activities are aimed at achieving the common goal has been approbated for the first time in practices of international projects.

2) The system of interaction between different organizations (research organizations, information centers and consulting services (distributors)), which already have experience in agricultural and water sector and experience of working with farmers, as well as sufficient technical, organizational and structural capacities to organize knowledge processing and transfer to farmers was created under the project.

3) The action strategy for National team is defined within the project in each country.

4) The needs and problems affecting directly or indirectly irrigation water use efficiency have been systematized by the project and can be classified as: institutional, technological, financial, economic, legal. At the same time, these problems were divided into those addressable by the project and those non-addressable by the project but that can affect the productivity of land and water at the field level.

5) The project experience has demonstrated that monitoring and determination of the needs and demands of farms and identification of their problems are important and must be conducted systematically. This is evidenced by the fact that, when questioning farmers in all areas covered by the project at its start in 2008, irrigation issues were not clearly expressed and were implicit and amounted about 17%. In 2009, after the training and explanatory work conducted by the project specialists for farmers, the number of questions directly related with irrigation water was about 60% of all questions, and after obtaining the necessary recommendations and achievement of considerable saving of irrigation water, the number of questions related to water achieved 70% in 2011.

6) National groups formulated the main gender inequality problems in agriculture and water management, which is markedly evident in women's right to land and water, in access to water, in sharing of responsibilities, control over resources, in agricultural water management, access to market and commercial services. Very little shift in minds about social status of women has place, especially in men’s minds. The actual situation is that the activity of women is growing and the number of woman-farmers is increasing.

7) The project managed to raise interests of farmers in adopting innovations that produce benefits for water users.

8) Timely delivery of irrigation water to farmers is a serious problem in many areas. The lack of water accounting system, due to which water charges are taken on the basis of quantity of hectares irrigated, cause serious problems to farmers because of unreasonable payments for water.

The new water distribution system based on water accounting for a group of small farms was adopted in the Kyrgyz Republic. This system allowed: - avoiding conflicts between farmers; - ensuring correct irrigation fees according to actual irrigation water volume used by each farmer; - efficient use of irrigation water.

The water accounting system for each dekhkan farm created within the project gave possibility to shift over from water charges per each hectare to charges per actual volume of used water, to reduce payment for water by 40-50% and therefore to reduce water volume for irrigation in Tajikistan.

In Uzbekistan, involvement of agronomists and hydraulic engineers in WUA's activities helped to regulate water use at farm level, to fix norm of irrigation water use, to adopt the water accounting system in each farm, to increase knowledge of farmers through monitoring and consulting by WUA's key specialists.

9) The system of regular monitoring of farm problems is created, the search for solutions through research institutes is organized, training materials and recommendations are prepared by information centers, and solutions and recommendations are delivered to farmers in each country.

10) The set of technologies suitable to specific local agricultural production is identified within the project for solution of the problems related to practical needs and demands of the farmers.

11) Specific approaches and methodology of training are developed in each country, taking into account local circumstances and experience of extension service.

12) Trainers from organization-distributors, clerks, irrigators and farmers have been trained on a regular basis within the project. 365 trainings were conducted over 3 years (2009-2011).

13) Analysis of results showed that consultations for farmers give results, although unapparent, but high efficient for those farmers who have taken advice. It is important that as a result of training and project work the views of farmers on the use of water have changed. They understood the main thing that water has the size, and water application has to meet the irrigation norm for each crop and soil conditions.

14) Farmers emphasize that the benefits from adoption of effective technologies are obvious. Farmers get by 30-40% more benefit as a result of consultation.

15) To improve control of water distribution and water use at WUA and farm level, it was decided to equip all farm off-takes with the water metering and regulating facilities in the main WUAs within the projects "WPI-PL" and "IWRM". The water accounting system was organized along the boundary of all farms and has created the

basis for effective water distribution at WUA level within the "WPI-PL" project. Additionally, it allowed adopting the volumetric method of water accounting. Within the WFM sub-project of the WPI-PL project, 434 water metering facilities were built and put into operation in 2010 as compared to 683 ones planned to be built. This year, as of November 1, 166 gauging stations were built, other 83 gauging stations will be built before the end of 2011.

16) SDC initiated construction of the drip irrigation system in order to demonstrate water-saving technologies for improving irrigation management at plot level within the WPI-PL project. The farms focused on horticultural crops and situated in the area with the worsest water supply were selected: in the “Hirmoni Aziz” WUA in the Fergana district, Fergana province, and the “Damgul Dastasi” farm in the Kasansay district, Namangan province. The total area of the constructed drip irrigation system is 40 hectares.

17) The result of improving the water productivity and water use efficiency is the result of extension and dissemination activity of each partner and, mainly, of trainers from organization-distributors.

18) During the second phase of the project, irrigation water use was significantly reduced in the project area as compared to the province. Water delivery was decreased in the project area: by 29.7% - in Kyrgyzstan, by 59% - in Uzbekistan, and by 30% - in Tajikistan. The number of water applications decreased in the project area. The recommended system of water accounting gave possibility to decrease payments for water use by 40% in Kyrgyzstan and Tajikistan. Planting of cotton on the furrow ridge and preliminary recharge irrigation allowed reducing three farming techniques associated with the use of costly machinery.

19) Owing to the project implementation, the water productivity, when cultivating cotton, ranged from 0.74 to 0.92 kg/m^3 - in Uzbekistan, from 0.61 to 0.85 kg/m^3 - in Tajikistan, and from 0.39 kg/m^3 to 0.52 kg/m3 - in Kyrgyzstan. In the Republic of Kyrgyzstan high water productivity was achieved for cereals and vegetable crops (0.66-0.78 kg/m^3 and more than 2kg/m3, respectively).

20) Technologies for growing drought-resistant cotton varieties tested on pilot fields in the Bagdad and Tashlak districts of the Fergana Valley have shown quite good results: when sowing later (two weeks later in average) the number of irrigations of cotton decreased (from 5-7 to 2) if the period between water applications is 30 days; the total water delivery for irrigation period decreased more than three times (from 8800 to 2100 m3/ha) , and yields increased up to 47 kg/ha.

21) The innovation cycles created within the WPI-PL project operate well and independently in each country and are adjusted to existing conditions. The partners cooperation scheme with equal involvement of partners at all levels is created within the project. Together, these organizations address the issues identified at the farm level. All participating partners of the innovation cycle completely understand their role, and they immediately respond to requests of other partners and support each other, if necessary. The innovation cycle mechanism has proved its effectiveness and dynamism.

22) Monitoring and evaluation of the WPI-PL project's activities conducted by an independent third party clearly showed the positive results of the project at the plot level.

23) The public authorities of all countries in the project area, represented by the ministries have demonstrated their interest in the project approaches for addressing the problems of water and agriculture sectors. Practical experience, results and disseminated materials of the project are used successfully in other projects: RESP-2 (Uzbekistan), SEP (Kyrgyzstan), Isfara (Tajikistan).

The annual seminar dedicated to the 2nd phase of the project and attended by all key partners from the Republic of Kyrgyzstan, Tajikistan and Uzbekistan, was held on 28-29 November 2011 in Tashkent. National coordinators reported the results of project activities in their respective countries and proposed future activity, and the Project Steering Committee evaluated the project results positively.

MINUTES OF THE PROJECT STEERING COMMITTEE (PSC) MEETING THE WATER PRODUCTIVITY IMPROVEMENT AT PLOT LEVEL (WPI-PL) PHASE II PROJECT

Tashkent, Uzbekistan November 29, 2011

Participants:

The members of the PSC:

Olivier Magnin – Water Resources Management Advisor, SDC Tashkent Office

Mukhitdinov Kh. – Head of the Interstate Commission for Water Coordination (ICWC) Secretariat

Gafarov H. – Deputy Director of Tajik Branch of SIC ICWC[3]

Toktobaev M. – Head of the Department for Water Use Planning and Regulating, State Committee of Water Resources and Reclamation of the Kyrgyz Republic

Umarov H.U. – National Coordinator for the Republic of Uzbekistan

Participated:

Mohan Reddy Junna - WPI-PL Project Leader from IWMI

Mukhamedjanov Sh. - WPI-PL Project Leader from SIC ICWC

[3] Authorized by the Ministry of Reclamation and Water Resources of the Republic of Tajikistan Mr. Gafarov was not able to participate at the PSC meeting as his documents were sent late.

Invitees: 61 people from the three target countries.

The meeting of the PSC was chaired by Mr. Mukhitdinov Khayrullo.

Agenda of the meeting:

1. Approval of the Progress Report for 2009-2011 along the WPI-PL (Phase II) Project;
2. Discussion of strategy for future in conformity with the outcomes of the WPI-PL (Phase II) Project.

Outcomes of the meeting:

1. The Committee Members acknowledged the progress and outcomes of the WPI-PL project for 2009-2011, functioning of the innovation system and strategies adapted for dissemination in each of the three countries of the Fergana Valley. The Committee Members agreed to approve the progress report for 2009-2011.
2. The Committee Members acknowledged high efficiency of National teams work.
3. The Committee Members positively assessed the mechanism for cooperation among partners which was created by the project and proved its efficiency and dynamism, and recommended to reach out this system for interaction beyond the project frameworks at national level in all the three states.
4. The Project, first in practice of international project implementation, created a system for independent activity of every national partner under strategic coordination of Regional team.
5. Provide for development of mechanism for interaction between different levels of water hierarchy in the strategy of the project for future.
6. The WPI-PL Regional team to submit to SDC proposals on goal and objectives for the extension period of Project Phase II and provide for continuous work of the National teams for this period.

The Chairman of the Steering Committee Khayrullo Mukhitdinov	Head of the ICWC Secretariat
Olivier Magnin	Water Resources Management Advisor, SDC, Tashkent
Toktobaev M.	Head of the Department for Water Use Planning and Regulating, State Committee of Water Resources and Reclamation of the Kyrgyz Republic
Umarov H.U.	National Coordinator for the Republic of Uzbekistan

WORKING GROUP MEETING ON APPROVAL OF INNOVATIVE SOLUTION FROM CENTRAL ASIA TO THE SIXTH WORLD WATER FORUM WITHIN THE PRIORITY THEME "BALANCE MULTIPLE USES THROUGH INTEGRATED WATER RESOURCE MANAGEMENT"

Almaty, Kazakhstan **11 December 2011**

The partners of the Global Water Partnership from 8 countries of Central Asia and Southern Caucasus (24 persons) took part in the working group meeting.

After discussion the participants have approved the Innovative Solution of the Central-Asian sub-region to be submitted to the International Forum Committee, which includes the followings:

Title of the Solution: IWRM practice for sustainability in Central Asia

Description:

To facilitate actions for wider IWRM practical implementation in the region:

- National IWRM Plans (or IWRM Visions) development and their adoption by National Water Authorities in Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan – by the end 2012.
- National IWRM policy dialogues in all countries for promotion of wide public participation (proper stakeholders) in water governance at all hierarchic levels is essential for 2012-2014. The main issues of policy dialogues are - how to

ensure the legal arrangements for the Public Water Bodies involved, what financial mechanisms for their involvement are needed.

- With the framework of the Aral Sea Basin Program-3 to establish the network of training centers and managing the coordinated capacity development process over the region. This training network should provide during 2012-2014 training and wide popularization of IWRM principles and achievements with water users' participation.
- Creation the expert working groups for legal and financial justification of IWRM and establishing its legislative basis, improving water charging mechanisms, legal and financial coordination of efficient water use aspects at all hierarchic levels – during 2012-2014.
- Provide assistance to the National water authorities to attract funds for technical measures during 2011-2012, aiming: introduction of water record keeping; contribution of hydro-meteorological services in IWRM; establishing the extension service for improving the water productivity; computerization of managing the water supply and irrigation systems; water-saving interventions, etc.

Location:

Central Asian Region: includes territory of five countries – Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan (possible plus Afghanistan)

Actors:

Scientific-Information Center of the Interstate Commission for Water Coordination in Central Asia with support from GWP CACENA, IWMI, SDC, GIZ and others.

Who should initiate the project?

Interstate Commission for Water Coordination in Central Asia

Which actors will be strategic in the implementation?

National Water Authorities, EC IFAS, GWP CACENA, SDC, GIZ, WB, ADB, UNDP

Who should ensure follow-up of the solution at the local level?

National Water Authorities

What is the current development status of the solution

The most significant step towards IWRM was made in the frame of regional project "IWRM-Fergana" implemented by Water Authorities of Kyrgyzstan, Tajikistan, and Uzbekistan under overall co-ordination of the SIC ICWC and IWMI, and financial support from Swiss Development Cooperation. An overall project objective: "to

contribute to more secure livelihoods, increased environmental sustainability, and greater social harmony, and to support rural restructuring in Central Asian countries through the improved effectiveness of water resources management on example of the Fergana Valley". The Project activities were based on the engineering measures and IWRM tools in combination with organizational, legal, and financial measures.

Key question your solution aims to answer

What, How and Who should be activated to find proper way for more wide and effective dissemination of IWRM in Central Asia?

How does the solution contribute to the target's effective implementation and attainment?

The Central Asian countries should adopt mutually agreed at the highest political level water strategy addressing to IWRM implementation aiming water saving and achievement of potential water productivity in all uses. To achieve sustainable development in Central Asia and improve the livelihoods of the rural population while protecting the environment in the long term, a more efficient allocation and management of water resources is needed based on regional co-operation in energy sector and agrarian specialization.

What will be the solution's key outputs and how is the solution "innovative" as such?

Main Target is practical implementation of the IWRM principles at almost 50 % of irrigated area in Central Asia up to 2015.

If available, please provide a brief description of the preliminary results yielded by the solution or by any pilot/R&D activities undertaken so far.

Wide IWRM implementation process in Central Asia addressing to:

- Reform institutional structure for water resources management with aim to subdivide functions – one part have to be responsible for water delivery services, second part – for water use, third should provide control (inspection) of the both first. Division of functions will create stimulus for minimization of unproductive water losses.
- Institutional set up for water delivery should be created the only on the hydrographic principles to avoid administrative pressure.
- Institutional set up for water use and control could be organized within administrative boundaries, because economic and public activities structured on administrative basis in the countries.
- Policy-making from bottom to top will allow to avoid sectoral hydro-egoism, and to put process into democratic way with involvement the key stakeholders.
- Investments for improvements of infrastructure will be not effective without adequate above-mentioned institutional reforms
- Institutional changes without improvements of managerial instruments also will be not effective.

What key qualitative and quantitative indicators would you suggest to monitor progress and success over time in the process of effectively implementing this solution

The all changes should be measured by proper water indicators – more drop of saved water per any action. The principal goal is to achieve significant reduction of water withdrawal from river. During the past project activities total water withdrawal to the pilot area was decreased more than by 20 per cent – mainly due to institutional reforms and improvement of mutual discipline of water managers and water users. In the same time there were improved indicators of water use efficiency and water productivity at farm level. These improvements promoted possibilities for increasing the financial sustainability of farmers and Water Users Associations.

Given your experience, who would / should be most interested in this Solution and why? How will it help them?

National Governments will be able to formulate their National Development Strategies related to water in more efficient way.

In what context do you think this solution could / would work best and why?

For wider implementation there should be solved the following jointly agreed **tasks**:

1. **IWRM consistency** should be fully understandable and acceptable by almost the all five Governments (National Water Authorities) and the key stakeholders.

2. **IWRM procedures** should be fully documented and presented in the form of know-how packages, applicable by different stakeholders at all hierarchy levels of water management.

There should be created **IWRM Knowledge chain** in the form of proper capacity development system

What is the minimum investment necessary (in terms of human resources, time,energy, infrastructure, financial resources, political will, etc.) in order to effectively implement this solution?

See detailed cost assessment in annex 1

What projects/programmes inspired this solution?

A movement of the Central Asian countries towards wide implementation of IWRM principles (in combination with expensive programs for technical rehabilitation) should be based on the agreed regional "IWRM Road Map".

What organisations / institutions/committees do you think should commit to this solution in priority?

National Water Authorities, EC IFAS (ICWC), GWP CACENA, UNECE, SDC, GIZ, WB, ADB, UNDP

Which steps have you already taken to secure these commitments?

SIC ICWC conducted pilot project in Fergana Valley, GWP CACENA supported national roundtables and public awareness campaigns on IWRM in all regional countries during last four years, UNECE supports IWRM policy dialogues.

Concept paper for solution adopted at the international conference (Tashkent, May 2011) available: www.cawater-info.net/6wwf/conference_tashkent2011/files/6-iwrm_eng.pdf

Annex 1

Preliminary assessment of the costs for wider IWRM implementation

Steps	Kaz	Kyrg	Tajik	Turk	Uzb
1. Awareness on IWRM, political will and support for the reform process building	**160**	**210**	**200**	**270**	**230**
1.1. Develop a communication strategy	50	50	50	50	50
1.2. Targeted meetings with politicians, media, donors	50	100	70	70	100
1.3. Establishment of the Country Water Partnership	0	0	0	50	0
1.4. Workshops	30	30	40	50	40
1.5. Public awareness campaign	30	30	40	50	40
2. Creation of the framework for broad stakeholder participation	**85**	**110**	**110**	**110**	**110**
2.1. Designing the participatory framework	25	50	50	50	50
2.2. Facilitation of participatory meetings	50	50	50	50	50
2.3. Setting up a platform (working statute and conducting of consultations)	10	10	10	10	10
3. Initiate capacity building activities for implementing reform process	**330**	**550**	**550**	**580**	**550**
3.1. Development of the Information System (Databases, models)	100	100	100	100	100
3.2. Benchmarking of the IWRM planning process	10	10	10	10	10
3.3. Training of trainers on IWRM issues	50	50	50	50	50
3.4. Creation of the appropriate incentive system to correct working environment for IWRM implementation	40	40	40	70	40
3.5. Institutional support in terms of equipment	50	150	150	150	150
3.5. Training for different stakeholders and parties involved	80	200	200	200	200
4. Overview of on going activities that the IWRM plan can build on	**75**	**75**	**75**	**75**	**75**
4.1. Inventory of activities relevant to water resources management	30	30	30	30	30
4.2. Compile and make available information on IWRM planning successes and weaknesses	10	10	10	10	10
4.3. Identify and build on experience from non-water planning activities	10	10	10	10	10
4.4. Identify knowledge gaps	10	10	10	10	10
4.5. Disseminate lessons and make information available to all	15	15	15	15	15
5. Situation analysis, prioritization of water related issues and management assessments	**30**	**30**	**30**	**30**	**30**
5.1. Identify and prioritize WRM issues and challenges	10	10	10	10	10
5. 2. Identify WRM functions	10	10	10	10	10

Steps	Kaz	Kyrg	Tajik	Turk	Uzb
5.3. Identify management potential and constraints	10	10	10	10	10
6. Preparation of strategy and plan for IWRM framework	**280**	**305**	**305**	**350**	**305**
6.1. Reform of policies, legislation and financial frameworks	50	75	75	100	75
6.2. Institutional roles and capacities	30	30	30	50	30
6.3. Management instruments	200	200	200	200	200
7. Ensure adoption of the plan at the highest political level	**40**	**45**	**45**	**65**	**45**
7.1. Identify stakeholder groups which are negatively affected by the reforms	10	10	10	10	10
7.2. Identify stakeholder groups which are positively affected by the reforms	10	10	10	10	10
7.3. Accommodate plan and transition strategy	10	15	15	25	15
7.4. Select the most appropriate mechanisms for adoption	10	10	10	20	10
8. Implementation and financing strategy	**140**	**140**	**140**	**140**	**140**
8.1. Identification of funding for plan implementation	30	30	30	30	30
8.2. Restructuring existing budget allocations	25	25	25	25	25
8.3. Establishment of the National steering group	60	60	60	60	60
8.4. Use the GWP ToolBox as checklist	25	25	25	25	25
TOTAL:	**1140**	**1465**	**1455**	**1620**	**1485**

DISCUSSION ON THE TARGETS 2.2.2 AND 2.2.4 OF THE PRIORITY "CONTRIBUTE TO FOOD SECURITY BY THE OPTIMAL USE OF WATER" WITHIN THE STRATEGIC AREA "CONTRIBUTE TO ECONOMIC DEVELOPMENT" OF THE CENTRAL-ASIAN CROSS-CONTINENTAL PROCESS ON THE 6th WORLD WATER FORUM

29 November 2011 **Tashkent**

The following persons took part in the discussion on targets 2.2.2 and 2.2.4 for 6th WWF:

Mukhamedjanov Sh.Sh. - Coordinator of the Group on Targets 2.2.2 and 2.2.4 and their solutions, WPI-PL Project Leader from SIC ICWC;

Mohan Reddy Junna - WPI-PL Project Leader from IWMI;

Sokolov V.I.- Coordinator of the Group on Target 2.1, RESP-II Project Leader;

Yamakazi Yu. - Assistant Permanent Representative, JICA;

Mukhitdinov Kh.E. - Head of the Interstate Commission for Water Coordination (ICWC) Secretariat;

Toktobaev M.T. – Head of the Department for Water Use Planning and Regulating, State Committee of Water Resources and Land Reclamation of the Kyrgyz Republic;

Umarov Kh.U. – National Coordinator of the project in the Republic of Uzbekistan;

and WPI-PL project partners from the Kyrgyz Republic, Tajikistan and Uzbekistan - 45 people in total.

Agenda:

1. Discussion of Target 2.2.2: "Increase water productivity by 40-50% per production unit and land productivity by 20-25%".

2. Discussion of Target 2.2.4: "Increase the use of drainage water preliminary by 5 km^3/year".

Mr. Mukhamedjanov Sh., Coordinator on the Targets and their Solutions, opened the discussion. He told about the forthcoming 6th World Water Forum, which would be held in Marseille on 12-17 March 2012. The main goal of the Forum is "to find and to initiate practical implementation of solutions based on broad discussion of issues, problems and recommendations of the previous fora and other international meetings", including outcomes of International Conference "Towards the 6th World Water Forum - cooperative actions for water security", which was held in Tashkent, 12-13 May 2011. Draft documents on food security need to be prepared and submitted to the 6th WWF in Marseille, with consideration of opinions of various organizations such as GTZ, IFAS, IWMI, ICARDA, etc.

Recently, due to increasing population in the world, the problem of food security has become more acute, especially in the Central Asian region, where the bulk of population growth and employment is in rural areas. Food security can not be solved without the assurance of water availability and security in the region, where shared resources are scarce and on the verge of exhaustion according to the World Bank and FAO. Attention also is need to preservation of soil fertility. For Central Asian conditions, the direct impact of temperature and precipitation as a result of future climate change would cause 6…10 % decrease in crop yields, such as cotton, wheat, tomato, and potato. However, pasture productivity would increase by 9-17 % over decade.

Growing water shortage is expected also in the coming decades. National policies in all Central Asian countries are aimed at achieving food security through their internal food production. Proceeding from the inland nature of the region, low incomes of rural population due to growth of competitive highly efficient users, such as hydropower and industrial production, it is especially important to increase agricultural production per hectare and achieve maximum yields from each cubic meter of water. Taking into

account favorable natural conditions in the region, the constraints to achieve this are seen in:

- irrigated areas and their productivity;
- limited water resources;
- artificial water shortage and competition between hydropower (energy regimes) and agriculture.

Mukhamedjanov Sh., Coordinator of the Group on Targets and their Solutions, presented the action plans, rationale and reports on existing solutions for two targets.

During the discussion of Target 2.2.2, Mr. Sokolov V.I. has noted that Central Asia has a lot of water as compared the Middle East and Africa, but water is used inefficiently. Therefore, water productivity in irrigated fields in the Central Asia region could be increased by 25-30% up to 2015-2018 and by 40-50% up to 2025. This water productivity level was achieved in our pilot zones in the Fergana Valley over 10-15 years. It was achieved because we improved the discipline of farmers and water users and raised their knowledge, applied new technologies. Water users need to be provided with irrigation norms. Thus, productivity is not an end in itself. Our goal is to teach people a different way to treat water, in new ways to use water, namely to change their way of thinking. In addition, we must remember that we do not have much suitable land for irrigation. Extension services could play a certain role in this way.

Zhooshev P. noted that to achieve this goal, it is needed, first of all, to create a tool for effective management of water like that, which is implemented in the WPI-PL project.

Khodjiev Kh. emphasized that it is needed to achieve food security also in the pumping irrigation areas. Virtually, each country in the region has some areas with pumping irrigation, especially Tajikistan.

Mukhamedjanov Sh.: Pumping irrigation covers 75% of irrigated land in Tajikistan, 15% - in Kyrgyzstan; the pumping irrigation zones are in Jizzak, Navoi, and Karshi in Uzbekistan.

Umarov Kh.: The main source of food is not only water but also land. Crop rotation and planting of secondary crops are equally important. Thus, additionally to water accounting, measures to protect the current soil conditions and to improve soil fertility in the future have to be taken.

Sokolov V.I.: It is necessary to improve communication with Turkmenistan - a single country, where irrigated areas were expanded; that experience also has to be taken into consideration in the solution for this target.

Relevant government agencies, public and non-governmental organizations contribute mainly to this goal. It is necessary to create a free market system for implementation of project solutions, to prepare a framework for promotion of effective mechanisms and to ensure their implementation in national processes.

During discussion of the Target 2.2.4, Mr. Mukhamedjanov Sh. noted that due to expansion and development of new irrigation land, the acute deficit of water was felt in the Central Asian region in dry years. However, in wet years, the use of large amounts of water for irrigation led to increased outflows from the fields to drainage network and to formation of significant amounts of drainage water then discharged into the river basin, thus worsening the quality of river water and causing formation of salt lakes.
Sokolov V.I.: It is necessary to take into consideration experience of drainage water use for irrigation in Turkmenistan (Golden Lake).
During discussion Mr. Mohan Reddy Junna noted that accumulation of drainage waters and outflows has led not only to contamination of river water but also to water-logging and salinization resulting in deterioration of soil fertility.
Sokolov V.I.: Organization of effective planning of water use, including secondary, drainage water is recommended. In addition, a tool at the local level (province, district, WUA) also should be developed and should take into account water and land interrelations in the development of reclamation measures (e.g. Experimental Water-Land Commission in the Kuva district in Uzbekistan). When using drainage water for irrigation, the interaction between water and salts also should be taken into consideration.
Sokolov V.I.: It is necessary to create a tool for monitoring and control of land conditions and for mitigation of the negative impact of irrigated areas, such as discharge of drainage water into water sources.
Mr. Khodjiev Kh. has proposed to create land reclamation groups that would keep records of and monitor groundwater, conduct chemical analyses, and take samples of drainage water.

Discussion resulted in the following conclusions:

1. Make changes in the targets rationale in line with comments of the participants.

2. Make changes in the Target Action Plan in line with comments of the participants.

3. Make changes in the Reports on existing solutions in line with comments of the participants.

4. Establish good communication with Turkmenistan because its experience should be reflected in the target solution.

5. Organize the working group consisting of the representatives from each country of the Central Asian region.

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