Interstate **C**oordination **W**ater **C**ommission Of Central Asia	BULLETIN No 20	June 1999

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PROTOCOL No 22
of International Coordination Water Commission of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tadjikistan, Turkmenistan and the Republic of Uzbekistan meeting

February 12-13, 1999 Samarkand

ICWC Members:

T.Sarsenbekov	Chairman of Committee for Water Resources of the Republic of Kazakhstan
K.Beishekeyev	Deputy Director of Water Management Department of Ministry of Agriculture and Water Management of the Kyrgyz Republic
M.Nazriyev	First Deputy Minister of Agriculture and Water Management of the Republic of Tadjikistan
T.Altiyev	Deputy Minister of Agriculture and Water Management of the Turkmenistan
A.Djalalov	First Deputy Minister of Agriculture and Water Management of the Republic of Uzbekistan

ICWC honored member

R.Giniyatullin	Chairman of EC IFAS

From ICWC organizations

G.Negmatov	Head of ICWC Secretariat
I.Kalandarov	Head of BWO “AmuDarya”
O.Lysenko	Head of Water Resources Department of BWO “AmuDarya”
M.Khamidov	Head of BWO "SyrDarya"
A.Leshansky	Head of Division of Water Allocation and Water Balance of BWO “SyrDarya”
V.Dukhovny	Director of SIC ICWC

Invitees:

B.Berdimuradov	First Deputy Khokim of Samarkand province
Kh.Andayev	First Deputy Khokim of Djizak province
Kh.Askarov	Head of Department of Committee for Water Resources of the Republic of Kazakhstan
Kh.Pulatov	Chairman of South Kazakhstan provincial Committee for Water Resources
A.Kamolitdinov	Head of Department of the Ministry of Agriculture and Water Management of the Republic of Tadjikistan
G.Khanmedov	Head of Department of the Ministry of Agriculture and Water Management of Turkmenistan
B.Yusupov	Head of Department of the Ministry of Agriculture and Water

	Management of the Republic of Uzbekistan
Kh.Umarov	Head of Uzbek Water Inspection
Z.Djurabekov	Head of "Zerdolvodkhoz"
M.Turayev	Deputy Head of Djizak Provincial Water Department
Zh.Sharipov	First Deputy Head of SyrDarya Provincial Water Department
M.Makhmanov	First Deputy Head of Samarkand Provincial Water Department
A.Turayev	Deputy Head of Bukhara Provincial Water Department
A.Bakiyev	First Deputy Head of Navoi Provincial Water Department
R.Ostanov	Head of Department of ABMC operation
B.Radjabov	Head of Department of KMC operation
U.Pirnazarov	Head of Department of SMC operation

A.Djalalov - First Deputy Minister of Agriculture and Water Management of the Republic of Uzbekistan – was a Chairman.

AGENDA

1. Consideration and approval of water reservoir cascade operation regime in Amu-Darya and SyrDarya rivers basin in 1999 (responsible: BWO "AmuDarya" and BWO "SyrDarya").
2. Program of ICWC and its entities financial provision, including financial plan, plan of SIC ICWC and its organizations design and scientific activity (responsible: ICWC members, BWO "AmuDarya", BWO "SyrDarya").
3. Interstate water structures preparation to growing period of 1999 (responsible: ICWC members, BWO "AmuDarya", BWO "SyrDarya")
4. Water related sector development sustainability in Central Asia (responsible: SIC ICWC).
5. Approval of Statute of Central Asian Center for vocational training of water sector's specialists (responsible: SIC ICWC).
6. Agenda of next ICWC 23rd meeting.

Having heard meeting participants and exchanged opinions, ICWC members have decided:

ON THE FIRST QUESTION

1. To approve water intake limits from AmuDarya and SyrDarya and water reservoir cascade operation regime for 1998-1999 including growing period as well as water supply to Aral coastal zone and Aral Sea (Appendix 1).

After Hydromet forecast growing period of 1999 to charge BWO's to make more precise water reservoir cascade operation regime.

BWO "AmuDarya" to revise Tuyamuyun and Nurek reservoirs operation regime with regard for water related situation of non-growing period. In case of water availability decrease to reduce water intakes limits on 10 %, except Kyrgyz Republic.

2. ICWC members to promote interstate agreements on water-power resources of Naryn-SyrDarya cascade and realization of its operation regime schedule for current year.

3. BWO "SyrDarya" and ICWC members from Kyrgyzstan and Kazakhstan to undertake necessary measures to eliminate releases to Arnasay sink.

4. To commission BWO "SyrDarya" and the Ministry of Agriculture and Water Management of the Republic of Uzbekistan to prepare Charvak reservoir operation regime and submit to the government for approval.

5. ICWC members together with BWOs and SIC ICWC to analyze water unproductive use at the regional level, to determine causes and prepare proposals to the ICWC next meeting.

ON THE SECOND QUESTION

1. To note that in spite of economic difficulties all states of the region allocated fund for BWO "AmuDarya", BWO "SyrDarya" and SIC ICWC activity.

2. To approve cost estimates for Basin Water Organizations on 1999.

3. To approve cost estimates for SIC ICWC on 1999.

4. ICWC members to undertake measures on full financing of these works. Ask the Ministry of Agriculture and Water Management of Turkmenistan to facilitate BWO "AmuDarya" financing at the past year level.

5. To charge BWO "AmuDarya" and BWO "SyrDarya" under coordination with ICWC members to definite order of financing and spanding financial means and to submit for approval to the next ICWC meeting.

6. To ask ICWC member from Kyrgyz Republic and BWO "SyrDarya" to consider financing of objects transferred by Kyrgyz Republic to provisional administration of BWO "SyrDarya".

ON THE THIRD QUESTION

1. To accept for consideration BWO's information about interstate systems and structures rediness to the growing period of 1999. BWOs to provide full workability of the interstate systems and structures.

2. To mark strengthening of tendency to reduction of separate structures workability on the interstate water courses.

To ask ICWC members to find financial means for these structures rehabilitation and reconstruction.

ON THE FOURTH QUESTION

1. To accept for consideration SIC ICWC information on the Central Asian water sector development sustainability.

2. SIC ICWC to perfect methodology for sustainability assessment with regard to zonal and national peculiarities and to disseminate among ICWC members.

ON THE FIFTH QUESTION

1. To mark that SIC ICWC has submitted for consideration Statute of Interstate Center for vocational training according to precedent ICWC meeting decision.

2. To charge ICWC members to consider draft Statute and within a month to submit their proposals to SIC ICWC.

3. SIC ICWC with regard to comments and amendments to finalize draft Statute and develop strategy of education in water related sector.

ON THE SIXTH QUESTION

1. Next ICWC meeting to be held in May 1999 in Turkmenistan.

Agenda of the next 23rd ICWC meeting:

1. Results of non-growing period of 1998-1999 and perfection of reservoir cascade operation regime and water intake limits in AmuDarya and SyrDarya basin. (responsible: BWO "AmuDarya" and BWO "SyrDarya").
2. About Regional Information System creation for water and land resources in the Aral Sea basin management (responsible: SIC ICWC).
3. About IFAS Board decision of 12.03.1998 fulfillment "Main goals and directions of the strategy of water resources use" (responsible: ICWC members).
4. About Ozerny and Daryalyk collectors reconstruction.
5. About order of financing of water related structures, transferred to BWO "Amu-Darya" and BWO "SyrDarya" and financial means spending (responsible: БВО и SIC ICWC).
6. About Central Asian water sector development sustainability assessment (responsible: SIC ICWC).
7. Statute of Central Asian courses of vocational training.
8. About agenda of the next 24th ICWC meeting.

For the Republic of Kazakhstan	T.Sarsenbekov
For the Kyrgyz Republic	K.Beishekeyev
For the Republic of Tadjikistan	M.Nazriyev
For Turkmenistan	T.Altiyev
For the Republic of Uzbekistan	A.Djalalov

Annex 1
to the Protocol of ICWC meeting
of February 12, 1999 in Samarkand

Water intake limits from AmuDarya and SyrDarya and water supply
to the Aral sea and river deltas in 1998-1999

River basin, state	Water intake limits, km^3		
	totally per year (since 1.10.98 till 1.10.99)	including for non-growing period (since 1.10.98 till 1.04.99)	including for growing period (since 1.04.98 till 1.09.99)
Totally from SyrDarya	21,57	3,07	18,5
including:			
The Republic of Kazakhstan	8,20	0,50	7,70
The Kyrgyz Republic	0,22	0,02	0,20
The Republic of Tadjikistan	2,00	0,20	1,80
The Republic of Uzbekistan	11,15	2,35	8,80
Besides that,			
water supply to the Aral sea	5,60	4,20	1,40
Totally from AmuDarya	52,750	15,279	37,471
including:			
The Republic of Tadjikistan	8,300	2,814	5.486
The Kyrgyz Republic	0,450	0,000	0,450
From AmuDarya			
at Kerki gauging station	44,000	12,465	31,535
Turkmenistan	22,000	6,500	15,500
The Republic of Uzbekistan	22,000	5,965	16,035
Besides that, water supply to the Aral Sea with regard to irrigation releases			
in collector-drainage network	5,000	2,000	3,000
sanitary-epidemiological releases to			
irrigation systems	0,800	0,800	0,000
Dashkhovuz province	0,150	0,150	0,000
Khorezm province	0,150	0,150	0,000
The Republic of Karakalpakstan	0,500	0,500	0,000
Totally to Aral Sea and Aral side	10,600	6,200	4,400

Note: Limits foresee water supply for irrigation, domestic needs, etc.; under basin water supply changes limits will be corrected respectfully.

PROTOCOL DECISION
OF INTERSTATE COORDINATION WATER COMMISSION (ICWC)

Having considered according to ICWC mission (Protocol No 18, Ashgabat and No 19, Shymkent) submitted draft statute of BWO "AmuDarya" corrected with regard to increasing requirements to water resources management at the interstate level on base of comments and proposals of ICWC members,

Interstate Coordination Water Commission decided:

1. To adopt submitted Draft Statute of BWO "AmuDarya" with regard to proposals and comments of ICWC members.
2. To charge BWO "AmuDarya" (Mr. I.Kalandarov) to registrate the Statute in governmental organizations.

For the Republic of Kazakhstan	T.Sarsenbekov
For the Kyrgyz Republic	K.Beishekeyev
For the Republic of Tadjikistan	M.Nazriyev
For Turkmenistan	T.Altiyev
For the Republic of Uzbekistan	A.Djalalov

CONSIDERATION AND APPROVAL OF RESERVOIRS CASCADE OPERATION REGIME AND WATER INTAKE LIMITS IN THE AMUDARYA BASIN FOR 1999[1]

In October 23-24, 1998 on ICWC meeting in Khudjand water intake limits from AmuDarya and SyrDarya and water reservoir cascade operation regime for non-growing period of 1998-1999 were approved as well as water supply to the Aral Sea and Aral coastal zone.

By 01.02.1999 established limits use was as follow:

	Limit for non-growing period, mln m^3	Limit by 01.02.99	Actual by 01.02.99	Percentage of incremental	Percentage from total
The Republic of Tadjikistan	2813	1838,4	1357,3	73,8	48,2
The Republic of Uzbekistan	5965	3203,6	4200,8	131,1	70,4
Turkmenistan	6500	3364,3	3452,9	102,6	53,1
TOTAL:	15278	8406,3	9011,0	107,2	59,9
Sanitary release:	800	680,5	914,5	134,4	114,3
- including:					
1. Khorezm	150	150	133,3	88,9	88,9
2. Karakalpakstan	500	380,2	535,7	140,9	107,1
3. Dashkhovuz	150	150	245,5	163,7	163,7
Besides that,					
Surkhandarya province	200	133,7	228,4	170,8	114,2

Established limits use is as follow:

1. Upstream – 73,8 %.

2. Middle reaches – 99,5 %, including the Republic of Uzbekistan – 97,2 %, Turkmenistan - 101,1 %.

3. Downstream – 191,5 %, including the Republic of Uzbekistan – 209,6 %, Turkmenistan - 121,3 %.

This disproportion in water consumption between middle and lower reaches is explained by agreed leaching irrigation shift to earlier time in the river lower reaches.

Specific features of past 4 months of current growing period were the following:

- actual lateral inflow upstream Kairakkum reservoir was 133.6 % of norm which permitted to create optimal stocks of water in reservoirs and supply water users;
- good weather conditions in the region and land preparation in river lower reaches as well as high humidity created favorable conditions for intensive leaching irrigation.

By 01.02.99 water volume in Tuyamuyun reservoir was 5994 mln m^3, last year by this date it was 6091 mln m^3, in Nurek reservoir it was 7271 mln m^3 against 7300 mln m^3 last year, in on-system reservoirs of AmuDarya basin water amount was 3950 mln m^3 against 3762 mln m^3.

Water supply to Aral Sea is over-fulfilled: 3189 mln m^3 against 1333 mln m^3 (239,2 %). Last year it was only 596 mln m^3.

[1] Information on the first question of the ICWC meeting agenda

For given period established limit on sanitary releases is used on 134,4 %, including:

- Khorezm - 88,9 %;
- Dashkhovuz -163,7 %;
- The Republic of Karakalpakstan-140,9 %.

Favorable water related situation within the AmuDarya river basin allowed to change established for the first 4 months water intake regime, Tuyamuyun reservoir operation regime, especially in lower reaches. Relative over-diversion were as follow:

- The Republic of Karakalpakstan - 538,5 mln m^3;
- Dashkhovuz - 53,1 mln m^3;
- Khorezm - 521,9 mln m^3.

In order to use water resources effectively states-consumers, which change water intake regime, should correct respectively limits for last two months of vegetation, not coming out of quota approved for each state.

Taking into account current humidity and Hydromet prediction for February, is assumed that total inflow by Kerki gauging station upstream Kairakkum canal during non-growing period will be within the limits of 18.0-20 km^3 (average 19.0 km^3). Having analyzed typical hydrological cycles, bearing in mind weather conditions, actual snow stocks in the mountains is assumed, that flow during vegetation would be 46,0-48,0 km^3 (average 47,0 km^3). Total runoff is expected within 64,0-68,0 km^3 or 103,2-109,7 % of norm. It is necessary to paid attention to irregular water supply within a year.

Taking into consideration above mentioned, and with respect to water related situation and weather conditions, it is proposed to accept expected flow by Kerki upstream Kairakkum canal 66,0 km^3, including: for non-growing period – 19,0 km^3, for growing period 47,0 km^3.

BWO "AmuDarya" submits for ICWC consideration water reservoir cascade operation regime (tables 1, 2).

Table 1

Nurek and Tuyamuyun reservoirs operation schedule
since April 1999 till September 1999

Nurek reservoir	Unit	Prediction						Total
		April	May	June	July	August	September	
Inflow	m^3/s	500	783	1193	1581	1357	684	16129
Water losses	m^3/s	27	52	0	1	-1	26	278
Volume at the beginning of period	mln m^3	5912	6127	6267	7156	9113	10453	5912
at the end of period	mln m^3	6127	6267	7156	9113	10453	10500	10500
Accumulation (+), depletion (-)	mln m^3	215	140	889	1957	1340	47	4588
Altitude at the end of period	m	859,61	861,42	872,93	896,5	909,83	910	
Release from water reservoir	m^3/s	390	679	850	850	857	640	11263

Tuyumuyun reservoir	Unit	Prediction						Total
		April	May	June	July	August	September	
Inflow	m^3/s	885	1678	2562	3278	2331	1284	31782
Water losses	m^3/s	369	217	639	599	327	448	6837
Volume at the beginning of period	mln m^3	5089	4579	3512	3137	4181	4303	5089
at the end of period	mln m^3	4579	3512	3137	4181	4303	4472	4472
Accumulation (+), depletion (-)	mln m^3	-510	-1067	-375	1044	122	169	-617
Altitude at the end of period	m	127,40	123,5	122,7	126,03	126,37	127,02	
Release from water reservoir	m^3/s	713	1859	2068	2289	1958	771	25562

Table 2

Nurek and Tuyamuyun reservoirs operation schedule
since October 1998 till March 1999

Nurek reservoir	Unit	Actual				Forecast		Total
		October	November	December	January	February	March	
Inflow	m^3/s	411	392	219	194	180	180	4141
Water losses	m^3/s	-1	166	-6	31	-18	-6	441
Volume at the beginning of period	mln m^3	10555	10280	9520	8548	7271	6608	10555
at the end of period	mln m^3	10280	9520	8548	7271	6608	5912	5912
Accumulation (+), depletion (-)	mln m^3	-275	-760	-972	-1277	-663	-696	-4643
Altitude at the end of period	m	907,79	900,54	889,77	874,35	866,10	856,21	
Release from water reservoir	m^3/s	515	520	588	639	472	443	8343

Tuyamuyun reservoir	Unit	Actual				Forecast		Total
		October	November	December	January	February	March	
Inflow	m^3/s	886	781	802	766	559	615	11598
Water losses	m^3/s	51	53	-29	50	71	79	716
Volume at the beginning of period	mln m^3	4753	5065	5310	5615	5994	5319	4753
at the end of period	mln m^3	5065	5310	5615	5994	5319	5089	5089
Accumulation (+), depletion (-)	mln m^3	312	245	305	379	-675	-230	336
Altitude at the end of period	m	128,11	127,9	128,66	129,27	127,88	127,03	
Release from water reservoir	m^3/s	719	634	717	574	767	622	10545

ABOUT SYRDARYA BASIN WATER RELATED SECTOR ACTIVITY WITHIN THE FIRST HALF OF NON-GROWING PERIOD OF 1998-1999 AND GROUND OF NARYN-SYRDARYA RESERVOIRS CASCADE OPERATION REGIME AND WATER INTAKE LIMITS ON GROWING PERIOD OF 1999[2]

Four months of non-growing period of 1998-1999 are over, limits for which were approved at ICWC meeting in Khudjand 23-24 October, 1998, water related situation in the SyrDarya basin was as follow:

Information about cascade operation regime is presented in table 1 and releases dynamics in table 2. Herewith schedule approved by ICWC is also represented.

Table 1

Water reservoir	Reservoir volume, mln m^3		
	by October 1, 1998	by February 1, 1999	
		schedule	fact
Toktogul	15069	13407	12223
Andijan	1356	1506	1422
Kairakkum	2150	2330	3031
Charvak	1892	1612	1113
Chardara	1536	4781	4517
Total	22003	23636	22306

Table 2

Water reservoir	Releases, mln m^3	
	schedule	fact
Toktogul	4337	5117
Andijan	478	440
Charvak	1288	1723
Kairakkum	7594	8163
Chardara	4649	4991

From table 1 and 2 is clear that main deviation from schedule has happened in Tokotogul reservoir, from which release during 4 months was 435 mln m^3 more than it was expected by ICWC schedule. Other deviations from schedule are negligible. It is worth to note that channel reservoirs reconstruction provided certain reserve while in resent years Kairakkum reservoir was filled up at the beginning of January and even in December.

What is about releases to Arnasay sink, according to schedule they have started in January that can be explained by its operation in winter and intensive inflow to it (more than 1000 m^3/s). It is worth to note, that over-inflow to Chardara reservoir on 100 m^3/s compared to ICWC schedule is caused by Toktogul hydrostructure regime changes, releases increase from Charvak reservoir and lateral inflow between Kairakkum and Chardara which was 1.2-

[2] Information on the first question of ICWC meeting agenda

1.4 times more to compare with predicted. Totally during January 1.51 km^3 was released to the Aral Sea.

In tables 3 and 4 information about water diversion from SyrDarya river during non-growing period is presented. While water allocating water intake limits and requests of republic – users were taken into account.

Table 3

Republic, water-related site	ICWC limit, mln m^3	Fact	Percentage
The Kyrgyz Republic	20	12	58
The Republic of Uzbekistan	2350	2391	101
The Republic of Tadjikistan	200	90	45
The Republic of Kazakhstan ("Dostyk" canal)	273	37	13

Besides that:

Table 4

Parameters	According to schedule, mln m^3	Fact
Inflow to Chardara reservoir	8576	9137
Supply to the Aral Sea	2787	3507

Naryn-SyrDarya reservoir cascade operation regime during non-growing period, taking into account indicators of growing period's completed part (October 1998 – January 1999), is presented in table 5.

Naryn-SyrDarya reservoir cascade operation regime prediction is difficult because of late Hydromet forecast (January). It was decided to use long-term forecast methodology developed by BWO "SyrDarya" on base of ICWC decision (protocol No. 17 of 26.09.1997). According to this forecast water inflow to Andijan reservoir is less than average multi-year value (88 % of norm), other components are close to norm. Prediction will be made more precise according to the next forecast (up to April of current year).

Toktogul reservoir operation regime for considered period is accepted according to recommendations of working meeting of representatives of water and power organizations of the SyrDarya basin (August 24-26, 1998, Bishkek). Water diversion is taken within the ICWC limits (18.5 km^3) for average humidity year. Limit of depletion for channel reservoirs is established as follow: Kairakkum – 343.5 m (according to Makhram pumping station operation requirements), Chardara reservoir – 243.36 m (under volume of 700 mln m^3).

Prediction of Naryn-SyrDarya reservoir cascade operation regime for growing period of current year is presented in table 6.

During discussion at ICWC meeting in Samarkand of Naryn-SyrDarya reservoir cascade operation regime proposed by BWO "SyrDarya" comments were made about necessity of releases increase from Kairakkum reservoir in January-March.

Table 5

SCHEDULE_FORECAST
for Naryn-SyrDarya reservoir cascade operation regime
since October 1, 1998 till March 31, 1999
(after Hydromet)

	Unit	October	November	December	January	February	March	Total mln m^3
		fact	fact	fact	fact			
TOKTOGUL WATER RESERVOIR								
Inflow to reservoir	m^3/s	290	240	219	150	170	192	
	mln m^3	777	622	587	402	411	514	3313
Volume: beginning of the period	mln m^3	15069	14916	14438	13544	12223	11134	
end of the period	mln m^3	14968	14466	13548	12242	11134	10737	
end of the period (fact)	mln m^3	14916	14438	13544	12223	-	-	-
Release from reservoir	m^3/s	326	412	550	636	620	340	
	mln m^3	873	1068	1473	1703	1500	911	7528
KAIRAKKUM WATER RESERVOIR								
Inflow to reservoir	m^3/s	470	618	953	894	970	590	
	mln m^3	1259	1602	2553	2394	2347	1580	11735
Volume: beginning of the period	mln m^3	2150	1978	1490	2430	3031	3201	
end of the period	mln m^3	1912	1409	2023	2481	3201	3009	
end of the period (fact)	mln m^3	1978	1490	2430	3031	-	-	-
Release from reservoir	m^3/s	570	847	765	893	960	720	
	mln m^3	1527	2195	2049	2392	2322	1928	12414
CHARDARA WATER RESERVOIR								
Inflow to reservoir	m^3/s	492	866	1073	1008	1115	937	
	mln m^3	1318	2245	2874	2700	2697	2510	14343
Volume: beginning of the period	mln m^3	1536	1514	2297	4113	4517	5400	
end of the period	mln m^3	1456	2242	4086	4246	5400	5400	
end of the period (fact)	mln m^3	1514	2297	4113	4517	-	-	-
Release from reservoir	m^3/s	509	575	402	396	400	650	
	mln m^3	1363	1490	1077	1061	968	1741	7700
CHARVAK WATER RESERVOIR								
Inflow to reservoir	m^3/s	125	91	79	70	65	84	
	mln m^3	335	236	212	187	157	225	1352
Volume: beginning of the period	mln m^3	1892	1750	1637	1368	1113	1020	
end of the period	mln m^3	1768	1636	1366	1115	1020	843	
end of the period (fact)	mln m^3	1750	1637	1368	1113	-	-	-
Release from reservoir	m^3/s	170	134	180	164	103	150	
	mln m^3	455	347	482	439	249	402	2375
ANDIJAN WATER RESERVOIR								
Inflow to reservoir	m^3/s	46	51	45	51	50	53	
	mln m^3	123	132	121	137	121	142	775
Volume: beginning of the period	mln m^3	1356	1249	1229	1323	1422	1415	
end of the period	mln m^3	1254	1228	1322	1425	1415	1361	
end of the period (fact)	mln m^3	1249	1229	1323	1422	-	-	-
Release from reservoir	m^3/s	84	59	10	13	53	73	
	mln m^3	225	153	27	35	128	196	763
Release to Kzylkum massif	m^3/s	5	2	0	4	5	5	
	mln m^3	13	5	0	11	12	13	55
Release to Arnasay sink	m^3/s	0	0	0	563	344	277	
	mln m^3	0	0	0	1508	832	742	3082
Supply to the Aral Sea	m^3/s	270	326	302	286	240	313	
	mln m^3	723	845	809	766	581	838	4562
fact	m^3/s	283	320	360	355	-	-	3502

Note. With respect to comments of participants of ICWC 22nd meeting.

Table 6

SCHEDULE-FORECAST
for Naryn-SyrDarya reservoir cascade operation regime
since April 1, 1999 till September 30, 1999
(after long-term forecast for 5 years)

	Unit	April	May	June	July	August	September	Total mln m^3
TOKTOGUL WATER RESERVOIR								
Inflow to reservoir	m^3/s	275	643	1070	860	546	256	
	mln m^3	713	1722	2773	2303	1462	664	9638
Volume: beginning of the period	mln m^3	10737	10669	11772	13246	13798	13637	
end of the period	mln m^3	10669	11772	13246	13798	13637	13790	
Release from reservoir	m^3/s	300	230	500	650	600	190	
	mln m^3	778	616	1296	1741	1607	492	6530
KAIRAKKUM WATER RESERVOIR								
Inflow to reservoir	m^3/s	477	522	578	601	515	327	
	mln m^3	1236	1398	1498	1610	1379	848	7969
Volume: beginning of the period	mln m^3	3009	3418	3418	3053	2507	1804	
end of the period	mln m^3	3418	3418	3053	2507	1804	1716	
Release from reservoir	m^3/s	320	488	650	730	730	344	
	mln m^3	829	1308	1685	1955	1955	891	8624
CHARDARA WATER RESERVOIR								
Inflow to reservoir	m^3/s	336	522	338	245	406	439	
	mln m^3	871	1399	876	656	1087	1137	6027
Volume: beginning of the period	mln m^3	5400	4645	3875	2618	1051	700	
end of the period	mln m^3	4645	3875	2618	1051	700	1249	
Release from reservoir	m^3/s	574	650	651	635	422	190	
	mln m^3	1488	1741	1687	1701	1131	492	8240
CHARVAK WATER RESERVOIR								
Inflow to reservoir	m^3/s	212	415	554	412	234	135	
	mln m^3	550	1112	1435	1104	628	351	5179
Volume: beginning of the period	mln m^3	843	1050	1490	1886	1780	1332	
end of the period	mln m^3	1050	1490	1886	1780	1332	1160	
Release from reservoir	m^3/s	132	250	400	450	400	200	
	mln m^3	342	670	1037	1205	1071	518	4844
ANDIJAN WATER RESERVOIR								
Inflow to reservoir	m^3/s	145	207	284	148	68	49	
	mln m^3	376	554	736	396	183	126	2372
Volume: beginning of the period	mln m^3	1361	1477	1494	1374	831	689	
end of the period	mln m^3	1477	1494	1374	831	689	684	
Release from reservoir	m^3/s	100	200	330	350	120	50	
	mln m^3	259	536	855	937	321	130	3039
Release to Kzylkum massif	m^3/s	14	110	119	135	90	20	
	mln m^3	36	295	308	362	241	52	1294
Supply to the Aral Sea	m^3/s	210	63	63	64	63	83	
	mln m^3	544	169	163	171	169	215	1432

Note. With respect to comments of participants of ICWC 22nd meeting.

INDICATORS OF SUSTAINABLE DEVELOPMENT IN WATER-RELATED SECTOR AND AGRICULTURE OF THE CENTRAL ASIAN STATES[3]

Meaning "sustainable development" is considered mainly within a context of possible global and local external conditions with purpose to support growing population well-being and long-term balance of social, physical and economic components of the system in order to foresee these changes impact at macro-level as well as at economic sectors level.

Four major types of potential are considered within the framework of sustainable development conception:

production assets potential;
human potential;
natural resources potential;
financial potential.

Natural inter-correlation of them, influence on each-other as well as understanding that total potential of a country, sector depends on sum and impact of these four potential.

Assessment of sustainable development potential is performed at different level – macro, brancial and object level. It is important to make stress on brancial level with respect to ICWC leaders responsibility for water sector within the region and states.

I. ***Production potential*** could be assessed on production assets. It is known, that production potential reduction has place mainly due to their ageing, moral and physical wear as well as concentration and under-utilization.

Production assests are renewed by simple and expanded re-production, attraction of capitals and technologies from outside, repairs and maintenance.

Matter of interests is comparative analysis of main production assets (USD/ha) for 1990 and1995.

Though during recent years data accounting and analysis became worse, nevertheless, separate indicators, which were available, show the following situation:

- main production assets of water-related organizations sharply reduced since 1990 till 1995 in all states of Central Asia (Kyrgyzstan – 38 %, other countries – 70-86 %) and are now from 44 USD/ha in South Kazakhstan and to 357 USD/ha in Kyrgyzstan to compare with 300-1000 USD/ha previously;
- production assets ageing is under progress; according to TACIS investigations tractor average age is 9 years, other machinery – 11 years, that exceeds its service normative duration;
- production capacity of construction industry in water sector decreased by 10 times: 3500 th. m^3 of forced concrete and 12 th. t of metallic constructions in 1985 and 250 th. m^3 and 0.8 th. t in 1995 respectfully;
- WARMAP investigations in 22 farms of the region show that open drains out of operation constitute 32 %; close drains – 16 %; vertical drains – 86 %; collectors – 40 %.

[3] [3] Information on the fourth question of ICWC meeting agenda

Situation is aggravated by under-estimation of main assets that leads to low subscriptions for their rehabilitation.

II. ***Natural resources potential*** is a basement of state well-being, often it is limited and requires financial mean for its re-production, and, therefor, rational policy of utilization. For our branch this potential consists of land and water.

Land resources, with respect to dynamics of their fertility, bonitet, could be characterized by decreasing potential. Highly fertile land share reduced from 22.6 to 21.5 %, fertile land share – from 30.7 to 29.5 %, middle fertile share increased from 30.8 to 32.8 %, slightly fertile land share stabilized (15.6-15.7 %), and low fertile land share increased (from 0.3 to 0.5 %).

But with regard to the range of other indicators land fertility reduces sharply but that does not influence land bonitet yet; but could appear by jumps:

According to WARMAP research:

phosphorus, potassium and mobile nitrogen content is soil decreases everywhere;

sub-ploughing layer has being compacted due to shallow ploughing and refusal from loosening;

number of fields with strongly saline soil increases (average soil solution salinity over 16 farms show salt accumulation – 51 % per year).

Typical in these terms is Makhtaaral zone in South Kazakhstan.

Makhtaaral zone irrigated lands state in 1985-1996

Indicators	Unit	Years						
		1985	1989	1990	1991	1994	1995	1996
Irrigated area, ha	ha	39504	40442	40569	40569	40569	40616	40616
including:		182,3	182,3	182,3	182,3	182,3	182,3	182,3
Non-saline lands area	ha	no data	39232	39344	38638	38519	37004	14951
Slightly saline lands area	ha							16425
Medium saline lands area	ha	no data	1210	1225	1931	2050	3565	7407
Strongly saline lands area	ha	-	-	-	-	-	-	1833

Water resources in the Aral Sea basin can not be considered reducing. Nevertheless, water-related situation stability depends on water resources use level and, consequently, violation of natural cycles. Though in past years, due to strict limitation of water and its allocation it became possible to reduce water diversion on 7 km^3 compared with 1990, during two last years situation aggravated:

- in 1994-1998 due to disagreement in water resources management 16,1 km^3 water were released to Arnasay sink;
- unproductive water use sharply increased in irrigated agriculture though agricultural production reduced by 2 times compared with 1990. Taking into account that water

diversion remained almost the same, unproductive use increase by 2 times. This is confirmed by WUFMAS data: useful water use in farms was 25-30 % in 1997-1998 against 45-60 % early;

- attention paid to productive water use and its limitation reduced even at inter-farm level, that is evident from example of AmuDarya basin where in 1997-1998 water diversion increased because of different reasons.

III. Human potential. Unfortunately, it was impossible to collect data over the region but data on Uzbekistan, which constitute about a half of the region's potential, permit to assess general situation:

- during 1990-1995 human potential decrease was 15 % for the Ministry of Agriculture and Water Management, 43 % - for Uzvodstroy, 31 % - in industry, 34.6 % - in transport enterprises, 40.0 % - in design-research institutes;
- though operational staff was not reduced, but its provision (salary) decrease compared with 1990 almost by 10 times;
- vocational training practically is stopped excluding separate workshops organized by SIC ICWC and the Ministry of Agriculture and Water Management. At the same time world practice in irrigated farming significantly grew, therefor human potential qualitatively reduced.

In 1997 interrogatory was conducted by SIC ICWC among 24 leaders of provincial water organizations. Only 50 % of them are satisfied by staff qualification. All of respondents underlined low salary as one of most important reason for potential decrease. About 80 % noted losses of qualificated staff, 60 % - personnel ageing.

From interrogatory is obvious that if before 1995 potential decrease was not observed, in consequent years this reduction is evident.

Financial potential

Economics in all states of Central Asia has the same tendency, which differs only by rate of fall, population growth, trade balance deficit, etc. It is evident from diagram 1 reflecting economic analysis of EU.

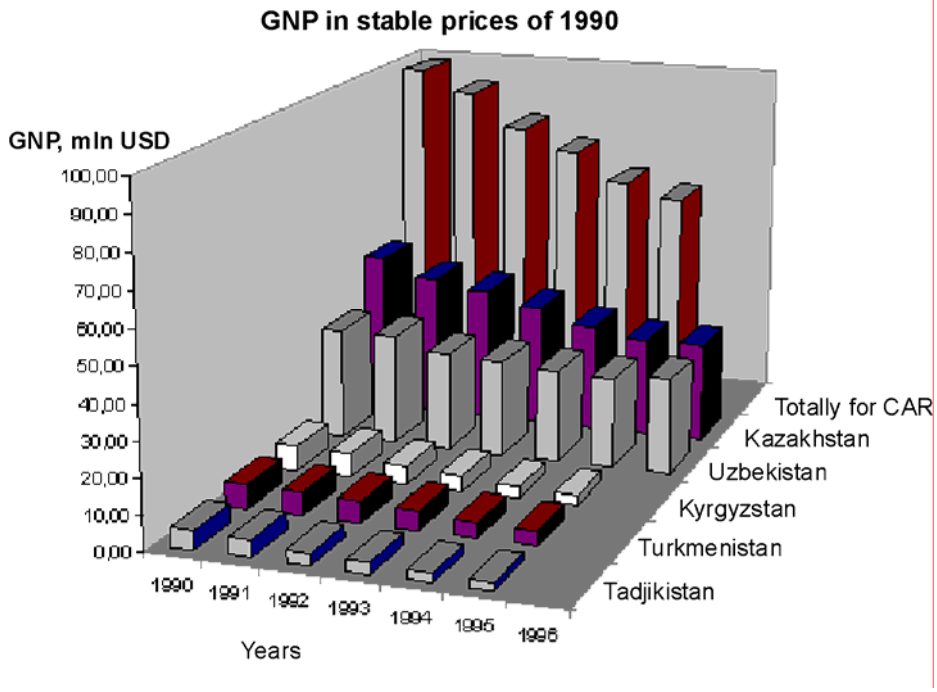
Naturally, gross national output, characterizing financial potential of state, reflects situation in our branch as well, which consists of:

state subsidies for operational expenses and capital investments;

payment for water as a resource and water organizations services;

external loans;

farms subscription for irrigated farming and water-related economy potential improvement.



Though it was impossible to collect correct data over all republics, but the following features of current situation is obvious:

- state subsidies are remained in significant scale in Uzbekistan, Turkmenistan and Kyrgyzstan, mainly in operational measures; in Kazakhstan and Tadjikistan they are negligible;
- even were subsidies are kept (Uzbekistan) they are reduced by 2 times compared with 1990, including;
  - for new lands development - 49 %;
  - irrigated land reconstruction - 60,5 %;
  - collector-drainage network construction and reconstruction - 81 %;
  - magistral and inter-farm canals and collectors construction and reconstruction - 59,5 %;
  - irrigation network reconstruction and water supply improvement - 84 %;
  - other expenses – almost 2 times.

- payment for water and services are yet negligible. Even in Kazakhstan, where water-economy is transferred to self-financing, water users contribution constitutes only 10 %;
- external loans in water sector and irrigated farming rise, especially in Kazakhstan, where in the Aral Sea coastal zone 100 mln USD are invested by the World Bank, in Kyrgyzstan loans equal to 30 mln USD, in Uzbekistan – 160 mln USD for 1999-2000 (the World Bank) and 50 mln USD (ADB). But compared to 1990 (about 2 bln USD) these investments are very low;
- operational costs.

Operational costs analysis on base of Regional Data Base, block "Economics" showed that all budget items were reduced. Maximum reduction is found for labor cost (Uzbekistan – 70 %, Tadjikistan – 97.4 %), at the same time labor reduction was found on 15 % (Kazakhstan – 3 %, Turkmenistan – 28 %).

Electric energy costs increased in Uzbekistan on 89 % and energy consumption reduced on 45 %.

Administrative-managerial costs are sharply reduced (Uzbekistan – 39 %, Tadjikistan – 96 %).

Total operational costs of water organizations were reduced as follow: Uzbekistan – 7.6 %, Kyrgyzstan – 60 %, Turkmenistan – 92.3 %).

According to USAID Project "Price formation in period of transition to water pricing" operation costs on average are 50 USD/ha.

Therefore, in Central Asian states water-economy and irrigated farming potential decreases, especially natural, financing and main assets potential. Analysis and development of sustainable development indicators will allow to work out measures for water sector sustainable development.

In connection with above mentioned:

It seems to be important to draw attention of all ICWC bodies and their leaders to deep analysis of existing phenomena in water sector;

To charge SIC ICWC to strengthen methodological research with participation of all national branches and national organizations and to prepare more detail study in 1999 on measures for sustainability improvement;

On base of these measures by the end of 1999 to prepare national reports for the governments about necessity to strengthen sustainability of water sector and irrigated farming in Central Asia.

Protocol of working meeting on GEF and WARMAP Projects with participation of national coordinators and representatives of IFAS members countries

Bishkek November 26-27, 1998

Attendees:

The Republic of Kazakhstan

N.Kipshakbayev	SIC ICWC Kazakh Branch Director

The Kyrgyz Republic

A.Sakebayev	National Coordinator
T.Kyshtobayev	Vice-Minister of Nature Protection
R.Apasov	Prime-Minister Department Referent
M.Omorov	EC IFAS Kyrgyz Branch Director
K.Beishekeyev	Ministry of Agriculture Water Department Deputy Director
V.Kasymova	SIC "Aral" Deputy Director
M.Bakanov	Kyrgyzgidromet Deputy Director
A.Bekenov	National Coordinator Assistant
L.Kiyashkina	SIC ICWC Kyrgyz Branch Director

The Republic of Tadjikistan

M.Nazriyev	Deputy Minister of Water Resources
N.Nasyrov	SIC ICWC Tadjik Branch Director

Turkmenistan

B.Annayev	Minister of Agriculture Assistant

The Republic of Uzbekistan

A.Djalalov	First Deputy Minister of the Ministry of Agriculture and Water Management of Uzbekistan
Sh.Talipov	Cabinet of Ministers Secretariat Leading Specialist

GEF Project Agency

V.Dukhovny	GEF Project Agency Managing Director
U.Ruziyev	Juridical Expert

WARMAP – 2

P. van den Hoven	Project Leader
I.Alster	Juridical Expert

Yu.Makaryev Interpreter

AGENDA

1. Participants introduction.
2. Information on the GEF Project.
3. Main documents of the GEF Project:
- Strategic Action Program;
- Project Implementation Plan;
- Procurement Plan;
- Financial Plan;
- Provision on book keeping account;
- Provision on National Coordinator;
- Order of Consultants recruitment.
4. GEF Project components state-of-art.
5. Press release. Apply to mass-media. Coordinated actions on Press release issuing.
6. GEF and WARMAP Projects activity coordination. Coordination with UNDP and other projects.
7. GEF and WARMAP Projects juridical aspects.
8. Conclusive discussion.

Having heard the report of V.Dukhovny on the GEF Project and discussed agenda items, participants have decided:

1. GEF Project, in spite of its low volume of financing, has very important significance:

- Project is a continuation and development of the most important parts of the "Program of concrete actions" and aimed to development and completion of the projects "Water Strategy" (1.1), "Dam Safety" (1.2), "Information System of River Observations" (2.1), "River Water Quality" (3), "Aral Sea Coastal Zone Wetlands" (4.1).

- Project shall be as a mean for attraction of local and foreign investments not only to GEF, but to other projects linked with it, particularly "Improvement of population well-being and employment in zones of ecological catastrophe".

EC IFAS Leadership together with the World Bank did all possible for project development. Agency statute is approved, agreements between EC IFAS and Taxation Committee and National Bank of Uzbekistan are signed.

At the same time participants noted, that appointment of National Coordinator post was not reflected in GEF Project Agency Statute.

In connection with above they asked Mr. R.Giniyatullin to re-approve the Statute with all needed additions and amendments.

Participants agreed that further successful activity requires signing Agreement about IFAS and its organizations Statute between all states of the region. To ask Turkmen side to submit this question for consideration of the Government of Turkmenistan.

2. To take as a guideline Strategic Action Program, Project Implementation Plan, Procurement Plan, Provision about book keeping account as well as the World Bank regulations, etc.

To draw attention of all National Coordinators and representatives of IFAS states-members and inform all governments to the fact that Uzbekistan has fulfilled its obligations in respect of contribution to the GEF Project that gave opportunity to approve this project.

To ask all countries to make the first contribution to the GEF Project, in first turn, for local expenses on all components. To count expedient to open special bank accounts by IFAS Branches in each country.

Taking into consideration importance of coordination by all governments of all aspects of the project, ask National Coordinators to agree with the governments their representativeness in United Commission or Coordination Council with regard to Expert Council of EC IFAS members' attraction.

3. National Coordinators to nominate candidates from local specialists and organizations according to the World Bank procedures for participation in Components A-2 and B of the GEF Project until December 5, 1998 and Component A-1 – until December 10, 1998.

As to Component D, to accelerate project preparation and start construction works, for this purpose to submit cost estimate for this works until December 10, 1998.

4. Paying attention to strengthening links between IFAS and public and taking into account necessity of permanent donors information about EC IFAS activity, EC IFAS began to issue press release in English and Russian, which will be disseminated through the National Coordinators and Internet.

To ask National Coordinators and representatives of countries-members to prepare names and addresses of partners, international organizations and embassies interested in GEF Project and organize regular press release dissemination. To prepare list of NGOs interested in GEF Project.

5. Meeting participants confirm necessity and importance of confirmation of discussion and agreement of juridical documents package, strengthening sustainability of joint water resources management.

With this purpose participants ask GEF Project Agency to apply on behalf of EC IFAS to the governments of all states-members with action plan, in which to define:

- first turn consideration of "Agreement on organizational structure of joint management, conservation and development of transboundary water resources", "Agreement on information exchange and data base creation for the Aral Sea basin";
- creation of Juridical Group by National Coordinator under leadership of representative of relevant level responsible for consideration and finalizing on behalf of governments all principle decisions and documents related to the Aral Sea problem;
- until January 31, 1999 to consider at national level the submitted texts of "Agreement on organizational structure of joint management, conservation and development of transboundary water resources", "Agreement on information exchange and data base creation for the Aral Sea basin" and to prepare comments and proposals from each country.

To consider expedient:

- to define National Coordinator and two representatives for participation in Regional Accordance Commission;;
- National Coordinator together with interested organizations during December 1998 – January 1999 to consider the texts of above "Agreements" taking into account requirements of Component A.

Signatures:

N.Kipshakbayev
A.Sakebayev
M.Nazriyev
B.Annayev
A.Djalalov
V.Dukhovny
P. van den Hoven

MEMORANDUM OF UNDERSTANDING AND INTERACTION BETWEEN NGOs AND IFAS

Representatives of NGOs of Kazakhstan, Kyrgyzstan, Tadjikistan, Turkmenistan and Uzbekistan together with members of EC IFAS, GEF Project under support of UNDP and GEF Project have met on April 12-14, 1999 in Tashkent and discussed Aral Sea basin program progress. Participants underlined that thanks to good will of Heads of states of Central Asia certain progress is achieved in environment improvement. States of the region under support of international organizations passed to concrete measures on drinking water supply improvement, social aid to population of zone of ecological disaster, on improvement of water resources management. Since the beginning of the project water saving and rational use of water and land resources became more and more important as a main direction of joint activity of specialists, politicians and population representatives.

Under this conditions NGOs could play significant role in the program realization, especially in public opinion formation with respect to water as valuable natural resource which use will predetermine sustainable development in the region.

Participants agreed on the following:

1. Taking into account importance of interaction between IFAS and NGOs to create under support of UNDP Project permanently acting Public Council of NGOs and Aral Sea basin Program. Public Council is created for interaction, information exchange, development of joint projects on the region sustainable development with consequent realization as well as for public opinion formation in support of Aral Sea basin Program Projects.

While forming public opinion for wide population involvement to the problems of rational water use, natural resources saving and sustainable development, Public Council wants, using mass-media, education and human potential of the region, influence:

governmental structures, which make decisions;

public opinion;

water consumption sphere (farmers, dekhkans, fishers) and other natural resources;

water-related organizations.

Public Council must come out of understanding that everybody has right to live in favorable environment and must to maintain and protect it for current and coming generations.

Public Council members are elected from each country on 2 persons from NGOs; one EC IFAS member and GEF Project Director are appointed to the Council.

Council meetings' frequency is one time in a half a year.

Public Council Chairman is elected in turn from NGOs representatives of different countries. Chairman works free of charge. Documentation is kept by secretary (financed by UNDP Project), selected according to UNDO procedure.

2. Because of large volume of information accumulated by IFAS and NGOs necessity appeared to set information exchange inside of the region.

For this purpose participants agreed:

to participate in development of conception and joint decisions on the region sustainable development;

to exchange information including on-going and future projects of mutual interest;

to create and maintain NGOs data base of ecological profile;

on competitive base to develop joint perspective programs of water saving and sustainable development with their implementation;

to publish the most interesting information in IFAS and NGOs issues;

to apply to EC IFAS and GEF Project Agency to inform NGOs about competitions and measures undertaken.

3. To ask UNDP Project to consider possibility of common IFAS and NGOs Bulletin.

Bulletin objectives are as follow:

collection, analysis and dissemination of ecological, economic and social information related to problems of sustainable development of the region;

exchange by international, regional and local information related to the regional problems solution, in the first turn, in the Aral Sea basin;

collection and dissemination of information about modern and traditional methods and technologies of rational use of water and related natural resources.

4. To ask UNDP Project and GEF Project Agency to organize access to IFAS website for NGOs participating in this program.

5. NGOs will be attracted to the IFAS activity and its projects on the following directions:

on public, competitive and contract base for fulfillment of GEF Project and especially Component B tasks;

for Aral Sea basin Program implementation monitoring;

for public expertise of separate Aral Sea basin Program components;

NGOs involvement in the working groups for new Projects development.

For GEF Project
of IFAS

V.Dukhovny,
Agency Director
A.Sakebayev,
Kyrgyzstan
I.Abduganiyev,
Kazakhstan
T.Avazov,
Tadjikistan
R.Abdullayev,
Uzbekistan

For NGOs
of Central Asian states

For Kazakhstan

International Ecological Association of Women of the East
National Ecological Society of Kazakhstan

Agency of Ecological Information
GREENWOMEN
NGO «Ana Umiti»

NGO «Aral Tenizi»

For Kyrgyzstan

Fund of Environment Protection of Kyrgyzstan
Association of Kyrgyz Women for World Without Nuclear Weapon and Ecological Safety
Public Center "SIC-Aral"
Young ecological Movement "Biom"

Club "Ecologist"

For Tadjikistan

International Tadjik-Amerikan Fund "Kukh-iston"
Scientific Society of Ecologists
Institute of Human Evolution
Union "Bashar"
Union of Ecologists and Climate Specialists "Ecoclim"

For Turkmenistan

Ecological Club "Katena'
Dashkhovuz Ecological Club

For Uzbekistan

Karakalpak Center "Perzent"
Association "For Ecologically Clean Fergana"
Association of Assistance to UNESCO "Aral-Dialog"
Leep – Asian-American Collaboration
Tashkent Branch of "Ecosan"
"Chirchik-Darya" Association
Ecological Club "Eremurus"

Memorandum is signed on April 14, 1999 in Tashkent and is open for signing by all NGOs of ecological profile.

APPLY OF NGOs-PARTICIPANTS OF THE WORKING MEETING OF APRIL 12-14, 1999 IN TASHKENT ON THE ARAL SEA CRISIS PROBLEMS

Due to IFAS initiative and under UNDP support working meeting of NGOs "Principles and ways of collaboration of IFAS and NGOs with purpose of interaction in public awareness and participation in decision making on the regional problems of the Aral Sea crisis" was held on April 12-14, 1999 in Tashkent. Twenty five NGOs from five states participated and 15 international and foreign organizations were invited.

Discussing problems of ecological situation in the region improvement, participants noted, that IFAS and NGOs made big job in this direction. The most important guide were interstate agreements signed by Presidents of all states.

Participants of the working meeting express their deep insatisfaction of existing ecological situation, state of land and biological resources, ecological safety reduction and local population well-being aggravation. National and other state plans are not fully fulfilled due to economic difficulties. Necessity exists for financial assistance from international organizations.

Aral region population faces negative consequences of environment degradation that leads to increase of illness and mortality, especially infant, poverty growth and natural potential decreases.

Participants apply to all NGOs to joint their efforts in order to attract local population, local authorities to the problems solution.

Supporting initiatives of the governments, IFAS and other interstate structures, participants apply to the Heads of states, legal bodies and governments to join their efforts in the Aral crisis resolution. Local population and world society are waiting for acceptance of International Convention on the Aral Sea basin sustainable development, which will facilitate recognizing global character of this problem and will be open for signing by all states.

Underlining substantial contribution of international organizations, especially UNDP, separate American and European states, participants wait from them further and more effective steps directed to democratization of public-political reforms and processes in Central Asian states, resolution of immediate socio-economic and ecological problems.

Participants propose to associate, public awareness improvement, public participation in decision-making, more active collaboration with IFAS.

Aral Sea problem should become all-people problem, symbol of humanity, social partnership, solidarity of democratic strata of society.

Participants apply to mass-media to issue this apply which is signed on April 14, 1999 in Tashkent by all NGOs-participants of this meeting.

For Kazakhstan

International Ecological Association of Women of the East
National Ecological Society of Kazakhstan
Agency of Ecological Information GREENWOMEN
NGO «Ana Umiti»
NGO «Aral Tenizi»

For Kyrgyzstan

Fund of Environment Protection of Kyrgyzstan
Association of Kyrgyz Women for World Without Nuclear Weapon and Ecological Safety
Public Center "SIC-Aral"
Young ecological Movement "Biom"
Club "Ecologist"

For Tadjikistan

International Tadjik-Amerikan Fund "Kukhiston"
Scientific Society of Ecologists
Institute of Human Evolution
Union "Bashar"
Union of Ecologists and Climate Specialists "Ecoclim"

For Turkmenistan

Ecological Club "Katena'
Dashkhovuz Ecological Club

For Uzbekistan

Karakalpak Center "Perzent"
Association "For Ecologically Clean Fergana"
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Leep – Asian-American Collaboration
Tashkent Branch of "Ecosan"
"Chirchik-Darya" Association
Ecological Club "Eremurus"

WHERE WE WANT TO BE IN XXI CENTURY?

On April 6-10, 1999 in Tashkent Regional Workshop was held for water resources and sustainable development organized by UNESCO. In the Workshop National Coordinators and representatives of 5 states, including SIC ICWC regional group, took part.

On the workshop Globesight model was presented permitting "to see" future development through social and economic indicators.

Two groups were used in the workshop. First group from 5 states' representatives and the regional group, was aquainting with the Globesight model. Representative of organization-developer (Case Western Reserve University) Dr. Sree N. Sreenath has explained principle of the model development, made more precise methodology of future assessments through XXI century vision. During model utilization each group gave own vision for own republic, developed scenarios and their forecasts on Globesight model.

Second group, consisting of national group leaders worked during April 9. On this group meeting major indicators of "expected future" and problems of perspective development of the countries of Central Asia were discussed in order to mutually coordinate transboundary water use.

As a development of this meeting it is expected to carry out next meeting in May in Almaty where national groups will present their vision and scenarios of their countries development on base of which regional vision will be worked out.

Vision it is a picture of future which we want to create, something achievable and worth to be achieved. It can create new tendencies and prevent origin of unfavorable tendencies. Tool of prediction is the Globesight model. While determining vision "where we want to go?" the question arises: how it is necessary to change approaches in order to achieve desirable future? These changes are performed through concrete goals achievement. Objectives, in turn, form base for strategies, on which plans and actions are based.

Thus, vision development in key positions such as: population growth, GNP increment and its structure change, natural resources use, provision population with food, etc. and requirements of water resources for irrigation, industry, municipal needs will allow to see problems in perspective. Scenarios development and testing on Globesight model gives opportunity to define major national indicators: GNP per capita, specific water consumption for irrigation, industry and municipal needs with respect to water resources availability, to define water resources deficit. Comparison of received and required indicators allows determining strategy and tactics of actions in field of rational water distribution and use.

Latter is especially important while developing strategy of inter-regional rational water allocation and use as well as tactic joint and local actions, policy and measures aimed to provide rational water use, mitigation of the Aral side crisis.

APPLICATION OF UP-DATE METHODS OF ASSESSMENT WHILE DETERMING SURFACE AND GROUNDWATER AND SOIL SALINITY BY PROVINCIAL HYDROGEOLOGICAL-RECLAMATION EXPEDITIONS

On August 12-14 in Namangan, on August 19-21 in Bukhara and on September 8-10 in Urgench technical workshops on application of up-date methods of surface and groundwater and soil salinity assessment by reclamation expeditions were held. The workshop in Namangan visited representatives from Namangan, Andijan, Fergana, Tashkent and SyrDarya provinces; in Bukhara – from Bukhara, Navoi, Kashkadarya, Samarkand, Surkhandarya provinces; in Urgench – from Khorezm province and Karakalpakstan. Participants having heard about computerized data base for assessment of land reclamation state as well as application of up-date methods and equipment for determining of surface and groundwater and soil salinity.

INTRODUCTION OF COMPUTER TECHNOLOGIES

Data base creation was started according to the Ministry of Agriculture and Water Management commission in 1995 in SPA SANIIRI and since 1997 – in SIC ICWC, which developed software for Automatic Information System "Reclamation".

Main tasks of this system are as follow:

transfer textual data into computer;

data initial processing (averaging, aggregating on levels "point-farm-district-province");

submission of averaged and aggregated information (10 days, monthly, annual, etc.);

analysis of initial information object technical state for planning;

analysis of land reclamation state on base of comparison of current data with water-salt balance at district level.

Data base "Reclamation" includes the following sections: groundwater regime (groundwater level and salinity), vertical drainage, horizontal drainage, salt sampling, water-salt balance.

In 1996 "Reclamation" data base was started and workshops on input data were conducted. Program software was corrected according to comments of participants.

For work quality improvement it is proposed:

to appoint responsibles for "Reclamation" data base;

to multiply passports of observation and operational wells during August;

in 1998 to provide preparation and input into data base initial and current data for 1997-1998 for sections: "groundwater level" and "vertical drainage";

by own means to solve operation of "Automatic mapping of groundwater level and salinity";

to recommend regular training on-the-job or in Tashkent;

to prepare computer maps scale 1:100 000 with situation up to 1.04.1999 on base of contract with the Ministry of Agriculture and Water Management;

to foresee in expedition's structure post of PC programmer and operator with increased salary;

to ask the Ministry of Agriculture and Water Management to send 1 specialist from each expedition to Tashkent to aquaint with data base as a whole.

INTRODUCTION OF ELECTRIC-CONDUCTIVITY METHOD FOR ASSESSMENT OF SOIL AND WATER SALINITY

In world practice for assessment of water and soil salinity method of electric conductivity within the soil abstract is successfully used, which reflects osmosis pressure with sufficient accuracy.

Advantage of this method in comparison with water soil abstract is that it really reflects state of environment.

The best of local classifications is salinity assessment on sum of toxic salts but due to necessity to determine all ions by laboratorial analysis and further calculations its utilization in practice is difficult.

Transition to soil salinity assessment on electric conductivity for soil salinity control in the region is expedient due to following reasons:

operativeness;

possibility of field measurements;

wide scope of area;

satisfactory accuracy due to repetition of measurements;

money saving to compare with classic methods of analysis.

There are lot of devices abroad for water solutions and soils electric conductivity definition.

In laboratory of SANIIRI in 1995 portable electric conductometer was invented which is analogue of foreign "X-express" (author A.Chernyshev). In 1995-1996 this device testing was conducted in field conditions.

At present time this device is ready for application to different types of water and salts, methodology is under development for express-analysis with help of this device.

At the workshops on the electric conductivity introduction it was decided:

1. Recommend to expeditions to use electric conductometer like "X-express".

2. On base of SANIIRI research to prepare methodological base for transition to soil salinity assessment.

3. At the first stage to use device for analysis of irrigation, drainage and groundwater salinity through determination of dry residue and chlorine-ion.

4. Recommend to expeditions to organize personnel training.

5. To include in staff computer operator and assistant.

6. SANIIRI to prepare provisional guidelines for salt survey with conductometer.

7. Organize replacement of measurement means for groundwater observations.

PROTOCOL
of working meeting on WARMIS development

March 26-27, 1999 Tashkent

Agenda:

1. Introduction by V.Dukhovny and R. den Haan
2. Regional Working Group (RWG) Report by I.Sorokina and A.Platonov
3. National Working Group (NWG) Report on realization of ToR for WARMIS.
   3.1. Review of fulfilled ToR by I.Sorokina
   3.2. National Coordinators Reports
4. Development of model for SyrDarya river by A.Sorokina
5. Development of model for planning zone by A.Tuchin
6. Connection between WUFMAS and models with respect to the regional planning programs by M.Armitage
7. Demonstration of data base for SyrDarya basin by I.Nosyreva and A.Leshansky
8. Demonstration of "Vodproekt" data base by O.Znai and S.Pak
9. Discussion of WARMIS national data base and special activity by A.Platonov and R. den Haan
10. Report about set of tools on data checking by G.Kovalenko and I.Sorokina
11. Proposals on versions management and data safety by D.Vashinsky
12. Proposals on new users interface of WARMIS and selection of reports by Yu.Ukhalin
13. Standardization of software by D.Vashinsky
14. Discussion of ToR for national working groups
    ToR № 36: NWG commentaries on the models
    ToR № 42: "Land" sub-base extension
15. Presentation of juridical agreement on information exchange by U.Ruziyev
16. Discussion on WARMIS licensing and prices for users by I.Sorokina and R.den Haan
17. WARMIS future activity up to February 2000 and proposals for WARMAP-2 Project continuation by R.den Haan
18. Final discussions and decision making
19. Final comments by V.Sokolov
20. Individual discussions between National Coordinators and Regional Working Groups and WARMAP personnel

Exchanging opinions participants of the meeting note:

1. No one group, except Tadjik one, submitted ToRs. It is proposed to submit them in the following terms:

Kazakhstan – until May 15, 1999;

Kyrgyzstan – until May 1, 1999;

Uzbekistan – until May 15, 1999;

Turkmenistan – ToR fulfillment considers impossible due to no excess to information. Ask EC IFAS (R.Giniyatullin), SIC ICWC (V.Dukhovny) to arrange information exchange with the Ministry of Agriculture and Water Management of Turkmenistan.

2. NWGs to study water intake analysis for AmuDarya and SyrDarya trunks. To submit to RWG official confirmation about these values validity or correct them.

3. According to list and codes of water bodies including sub-base "Industry" it is necessary until April 15, 1999 all NWGs to complete coordination with RWG.

4. All NWGs to check all retrospective operative and new data (1996-1997) on base of previously transferred module "River site water balance" and other tools, transferred during this workshop. Under balance discrepancy 5-10 % to find out the reasons and insert necessary amendments and additions. Work should be fulfilled until May 31, 1999. In this case data testing could be considered as completed.

5. Sub-base "Climate" requires additional information, especial for "evaporability" NWGs until April 15, 1999 to fill up all fields of this sub-base. Under these field data absence it should be filled up by calculated data (with indication of way of its obtaining) and submit to RWG including calculation methodology. Sub-base will be finally checked up by WARMAP experts until May 1, 1999.

6. On sub-base "Industry". Uzbek NWG to insert urgently comments on thermal energetics and without data of Turkmen NWG, sub-base will be practically completed.

7. NWGs to accelerate works on GIS utilization. Each NWG to choose one planning zone and put on it all infrastructure including zones of drainage outflow formation. To draw attention of V.Sokolov, I.Sorokina, A.Platonov to the fact, that coordination with NWGs on GIS utilization was not organized. To charge them to prepare immediately ToR with respect of shortcomings and under-payment of bridging period.

8. National development of WARMIS data base assumes possibility of different versions for National Data Base (NBD) following some conditions caused by interaction with regional data base (RBD):

NDB provides national module and export of national data to be inserted into RDB according to previously agreed set of data;

part of NDB, including information of regional level, and RDB keep single terminology, unified measurement units, codification and format;

developers of NDB and RDB coordinate NDB structure and set of software;

transferred to NWGs WARMIS DB version 0.2 NWGs can consider as its own if other versions are absent;

NDB should include control block for national data submitted to RDB.

9. Workshop participants consider WARMIS data base should be protected from unauthorized access as inside of regional and national centers, so from external users under licensing and transfer.

10. Participants approve control block development and consider as necessary development of next its stages and perfection.

11. All regional and national centers of WARMIS and WARMAP office before official transition in other software media should use MS Windows 95, MS Access 2.0, MS Office 95.

Participants ask WARMAP Project to accelerate WARMIS software up-date (MS Access 97) and purchase MS Office 97 Pro or more advanced version.

12. National Coordinators coordinate and sign ToR № 36.

13. As to ToR № 42, National Coordinators coordinate work composition, but labor cost should be agreed as follow:

on item 1 payment will be done according to actual expenses with participation of local experts of WARMAP;

on items 2, 3 to test labor expenses by own on example of Uzbek NWGs. NWG labor costs are distributed proportionally to the number of districts.

14. Participants consider as expedient to insert in Juridical Agreement item 1.6 with clear explanations of information system of national and regional revel. In accordance with this item to correct all other items of this agreement.

15. NWGs until May 1, 1999 to submit expenses for all regional and national participants of WARMIS creation for definition of information price in case of its selling. Profit distribution should be done with respect to contribution of each participant.

NOTE: WARMAP-2 Project Consultant can not agree with approach to assessment of expenses and profit distribution. It is proposed to discuss this question in detail on the next meeting.

16. Ask WARMAP Project to transfer to NWGs BWO IS development without data.

17. Participants positively consider BWO and Vodproekt data base demonstration.

PROTOCOL SIGNED:

GEF Project Agency Director	V.Dukhovny
For WARMAP Project	R. den Haan
	V.Sokolov
For RWG	I.Sorokina
	A.Platonov
For Kazakh NWG	N.Kipshakbayev
For Kyrgyz NWG	L.Kiyashkina
For Tadjik NWG	N.Nasyrov
For Turkmen NWG	V.Krokhmal
For Uzbek NWG	B.Yusupov

WORKSHOP ON AGRICULTURAL WATER USERS ASSOCIATIONS DEVELOPMENT PROBLEMS

On November 18-19, 1998 in Mankent (Kazakhstan) within the framework of EPIC Project (Nature protection policy and resources management organizational structure strengthening) workshop-meeting on agricultural water users associations development was held.

In workshop representatives of USAID, Harvard University of International Development, Ministry of Agriculture of Kazakhstan, Province's Khokimiyat, National Bank and farms heads from Southern Kazakhstan participated.

Guests from Uzbekistan – SIC ICWC leading researches were invited.

Reporters highlighted economic situation in irrigated farming of Southern Kazakhstan (Sam Johnson), about mechanism of crediting and loan return on invested projects (V.Nenadov, ADjabasov), about irrigation assets privatization possibility of uniting of existing associations with inter-farm irrigation system.

Workshop offered to governmental structures recommendations on water users associations development.

ORGANIZATION OF EARLY AWARENESS AND MONITORING SYSTEMS ON WATER RESERVOIRS AND NATURAL LAKES IN USA

Mr. K.Ballyev (Component C Director) and representatives of Tadjikistan were invited to the USA(30.11.-21.12.1998) by FOCUS organization (USA). They have acquainted with the experience of American scientists and managers in development and production of early warning and monitoring systems on reservoirs and natural lakes. The delegation visited the following organizations:

Federal Geological Department (Portland, Ohio). The automated warning system includes 1,700 sensors and intermediate stations for output transmission. All data are transmitted via radio to the master station, a central point of data acquisition and computer processing. Radio transmitters use solar energy and have reserve batteries. Satellite communication can be used.

National Climate Center monitors hydro-meteorological and climatic conditions on the whole territory of the USA. All the components of the system are automated. Outputs from sensors of monitoring stations are transmitted to the master station via two communication channels (radio and satellite communications) where data are processed and transformed into forecasts. In case of emergency the warning system starts operation. The government invests the service; population is informed free of charge. In the Museum of Helen Volcano (Ohio) one can see the example of the effective operation of the service, when the volcano eruption was predicted and people were warned and evacuated.

BC Hydro W.C. Seyers International Operations (Seattle, Washington) performs design, construction, monitoring and maintenance of reservoirs and hydropower stations under the governmental and other contracts all over the world. It produces 75% of all hydropower in Canada and two states of the USA (Utah and Colorado). The company monitors precipitation in the upstream river watersheds, rainfall accumulation and transportation and forecasts water availability. These data are required for development of the most efficient operational schedules of water storage reservoirs. Each 3 seconds the information on the status of dams, reservoir banks and slopes, and landslides in all river basins is transmitted from sensors and terminal stations to the master station. For transmission meteorites are used at the height of 15-26 km. The same system was installed and has been operated for 5 years in Pakistan and Nepal. BC Hydro is implementing Canadian National Program of Dam Sustainability. The national inspection organization was set up, responsible for supervising sustainability of 61 dams and gathering information on their status.

Department of Public Safety Division of Comprehensive Emergency Management (Salt Lake City, Utah) has a system of warning and evacuation in case of emergency (reservoir failures, floods and other natural disasters). Everybody in the USA has instructions and plans showing what to do in case of emergency.

Federal Institute of Geological Science (Denver, Colorado) studies natural dams. It has a scientific system of forecasting, data processing and development of recommendations for improvement of natural dam management using new non-traditional technologies.

National Ocean and Atmosphere Administration (NOAA) (Washington, D. C.) receives and processes hydro-meteorological data from all over the world (tsunami, etc.) and informs the population of the USA.

The World Bank Headquarters (Washington, D.C.). The final meeting took place at the World Bank Headquarters with Messrs. Alessandro Palmieri (Senior Dams Specialist) and Josef Goldsberg. During the meeting the financing was discussed for Component C “Dam Safety and Reservoir Management” and Lake Sarez safety.

ABOUT WATER COUNCIL OF THE REPUBLIC OF UZBEKISTAN – UZBEK COMMITTEE FOR IRRIGATION AND DRAINAGE ACTIVITY IN 1998

During 1998 there were 4 meetings where 4 large questions were considered:

1. Problems of water resources rational use in Uzbekistan and immediate measures on their resolution.

Report was prepared by Uzvodproekt with participation of the Ministry of Agriculture and Water Management, SANIIRI, Uzgipromeliovodkhoz, Uzgiprovodkhoz and TIIIMSH.

Presentation was made by T.Derlyatka (Uzvodproekt), co-reporter was Prof. S.Mirzayev (TIIIMSH). It was underlined that under new plans preparation to the problems of water and land reclamation no satisfactory attention is paid.

2. Development of general strategy of water allocation, rational water use and water resources conservation in the Aral Sea basin.

Report was prepared by SIC ICWC and Uzvodproekt. Reporter Prof. V.Dukhovny.

Co-reporter was Dr. V.Sokolov. It was proposed to multiply full text of report "Main provisions of strategy for water resources management". Additional draft decision is prepared with respect to comments of Council members. This decision will be considered at the next Council meeting.

Besides, another two questions are prepared for Council consideration:

3. Scheme of fresh groundwater use and preservation in Uzbekistan up to 2010. It is developed by Uzvodproekt with participation of Uzbekgidrogeologiya, TIIIMSH. Reporter G.Degtyarev (Uzvodproekt).

4. Problems of water resources accounting and immediate measures on hydrometeorological information exchange.

Report was prepared by Glavgidromet, reporter V.Chub.

Two last questions consideration is postponed due to some reasons.

Uzbek National Committee for Irrigation and Drainage has done certain job:

Invitations for 17th ICID Congress in Grenada, Spain were sent to local organizations. Three abstracts were sent to ICID 17th Congress Organizing Committee. Reports of A.Djalalov, M.Mirkhodjiyev, S.Mirzayev, R.Ikramov and Kh.Yakubov are accepted and are being translated now in English.

Special Questionnaire sent by ICID Headquarters, on irrigation under scarce water resources is being filled in.

Certain organizational work was done on preparation to the World Water Day on March 22, 1999.

Dissemination of ICID publications is executed (News Update, Newsletter, ICID Annual Report, ICID Scientific Journals) among local water-related organizations and specialists-members of NCID.

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