

Interstate Commission for Water Coordination of Central Asia	<b>BULLETIN № 1 (47)</b>	March, 2008
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**PROTOCOL OF THE 48<sup>th</sup> MEETING OF INTERSTATE COMMISSION FOR  
WATER COORDINATION (ICWC) OF THE REPUBLIC OF KAZAKHSTAN,  
THE KYRGYZ REPUBLIC, THE REPUBLIC OF TAJIKISTAN,  
TURKMENISTAN AND THE REPUBLIC OF UZBEKISTAN**

October 11, 2007

Khojent city

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Chairman:	Saidi Yokubzod – the Ministry for Land Reclamation and Water Resources, the Republic of Tajikistan

***Agenda:***

1. On 2007 growing season and approval of water withdrawal limits during the non-growing season in the Basins of the Amudarya and the Syrdarya Rivers (BWO “Amudarya” and BWO “Syrdarya” are in charge).
2. On the results and perspectives for works completion on ADB RETA 61630 Project.
3. On the development of work principles for “Central Asian Regional Water Information Base” (CAREWIB) in the interests of national information systems.
4. On “Provisions about ICWC”.
5. On the agenda and venue of the next 49<sup>th</sup> ICWC meeting.

Having the agenda approved, the reports listened and the opinions exchanged, the members of Interstate Commission for Water Coordination of Central Asia (ICWC) decided:

**On the first item:**

1. Take into consideration the information about events of BWO “Amudarya” and BWO “Syrdarya” on the implementation of water withdrawal limits and provision of the accepted operating regime of tandem reservoir system during 2007growing season.
2. Adopt water withdrawal limits for 2007-2008 non-growing season and coordinate the regime of forecast-schedule for tandem reservoir system operation along the Amudarya River with the Ministry for Energy and Industry of the Republic of Tajikistan.
3. Adopt water withdrawal limits for non-growing season 2007-2008 within the Syrdarya River Basin. The states within the Syrdarya River Basin should coordinate the proposed operating regime of Naryn-Syrdarya tandem reservoir system with the national Energy Agencies in a short period.

**On the second item:**

1. Take into consideration the information of National work groups and Regional work groups about the work done.
2. Chiefs of National work groups should ensure the completion of work up to the end of 2007.
3. The Tajik party has withdrawn its remarks concerning the preamble, Articles 2 and 3 “Agreements on water and power resources use in the Syrdarya River Basin”. Article 6.1 has been revised in the following way: “Before the approval of new water allocation strategy within the basin, the water withdrawal limits for the Parties during hydrological year from the Syrdarya River (Provision 1) and its main tributaries, including the Chirchik River should be allocated on the basis of Correction Note for “Revised water resources use and conservation master-plan for the Syrdarya River Basin” approved in Protocol #413 of Scientific and Technical Council under the Ministry for Land Reclamation and Water Resources of the USSR from February 29, 1984 within the period of 5 years and to extend it automatically for the next 5-year period if another proposal on this issue in a written form has been submitted by none of the parties not later than 6 months in advance”.
4. National work groups should continue the work on the mentioned Agreement.

**On the third item:**

1. Approve the development principles of national information systems proposed by SIC ICWC and implemented within the framework of Phase 2, CAREWIB Project, according to signed Memorandums.
2. ICWC Members together with SIC ICWC are to organize establishment of national contact points and support for preparatory work during inception period of the next phase of CAREWIB Project.
3. ICWC Members thank Swiss Agency for Development and Cooperation for their active support.

**On the forth item:**

1. Take into consideration the information about the work on draft “Provisions about ICWC” and draft Agreement “Regarding consolidation of management organizational structure, conservation and development of transboundary water resources in the Aral Sea Basin”.
2. Taking into account that members of National work group from the Kyrgyz Republic have not initialled the mentioned projects, B.T. Koshmatov, ICWC Member, is asked to take measures on consideration of the mentioned drafts within one month period.
3. Taking into account importance and significance of the mentioned drafts, the documents should be considered and approved by current ICWC Members during the next meeting of ICWC.

**On the fifth item:**

1. The next 49<sup>th</sup> meeting of ICWC should be held in the second ten-day period of February, 2008 in the Republic of Uzbekistan.
2. Approve the agenda for the next 49<sup>th</sup> ICWC meeting.

*Agenda:*

1. Regarding implementation of water withdrawal limits and provision of accepted operating regime of reservoir cascades on the Amudarya River and the Syrdarya River during growing season 2007-2008.
2. Regarding the program for provision of ICWC financial and logistics activity and its executive bodies (responsible BWO «Amudarya», BWO «Syrdarya», the Secretariat, SIC ICWC, CMC ICWC and Training Center ICWC).
3. Regarding progress of works on ADB RETA 6163 Project.
4. Regarding “IWRM-Fergana” project assessment results.
5. Regarding “Provisions about ICWC” and Agreement “Regarding consolidation of management organizational structure, conservation and development of interstate water resources sources in the Aral Sea Basin”.
6. Regarding the First Asian-Pacific Water Summit.
7. Regarding the agenda and venue of the next 50<sup>th</sup> ICWC meeting.

From the Republic of Kazakhstan

A. Kenshimov

From the Kyrgyz Republic

B. Koshmatov

From the Republic of Tajikistan

S. Yokubzod

From Turkmenistan

K. Ataliev

From the Republic of Uzbekistan

Sh. Khamraev

## ON 2007 GROWING SEASON AND APPROVAL OF WATER WITHDRAWAL LIMITS FOR THE NON-GROWING SEASON IN THE AMUDARYA RIVER AND THE SYRDARYA RIVER BASINS<sup>1</sup>

### I. The Amudarya River Basin

#### *Results of implementation of water withdrawal limits and tandem reservoir system operating regime in the Amudarya River Basin during 2007growing season.*

The expected water availability on October 10, 2007 during the growing season in the Amudarya River Basin in the given “Atamurat” section line upstream of Garagumdarya amounted to 86.9 % of the norm. At the norm of 47 billion 592 Mm<sup>3</sup>, the actual water availability amounted 41 billion 344 Mm<sup>3</sup>.

Ten-day period-based dynamics of water availability change in the given Atamurat section line upstream of Garagumdarya is shown in the table below.

Preliminary use of established water withdrawal limits during the reported growing period across the states is seen in the following way:

- In general in the basin, established water withdrawal limit is used for 101.3 %; the actual value composed 34 billion 439 Mm<sup>3</sup> at the limit of 33 billion 990 Mm<sup>3</sup>.
- The Republic of Kyrgyzstan overused the established water withdrawal limit by 4.2 %; the actual value composed 16.0 million m<sup>3</sup> at the limit of 382 million m<sup>3</sup>.
- The Republic of Tajikistan overused the established water withdrawal limit by 100,9 %; 5 billion 846 Mm<sup>3</sup> were actually used at the limit of 5 billion 796 Mm<sup>3</sup>;
- Turkmenistan overused the water withdrawal limit by 103.6 %; 13 billion 648 Mm<sup>3</sup> were actually used at the limit of 13 billion 175 Mm<sup>3</sup>;
- The Republic of Uzbekistan overused the water withdrawal limit by 103.2 %; 14 billion 55 Mm<sup>3</sup> were actually used at the limit of 13 billion 617 Mm<sup>3</sup>.

Across reaches of the river, the use of established water withdrawal limits is the following:

1. Upstream – 98.6 %, including Tajikistan – 100.8 %, the Republic of Uzbekistan – 85.7 %.
2. Midstream – 107.8 %, including the Republic of Uzbekistan – 113.9 %, Turkmenistan – 104.4 %.
3. Downsteram – 98,8 %, including the Republic of Uzbekistan - 97,2 %, Turkmenistan - 101,9 %.

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<sup>1</sup> Materials to the first issue of the agenda of the 48<sup>th</sup> ICWC meeting, Khojent city, October 2007.



Water delivery schedule for the Prearalie and the Aral Sea during the current growing season was executed on 43,8 %; 1050 million m were delivered<sup>3</sup> at the plan of 2 billion 400 Mm<sup>3</sup>.

By October 1, 2007 water volume in Nurek reservoir composed 10 billion 450 Mm<sup>3</sup>. 10 billion 434 Mm<sup>3</sup> were at the same date in the last season.

Water volume in Tyuyamuyun reservoir by October 1, 2007 composed 2 billion 781 Mm<sup>3</sup>. 3 billion 57 million m<sup>3</sup> were at the same date in the last season.

*Summary:*

1. The current water situation in the Amudarya River basin during the given growing season seems to be considered as satisfactory; the water saving policy followed in the basin has shown positive results and allowed to ensure successful timely irrigation and provide optimally possible water supply to Tyuyamuyun reservoir.
2. Agreement regarding shared water resources use by Turkmenistan and the Republic of Uzbekistan in the Lower Amudarya River of May 26, 2007, approved by the Heads of national water sectors of Turkmenistana and The Republic of Uzbekistan gave positive results. 8 joint meetings were held with the participation of representatives of Dashoguz province, the Republic of Karakalpakstan and Khorezm province, BWO «Amudarya» and **UE TMGU**. During these meetings joint decisions about optimal use of available water resources in the Lower Amudarya River were made, taking into account the interests of each party and the current water situation.

***Consideration of water withdrawal limits and coordination about tandem reservoir system operating regimes during non-growing season 2007-2008 in the Amudarya River Basin***

According to Uzglavhydromet (Uzbek Central Meteorological Centre) forecasts and preliminary estimation of BWO “Amudarya”, water availability in the given “Atamyrat” section lineupstream Garagumdarya is expected at approximately the planned norm.

Taking into account the growing season outcomes and approximately expected water availability, BWO “Amudarya” agreed with all state-water users in the basin water withdrawal limits for non-growing season 2007-2008. On the basis of the water withdrawal limits, preliminary water intake operating regimes and preliminary tandem reservoir system operating regime in the Amudarya River Basin were elaborated which were submitted to ICWC members.

**BWO “Amudarya”** is submitting the following volumes of water withdrawal limits for non-growing season 2007-2008 across the states to the ICWC members:

- water withdrawal limits to be defined in the volume of 2 billion 864 Mm<sup>3</sup> for the Republic of Tajikistan;
- water withdrawal limits to be defined in the volume of 6 billion 500 Mm<sup>3</sup> for Turkmenistan;

- water withdrawal limits to be defined in the volume of 5 billion 980 Mm<sup>3</sup> for 2006-2007 non-growing season for the Republic of Uzbekistan.

The operating regime of the Nurek reservoir as well as an option of the operating regime of the Tyuaymun reservoir at the water availability of 90.0 % were developed by BWO «Amudarya» together with CDC “Energiya”. Both operating regimes were submitted to the ICWC members.

Sanitary-and-ecological releases in the volume of 800 million m<sup>3</sup> for non-growing season are proposed to be established for the Amudarya River lower reaches, including:

- Dashoguz province – 150.0 million m<sup>3</sup>;
- The Republic of Karakalpakstan – 500.0 million m<sup>3</sup>;
- Khorezm province – 150.0 million m<sup>3</sup>.

The water supply plan for the Aral Sea and Prearalie (Aral Sea coastal zone) is proposed to be established in the volume of 2 billion 100 Mm<sup>3</sup> for non-growing season 2007-2008, taking into account CDC.

Finally, BWO «Amudarya» proposes the following:

1. Approve the tandem reservoir system operating regimes and the water supply plan for the Aral Sea and Prearalie (Aral Sea coastal zone) for non-growing season submitted to the ICWC members.

Ten-day period-based dynamics of water availability change in the given Atamurat section line upstream of Garagumdarya

Balance items	Unit measure	April			May			June			July			August			September			Total
		Phase I	Phase II	Phase III	Phase I	Phase II	Phase III	Phase I	Phase I	Phase I	Phase I	Phase I	Phase I	Phase II	Phase III	Phase I	Phase II	III		
Inflow to Nurek	m <sup>3</sup> /s	511	886	961	1190	1196	907	1019	1217	1694	1570	1355	1323	1291	1164	1105	989	898	580	17444
	m <sup>3</sup> /s			786			1092			1310			1413			1184			822	17444
Accumulation (+), Drawdown (-)	m <sup>3</sup> /s	36	287	248	362	300	54	147	281	702	624	404	355	329	283	366	274	189	-137.5	4476
Water volume of the Nurek reservoir	5974	6005	6253	6467	6780	7039	7091	7218	7460	8067	8606	8955	9292	9576	9821	10169	10406	10569	10450	
Water loss in the reservoir	m <sup>3</sup> /s	0	0	0	0		2						1			0				3
Water release from the Nurek	m <sup>3</sup> /s	475	599	713	828	896	851	872	936	992	946	951	967.5	962	881	739	715	709	717	12964
				596			858			933			955			857			713	12964
KERKI gauging station	m <sup>3</sup> /s	1314	1268	1446	1794	2303	1955	1715	2186	2239	2707	1953	1742	1615	1590	1276	1162	971	942	26503
Rate	m <sup>3</sup> /s	876	1060	1280	1860	2310	2730	2440	3090	3030	3490	3600	3270	2830	2400	2160	1820	1400	1160	35961
	%	150	119.6	113.0	96.5	99.7	71.6	70.3	70.7	73.9	77.6	54.3	53.3	57.1	66.3	59.1	63.8	69.4	81.2	
Water availability in the given section line	m <sup>3</sup> /s	1857	2154	2327	2809	3295	2669	2506	3157	3669	4066	3114	2849	2665	2556	2256	2043	1766	1315	41344
Norm	m <sup>3</sup> /s	1280	1580	1980	2470	2620	2830	3320	3820	4210	4690	4630	4290	3900	3530	3010	2420	1900	1590	47592
	%	145.1	136.3	117.5	113.7	125.8	94.3	75.5	82.7	87.1	86.7	67.2	66.4	68.3	72.4	75.0	84.4	93.0	82.7	87
Accumulation (actual)	million m <sup>3</sup>	1605	3466	5477	7904	10751	13288	15453	18181	21351	24864	27554	30261	32564	34772	36916	38682	40208	41344	41344
Norm	million m <sup>3</sup>	1106	2471	4182	6316	8580	11269	14138	17438	21076	25128	29128	33205	36575	39625	42485	44576	46218	47592	47592
	%	145.1	140.3	131.0	125.1	125.3	117.9	109.3	104.3	101.3	98.9	94.6	91.1	89.0	87.8	86.9	86.8	87.0	86.9	86.9

## II. Syrdarya River Basin

### *Regarding growing season 2007 and approval of water withdrawal limits for the non-growing season in the Syrdarya River Basin*

2007 non-growing season was generally characterized with the lower water availability compared with the rate on the Syrdarya River Basin.

According to the hydrometeorological service's forecasts submitted before the beginning of growing season, the water availability in the Naryn River was expected to be 85 %, in the Chirchik River - 80 % and the Karadarya River – 65 % of the norm. Inflow to reservoirs was assessed at the rate of 80 % and channel inflow – only 72 % of the norm.

According to Uzglavhydromet, available water resources for the growing season were assessed in the volume of 17 billion 267 Mm<sup>3</sup>, while calculated water consumption amounted 18 billion 746 Mm<sup>3</sup>. At the same time, the water resources deficit was 1.5 billion m<sup>3</sup>.

Under such conditions, the elaborated schedule-forecast for operation regimes of the Naryn-Syrdarya tandem reservoir system and corresponding water withdrawal limits were corrected according to the current actual water situation. Water withdrawal limits were accepted with the restriction of 15 % which was coordinated and approved at the 47<sup>th</sup> ICWC meeting. Thus, the Toktogul reservoir releases were set in the signed Schedule of electric power supply from the Kyrgyz Republic to the Republic of Uzbekistan and releases from Kayrakkum – in the Protocol between the Republics of Tajikistan and Uzbekistan.

Detailed data concerning the water situation during growing season 2007 in comparison with the forecasts are characterized with the following indicators.

Abundant precipitation in spring and in the first ten-day period of June as well as temperature raise by 3-5 degrees in comparison with the norm in the third ten-day period of June contributed to improved water situation.

Inflow to upstream reservoirs (Table 2.1) was actually 17 billion 233 million m<sup>3</sup> or 91.8 % of the norm which is more than predicted one by 2.2 billion m<sup>3</sup>. 8.9 billion m<sup>3</sup> (94.15 % of the norm) flew into the Toktogul reservoir. In the Andizhan reservoir the water situation remained complex during the whole growing season. 1.55 billion m<sup>3</sup> flew into the reservoir, or only 51 % of the norm instead of predicted 70 % of the norm. At the same time, the inflow into the Charvak reservoir exceeded the predicted one by 40 % and was more than 6.2 billion m<sup>3</sup> (120 % of the norm).

Lateral inflow (Table 2.1) was non-uniform along the sites but overall exceeded the forecast by more than 23 %, i.e. 10.7 billion m<sup>3</sup> (93 % of the norm).

General inflow in the basin was 27.9 billion m<sup>3</sup>, i.e. 92.5 % of the norm instead of the predicted 74 % mainly due to high water availability in the Chirchik River basin.

Actual releases from reservoirs achieved 113.7 % out of the predicted volume that can be explained by considerable discharge from the Charvak reservoir – 138,2 % and from Chardarya – 170,4 % (Table 2.2). In spite of the signed Schedule for electric power supply from Kyrgyzstan to Uzbekistan and the agreement on additional water releases of

1 billion 560 million m<sup>3</sup>, discharge from the Toktogul reservoir made up 85 % out of the schedule. At the same time, 3.2 billion m<sup>3</sup> of water was accumulated in the reservoir.

On October 1, the water volume of the Toktogul reservoir was 13 billion 729 million m<sup>3</sup>, the Andijan reservoir - 479 million m<sup>3</sup>, the Charvak reservoir - 1 billion 550 million m<sup>3</sup>, the Kayrakkum reservoir - 853 million m<sup>3</sup> and the Chardarya reservoir - 907 million m<sup>3</sup> (Table 2.3).

As of 01.10.07, water supply to the states-water users was: Kazakhstan - 712 million m<sup>3</sup> (89 % of the limit), Kyrgyzstan – 170.68 million m<sup>3</sup> (70 % of the limit), Tajikistan – 1610.13 million m<sup>3</sup> (99 % of the limit) and Uzbekistan - 7722 million m<sup>3</sup> (102 % the limit) (Tables 2.4 and 2.5).

An overall adverse water availability in the basin during growing season 2007 caused reduction of actual intakes by 15 % on the average.

The positive fact of the growing season was water supply to the Aral Sea and Prearalie in the volume of 2 billion 208 million m<sup>3</sup> because of the additional inflow from the Chirchik River basin and the increase of releases from the Chardarya reservoir by 70 % (Table 2.6).

250 million m<sup>3</sup> were discharge into the Arnasays depression upon the request of the Republic of Uzbekistan in April.

**Table 2.1.**

Parameter	Volume (from 01.04 to 01.10.07), million m <sup>3</sup>		Percent out of the norm	
	forecast	actual	forecast	actual
for the Toktogul reservoir	8315.83	8911.48	88	94
for the Andijan reservoir	2133.48	1548.77	70	51
for the Charvak reservoir	4191.59	6220.80	81	120
the Ugam River	398.93	552.28	74	103
<i>Total:</i>	15039.83	17233.33	78	92
Toktogul – Uchkurgan	1067.55	1305.03	90	110
Uchkurgan, Uchtepe-Kayrakkum	2366.41	3444.27	70	102
Andijan – Uchtepe	1820.62	2166.56	72	85
Kayrakkum – Chardara	1739.07	3006.37	55	95
Gazalkent-Chinaz-Chirchik gauging station	632.88	743.16	64	75
<i>Sub-total:</i>	7626.53	10665.39	70	93
<b>TOTAL:</b>	22666.36	27898.72	74	92.5

**Table 2.2**

Reservoir	Releases (from 01.04 to 01.10.07), million m <sup>3</sup>		Percent
	planned	actual	
Toktogul	6931.44	5856.55	85
Andijan	2535.84	1829.01	72
Charvak	3975.09	5385.74	135
Kayrakkum	7827.84	7890.99	101
Chardarya	6380.64	10451.52	164
<b>TOTAL:</b>	<b>27650.85</b>	<b>31413.92</b>	<b>114</b>

**Table 2.3**

Reservoir	Reservoir water volume, million m <sup>3</sup>			
	by 01.04.07	planned	actual	by 01.10.06, actual
Toktogul	10788.53	12118.15	13729.00	17154.00
Andijan	854.79	441.49	479.27	457.40
Charvak	719.75	1317.47	1550.20	1058.40
Kayrakkum	3418.15	1085.67	853.00	1168.00
Chardarya	5399.70	822.28	907.00	865.00
<b>TOTAL:</b>	<b>21172.92</b>	<b>15785.06</b>	<b>17518.47</b>	<b>20702.8</b>

**Table 2.4**

Site, State-water user	Withdrawal limit, million m <sup>3</sup>	Actual withdrawal, million m <sup>3</sup>	Per cent
Toktogul – Uchkurgan hydrosystem, including			
Kyrgyzstan	146.06	127.89	87.6
Tajikistan	201.08	206.85	102.9
Uzbekistan	3074.30	3214.42	104.5
Uchkurgan – Kayrakkum hydrosystem, including			
Kyrgyzstan	72.10	42.78	59.3
Tajikistan	381.45	477.50	125.2
Uzbekistan	462.45	474.55	102.6
Kayrakkum hydrosystem – the Chardarya reservoir, including			
Kazakhstan	798.34	712.24	89.2
Tajikistan	1036.73	925.78	89.3
Uzbekistan	4001.92	4033.03	100.7

**Table 2.5**

Republic – water user	ICWC limit by 01.10.07, million m <sup>3</sup>	Actual withdrawal by 01.10.07, million m <sup>3</sup>	Percent
the Kyrgyz Republic	218.16	170.68	78.2
the Republic of Uzbekistan	7538.68	7722.00	102.4
the Republic of Tajikistan	1619.26	1610.13	99.4
the Republic of Kazakhstan (Dostyk canal)	798.34	712.01	89.2

**Table 2.6**

Parameters	Planned, million m <sup>3</sup>	Actual, million m <sup>3</sup>
Water supply to the Aral Sea	1398.93	2596.24
Discharge into the Arnasay depression	0	244.35
Inflow into the Chardarya reservoir	3602.93	7290.81

***Consideration of water withdrawal limits and recommended Schedule-forecast of tandem reservoir systems operating regime along the Syrdarya River for 2007-2008 non-growing season***

According to the Hydrometeorological service's forecast of 27.09.2007, water availability is expected to be 95-100 % of the norm during 2007-2008 non-growing season in the Syrdarya River basin. Hence, the Schedule-forecast of tandem reservoir system operating regime for 2007-2008 non-growing season was elaborated, taking into account the water withdrawal limits (Table 2.7) and water users' requests.

According to this schedule, carryover water storage in the Toktogul reservoir will make approximately 9 billion m<sup>3</sup> by the beginning of the growing season on April 1, 2008 that is 1.7 billion m<sup>3</sup> less than storage for the same date of 2007 and 2.4 billion m<sup>3</sup> less than average long-term volumes. Therefore, we should be ready that a difficult situation concerning water supply to water users might appear during the non-growing season of 2008. In order to improve the situation it is necessary to save water resources during the non-growing season to save as much water as possible in the Toktogul reservoir. At the same time, it is necessary timely to solve all issues concerning fuel and energy resources saving and supply for Kyrgyzstan.

Table 2.7

River Basin, state	Water withdrawal limits for 2007-2008 non-growing season, million m <sup>3</sup>
Total withdrawal from the Syrdarya River, of which:	3104.93
The Republic of Kazakhstan	404.32
The Kyrgyz Republic	36.66
The Republic of Tajikistan	179.59
The Republic of Uzbekistan	2484.36
Water supply to the Aral Sea and Prearalie	2823.72

## EXPLANATORY NOTE FOR THE WATER SITUATION ANALYSIS ON THE AMUDARYA RIVER AND SYRDARYA RIVER BASINS DURING 2007 GROWING SEASON

The water situation during the growing season in the Syrdarya River and Amudarya River basins was analyzed according to the following indicators:

- Water availability – along sites, periods, inflow into reservoirs and channel inflow, with comparison of planned and actual data;
- Reservoir operating regimes – water accumulation and releases from reservoirs, with comparison of planned and actual data;
- Water allocation schedules – deficit period, available water supply and equitability of water delivery, with comparison of planned (limits) and actual data.

### *Syrdarya River Basin*

Actual water availability in the basin characterized with the total inflow to upstream reservoirs and lateral inflow was more than predictable volume by 5.23 m<sup>3</sup> but less than the norm by 2.26 m<sup>3</sup> (7,5 %).

Actual inflow into the Toktogul reservoir was 8.91 m<sup>3</sup> that is more than predictable volume by 0.6 m<sup>3</sup> (7.2 %). Surplus flow in terms of inflow to the Toktogul was compensated with deficient inflow into the Andijan reservoir which was 1.54 m<sup>3</sup> that is less than the forecast by 0.58 m<sup>3</sup> (27.4 %). However, as the actual lateral inflow on the sites of Toktogul-Uchkurgan, Andijan-Uchtepe and Uchkurgan, Uchtepr-Kayrakkum was more than the predictable water availability by 1.66 m<sup>3</sup>, the total water availability in the basin site till the Kayrakkum reservoir (site I) was more than the predictable water availability by the same volume. The most exceeding actual data of lateral inflow in



comparison with the forecasted one was observed on the Uchkurgan and Uchtepe-Kayrakkum sites ( $1.08 \text{ m}^3$ ).

The basin site from the Kayrakkum till the Chardarya reservoir (site II) in terms of natural inflow into the Charvak reservoir and lateral inflow on the Kayrakkum-Chardara and Gazalkent- Chinaz-Chirchik sites is characterized with actual volume excess over the forecast which is  $3.56 \text{ m}^3$ . The lateral inflow on the Kayrakkum-Chardara site was  $3.0 \text{ m}^3$  (95 % out of the norm) that is more than the forecast by  $1.27 \text{ m}^3$ .

In spite of the fact that the actual inflow into the Toktogul reservoir was higher than the forecasted volume (the deviation made 7 %), the schedule for releases from the reservoir was broken and the actual releases were less than the forecast volume by  $1.08 \text{ m}^3$  (the deviation is 15.5 %). By the end of the growing season, in the Toktogul the water availability volume was accumulated more than was planned by  $1.8 \text{ m}^3$ . The releases from the Toktogul were inequable: if the releases were lower by  $161 \text{ m}^3/\text{s}$  (29 %) and  $209 \text{ m}^3/\text{s}$  (32 %) than planned in the first ten-day periods of June and July, then their volume exceeded the planned by  $63 \text{ m}^3/\text{s}$  (21 %) in the beginning of September.

This situation could not be compensated with the releases from the Andizhan reservoir which were lower by  $0.7 \text{ km}^3$  (the deviation is 27 %) than it was planned due to the deficit of inflow into the reservoir (the forecast exceeded the fact by 27 %). The actual accumulation of the Andijan reservoir was approximately the same as it was planned by the end of the growing season.

Another situation was in the Charvak reservoir. In this case, the surplus inflow into the reservoir (the actual inflow was higher by 17 % than planned) allowed to fulfill the plan on water accumulation and provide additional releases from the reservoir in the volume of  $1.41 \text{ km}^3$  (actual deviation from the plan made 35 %) higher than planned.

The inflow surplus (the deviation of the fact from the plan is 17 %) into the Kayrakkum reservoir allowed to have impound it by the end of the growing season more by  $0.2 \text{ km}^3$  than the planned volume and to fulfill the plan on releases from reservoirs during the period in general. However, the releases from the Kayrakkum were inequable: in the end of April, May-July the releases were lower than it was planned, the maximal deviations were  $128 \text{ m}^3/\text{s}$  (32 %) in the first ten-day period of May and  $133 \text{ m}^3/\text{s}$  (24 %) in the first period of June.

Mainly, at the expense of the additional inflow from the Chirchik River basin, the actual inflow into the Chardarya reservoir was higher/ more by  $3.34 \text{ km}^3$  than it was planned (the deviation is 84 %) that allowed to impound the reservoir additionally by  $0.75 \text{ km}^3$  and to make additional releases from it in the volume of  $4 \text{ km}^3$  (the deviation is 63 %).

The analysis of flow probability and flow distribution equitability have been conducted in the comparison of actual withdrawals with corrected withdrawal limits (reduced by 15 %) which were defined on sites in the following volumes: the site up to the Kayrakkum reservoir (site I) –  $4.34 \text{ km}^3$ , the site from the Kayrakkum till Chardara (site II) –  $5.84 \text{ km}^3$ .

On site I, the actual withdrawal exceeded the limits by  $0.21 \text{ km}^3$  and on site II it was lower by  $0.17 \text{ km}^3$ . In general, on two sites the difference between the actual withdrawal and corrected limits was  $0.04 \text{ km}^3$ . At the same time, the Kyrgyz Republic did not get  $0.05 \text{ km}^3$ , the Republic of Kazakhstan (Dostyk canal) –  $0.09 \text{ km}^3$ , the Republic of

Tajikistan – 0.01 km<sup>3</sup> of water. The Republic of Uzbekistan exceeded the corrected limit by 0.18 km<sup>3</sup>.

Water distribution is characterized with in equitability along other sites and during other periods.

In April the water deficit on site I occurred in all the states. In Kyrgyzstan the water scarcity was kept till the middle of July. Tajikistan exceeded the water (at the expense of channel inflow) from the beginning of May. Mainly, Uzbekistan had the water scarcity in June and water excess from the end of August due to inequable releases from Toktogul.

The water deficit occurred due to inequable releases from the Kayrakkum reservoir (while from the end of April to the beginning of August the actual releases were lower than planned but higher during another period) during April-May period on site II. This water deficit could not be covered at the expense of the lateral inflow.

The periods from the mid April to the mid June and the second half of September were the most problematic on each site according to the equitability indicator for water supply into canals (equitability is observed at the indicator rate of 100 %). Water was supplied in a very inequitable manner to Kyrgyzstan during specific periods (46 %, the first ten-day period of June), Tajikistan (35 %, the third ten-day period of April, site II), in a more equable manner – to Uzbekistan and Kazakhstan.

### ***Amudarya River Basin***

The actual water availability of the Amudarya River in Atamurat control station located upstream of Garagumdarya during the growing season was 41.3 km<sup>3</sup> that is lower the norm by 6.3 km<sup>3</sup>. The part of the water availability for the Vakhsh River in the control station upstream of the Nurek reservoir was 17.44 km<sup>3</sup>. The actual inflow into the Nurek reservoir was higher by 4.6 km<sup>3</sup> (the deviation is 36 %) as compared to the predictable inflow.

Due to the inflow surplus, the Nurek reservoir by the end of the growing season was impounded in accordance with the plan and the actual release from the reservoir exceeded the planned one by 4.7 km<sup>3</sup> (the deviation is 56 %). Though the releases from the Nurek reservoir were inequitable (the deviation is 34-112 %), they exceeded the plan during all ten-day periods.

In general, there was no water scarcity on the basin site from the Tyuyamuyun hydrosystem (site I) in all the states but it was observed during some periods at the expense of inflow scarcity in the Pyanj in April, May and June. During the first ten-day period of April the water deficit was 160 m<sup>3</sup>/s (17 %), in the beginning of June – 140 m<sup>3</sup>/s (4 %). The equitability of water delivery to canals on site I changed from 92.2 to 99.7 %. The highest values during certain ten-day periods occurred in Tajikistan (58 % for the first ten-day period of April) и Turkmenistan (81 %).

The actual inflow into the Tyuyamuyun reservoir in general during the growing season exceeded the plan by 1.78 km<sup>3</sup> (the deviation is 9 %). In spite of this, the reservoir could not be impounded according to the plan by the end of the growing season. The actual release from the reservoir was 17 km<sup>3</sup> that is in excess of the plan by 1.3 km<sup>3</sup> (the

deviation made 8 %). The inflow surpluses were discharged into the Amudarya River lower reach in July – September; in May – June the releases delay occurred due to the increase in actual reservoir impoundment over the plan. The errors in the operating regime planning for the Tyuyamuyun hydrosystem were caused by the problems in water balance drawing up on the site of the Darganata gauging station - Tyuyamuyun gauging station as well as by uncertainty in the losses assessment.

The water deficit was 0.16 km<sup>3</sup> (approximately 1 %) on the basin site lower than the Tyuyamuyun hydrosystem (site II) in general in all the states. However, the deficit was not distributed evenly. The greatest deficit occurred in May-June (the limit deviation from the fact is 9-27 %). In general during the growing season the deficit was 0.24 km<sup>3</sup> in Uzbekistan (the deviation is 3 %), and there was no water deficit in Turkmenistan (2 % of surplus).

Water supply schedules into canals on site II are extremely inequitable. The water supply equitability in Turkmenistan decreased to 60-68 % in April and June with considerable failure in water supply during certain ten-day periods (50 % during the second ten-day period of June). Water supply to Uzbekistan is more equitable and available water supply during some ten-day periods does not decrease lower than the level of 73 %.

## **ON THE RESULTS AND PERSPECTIVES FOR WORK COMPLETION UNDER ADB RETA 6163<sup>2</sup> PROJECT**

*(as of October 5, 2007)*

In accordance with the program of works approved by ICWC on March 30-31, 2006 at the 44<sup>th</sup> meeting in Ashkhabad city the works are conducted in two directions:

1. Elaboration of the Agreement on water and power resources use in the Syrdarya River Basin.
2. Elaboration of corresponding regulations and guides for more sustainable basin water resources management.

The project participants and the members of National work groups and Regional work groups have accomplished a great job on preparation and coordination of a new text for the “Agreement on the Syrdarya River”. The project was three times considered at ICWC meetings. Nevertheless, the consensus on a range of proposals which were the object for coordination before has not been achieved.

In the protocol of a work meeting “On water and power resources use in the Syrdarya River Basin” of August 24-25 2007, the participants at the meeting achieved a consensus and some certain progress regarding the majority of issues that had not been agreed before. In the protocol it also was mentioned: “All unsolved issues on the Agreement to

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<sup>2</sup> Materials for the second agenda item of the 48<sup>th</sup> ICWC meeting, Khojent city, October 2007

be submitted to ICWC members at the next meeting of ICWC for complete approval”. (Annex 1 – The list of non-agreed issues).

The work on the second part is conducted by five subgroups:

- Subgroup 1: responsible for establishment of rules for procedural obligations implementation and responsible for development of recommendations on improvement of rules for water and power resources regulation and management in the Syrdarya River Basin. The model of rules and recommendations has been prepared, national groups of The Republic of Tajikistan and The Republic of Uzbekistan have not presented their materials.
- Subgroup 2: responsible for clarification of water losses in the middle and lower reaches of the Amudarya River. An analytical report approved by National work groups of the Republic of Tajikistan, the Republic of Uzbekistan and BWO «Amudarya» has been submitted to the Republic of Tajikistan for approval.
- Subgroup 3: responsible for development and coordination of detailed methodical recommendations on the general basin costs accounting, data collection and assessment of actual damages because of water resources use regimes. The first version of the costs list was prepared and submitted to the heads of National work groups.
- Subgroup 4: responsible for completion of the draft Agreement “On strengthening of institutional framework for transboundary water resources management, protection and development”. The work of the subgroup was completed without participation of the representative of the Kyrgyz Republic who did not come.

Subgroup 5: responsible for preparation of inventory of interstate objects. The inventory for the Amudarya River was prepared but as to the Syrdarya River, no materials were submitted by any of the republics.

The work program on this project approved by ICWC is planned to be completed by December 2007; however it is considerably behind the schedule of its implementation. One of the reasons of insufficient work are continuous problems connected with each National work group’s representatives participation (NWG) and putting forward their proposals.

Successful completion of the program will allow approving a new Asian Bank project for the next period, which is being developed by ADB at present. (Annex 2 – Brief project content prepared by the ADB Regional Office).

## UNSOLVED ISSUES ON THE DRAFT AGREEMENT “ON WATER AND ENERGY RESOURCES USE IN THE SYRDARYA BASIN RIVER”

1. *On Preamble* – the Tajik party proposes to exclude the second paragraph “on the way of true spirit of neighbourhood and cooperation”.
2. *Article 2 and Article 3 “Subject of the Agreement”* – during last discussion, the Tajik party proposed to revise them due to inconsistencies, though these articles had been agreed before.
3. *On Article 6, clause 6.1.* – the Tajik party proposes the wording “For the initial term of effect of the Agreement” and further according to the text.
4. *On Article 7, clause 7.3.* – the Kyrgyz party supplemented this article and added clause 7.3 “quantity of power resources supplied is based on Annex 3” at the meeting in Bishkek on July 31 – August 2. The proposal was put forward but the annex 3 is still not submitted. The Uzbek party proposes not to include this clause in the draft Agreement as supplied quantities are defined by annual agreements.
5. *On Article 8, clause 8.13* – the Tajik party supplemented this article with clause 8.13 “The parties will develop the calculation methods of compensation for water delivery service” and undertook to submit additional explanations. The Uzbek and Kazakh parties propose not to include this clause in the draft Agreement.
6. *On Article 9.1.* – the Republic of Kazakhstan and the Republic of Uzbekistan propose to keep the previously agreed wording “construction of new hydropower objects and reservoirs in the region as well as development of large irrigated schemes”. The Republic of Tajikistan proposes to exclude the first part of this clause and to leave only the wording “development of large irrigated schemes”.

All other clauses of the Agreement were agreed by all National work groups’ and Regional work groups’ members (except for National work group of the Kyrgyz Republic).

## **BRIEF SUMMARY OF THE PROJECT PREPARED BY THE ADB REGIONAL OFFICE**

The Project is supposed to be developed as the following:

Project purpose: to facilitate the improvement of water resources management in Central Asia.

Countries-participators: Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.

Coverage: the Syrdarya River and the Amudarya River Basins.

Components: (1) improvement of databases on basins and information exchange between ICWC, BWOs, national water and power agencies and hydrometeorological services; (2) carrying on a political dialogue on transboundary water resources use at the regional level, including the improvement of the Agreement on Syrdarya and Amudarya; (3) strengthening of water agencies' capacities.

Implementation measures: ADB is the main executive agency. Each country will form and approve permanent national work group with a specific staff which should participate in all the project events. Special representatives of regional organizations such as IFAS, BWOs, SIC ICWC, CEC and others will participate in the project. Also the Secretariat for organizational matters coordination should be established. In turn, each country will act as a chairman at meetings on considering issues of transboundary water resources use. The meetings will be held in turn in one of the states of the region on parity conditions in accordance with the agreement of the parties.

## **ON THE DEVELOPMENT OF WORK PRINCIPLES UNDER THE PROJECT “CENTRAL ASIAN REGIONAL WATER INFORMATION BASE” (CAREWIB) IN THE INTERESTS OF NATIONAL INFORMATION SYSTEMS<sup>3</sup>**

Assistance in the development of national information systems is rendered in the framework of Component 3, Phase 2 of CAREWIB project.

The key purpose/task of this component is horizontal and vertical CAREWIB development at the national level, tools development aimed at CAREWIB integration into the decision making processes of national, regional and international organizations as well as into public discussions.

In accordance with the draft Agreement “On formation and function of national, basin and regional databases for comprehensive water resources use and conservation of the Aral Sea Basin” signed by ICWC members at the 44<sup>th</sup> ICWC meeting (March 30-31, 2006, Ashkhabad), the main means for the project support is the improvement of access to the information about water resources, water sector and the environment in Central Asia at regional, basin and national levels by formation of national information systems closely connected with regional, basin and national databases. The project will lay down the one methodical foundation of national information systems of all states in Central Asia by joint efforts of SIC and ICWC members.

First of all, formation of national information systems in the five countries of the region similarly to regional information systems (IS) will be established by transferring information system software, methodology and available databases on countries and provinces and by intensive training of creators of national information systems as well. SIC organized the work on definition of responsibilities and duties of the Parties in formation of national IS which were defined in Memorandums of Mutual Understanding between SIC and five national water organizations and 3 of them had already been signed. The project staff analyzed the needs in equipment for equipping of national contact points for MAWR and optimal equipment configuration was defined for the development of national IS and its specification was made up. After that computer equipment will be purchased and necessary software will be installed. The equipment will be delivered and installed in five national contact points.

The special emphasis will be laid on the interface development able to take into account a national specific character and preferences of ICWC members concerning scale and structure of databases such as possibility of extension of additional information layers or information sorting in accordance with basins or districts. Moreover, promotion of national project participants as the key staff of national teams for IS’s development will allow to use their respectable experience and serious skills gained in the process of Project Phase 1 implementation and provide adequate DB completion of national IS’s and timely corresponding data transfer to the regional IS’s.

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<sup>3</sup> Materials for the 3<sup>rd</sup> issue of the agenda of the 48<sup>th</sup> ICWC meeting, Khojent city, October 2007

The advantage of supporting the regular, significant and reliable information exchange between regional, national and basin databases is the possibility of water reserves definition by careful data validity check on water delivery and use. The comparison of the data of each water hierarchy level will allow to reveal disparities and to define intersections with irrational water loss. Analytic IS capabilities launched in the process of the system improvement during Phase 2 will ease the evaluation of water balance accuracy and CAREWIB integration into the processes of making decisions by different interested parties. Publication of articles written on the basis of analytic IS products will have a special meaning for public debates.

The following is proposed in this context:

- transfer of available database content to countries and provinces to appropriate national IS;
- development of the one methodological base for national IS with the further transfer of CAREWIB software and samples of interfaces to the teams of developers of national IS's;
- organization of primary training of developers of national IS's to introduce them methods of BD maintenance, experience transfer and effective CAREWIB interface use. National developers of IS's will be maintained in an appropriate way in the process of project implementation by providing technical and methodological consultations of SIC ICWC experts on IS's;
- compatibility of national IS's created by national developers to CAREWIB ISs to provide a regular information exchange between BDs;
- organization of training and consultations, development of interaction between specialists of water economy organizations (ministries and basin/ province water administrations, canal management administrations, WUAs), NGOs, research institutes and other interested parties to CAREWIB IS's use and the portal in their everyday activity and implementation of advanced technologies with the purpose of increasing the water economy efficiency in Central Asia;
- CAREWIB IS's integration into the process of making decisions by ICWC, IFAS bodies, Euro-Asian Economic Community, national ministries and other users by introducing with IS's capabilities during different meetings of these organizations.

SIC will be the main executor responsible for the supervision of project events and providing the interconnection with a regional network of their branches in Kazakhstan, Kyrgyzstan and Tajikistan, SIC ICSD in Turkmenistan, ministries of agriculture and water resources in five countries, IFAS IS's, ICWC, BWO «Amudarya», BWO «Syrdarya», donors and participants of ASBP. SIC will also provide the connection with national contact points under each Ministry of Agriculture and Water Resources which will develop national IS's: will train the staff, purchase equipment, transfer available data, technique, developed software and adjust it for the requirements of national water management organizations.



National contact points established in each country under each Ministry of Agriculture and Water Resources will provide the information system being created with national data to be used by staff of Ministries of Agriculture and Water Resources and their departments; organize the further development of this IS at a province level (and if required at a lower level) on methodology transferred to SIC.

## **FIRST ASIA-PACIFIC WATER SUMMIT**

*(December 3–4, 2007, Beppu, Japan)*

The First Asia-Pacific Water Summit was held with the support of the Japanese Government and was dedicated to “Water Security: Guidance and Obligations”. The main objective was to provide an opportunity for political leaders in the region to more deeply realize the significance of water-related problems in the region for achievement of the UN Millennium Development Goals and organize a dialogue with all stakeholders on these problems during the summit in order to formulate this significance in form of specific actions for each country.

The idea of such event first occurred during the 4<sup>th</sup> World Water Forum (Mexico, March, 2006) upon initiative of the Japanese Water Forum’s President, the former Japanese Prime-Minister Rutaro Khoshimoto. After sudden and untimely death of Mr. Khoshimoto, this affair dedicated to solution of global water problems was taken on by former Japanese Prime-Minister Yoshiro Mori, who is now the President of the Asia-Pacific Water Forum and the Head of Steering Committee of the First Asia-Pacific Water Summit (APWS).

The Steering Committee is comprised of: Ambassador of Singapore Prof. Tommi Kox; special UN ambassador on Millennium Development Goals in the Asia-Pacific region Mrs. Yerna Vitoyelar, and former executive chairman of Water Help program Mr. Rawi Narayan.

The meeting was attended by several Heads of state and governments, official delegations from 36 countries of the Asia-Pacific, including representatives of various international and regional organizations, financial institutions and businesses, civil society and non-governmental organizations, research and mass media.

Central Asia was represented by official delegations from the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and the Republic of Uzbekistan, as well as by the International Fund for Saving the Aral Sea headed by its Chairman, the President of Tajikistan Emomali Rakhmon.

1<sup>st</sup> APWS was held in the exhibition center B-Con Plaza. A ten-minute video-clip was demonstrated before the opening ceremony about water problems in the Asia-Pacific

region, where 60 % of the world's population lives (3,7 billion people), where each of five persons (0,7 billion people) does not have access to clean drinking water and more than half population (1,9 billion people) does not have access to sanitation facilities. At the same time, along with water shortage, the region has to confront with disasters becoming more frequent due to climate change, such as floods, catastrophic landslides, with huge human losses which account for 80% of the world's water-related losses.

The opening ceremony of the 1<sup>st</sup> APWS followed a special program, with participation of His Imperial Majesty Crown Prince of Japan and His Royal Highness Prince of the Netherlands William Alexander, who had their floors after the opening speech of Mr. Yoshiro Mori, with welcome speeches and presentations dedicated to an exclusive importance of water-related problems for the world in general and the Asia-Pacific region in particular. Then, the Prime-Minister Yasuo Fukuda welcomed the Summit on behalf of the Japanese Government. He highlighted three main regional problems: drinking water supply and sanitation; water-related disasters; secured agricultural water supply, the solution of which he sought in implementation of integrated water resources management. Prof. Tommi Kox spoke on behalf of the Steering Committee of Asia-Pacific Water Forum and presented main points of Policy Brief document prepared and published specially for 1<sup>st</sup> APWS. The strategy and actions were determined according to this document in three priority themes:

- A. ***Water financing and capacity building*** in order to increase investments in water and sanitation infrastructure, as well as in research, training and technique.
- B. ***Water-related disaster management*** in order to reduce population vulnerability, as well as to provide population with water after any disaster.
- C. ***Water for development and ecosystems*** in order to improve water productivity through conservation and stabilization of aquatic ecosystems.

Those priority themes are considered within five areas of key results:

1. Knowledge and practices development.
2. Local capacity development.
3. Outreach strengthening.
4. Investment and result monitoring.
5. Forum and summit support.

The UN General Secretary Pan Ki-Moon in his video welcome spoke about utmost importance of water-related problems and the significance of this event.

Every speech during the official opening ceremony demonstrated water and climate change concerns and stressed an urgent need for the improvement of this situation by joint efforts and more active participation of society's leaders.

The plenary session of the 1<sup>st</sup> APWS was started by the Heads of State and Government. First, the President of the Republic of Tajikistan Emomali Rakhmon took the floor. In his speech he underlined that the world development tendencies were such that value of

water could be higher than the value of oil, gas, coal and other resources necessary for the sustainable future of every country and region.

While supporting APWF's priorities in area of water financing and water disaster management improvement based on ecosystem approach, he noted an urgency of establishing regional and international emergency funds under UN umbrella in order to eliminate difficulties related to access to clean drinking water and render assistance in case of natural disasters. At the same time, he proposed to establish a Water Partnership of developed countries that would give target assistance to developing or poor countries in addressing water problems. For joining efforts in solving water problems, he proposed to initiate a special ministerial conference within the framework of UN's General Assembly and develop and adopt International Water Convention.

As concerns the Republic of Tajikistan, he spoke about priority of hydropower development and called upon all interested parties to cooperate in developing these resources on equal and mutually beneficial basis. Similar approach was suggested for solving the problem of Sarez lake, which is subjected to break, through the establishment of international consortium to be dealing with the use of this lake for drinking water supply needs in Central Asian region. When touching global warming and intensive glacier melting in Tajikistan's mountains, Emomali Rakhmon proposed to hold in the city of Dushanbe in 2008 an International conference on water-related disaster reduction.

As a follow-up of previous proposals of the Presidents of Uzbekistan and Kazakhstan, he spoke on a need to attribute to IFAS the status of UN institute and recognizing of the Aral Sea basin as a priority pilot region for achievement of the Millennium Development Goals. In order to establish close cooperation between the Aral Sea basin and the APWF and to increase support to water management improvement, he proposed to create a Central Asian sub-regional center in the city of Dushanbe.

Then, the leaders of Asia-Pacific island states such as Kiribary, Palau, Nauru, Tuvalu and the Federal States of Micronesia that are threatened by expected sea-level rise and cyclones becoming more frequent due to climate change. The Prime Minister of the Kingdom of Bhutan described how the climate change in his country leads to rapid glacier depletion and more frequent floods inundating downstream areas of residence.

Vice Prime-Minister of the Kyrgyz Republic Dosbul Nurullu took the floor last and addressed issues of environmental security using as an example a need for rehabilitation of Mailisay uranic tailing dumps that threatened both Kyrgyzstan and other neighboring states. Concerning water problems in the Central Asia, he touched upon Toktogul reservoir as an object serving the needs of downstream countries to the prejudice of national Kyrgyzstan's interests through flooding of lands and huge maintenance costs of the hydropower project. At the same time, he proposed to support establishment of Water and Power Academy in the city of Bishkek and hold water-power summit in partnership with APWF.

Upon completion of the plenary meeting, parallel sessions were held:

### **December 3, 2007.**

1. ***Climate change, glaciers and water resources in the Himalayas.*** This session addressed issues of climate change and snow-glacier storage reduction that became particularly pronounced in the last decade. In order to study these processes and prevent their negative consequences for water resources, it is necessary to enhance regional cooperation in collection and exchange of information on monitoring and assessment of climate changes.

2. ***Leaders' mandate for water actions.*** Leaders of enterprises and businesses have gathered together at round table in order to discuss AP region's development scenario, focusing on challenges that had growing impact on their activities and the society as a whole. The session considered a number of good examples and political recommendations calling upon leaders of businesses to support initiatives aimed at solution of water problems.

3. ***Monitoring of investments and results for water.*** The accumulated experience indicates to an urgent need for improvement of policies for regional and national monitoring of investments and achieved results, and this should be linked with priority issues, such as investing and impact on IWRM, water supply and sanitation.

### **December 4, 2007.**

1. ***Regional launch of international sanitation year 2008.*** The session's participants stated that sanitation was a key point in achievement of MDGs. They called upon the national leaders to focus efforts on more efficient implementation of Khashimoto Action Plan on sanitation. They also requested the Japanese Government to include sanitation in the agenda of G8 in Tokyo in 2008.

2. ***Dialogue on water and climate for small islands.*** Reporters of this session indicated to vulnerability of aquatic ecosystems in small island states and to great importance of efficient water management for them in context of climate change. Discussions were focused on shift in paradigm and transfer from elimination of consequences to prevention and management of water disasters.

3. ***View for guaranteed water security in the Aral Sea basin – cooperation against competition.*** The session was moderated by the Chairman of the World Water Council Loic Fauchon. The reporter of the session was the head of UNESCO's Hydrological program Mr. Saloshee Nagi. According to the earlier adopted agenda, the President of the Republic of Tajikistan took the floor first, the Chairman of IFAS Emomali Rakhmon and then ICWC members spoke – A.D.Ryabtsev, B.T.Koshmatov, Sh.R.Khamrayev, S.Yokubzon and acting chairman of EC IFAS S.Rakhimov. A message dedicated to environmental problems was communicated by the Azerbaidjan's Minister of Environment and Natural Resources Khusseingulu Seyid Bagirov. The participants spoke about exposure of the Central Asian region to various water-related disasters and that becoming more frequent floods and droughts, mudflows, avalanches and landslides caused considerable economic damage to the countries annually. It is necessary to elaborate common approaches and joint actions in order to solve water issues, including

the global problem of the Aral Sea and Prearalie. This would require urgent increase of investments, especially in rehabilitation of outdated and inoperational water infrastructure. There are certain difficulties in harmonization of water needs among different economic sectors, such as irrigation, hydropower, and environmental protection, particularly under conditions of transboundary water use. Nevertheless, the accumulated positive experience of regional cooperation in the Aral Sea basin shows that exactly political will of the Heads of State is one of major factors for achievement of sustainable water development.

4. ***Water disaster management.*** The session was aimed at integration of water disaster risk reduction approaches into national development plans. The participants concluded that adaptation to increased risks related to climate change is the most important priority.

5. ***Water for development and ecosystems.*** Discussions were focused on how to ensure water supply for various economic sectors, taking into account a need for development and conservation of the environment. The participants acknowledged an importance of supporting local actors and developing skills of good governance for creation of win-win conditions.

6. ***Leadership for guaranteeing water security in the Asia-Pacific region: knowledge, financing, and capacity building.*** The session's participants concluded that investments in water development imply investing of poverty eradication. Besides, development of various financing mechanisms was discussed such as cost sharing among the governments and water users and use of additional resources as formed through current rapid economic growth for urgent activities in sanitation and agriculture.

7. ***Capacity building for local actions.*** A number of concrete initiatives, including establishment of capacity development centers for situation improvement at local level was discussed. Such centers will serve for active cooperation with various NGOs, local authorities and the general public in support of three priority themes of APWF.

The final part of the 1<sup>st</sup> APWS included reports of the session, presentation of the Summit's general report, announcing of the message from Beppu, presentation of the Turkey's representative with invitation to the 5<sup>th</sup> WWF in 2009, addresses of representative from American (Brazil) and European (Denmark) continents with information about similar regional summits and of Singapore's representative about 2<sup>nd</sup> APWS in 2008.

Final speeches were forwarded on behalf of the Japanese Government by Minister of Land, Infrastructure and Transport Tetzutso Fuyushiba and on behalf of APWF BY Yoshiro Mori.

Work under the summit was aimed at achieving progress in addressing of above three priority themes within ATWF's five key result areas. Moreover, the more important thing was to stress responsibilities of the governments for the state and use of water resources and to induce the Summit's participants and especially the leaders and decision makers to recognize the significance of water problems in the region and bring them higher to the top political level.

## **INTERNATIONAL EXHIBITION «WATEC—2007»**

*October 29 – November 6, 2007*

At the invitation of the Ministry of Foreign Affairs of the State of Israel, the delegation of ICWC consisting of A.D. Ryabtsev, L.N. Dmitriyev (Kazakhstan), B.T. Koshmatov (Kyrgyzstan), A. Yazmuratov (Turkmenistan), N. Ernazarov (Uzbekistan), Y.Kh. Khudaybergenov (BWO Amudarya), V.A. Dukhovny, P.D. Umarov (SIC ICWC) took part in the activities of the International Exhibition WATECH-2007 and were familiarized with the experience of water resources management and water use in Israel.

The delegation was met at the Ministry of Foreign Affairs of Israel, by the Director of the National Water Authority, Head of “Mekorot” Water Company, and visited a number of waterworks facilities in the country. Prominent water specialists of the country made speeches before the delegation members and exchanged views with them.

The main conclusions that can be made based on the results of the trip:

1. Israel can be rightfully considered as a pioneer practice ground for water resources use and management on a national scale.
2. According to its water resources availability, Israel takes one of the lowest places: annually 7 million people in the country consume 1.9 billion m<sup>3</sup> of water or 270 m<sup>3</sup> per capita a year. It is reached through integrated involvement of all kinds of water as resources, including:
  - surface water - 450 million m<sup>3</sup>;
  - groundwater - 880 million m<sup>3</sup>;
  - treated wastewater - 470 million m<sup>3</sup>;
  - desalinated water - 100 million m<sup>3</sup>.

The Government intensively works on the development of a long-term strategy for water supply, as water is a really strategic resource.

3. The industrial and population growth continually reduces the portion of water used by agriculture. At present (and accepted for future), the water use for agriculture amounts to no more than 50%, less than a half of this water is clean; potential desalinated and undertreated wastewater constitute the main source. The country practically has no waste (collector-drainage) water in the agriculture, and almost no losses in all the sectors: the norm of losses is only 4%.

4. Water conservation is ranked as one of the main orientations of the national policy. Water conservation is stimulated by using different means:

- rigid limitation and licensing of all water uses, provided that the limit can be reduced depending on yearly water availability prediction;

- a favorable system for water pricing: price grows for clean water and reduces for return water;
- a well-established system for water accounting at all levels of water use hierarchy;
- education of all water users and especially young generation.

It is necessary to note that the creation and automation of a unified system of water conduits for all water users practically eliminate a possibility of losses in quantities exceeding fixed limit.

As a result of such an attitude to water conservation, over the last 20 years water productivity has raised twice as much.

Irrigated agriculture covers 190,000 ha of the total area of cultivated lands amounting to 350,000 ha. Wheat (31%), sunflower (23%), orchards (26%) and vegetables (16%) are dominant among cropped areas. Cotton accounts for only 4% with crop yields of 5.5 - 6 tons per hectare. The crop yields of grain crops amount to 5.5 - 6 t/ha as well. The crop yields of vegetables amount to: 70-90 t/ha for tomatoes and cabbage; 60-70 t/ha for potatoes and onion. The crop yields of orchard crops amount to: 10-15 t/ha for apricots, grapes and dates; 15-20 t/ha for apples, pears, plums, peach and mango; 40-50 t/ha for citrus and bananas.

Mean income per agricultural worker is \$1500 a month.

5. At present, the reconstruction of water sector management is going on in the country. In place of the Water Commission, which functioned under the auspices of the Ministry of Infrastructure, a National Water Authority has been established, which functions under the guidance of Board of Directors - 8 members headed by Managing Director, and includes Deputy Directors General of the Ministries of Agriculture, Infrastructure, Environment, the Interior, Transport and Industry and two representatives from the public. The Commission is responsible for hydrological forecasts and water accounting (hydrological service), planning of needs, determination of water use limits, reconstruction and upgrading of infrastructure, implementation of automation, fixing of tariffs and collection of charges for water, relationships on transboundary waters and prospective investment. The Water Authority does not interfere in the operation of water production companies such as Mekorot (water supplier), wastewater treatment plants, and water production plants and so on. A special emphasis is put on the development of further water policies, preparation of a set of measures for implementation of them through the Government, control over their implementation.

6. The system of payment and tariffs takes a special place in the national water policy. The cost of water in the water supply system (Mekorot) is \$0.4 per m<sup>3</sup>. The municipalities and industry receive water from it at this price. Municipality sells water at a progressively increasing tariff:

- first 8 m<sup>3</sup> of water a month - \$0.6 per m<sup>3</sup>;
- next 7 m<sup>3</sup> of water a month - \$0.88 per m<sup>3</sup>;
- over – \$1.2 per m<sup>3</sup>;

The industry pays:

- \$0.4 per m<sup>3</sup> for clean water;
- \$0.32 per m<sup>3</sup> for undertreated water;
- nothing for brackish water.

The agriculture is subsidized. First 50% of the licensed limit on clean water is paid at \$0.19 per m<sup>3</sup>; next 50-80% - \$0.23 per m<sup>3</sup>; over – \$0.3 per m<sup>3</sup>;

Undertreated wastewater: first 50% of the limit – \$0.13 per m<sup>3</sup>; next – \$0.1 per m<sup>3</sup>.

Moreover, the total income on water is more than US\$4 billion, and the budget of the Water Authority is US\$1.5 billion a year.

7. By 2020, three countries (Israel, Palestine, Jordan) with shared water resources will have a 24-million population. To ensure at least 200 m<sup>3</sup> per capita per year, the region should have 5 billion m<sup>3</sup> of water. To this end, in addition to 2.65 billion m<sup>3</sup> of natural water resources and 1.1 billion m<sup>3</sup> of return water, water production by using desalination or other methods should reach 1.35 cubic kilometers or 26%. At present, one of the largest desalination plants in the world with an annual capacity of 108 million m<sup>3</sup> has been put into operation in Ashkelon, a desalination plant with an annual capacity of 100 million m<sup>3</sup> is being constructed in Haifa, and a 200-million m<sup>3</sup> plant in Shafdan and a 100-million m<sup>3</sup> plant in Ashdod are projected. However, according to the opinion of specialists, the problem of complete water use in the region can be solved through the construction of a canal from the Red Sea to the Dead Sea, with hydro power stations on it, which would generate electric energy available for desalination of 850 million m<sup>3</sup> of water a year. This US\$5 billion project is now under the review of the World Bank.

***The suggestions and recommendations made based on the results of the trip are as follow:***

1. An agreement was reached with the organizers of WATEC-2007 exhibition to hold similar event with international scientific-practical conference in October –November 2008 in Almaty.
2. Based on the results of the negotiation with the leadership of MASHAV and CINADCO, it was suggested to organize joint work on training programs for water specialists and establishment of extension services for farmers. At the same time, it was suggested to organize a demonstration plot for advanced Israeli technologies for drip irrigation, greenhouses and fisheries at the ICWC Training Center in Tashkent on a competitive bidding basis.
3. Based on the results of the negotiation with the “Tahal” Consulting Engineers Ltd. and representatives from the Institute for Research of Deserts and a number of other institutions, it was suggested to organize a scientific-technical cooperation in the field of treatment and use of collector-drainage water, selection of modified salt-tolerant crops irrigated with saline water, and launch joint activities for development and afforestation of sandy grounds on the dried bed of the Aral Sea.



4. Based on the results of the negotiation with the “Motorola” Company’s representative office, it was decided to start studying opportunities for involving Israeli specialists in work on implementation of projects for automation of waterworks facilities in central Asia.

5. “Tahal” offered to prepare a turnkey project proposal with attraction of investment by them, based on credit, under the guarantees of the Governments.

## **THE REGIONAL CONSULTATION MEETING ON DEVELOPING KNOWLEDGE AND LESSONS**

*(Singapore, October 29-31, 2007)*

The Regional Consultation Meeting for Candidate Water Knowledge Hubs in the Asia-Pacific Region was hosted by Singapore’s Public Utilities Board (PUB Singapore) on 29-31 October 2007 at the Singapore WaterHub. The meeting was organized in the context of the Asia Pacific Water Forum’s (APWF) Key Result Area 1 activities for developing knowledge and lessons. The meeting was attended by 24 representatives from 14 leading research and information centers from Indonesia, China, Malaysia, Australia, Sri-Lanka, Japan, Central Asia, Korea, etc.

The first day was opened by Mr. Ng Han Tong, Industry Development Department at PUB Singapore and the representatives of UNESCO-IHE Mr. Jan Luijendijk and ADB Mr. Wouter Arriens, who moderated the meeting. The moderators made introduction presentations about possibilities of and approaches to water knowledge sharing in the Asia-Pacific region. Mr. Tan Ban Thong, manager of Singapore WaterHub, explained how to establish knowledge hubs using the Singapore WaterHub as an example. Then, other Candidate Water Knowledge Hubs made their short presentation. Oygul Usmanova, head of international relations division at SIC ICWC (Scientific-Information Center of the Interstate Commission for Water Coordination), represented this Center at the meeting and made presentation, where she described activities of SIC, its main fields of expertise and presented a CAREWIB Project as a basis for the establishment of WaterHub in Central Asia, as well as proposals for cooperation with other similar water knowledge hubs in the Asia-Pacific region regarding both information exchange and joint training programs.

The next day was dedicated to discussion of a model and key operating principles of WaterHub. A need was underlined for a new approach for knowledge partnerships and networking with the help of regional water knowledge hubs that focus on key water sector topics (knowledge domains). In this approach, space is created for countries with advanced expertise and existing centers of excellence in the region to offer their services as a regional water knowledge hub to clients and partners in the region.

For the new approach to work and become self-sustaining, the regional water knowledge hubs will need to demonstrate and maintain excellence in their products and services to

meet client needs. Adopting a number of common key operating principles will help to ensure that this happens. Each regional water knowledge hub, working in its knowledge domain, should be able to demonstrate:

- vision and leadership;
- a focus on client needs;
- significant outcomes and impact in the region;
- a team of experienced specialists;
- generation and identification of state-of-the art knowledge;
- a stimulating research environment including internships for younger researchers;
- relevant and feasible knowledge solutions to address water management challenges in the region;
- regular comparative analysis across the region;
- excellent products and services that meet client needs;
- an inclusive attitude to knowledge networking;
- an entrepreneurial approach to developing a sustainable business model; and
- adequate human and financial resources to develop the knowledge hub's excellence.

The key water sector topics were identified and comprised water management, including separately Central Asia and Pacific countries, water governance, urban water supply, etc. After the discussion, the participants visited major infrastructure objects of PUB Singapore, namely treatment structures and Marine Barrage construction through Marina channel, which would prevent coastal areas from flooding and simultaneously create a fresh-water reservoir with constant water level.

Finally, cooperation among the candidate regional water knowledge hubs was discussed and the participants shared their visions about roles of their institutions as water hubs. Then a Message from the Regional Consultation Meeting containing key findings and recommendations was approved. Particularly, it is planned to make announcement of candidate hubs and the proposed Network at the 1st Asia Pacific Water Summit on 3-4 December in Beppu, Japan. Besides, each candidate hub should complete the development plan in the first quarter of 2008 and based on a review of the development plan, regional water knowledge hubs for priority water sector topics (knowledge domains) are to be recognized.

## **THE MEETING OF NATIONAL AND REGIONAL WORK GROUPS ON ADB RETA 6163 PROJECT**

The meeting of national and regional work groups on ADB RETA 6163 Project on October 11, 2007 in Khojekent.

Having discussed the progress of work of ADB RETA 6163 Project finalization this year, the representatives of National work groups (NWG) and Regional work groups (RWG) agreed on the following below:

1. Subgroup № 1: responsible for establishment of rules for procedural responsibilities implementation, and for development of recommendations on improvement of rules for water and power resources regulation and management in the Syrdarya River Basin. The model of rules and recommendations has been prepared, national groups of The Republic of Tajikistan and The Republic of Uzbekistan have not presented their materials. All the subgroups should submit their materials before November 1. The regional group from November 1 to December 1, 2007 should prepare the final document and submit it to all work subgroups members. The meeting will be held within the period of December 10 to 15, 2007. The coordinated materials should be submitted to ICWC Members before the end of the year.
2. Subgroup 2: responsible for clarification of course losses in the middle and lower Amudarya River courses. The subgroup submitted the detailed report. On the Tajik party's proposal, this document was submitted to the Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan with the request to give their view on this issue. After receiving the opinion of the Tajik party, the materials will be submitted to ICWC Members.
3. Subgroup 3: responsible for development and coordination of detailed methodical recommendations on the general basin costs accounting, data collection and actual damages assessment because of water resources use regimes. The first version of the expenditure list of was prepared and submitted to the heads of National work groups for coordination and preparation of the general basin expenditures for 2006. Members of NWG Subgroups should submit their methodical recommendations on the accepted items of the "List" not later than on November 15, 2007. All the works should be completed, coordinated at the NWGs and PWGs level and distributed to the ICWC Members to the end of the year.
4. Subgroup 4: responsible for completion of the project of the Agreement "On strengthening of an organizational structure of transboundary water resources management, guarding and development". The work of the subgroup was completed without participation of the representative of the Kyrgyz Republic who was sent the materials coordinated by the rest of participants. The Kyrgyz party is asked to expedite the coordination of these materials.
5. Subgroup 5: responsible for preparation of objects register of the interstate significance: the list of objects should be submitted to NWG Subgroup before November 10, 2007.

## **TRAINING WORKSHOP ON CREATION OF THE NATIONAL INFORMATION SYSTEM IN THE REPUBLIC OF TAJIKISTAN IN THE FRAMEWORK OF CAREWIB PROJECT**

Within the period of October 25-28, 2007 in Dushanbe the staff of CAREWIB Project organized and conducted a training workshop on creation of a national information system in the Republic of Tajikistan.

In accordance with the Memorandum signed by the Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan (MLR&WR RT) and SIC ICWC, CAREWIB Project staff purchased and delivered computer equipment to the MLR&WR RT including the server to store the national database, a computer to input data and operate them, a printer, networking equipment (hub, cable, modem), a no-break power supply unit. The equipment was installed in the established national contact point under the MLR&WR RT and three computers were connected to the network.

The following experts were trained:

1. U.I. Murtazaev – Tajik Office of SIC ICWC
2. B. Samadov – Tajik Office of SIC ICWC
3. Sh. Okhunjanova – Tajik Office of SIC ICWC
4. D. Kimsanov – the department of external economic relations of MLR&WR RT
5. M. Sharipov – the Agency of science, technique and water resources of MLR&WR RT
6. N. Khasanova – “Tajik Research University for Hydrology and Land Reclamation”
7. M. Buriev – “Tajik Research University for Hydrology and Land Reclamation”
8. N.K. Nasyrov – “Tajik Research University for Hydrology and Land Reclamation”
9. Kh. Rakhmatullaev – ADB “Agriculture rehabilitation in Tajikistan” Project
10. T. Mirsaidzade – the department of external economic relations of MLR&WR RT
11. Kh. Islomov – the Agency of science, technique and water resources of MLR&WR RT
12. Kh. Salibaev - ADB “Agriculture rehabilitation in Tajikistan” Project

I.F. Beglov, the project manager, told about the project purposes and tasks, Phase I achievements, expected Phase II results and answered the asked questions. The main direction of CAREWIB project in Phase II will be the assistance to national water organizations to create national databases. Thus, the purchase of modern computer equipment, its delivery, installation and debugging are supposed at the expenses of the project. Also, elementary training of people responsible for creation of national databases, and their consulting via the forum of CAWater-Info Portal and e-mail afterwards are supposed. Thus, the workshop in Dushanbe is the first in the range of training workshops which will be held by the project staff in five states of Central Asia this year. Also, such training workshops are supposed to be conducted twice a year as

well as one regional conference where reports of heads of national contact points about achieved results during a year are supposed to be listened to.

D.A. Sorokin, the Coordinator of Information systems Block, told about general principles of database creation, architecture, project decisions, and introduced the methodical materials prepared for the workshop to those present, and answered the asked questions. He also presented a sample of national database prepared by the project staff for MLR&WR RT to those present.

At the request of trained people, during practical training the database was created by example of 2TII-Water Management Administration of MLR&WR RT: tables, requests, forms of data and diagrams visualization and reports were created.

The following staff was proposed for the national contact point:

- U.I. Murtazaev - PhD in Geographical sciences, Professor – Tajik Office of SIC ICWC, acting as Director, the Head of the National contact point in RT;
- N.K. Nasyrov - Doctor of Technical Sciences, Professor – “Tajik Research University for Hydrology and Land Reclamation”, Department of Land Reclamation and Scientific and Technical Information, National Coordinator in RT;
- Ya.E. Pulatov - Doctor of Agricultural sciences, Professor –“Tajik Research University for Hydrology and Land Reclamation”, Director General, responsible for information provision into the national database of RT;
- D.R. Rakhmatullaev - “Tajik Research University for Hydrology and Land Reclamation”, the Chief of Technical Department, responsible for information provision into the national database of RT;
- A.M. Majidov - Tajik branch of “ Syrdarya” BWO, Chief, responsible for information provision into the national database of RT;
- S.B. Barotov - Tajik branch of BWO “Amudarya”, Chief, responsible for information provision into the national database of RT;
- A.B. Samadov - Tajik Office of SIC ICWC, responsible for information provision into the national database of RT;
- Sh.M. Okhujanova - Tajik Office of SIC ICWC, responsible for information provision into the national database of RT.

In conclusion, all the participants of the workshop thanked frankly the organizers of the workshop, i.e. SIC ICWC and the sponsor of the workshop - SDC.

## **TRAINING WORKSHOP ON CREATION OF THE NATIONAL INFORMATION SYSTEM IN THE REPUBLIC OF KAZAKHSTAN IN THE FRAMEWORK OF CAREWIB PROJECT**

During the period of November 12-15, 2007 in Astana, the CAREWIB project staff organized and conducted the first training workshop on creation of the national information system in The Republic of Kazakhstan.

The workshop was conducted in accordance with the Memorandum signed by Water Resources Committee (WRC) under the Ministry of Agriculture of The Republic of Kazakhstan and SIC ICWC. In accordance with this Memorandum, SIC ICWC will assist national water organizations with creation of national databases including the material base updating and staff training. This activity will be conducted in the framework of CAREWIB Project Phase II and is the main project direction during Phase II.

Computer equipment including a server for storage of the national database, a computer for data input and operation them, a printer, network equipment (hub, cable, modem) was purchased and delivered by the CAREWIB Project staff to WRC under the Ministry of Agriculture of RK. The equipment was installed in the established national contact point under WRC of the Ministry of Agriculture of RK, and necessary works on the equipment installation and tuning including connection of two computers to the network were done.

The following specialists had been trained:

1. G.B. Sarsenbaeva – the Chief of Water Resources Regulation, Use and Conservation Administration, WRC;
2. A.A. Shamshieva – Chief Expert of International Affairs Department, transboundary and inter-province water apportionment, WRC;
3. M.U. Imanaliev – Chief Expert of Water Resources Regulation, Use and Conservation Administration, WRC;
4. S.S. Tanatbaev – Chief Expert of Water Resources Regulation, Use and Conservation Department, WRC;
5. K.A. Askarov – hydrologist of PPCCAM project;
6. O.A. Kistaubaev – Chief of Department of Monitoring, State Water Accounting, and Water Resources Cadastre of Aral-Syrdarya Administration of Basin Water Organization;
7. E.E. Sagimbaev – Chief Expert of State Water Resources Control and Conservation of Aral-Syrdarya Basin Water Organization Administration;
8. N.N. Musirali – Chief Expert of NDC, “KEGOC” Joint-Stock Company;
9. A.S. Kaliev – Chief Expert of Joint-Stock Company “KEGOC”.

I.F. Beglov, the Project Manager, acquainted those present with all CAWater-Info web-portal sections in detail and demonstrated all the benefits of the portal application for

reception of necessary, timely and reliable information. All those present were acquainted with the project purposes and tasks, Phase I achievements and expected Phase II results.

D.A. Sorokin, the Coordinator of Information systems Unit, presented a sample of national databases prepared by the project staff for WRC of the Ministry of Agriculture of RK to those present. The listeners were acquainted with the database parameters and operation technology in detail. Possibilities of the database were presented and directions of the further improvement were highlighted (porting/ connection of additional data tags, estimating package etc.).

D.A. Sorokin also told about general principles of databases creation, architecture, project decisions, and introduced methodical materials prepared for the workshop to those present and answered the asked questions.

During the discussion K.A. Askarov mentioned that PPCCAM Project has an information system but it is impossible to use it as there are no trained specialists and interface adapted completely. Thus, CAREWIB Information Systems meeting main requirements to ISs of a similar type and having an intuitively understanding interface might successfully be used not only by WRC experts but also in PPCCAM Projecte.

G.B. Sarsenbaev emphasised that Aral-Syrdarya BWO Administration which specialists are invited for the training is in charge for databases filling of National IS.

During the practical training the participants were acquainted with the procedure data input in DB. Also, the training on design fundamentals in DB control system was conducted. Tables drawing up, requests, data visualisation forms and reports at the users' request were shown.

Moreover, D.A. Sorokin and A.V. Kats adjusted completely the "Water supply" section of "Water Management" unit to the form of 2TP-water organization of WRC of the Ministry of Agriculture of RK and created a new installation package of the national system of RK.

Data transfer unit via e-mail was developed for automatic transfer from provinces centres to the national contact point (control center) and the Project office (SIC ICWC). Thereby, the possibility for information addition and updating in DB of the regional information system in automatic mode occurred.

People responsible for creation of national databases and who had elementary training will be given consultations via the forum of CAWater-Info Portal and E-mail. Similar training workshops will be conducted two times a year, the terms will be coordinated with A.D. Ryabtsev, the ICWC Member from the Republic of Kazakhstan, Chairman of WRC of the Ministry of Agriculture of RK. A regional conference will be held where the reports of national contact points' heads about achieved results during a year are supposed to be listened to.

The following staff was proposed for the national contact point:

- G.B. Sarsenbaeva - the Head of the National contact point in RK, Chief of Department Water Resources Control, Use and Conservation, WRC;
- A.A. Shamshieva - Main Specialist of International Affairs Department, Transboundary and Inter-Province Water Apportionment, WRC;
- M.U. Imanaliev - Main Specialist of Department of Water Resources, Regulation, Use and Conservation, WRC;
- O.A. Kistaubaev - Chief of Monitoring, State Water Accounting and Water Resources Cadastre of Aral-Syrdarya BWO Administration;
- E.E. Sagimbaev - Main Specialist of State Control and Conservation of Water Resources of Aral-Syrdarya BWO Administration.

In conclusion, all the participants of the workshop thanked frankly the organizers of the workshop, i.e. SIC ICWC and the sponsor of the workshop - SDC.

**WORK MEETING WITHIN THE FRAMEWORK OF PROJECT ADB RETA 6163: «IMPROVEMENT OF SHARED WATER RESOURCES MANAGEMENT IN CENTRAL ASIA».  
AGREEMENT ON THE USE OF WATER AND ENERGY RESOURCES IN THE SYRDARYA RIVER BASIN**

A work meeting of the regional (RWG) and national working groups (NWG) was held in Tashkent on 4-7 December to discuss draft Agreement on the Use of Water and Energy Resources in the Syrdarya River Basin. The meeting was attended by representatives of water and energy agencies (except Chairman of NWG and representative of the water sector of the Kyrgyz Republic) in the Syrdarya river basin countries as well as representatives of BWO Amudarya, BWO Syrdarya and SIC ICWC.

The aim of this work meeting was to agree remarks on articles 7 (item 7.3), 8 (items 8.9 and 8.13) and 9 (item 9.1), and remarks from the Kyrgyz NWG.

Based on the discussion results, the following decisions were made:

1. In general, the articles of the draft Agreement were approved and agreed by the participants of the work meeting apart from the following items:

- Item 7.2. The Kyrgyz and Tajik parties agreed this item as amended: “The Parties acknowledge that water release from the Toktogul reservoir in a multi-year regime shall be done depending on hydrological conditions of year, based on long-term planning of flow regulation regime”. The Uzbek and Kazakh parties suggested amending this item as follows: “The Parties acknowledge that water release from the Toktogul reservoir in a multi-year regime shall be done depending on hydrological conditions of year and be no more than 12.2 billion m<sup>3</sup>”.



- Item 8.9. The Tajik party suggested keeping its last version. The Uzbek and Kazakh parties suggested amending it as follows: “ In average and above average water years and in the threat of emergency situation in the Shardara reservoir and the Syrdarya river lower reaches resulted from high inflow to them, water from the Shardara reservoir shall be released into the Aydar-Arnasay depression. The volumes and discharges of water released shall be agreed by the Parties concerned”.

- Item 9.1. Not changing their position, the Tajik and Kyrgyz parties suggested deleting the first part of the sub-item in this article and only keep “development of large massifs of irrigable lands”. The Uzbek and Kazakh parties suggested keeping the first part of this sub-item “construction of new hydropower facilities and reservoirs in the region...” and so on in the text.

- Article 15. Items 15.2, 15.3 and 15.4 (Remarks of the Kyrgyz party). These items were not considered because of the absence of representatives from water management organization of the Kyrgyz Republic.

2. Taking into account the repeated absence of the Kyrgyz NWG, during the consideration of the mentioned issues it is necessary to ask representatives from the Kyrgyz NWG to present their specific suggestions to the draft Agreement on the abovementioned items prior to entering the issue onto the ICWC meeting agenda.

3. It is necessary to ask ICWC members to consider and make decision on non-agreed items of the draft Agreement.

### **WORK MEETING OF SUBGROUP # 3 “ON DEVELOPMENT AND COORDINATION OF DETAILED METHODOLOGICAL RECOMMENDATIONS ON THE SHARED BASIN COSTS ACCOUNTING, DATA COLLECTION AND ACTUAL DAMAGES ASSESSMENT BECAUSE OF THE AMUDARYA RIVER AND THE SYRDARYA RIVER WATER RESOURCES USE REGIMES”**

The work meeting of Subgroup # 3 responsible for development and coordination of detailed methodical recommendations on the general basin costs accounting, data collection and actual damages assessment because of the Amudarya River and the Syrdarya River water resources use regimes” was held within the framework of “Water Resources Management Improvement in Central Asia” ADB RETA 6163 Project on October 2-3, 2007 in Tashkent city.

The purpose of this meeting was to define the list of the state annual general basin costs and actual damages assessment because of the Amudarya River and the Syrdarya River water resources use regimes.

The following people participated at the meeting:

Yusupov Rustam Karimovich	Group Leader, Chief Expert of the Ministry for Land Reclamation and Water Resources of the Republic of Tajikistan
Khegay Viktor Veniaminivich	Chief Expert, SIC ICWC
Akmuradov Mered Khaytlievich	Chief of Land Reclamation Department of the Ministry of Water Resources of Turkmenistan
Khudayberganov Bakhadyr Matkarimovich	Deputy Chief of the Administration of the Ministry for Agriculture and Water Resources of the Republic of Uzbekistan
Lysenko Oleg Grigorevich	Chief of Water Resources Administration of BWO «Amudarya»
Sakhvaeva Ekaterian Pavlovna	Chief Expert of Water Resources Department of the Ministry of Water, Agriculture and Processing Industry of the Kyrgyz Republic
Pulatov Kamitjan	Advisor of the Chairman of Water Resources Committee of the Ministry of Agriculture of the Republic of Kazakhstan
Loktionov Aleksander	Chief of Department of BWO «Syrdarya»

Having the reports of V.A. Dukhovny, the Project Head, and R.K. Yusupov, Subgroup # 3 Head listened and opinions exchanged, the participants decided:

1. To recommend the elaborated List of the state annual general basin costs and actual damages assessment because of the Amudarya River and the Syrdarya River water resources use regimes for submitting to ICWC. (Provision 1).
2. NWGs (National Work Groups) reserve to themselves the right to make changes and supplements in the List of states' shared annual basin costs and actual damages assessment from the Amudarya River and the Syrdarya River water resources use regimes.
3. NWGs Subgroup # 3 Members should submit their methodical recommendations on the adopted items of "List" not later than November 15, 2007. (Annex 2).

*Annex 1*

**List  
of states' shared annual basin costs and  
actual damages assessment because of the Amudarya River and  
the Syrdarya River water resources use regimes**

1. Maintenance costs of interstate organizations (ICWC Secretariat, BWO, SIC and CMC).
2. Shore protection and bed regulation along the Amudarya River, the Syrdarya River and their main tributaries.
3. Maintenance costs of Hydrometeorology Services in the Amudarya River and the Syrdarya River basins and of regional information systems.
4. Maintenance costs of reservoirs, canals, collectors and waterworks of interstate significance in the Amudarya River and the Syrdarya River basins.
5. Implementation of automated control systems of interstate objects management.
6. Population and national objects protection of from flood, mud flow and landslide.
7. National objects protection from underflooding caused by waterworks operation of interstate significance.
8. Measurements on water scarcity consequences decrease at interstate waterways.
9. Maintenance costs and rehabilitation of zones of flow formation of the Amudarya River, the Syrdarya River and their main tributaries.
10. Scientific research and forecasting of water resources formation, their conservation and efficient use.
11. Practical implementation of scientific water saving technologies.
12. Water conservation from pollution and water quality improvement.
13. Ecological conditions improvement in the Lower Amudarya River, the Syrdarya River and the Aral Sea.
14. State damages caused by the agreed interstate waterways use regime trouble or uncoordinated operations at them.

*Note:* Costs consist of state funds, grants, loans and credits, and water management organizations' business and private investments as well.

**List  
of states' shared annual basin costs and  
actual damages assessment because of the Amudarya River and  
the Syrdarya River water resources use regimes**

Costs	Costs structure
Maintenance costs of interstate organizations (ICWC Secretariat, BWO, SIC and CMC).	Annual actual allocation
Shore protection and bed regulation along the Amudarya River, the Syrdarya River and their main tributaries.	Annual actual costs of shore protection and bed regulation works execution and specialized organizations
Maintenance costs of Hydrometeorology Services in the Amudarya River and the Syrdarya River basins, and of regional information systems.	Actual costs of National Hydrometeorology Services, their reequipment, development and rehabilitation of hydrometeorological gauging stations and weather stations in the zone of runoff formation and dispersal. Provided parties' related information exchange necessary for normal water resources management. Actual costs of regional information systems development and maintenance.
Maintenance costs of reservoirs, canals, collectors and waterworks of interstate significance in the Amudarya River and the Syrdarya River basins.	Costs at a national level as well as other countries' costs in accordance with interstate agreements depending on object purpose. Maintenance costs of power reservoirs in the volume uncovering power production.
Implementation of automated control systems of interstate objects management.	On the basis of construction documents on rehabilitation of existing objects and construction of new objects.
Population and national objects protection of from flood, mud flow and landslide.	Costs of forecasting and due notice, people evacuation, provision of habitation, food, clothes, and taking measures on minimizing and liquidation of consequences of mud flow and landslide as far as possible.
National objects protection from underflooding caused by waterworks operation of interstate significance.	Measures on underground water level decreasing in the zone of operation of waterworks of interstate significance defined and taken by the parties together. Works listed above will be executed in accordance with the agreement of the parties.
Measurements on water scarcity consequences decrease at interstate waterways.	State costs of water deficit prevention and its consequences including water transfer from one source to another, mounting of additional pumping stations, application of water saving irrigation methods, additional well drilling, water rotation implementation etc.
Maintenance costs and rehabilitation of zones of flow	Forest planting saving and rehabilitation, taking erosion-preventive measures.

formation of the Amudarya River, the Syrdarya River and their main tributaries.	
Scientific research and forecasting of water resources formation, their conservation and efficient use.	States' costs of researches in the field of water use and allied fields – hydrology, land reclamation, hydrogeology and others.
Practical implementation of scientific water saving technologies.	Taking water saving measures complex on decreasing of intake from interstate water sources.
Water conservation from pollution and water quality improvement.	Water quality monitoring system, its limitation and licencing, costs of water decontamination, construction of base stations along the boundaries of states. Measures on draining of saline collector-drainage water discharged into the stream canals of the Amudarya River and the Syrdarya River.
Ecological conditions improvement in the Lower Amudarya River, the Syrdarya River and the Aral Sea.	Cost of construction and construction complex exploitation received to keep up ecologically sustainable regime of deltas, their conservation and rehabilitation of lower reach bio-productivity; costs for controlling the dewatered sea ground desertization; maintenance costs of Delta Administration.
State damages caused by the agreed interstate waterways use regime trouble or uncoordinated operations at them.	Actual losses of material resources, equipment, population health, fauna and flora caused by: <ul style="list-style-type: none"> <li>- flood if caused by uncoordinated releases from upper located reservoirs, releases from adjacent territories exceeding planned or calculated parameters;</li> <li>- water deficit if caused by breach of limit cutting volumes coordinated by the parties as a result of unequal runoff water distribution;</li> <li>- landslide caused by creation or overfilling of break-prone lakes;</li> <li>- mudflow caused by uncontrolled transboundary releases.</li> </ul>

*Note:* Costs consist of state funds, grants, loans and credits, and water management organizations' business and private investments as well.

## **CONSIDERATION OF RECOMMENDATION ON HYDROMODULE ZONES BOUNDARIES CORRECTION AND IRRIGATION RATES CLARIFICATION (IWRM-Fergana Project)**

A workshop-meeting on “Consideration of recommendations on hydromodule zones boundaries correction and irrigation rates clarification within the framework of IWRM-Fergana Project” was held in Fergana city on January 15, 2008.

The agenda comprises the following items:

1. Assessment of existing irrigation rates and regimes on the basis of data of demonstrational/ pilot sites under IWRM-Fergana Projecta (Sh.Sh. Mukhamejanov).
2. Contradiction of actually required irrigation norms and regimes to approved recommendations on hydromodule zoning (deputy chiefs: the Naryn-Syrdarya BISA – N. Obetshaev, Syrdarya–Sokh BISA – F. Rasulov, Naryn-Karadarya BISA – S.Sh. Ergashev).
3. Recommendations on hydromodule zones boundaries correction and irrigation norms clarification within the framework of IWRM-Fergana Project” (G.V. Stulina)

Sh.Sh. Mukhamejanov opened the workshop who noticed that the workshop purpose was discussion on clarified boundaries of hydromodule zones and irrigation rates for the command zones to SFC in the Fergana and the Andijan provinces. He proposed to consider the gained results of pilot sites irrigation, to listen to the reports of G.V. Stulina, the Executor of hydromodule zoning correction, and BISA representatives on problems of existing zoning at present.

V.A. Dukhovny, the Director of SIC ICWC, said that there were different approaches to definition of irrigation water amount. In the West many people think that water is measured by money. A farmer takes as much water as he can pay for. A license of water is granted for years. In Israel, license of water is granted only for a half of a year. Water price cost is 60 cents per 1 m<sup>3</sup> here. However, water delivery cost depends on shared used volume. If water is used in accordance with the norm so payment is 25-30 cents/ m<sup>3</sup>, if 50 % out of the norm, so cost is 14 cents/ m<sup>3</sup>. Practically, Uzbekistan also pays 1-1.5 cents/ m<sup>3</sup> for surplus water paying for power to the Kyrgyz Republic. We are interested to calculate water correctly to prevent surplus loading on irrigation network.

Keeping on the same norms but changing hydromodule zoning enabled to minimize water use by 15-20 % when correcting. Average long-term data were taken into account for previous hydromodule zoning. Changing climatic conditions and underground water level required to correct the irrigation regime. MAWR made a decision to use new hydromodule zoning within the project zone as an experiment. It is very important that the new method allows to take into account the progress of climatic indicators of the year in contrast to the existing methods.

G.V. Stulina made a presentation on the work execution. She stated correction methods and showed the results. As a result of the work, hydromodule zoning maps were designed and analysis was conducted which showed that 1+2+3 area of hydromodule zones decreased, and 4+5+6 and 7+8+9 area of hydromodule zones increased as a result of underground water level changing. Irrigation regime was calculated on CROPWAT Program. The irrigation regime table for each hydromodule zones, for basic crops was drawn up. Water use decreased at the coefficient of efficiency of the system of 75 % during growing season, by 30 % in comparison with the planned at the coefficient of efficiency of 63 % - by 25 %).

The map of “Akbarabad” WUA hydromodule zoning was drawn up, the table of allocating areas of hydromodule zones for each farm of WUAs.

G.F. Solodkiy stated the work results. He mentioned that 3 stages of the work.

1. The map of hydromodule zones was drawn up, the program (CROPWAT modification) on average climatic indicators (2000-2004), irrigation regime was calculated in according with ground water level. The results were presented in the form similar to the used at present. This map could be used to assess water use on a scale of a canal.
2. Program block was created and prepared to transfer it by using which it would be possible to correct the irrigation regime by changing a sowing term, for example.
3. Algorithm and program were derived which allow to forecast and calculate the irrigation regime for perspective by choosing a year-analog (in ten-day period).

Solodkiy demonstrated the program interface and accounting forms as a result of its operation.

The following decision was made as a result of the discussion:

1. To approve the executed work. To recognize it as urgent and necessary.
2. To consider the possibility for developing a mechanism for calculation of recharge irrigation and irrigation before sprouting of cotton
3. To conduct field observations and to calculate irrigation norms for makhallya homestead lands during the next works. To pay attention that they are supplied with water insufficiently.
4. To inventory a sowing structures including on adyrs (where it is not allowed to plant such crops as onion).
5. To exclude a watering chart from a result table according to progress phases or to correct it.
6. To represent a hydromodule ordinate as a result of calculation.

## MISCELLANEOUS IN BRIEF

### *IN BRIEF*

**Kazakhstan:** Israel Company on Water Desalination “IDE Technology” plans to construct two desalting plants at the cost of 14 million dollars. These technical constructions will supply the Kazakh National HEP with 12000 m<sup>3</sup>/day of water as well as the inhabitants of Aktau city in the Caspian Sea with drinking.

**Nicaragua:** Inter-American Development Bank approved the lax credit for 30 million dollars to improve of ENACAL Administration, a utility enterprise belonging to a state providing urban regions with drinking water. The program will include an extraordinary plan on rehabilitation of service tools and equipment in some countries including Managua.

**Haiti:** Inter-American Development Bank approved lax credit for 15 million dollars for a Program of drinking water expenditure and water treatment services in rural communities. The Program which will be executed by National Drinking Water Service should be of benefit for approximately 90 thousand people whose average water use is 7 l/day per one person and this is almost a third of the main minimum recommended by World Health Organization.

**Ecuador:** Inter-American Development Bank approved lax credit to the amount of 70 million dollars for two stages of the Program of environment treatment which will provide the inhabitants of Quito with sewerage systems as well as flood protection. The program includes drinking water supply, sewerage works, works on flood protection and organizational structures strengthening.

**India:** World Bank approved the credit to the amount of 120 million dollars for rural water supply in Uttaranchal and Project on water treatment providing the modernization of a water supply system in provinces. It is planned to help at least 1.2 million people or 20 % of rural population at the Project implementation. This Project will also improve the treatment system in approximately 30 % of rural provinces.

## WATER PRICES ARE PERSISTENTLY RISING WORLDWIDE<sup>4</sup>

Consulting company NUS Group in its International Water Report and Price review for 2006-2007 has announced that world prices for water in 12 out of 14 examined large countries have raised during the last 12 months. Moreover, the company suggested further increase in prices in the coming year.

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<sup>4</sup> World Water volume 30, issue 5, September/October 2007.



Denmark is remaining the most expansive country in the world. Its cost of water is US\$0.6 per m<sup>3</sup>. Germany is followed by Denmark and ranks second in the world market for water. Although experienced the highest increase in water rates in its history last period which was 6.1%, the USA stays one of the least expansive countries worldwide. Australia is the only country which has suffered from the highest boost in price compared to previous year—17.8%. The following is the list of countries that have experienced price increases in comparison to last year: Belgium, Canada, South Africa, and GB.

According to the president of the consulting company NUS Group, Richard Soultanian, the causes of these changes in prices vary. He stated that: “Increases in price for water were quite specific; however, growth reasons are even more diverse. In some countries such as Australia environmental problems like drought, in other countries say in Canada problems concerning enhancing effective protection of environment are appearing to be main reasons for price growth.”

Taking into account current events happening in the world, large commercial water users can not rely on cheap and huge water reserves any more.

### **EXPANSION OF PANAMA CANAL TO FIT IN MEGATANKERS<sup>5</sup>**

Authorities of Panama Canal have empowered American CH2M Hill and its partners DHV Group from Holland and TYPASA Group from Spain to launch \$5.25 billion project. DHV is responsible for the construction of marine and blocking facilities under the current project. Franco-Belgium consortium CPP has finished preliminary project. Canal should be changed so that merchant tankers with deadweights of 65-70 thousand tons could go through it. Due to their largeness and low set these megatankers can not pass through the canal. Construction work has to be completed by the year 2014. Expected capital investment into project is \$5.25 billion.

“This is one of the most prestigious projects in hydroengineering construction in the world, and similar to the flood safety dam in Saint Petersburg it is one of the most observable hydroengineering projects”, stated manager of the DHV program Ben Rizkemp. Panama Canal will celebrate its centenary on August 15, 2014. The aim is to be able to finish all construction work by this time, in order to first megatanker could go through Panama Canal at its centenary day.

### **WATER DISPUTE IS TURNING INTO EFFECTIVE COOPERATION<sup>6</sup>**

The world with boosting population and increasing pressure in the sphere of economic production and scarcity of water resources is inclined to have conflicts. Water resources, however, are not always considered as the only source of violent conflicts or war. The last war for water occurred 4500 years ago between Mesopotamia, Uruk and Lagash for the right of irrigation along the Tigris river. But water resources has played significant

<sup>5</sup> World Water volume 30, issue 5, September/October 2007.

<sup>6</sup> UPDATE UNESCO-IHE October 2007.

role in many continuous disputes in the world in all periods. The conflict usually arises as the result of the attempts to rule over water resources or use them for military or political purposes. During the last decades there have been tough relationships putting under constraint water resources in the Middle East in the Nile basin, on the USA and Mexico borders, in South Africa, as well as on the border of Paraguay and Argentina and so on.

## **THE WORLD BANK WILL CEASE THE OPERATIONS OF LAHMEYER ON THE GROUNDS OF ITS INVOLVEMENT IN CORRUPTION**

It has been announced unacceptable by WB to further finance contracts of German project-consulting company Lahmeyer International that have been financed by the bank during the last seven years. It was explained that the company was involved in the corruption activities during implementation of a water project in the mountainous area in Lesotho (LHWP). Bank's Committee of Sanctions identified that Lahmeyer bribed the manager of mountainous area development office of Lesotho, Mashupo Sole who was responsible for the signing and implementation of contracts.

In July 2004, WB discharged the Canadian car producing company Acres International for three years and also company was suspected on giving a bribe in the process of LHWP. Other two European firms cooperating with LHWP have been caught in Lesotho, even though they were not part of the project financed by the Bank.

“Lesotho's Government displayed its power and ability to investigate its own officers, and some foreign companies accused of corruption” stated WB president Paul Volkovitz.” Organizations like WB and governments of rich countries should support strong position of poor countries in their desire to ascertain that all appropriated funds for the poor are precisely being used on purpose.”

LHWP is a large-scale hydroelectric project for transferring water with the value of billions of USD implemented by the Government of Lesotho and South Africa. This project is mainly assigned for transferring water from Maluti Mountains located in the eastern and central part of Lesotho to Gauteng province in South Africa. Lahmeyer International was a part of the consortium that carried out analysis of feasibility of LHWP project in 1986. The first stage of the project has already been accomplished and included Kats and Muel dams, water channels with the length of 82 km, and 200 km driveways with the total cost of \$2.5 billion.

Lahmeyer acquired two WB contracts concerning component of water transfer which are related to detailed contract design, construction supervision, project research and technical advice regarding South water-supply tunnel and Mohale tunnel.

In conclusion, the Committee took into account several aspects such as shortcomings of Lahmeyer International detected owing to WB contribution, payment of criminal fine, and collaboration with Lesotho's authorities. The bank made a decision about a cutback of a four year discharge, if Lahmeyer cooperates with WB in the disclosure of any crime. Group of environmental defenders supported this prohibition but made an appeal to the

WB to guarantee future censures for bribery regarding WB projects to immediately extinct rights and called the bank to work together with other multilateral development banks and with agencies with bilateral assistance in order to provide dismissal of guilty contractors.

## **WATER GIANTS ARE LOSING WORLD SUPREMACY**

According to David Lloyd Owen, the Director of consulting firm “Envisager”, five biggest water companies are losing their dominating positions.

“For the last three years nature of water industry has fundamentally changed and now major players have less dominating positions” said Owen to the members of industry who visited Pinsent Masons Water Yearbook opening. ”Since the times of selling water of the Thames by RWE directly to Mackouri, the “big five” has now relying on the less than half of operating staff. We have not experienced such an event for a long time”.

In 2002, five largest companies (Suez, Veolia, RWE, SAUR and Agbar) accounted for about 75% of operating staff. In 2006, it has fallen to 47%.

Owen noted: “In this sense, there is a significant change in the number of locally based companies appearing in the sphere of developing economy. Majority of these companies are relatively small, however, in total they play a significant role.

Shift of high remunerations from multinational companies for the benefit of local and foreign business is the main reason for the existence of these companies. Most of the above mentioned refers to problems faced by multinational companies since the mid 1990, especially regarding political and foreign currency risk.”

However, Doctor Owen warned: “While local or foreign investors are eliminating currency risk, this is not a criterion for positive development; it only hinders mobilization of new sources of funding required for achieving the Millennium Development Goals.”

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