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**ABOUT MEASURES ON FURTHER DEEPENING OF ECONOMIC INTEGRATION OF THE STATES-PARTICIPANTS OF THE AGREEMENT ON COMMON ECONOMIC SPACE CREATION**

1. Heads of states-participants of the Agreement on common economic space creation notice, that most important task during current period is practical measures undertaking on deepening of economic integration with the purpose of more complete and rational use of raw materials and natural potential of the states-participants.
2. For this tasks solution to charge the Council of Prime-Ministers to prepare to next meeting of Interstate Council of the Republic of Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan practical proposals and concrete grounds for the international consortiums creation:
  - a) in energetics bearing in mind rational and complete use of hydraulic resources of the region;
  - b) in water resources for common effective operation of water structures and water supply increase for the states-participants'
  - c) in food bearing in mind more complete provision of population with food products with regard to the states-participants specialization;
  - d) in communications bearing in mind formation of common communicative space;
  - e) in mining and processing of the natural resources with regard to regional and national interest of the states-participants;
3. Formation of above mentioned international consortiums and attraction national and foreign investments to carry out openly on the principle of tender.
4. Taking into account importance of more complete and rational use of all resources of the Central Asian region to invite for participation in the international consortiums the Republic of Tadjikistan and Turkmenistan.

Is executed in Cholpon-Ata on July 24, 1997 in single copy in Russian.

Original copy is kept in the Executive Committee of Interstate Council of the Republic of Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan, which sends to each state its authorized copy.<sup>7</sup>

For the Republic of Kazakhstan N. NAZARBAEV

For the Kyrgyz Republic A. AKAEV

For the Republic of Uzbekistan I. KARIMOV

## **COMMUNIQUE OF THE INTERNATIONAL TECHNICAL MEETING ON THE ARAL SEA BASIN PROBLEMS**

**October 16, 1997**

**Tashkent**

International technical meeting on the Aral Sea Basin problems was organized by the UNDP, the World Bank and the countries-founders of the International Fund for the Aral Sea Saving initiative, supported by the IFAS President, the Republic of Uzbekistan President I.Karimov and adopted by all Heads of states of Central Asia.

In this meeting participated: Deputy Prime-Ministers of all countries of the region, leaders and specialists of the Ministries and departments, Embassies of many countries, accredited in Uzbekistan, representatives of different international banks and funds, UN and the World Bank missions and organizations, technical experts, specialists, representatives more than thirty countries and organizations - donors. Number of participants was more than 200 personalities. The meeting participants noticed that the Aral Sea crisis is terrible warning to all world society how fast and wide-scaled could be ecological threat to the whole region where only 20 years ago nobody paid attention to the environment. Two decades of history to the planet is only a moment and within this moment the fourth in size lake in the world is disappearing and the population equal to the European suddenly fell into the epicentrum of crisis. This phenomena is worth to be considered properly by al the mankind.

The meeting participants are sure, that it will serve the following goals:

- draw attention of the world society to the problems of ecological threat to the mankind and particularly to the Aral Sea crisis;
- convince everybody on the example of the Aral Sea tragedy that if people, countries and international organizations do not aware and do not work practically on the measures for prevention of wrong way of nature usage, ecological crisis will become the threat for all the mankind.
- confirm that on the basis of responsibilities of 5 Central Asian states and assistance of international community it is possible to stop this threat and provide solution of the Aral Sea problem.

The meeting participants positively assess deep analysis of the reports and presentations submitted for consideration and discussion and underline importance a) work being done on mitigating of the Aral crisis by the countries of Central Asia allocating more than 26 mln. USD since 1994; b) donors' technical and financial assistance provided to present time.

The meeting pointed out that coordination of the Aral Sea problem by UNDP and the World Bank drew attention to this problem of all international organizations. This meeting will serve to consequent continuation of assistance to the Central Asian states.

At the same time the measures being undertaken on mitigating of the sea desiccation consequences are evaluated as insufficient. The participants underline necessity of continuation of

the efforts on the water resources regional management improvement and support the additional priorities proposed to fight poverty, which the Central Asian states intend to start immediately on expense of their contributions and count on assistance of the countries-donors and international organizations.

Basin's countries express their hope on more active help of the donors, international organizations and the World Bank in implementation of the programs where most prior is the program «Clean Water» for population supply with potable drinking water.

One of the most important directions of assistance are the special funds (agencies) creation to support private business as the most efficient way of employment improvement and poverty fighting.

The meeting participants hope that after this meeting UNDP, the World Bank and the countries-donors on the basis of information obtained, proposals, ToRs will inform EC IFAS about their participation in the appropriate programs, projects and concrete contributions in their implementation as soon as possible.

International Technical Meeting expresses its assurance that all participants will make certain efforts for widening the circle of aware agencies in order to attract more financial means for mitigating the crisis and assist Aral Sea Basin's population to fight poverty. The meeting supports establishment of the IFAS independent publication issue for the crisis monitoring and awareness of population, specialists and public society about crisis' problems solution. The meeting suggests to everybody to take part in permanent assistance to IFAS.

Organizing Committee  
of the Technical Meeting  
on the Aral Sea Basin's problems

List of the donors participating in the Aral Sea Program:

European Union (ÄU);  
Trust Fund GEF (the Netherlands);  
The World Bank;  
Japan Government (Japanese overseas fund);  
Swiss Agency for International Development (SIDA);  
Canadian Agency for International Development (CIDA);  
American Agency for International Development (USAID);  
UN Development Program (UNDP);  
UN Organization for Science, Culture and Education (UNESCO);  
Food Agriculture Organisation (FAO);  
Ecological Commission for the Asia and Pacific Countries (ESCATO);  
World Health Organization (WHO);  
Kuwait Fund for Assistance;  
Asian Development And Reconstruction Bank (ADB);  
NATO Scientific Program;  
Government of Germany;  
Government of Great Britain;  
Government of France;  
Government of Israel.

**PROCEEDING NO 17**

of the Interstate Coordination Water Commission's Meeting of the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tadjikistan, Turkmenistan and the Republic of Uzbekistan

**26 September, 1997**

**Tashkent**

**Attendees:**

**ICWC Members**

T.T. Sarsenbekov	Chairman of the Committee of Water Resources of the Republic of Kazakhstan
A.V. Kostyuk	First Deputy Chief of the Water Department of the Ministry of Agriculture and Water Management of the Kyrgyz Republic
N.A. Ashurov	Minister of Melioration and Water Management of the Republic of Tadjikistan
T.A. Altiyev	Minister of Melioration and Water Management of Turkmenistan
A.A. Jalalov	Deputy Minister of Agriculture and Water Management of the Republic of Uzbekistan
R.A. Giniyatullin	Honorable member, EC IFAS Chairman
A.B. Jumaniyazov	Minister of Agriculture and Water Management of the Karakalpak Republic

**ICWC Organizations**

I.D. Kalandarov	BWO «Amu Darya» Head
G.K. Tulyavova	BWO «Amu Darya» Department Head
Yu.V. Tolstunov	BWO «Syr Darya» Deputy Head
A.I. Leshansky	BWO «Syr Darya» Department Head
V.A. Dukhovny	SIC ICWC Director
F.F. Beglov	SIC ICWC Chief Specialist
G.A. Negmatov	ICWC Secretariat Head

**Invited**

B.V. Yusupov	Head of Department of the water resources balance of the Ministry of Agriculture and Water Management of the Republic of Uzbekistan
D.G. Goshayev	Head of Operation Department of Minvodkhoz of Turkmenistan
A. Kamaletdinov	Deputy Head of the Science and Technique Department of Minvodkhoz of Tadjikistan
N.K. Nosirov	«TadjikNIIGM» General Director
A. Kutjanov	Head of the Kzyl Orda Provincial Committee for Water Resources of the Republic of Kazakhstan

H.D. Pulatov	Head of the Chimkent Provincial Committee for Water Resources of the Republic of Kazakhstan
A.K. Kenshimov	Head of Department of the Water Resources Committee of the Republic of Kazakhstan
I. Amirkhanov	Head of Aral - Syr Darya BWO
Sh.G. Talipov	Senior referent of the Cabinet of Ministers the Republic of Uzbekistan
A.M. Ovchinnikov	Deputy Head of Hydrometservice of the Republic of Uzbekistan

### **Chairman**

M.D. Jumaniyazov	Minister of Agriculture and Water Management of the Republic of Uzbekistan
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### **Agenda**

1. About water release to the Aral Sea arrangement and water use in the deltas (Responsible: BWO «Syr Darya», BWO «Amu Darya», SIC ICWC).
2. About elaboration of the regional criteria on water resources use in the basin (Responsible: SIC ICWC).
3. Information of the ICWC members and their organizations about ICWC decisions' fulfillment, adopted in 1996-1997 (Responsible: ICWC members, SIC ICWC, BWO «Syr Darya», BWO «Amu Darya»).
4. About dry season 1997 overcoming and ICWC prospective goals (Responsible: BWO «Syr Darya», BWO «Amu Darya», SIC ICWC).
5. About preparation of the draft Agreement on the State Water-Energy Concern's creation.
6. Information about ICWC delegation participation in the meeting of the Executive Committee of International Commission in Irrigation and Drainage on September 8-12, 1997.
7. Information about ICWC mission's fulfillment on the water resources forecasts' amplification by Hydromet service (Responsible: BWO «Syr Darya», SIC ICWC).
8. Consideration of proposal for ICWC founders' nomination for Stockholm Water Fund Prize (EC IFAS).

After the meeting participant's presentations have been heard and opinions exchange has been executed ICWC members decided:

#### *On the first question:*

1. ICWC members of appropriate countries should provide by the agreement with BWOs and Hydromet service additional gauging stations on flow calculation to the Aral Sea and natural deltas' environment and to take measures for preventing use of sanitary water releases to the Aral Sea for another purposes.

To charge BWO «Syr Darya», BWO «Amu Darya» and SIC ICWC to develop control mechanism and data submitting and water use analysis form for water taken from the main river trunk and water disposal into it and for water released to the Aral Sea natural environment and to organize information exchange with organizations which are responsible for water management activity in the lower reaches of Amu Darya and Syr Darya rivers.

2. ICWC members should include into SIC ICWC research plan special study on background of minimum volume of sanitary water release in the Syr Darya river's trunk downstream Chardara and in the Amu Darya river's trunk downstream Takhiatash hydrostructure for years of different humidity, to provide financing and submit results for approval of ICWC.

*On the second question:*

1. To accept the approaches for development of the regional criteria of water use in the basin, presented by Prof. Dukhovny, SIC ICWC Director. To establish the working group under his leadership from the representatives of Central Asian states to develop the regional criteria. Take into account, that criteria development does not touch the principles of existing water allocation among the states.
2. ICWC members, Ministers (Chairmen) of Agriculture and Water Management Central Asian states:
  - a) to organize development of the national criteria on the water resources use in each country with due regard to specific national and zonal peculiarities, which should be a basement for development of the common regional criteria;
  - b) to foreseen financing for development of the regional criteria on the water resources use in the basin.

*On the third question:*

1. To adopt the information of the ICWC members and their organizations about ICWC decisions fulfillment, accepted in 1996-1997. Take into account that main part of the decisions which fulfillment depends on ICWC members themselves were put into practice.
2. To notice necessity to strengthen collaboration with external ICWC partners in order to support ICWC in its activity. To make responsible for ICWC missions fulfillment some personalities in each country.

*On the fourth question:*

1. To accept the information about dry period of 1997 overcoming prepared by BWO «Syr Darya» and BWO «Amu Darya».
2. To charge BWO «Syr Darya» within 10 days to develop and agree with the ICWC members the Naryn-Syr Darya cascade's operation regime and water intake limits from Syr Darya in 1998 taking for a basement the protocol decision of September 4-5, 1994 in Bishkek and the Kayrakkum water reservoir's release limitation to the altitude 343,5 m. To



send above mentioned schedules to energetic organizations for agreement and implementation.

3. To approve operation regime and water intake limits for the non-vegetation period of 1998 developed by BWO «Syr Darya» and BWO «Amu Darya».
4. To charge BWO «Syr Darya» and BWO «Amu Darya» jointly with SIC ICWC to develop an operation regime of the reservoirs' cascade for 5 years with regard to coming dry years with attraction of free energetic capacity of the Mary hydropower plant.
5. To organize up to November, 1997 on the basis of ICWC decision (ICWC protocol No 16, para 3) ICWC session under chairmanship of the Deputy Prime-Ministers responsible for water problems with participation of financial, energetic, agricultural and planning departments and to consider all questions related to ICWC activity in 1998, including: Plans of action for BWOs, SIC ICWC and Secretariat; Plan of design and research activity for SIC ICWC organizations; Plan for dry season overcoming at the regional and national level; Plan for Hydromet service improvement. For this purpose BWO «Syr Darya», BWO «Amu Darya», SIC ICWC to submit within 1 month their proposals for final decision. ICWC members to agree with the Deputy Prime-Ministers about meeting carrying out in the first half of November, 1997.
6. BWO «Amu Darya» should organize jointly with interested sides water intake and release measurement from the Tuyamuyun water reservoir.
7. After completing sluice construction on the left bank canal to pass this structure to BWO «Amu Darya».

*On the fifth question:*

1. To accept EC IFAS and the Republic of Kazakhstan proposal on the draft agreement «About establishing of the Interstate water-energetic consortium».
2. Ask ICWC members within 10 days to send their proposals to SIC ICWC for summarizing and submitting them for consideration until October 15, 1997.

*On the sixth question:*

1. To adopt ICWC delegation's report on the EC ICID meeting of September 8-12, 1997 in Oxford, UK.
2. Ask ICWC members to organize ICID decisions fulfillment.
3. Taking into account attention paid by ICID to the region's problems and its support ask the Kyrgyz Republic and Turkmenistan national committees to join ICID as soon as possible.

*On the seventh question:*

1. To accept SIC ICWC, BWOs and Uzhydromet information.

2. Because of the World Bank financing of the existing gauging stations equipment and new ones construction ask the governments - ICWC members to determine cost estimate for common construction works related to the gauging stations on own expense in 1998 according to their location.

*On the eighth question:*

1. To adopt IFAS proposal about the candidates of ICWC honorable members - founders for the Stockholm Water Fund Prize.
2. ICWC members within 10 days to agree the candidates with the governments and to send documents to SIC ICWC for staging.

### **Agenda for next ICWC meeting No 18**

To carry out next ICWC meeting in Turkmenistan according to decision on the fourth question, para 5.

#### **Agenda**

1. Consideration and approval of the water reservoirs' cascade operation regime and water limits for 1998 (BWO «Syr Darya», BWO «Amu Darya»).
2. Program of institutional-financial provision of ICWC and its bodies activity in 1998 and the coming 5 years, including:
  - plan of operational costs financing;
  - plan of SIC ICWC and its organizations' design and research activity;
  - plan for Hydromet service improvement and water calculations accuracy increase.
3. About readiness of the interstate systems and structures to the vegetation period of 1998.

For the Republic of Kazakhstan

T.T. Sarsenbekov

For the Kyrgyz Republic

A.V. Kostyuk

For the Republic of Tadjikistan

N.A. Ashurov

For Turkmenistan

T.K. Altiyev

For the Republic of Uzbekistan

A.A. Jalalov

**PROCEEDING OF THE SIC ICWC REGIONAL BOARD OF DIRECTORS'  
MEETING****Almaty****June 22, 1997****Attendees:**

From the Republic of Kazakhstan - L.N. Dmitriyev, A.V. Zemlyannikov  
From the Kyrgyz Republic - K.K. Bishikeyev, T.S. Sarbayev, L.M. Kiyashkina  
From the Republic of Tadjikistan - M.M. Sarkisov  
From the Republic of Uzbekistan - V.I. Antonov, R.K. Ikramov, M.G. Khorst  
From SIC ICWC - V.A. Dukhovny, A.M. Shapiro  
From SIC ICWC Kazakh branch - N.K. Kipshakbayev  
From SIC ICWC Tadjik Branch - A.K. Kasymov  
From EC IFAS - B. Khamrayev.

SIC ICWC Board of Directors meeting in Almaty due to the World Bank financial support and exchanging opinions on the current situation in the Aral Sea Basin agreed upon the following:

1. As a result of the EC ICAS and a new created EC IFAS jointly with ICWC efforts certain progress in completing of the first preparatory stage of the «Program of Concrete Actions» has been achieved:
  - The «Main Provisions of the Aral Sea Basin Regional Water Strategy» is completed with due regard to the comments of 5 states;
  - The three first agreements texts are adopted by ICWC and recommended for consideration of the concordance commissions at the government level;
  - The regional information system of the basin's land-water resources creation has been started on expense of the WARMAP Project, including 5 national and 3 regional centers;
  - Field observation system is organized on assessment of land and water productivity (WUFMAS) for the typical zones of the Central Asian region;
  - 24 ToRs for water resources management strategy development and for Programs 1.2; 1.3; 2.2 and for the gauging stations network improvement on the transboundary rivers are elaborated and accepted by the World Bank;
  - Preliminary Technical-Economic Background for 10 pilot projects are prepared: two for each country of Central Asia;
  - The main achievement is development of the mechanism of interrelations and consensus achievement by the representatives of the region's states and foreign experts in development of the main provisions of water development and management.
2. Meeting participants noticed that current situation in water allocation and water intake limits observance and certain announcements of some states' representative raises doubts in sustainable water resources management at present time as well as in the near future.

Taking into account above mentioned it is necessary:

- To strengthen ICWC, BWOs and SIC ICWC activity on provision of equitable water allocation and management and observance of previous agreements on the transboundary rivers' water resources sharing;
  - To accelerate creation of the mechanism of management, agreements development as a legal basement of management and the correction procedures in current situation;
  - To raise the sides responsibility for their activity within the framework of the agreements accepted, protocols and decisions;
  - to strengthen awareness of society of all countries of the region of the main provisions of the World Water law in terms of equitable water use and allocation by means of ICWC organizations;
3. Supporting the World Bank and EC IFAS efforts in the «Program of Concrete Actions» development, participants noticed, that:
- there is certain delay in financing of water resources management strategy development, that is why collaboration achieved in this field is not used;
  - GEF Program should be developed according to certain plans of actions, foreseen by ICWC and appropriate approaches to allocation of means and programs. For instance, participants do not understand why the component A2 within the water program appeared as a priority in salt management but not water management;
  - recognizing necessity to fight poverty «Program of Concrete Actions» project keeps priority as a base for development of the water resources management.
4. Supporting EC IFAS position in coordination and implementation of the plan of strategic actions meeting's participants consider as necessary:
- to establish Consulting Central Asian Association for joint fulfillment of the program including «Kazgiprovodkhoz», «Kyrgyzgiprovodkhoz», SIC ICWC, consulting groups of Uzbekistan, Tadjikistan and Turkmenistan;
  - to accept «Kyrgyzgiprovodkhoz» suggestion about Association's location and registration in Bishkek;
  - ask Mr. Sarbayev to help in constituent documentation preparation and leaders of all national centers in their consulting groups registration;
5. Taking into account approval by European Union «WARMAP Bridging period» all leaders of scientific-research organizations should concentrate efforts on finalizing WARMIS and WUFMAS programs during this period. At the same time to pay attention to due formation of the WARMIS data base only within the framework of ICWC.
6. To accept EC IFAS and SIC ICWC position to prevent USAID's separate actions aimed to break unity of ICWC in its activity on the water resources management and development.

**Signatures:**

L.N. Dmitriyev  
M.S. Sarbayev  
M.M. Sarkisov  
M.G. Khorst  
N.K. Kipshakbayev

A.V. Zemlyannikov  
L.M. Kiyashkina  
V.I. Antonov  
V.A. Dukhovny  
A.K. Kasimov

K.K. Bishikeyev  
N.K. Nasirov  
R.K. Ikramov  
A.M. Shapiro  
B. Khamrayev

**PROCEEDING OF THE SIC ICWC BOARD OF DIRECTORS MEETING**

October 10, 1997

Tashkent

**Attendees:****From the Republic of Kazakhstan:**N.K. Kipshakbayev  
A.V. ZemlyannikovDirector, SIC ICWC Kazakh branch  
Chief Engineer, «Kazgiprovodkhoz»**From the Kyrgyz Republic:**L.M. Kiyashkina  
T.S. SarbayevDirector, SIC ICWC Kyrgyz branch  
Director «Kyrgyzgiprovodkhoz»**From the Republic of Tadjikistan:**A.K. Kasimov  
N.K. NosirovDirector, SIC ICWC Tadjik branch  
General Director, SPA «TadjNIIGM»**From Turkmenistan:**

M.M.Sarkisov

Director, «Turkmengiprovodkhoz»

**From the Republic of Uzbekistan:**V.I. Antonov  
R.K. Ikramov  
Sh. H. RakhimovGeneral Director, «Uzvodproekt»  
General Director, «SANIIRI»  
Deputy Director, «SANIIRI»**From SIC ICWC:**V.A. Dukhovny  
V.I. Sokolov  
I.A. Sorokina  
F.F. BeglovDirector, SIC ICWC  
Deputy Director, SIC ICWC  
Head, Regional Computer Center  
Leading Specialist**Invited:**H.I. Yakubov  
M.G. Khorst  
A.M. ShapiroProject Coordinator  
Regional Group Member  
Regional Group Member**Agenda**

1. Consideration of the results of the first stage of work on the Project «Evaluation of Previous Pilot Projects on Irrigation and Drainage in Central Asia» and the reports of the national groups' leaders about procedure and results of the previous pilot projects selection in the countries and the report of the projects coordinator about further project implementation.
2. Consideration of the SIC ICWC plan and preparation to the ICWC session.
3. About the World Bank GEF Program implementation.
4. WARMIS Program consideration.

### **Decision**

#### *On the first question:*

To agree with seminar's decision on the Project «Evaluation of previous pilot projects on irrigation and drainage in Central Asia» (Protocol of October 9-10, 1997 is attached).

#### *On the second question:*

In accordance with ICWC decision of September 26, 1997 in order to prepare the next ICWC meeting in November, 1997:

1. To adopt as a whole the plan of scientific-research activity. Charge SIC ICWC to make some corrections before it submitting to the ICWC session:
  - to change the priority of the problems within this plan (to put fourth problem on the first place;;
  - to give details to study of the Syr Darya and Amu Darya basins;
  - to determine priorities of all problem and tasks of the plan.
2. Until November 1 all institutes should submit to V.I. Antonov the proposals on design work of regional nature. Ask «Uzvodproekt» (Antonov V.I.) to prepare common plan of design work of ICWC.
3. To charge V.A. Dukhovny to submit to the ICWC session two plans for ICWC approval. It is necessary to single out financing of this work in the separate line of budget of the Ministries of finance of each state.
4. Ask M.M. Sarkisov to report of Turkmenvodkhoz leadership about necessity to support the ICWC broad session carrying out in mid-November in Turkmenistan. Ask to appoint exact time and place of this session and send invitations to all Deputy Prime-Ministers on behalf of Organizing Committee.

#### *On the third question*

The Board notices with gratitude that common estimate, work content and financing level within the GEF Project is appropriate to prior tasks of the water strategy development and in-

roduction which allow to implement solutions of the principle problems of the preparatory stage.

The project takes leading place in solution of the problems mentioned by the Heads of States in the «Program of Concrete Actions on the ecological situation improvement in the Aral Sea Basin with due regard to socio-economic development» (January 11, 1994, Nukus). Success in common water resources management, use and preservation depends on the project's correct building, its components connection, means distribution, executors selection, etc.

On the basis of preliminary analysis of materials (participants were provided only by part of translated text) Board notices, that the project's content, its main provisions, order of implementation and means distribution require certain amplification with regard to the following:

- It must provide fulfillment of the Nukus decision of the Heads of States about development of the water allocation use and preservation strategy and legal and normative documents regulating its implementation together with the measures providing sustainability of fulfillment;
- on the components A-1, A-2, A-3 is reasonable to follow content which was recommended by ToRs developed on request of the World Bank in May 1997 by summarizing of 24 ToRs as a result of preliminary stage of the regional water strategy;
- all studies executed on expense of other donors should be strictly agreed and adjusted with GEF Project, EC IFAS and the donors themselves in order to provide appropriate coordination and guarantee their financing in accordance with the common scheme (participation of the local sources, USAID, European Union and others);
- taking into account finance limitation it is not reasonable to pay attention to secondary aspects which should be solved within other programs (Program 7, Program 1.3);
- to organize work in strict accordance with EC IFAS proposals and underline the local specialists participation and foreign experts (5-6 persons) group creation, which will be responsible for the project implementation together with the local specialists.

*On the fourth question*

To agree with decision of the national and regional centers representatives' meeting, participants of WARMIS-2 subproject (Protocol of October 9-10, 1997 is attached).

N.K. Kipshakbayev  
A.V. Zemlyannikov  
L.M. Kiyashkina  
T.S. Sarbayev  
A.K. Kasimov  
N.K. Nosirov  
M.M.Sarkisov

V.I. Antonov  
R.K. Ikramov  
Sh. H. Rakhimov  
V.A. Dukhovny  
V.I. Sokolov  
I.A. Sorokina  
F.F. Beglov

## PROCEEDING OF THE MEETING OF THE REGIONAL AND NATIONAL CENTERS' REPRESENTATIVES - WARMIS-2 PARTICIPANTS

October 9-10

Tashkent, SIC ICWC

The meeting participants considered and discussed the WARMIS Program's current state and came to the following conclusion:

1. WARMIS is an information system (IS), which should support water resources allocation at the regional level, implements now only one component - information base. According to the WARMIS concept and ToR on 1996-1997 was expected, that the IS WARMIS-2 databases are necessary for solution of two first and foremost tasks:
  - planning of annual water allocation for each basin by means of appropriate economic and hydrological mechanisms;
  - planning of prospective development each basin in the interest of multilateral economy and environment.
2. At present time WARMIS DB developed by the WARMAP Project's specialists has certain disadvantages which prevent their practical use for solution of some tasks (appendix 1).
3. All meeting's participants consider as necessary to use rest 4 months of the bridging period to finalize WARMIS-2 DB according to ToR's requirements. Analysis of the draft ToRs showed, that ToR version developed by regional working group is more realistic and practical and mostly corresponds to the main goal of this project.
4. Joining of the Access data bases, GIS and the module «Balances of planning zone» is carrying out for one zone in each country to the level of inter-farm networks coming from previous sharing.
5. In opinion of the meeting's participants, taking into account lack of financing and limited time, it is necessary to concentrate efforts of the base developers and the regional and national groups experts on the regional level WARMIS DB development not touching the national level, as it is proposed in the draft ToR of the WARMAP Project. It will allow to develop existing version of WARMIS-2 DB to practical state and use.
6. The meeting certified that during WARMIS Project implementation good teams have been created of national consultants which status is recognized and supported by all project's participants as the plenipotentiary representatives of the information system within the national borders. Thus is clear that all activity at the regional as well as national level should be performed through SIC ICWC and the national working groups. Slight contacts between the WARMAP Project's experts and separate executors and agencies passing by SIC ICWC and national centers should be excluded.
7. In order to prepare WARMIS-2 DB to experimental operation in the interested organizations it is necessary that the database developers - the WARMAP Project's specialists pass



to the regional and national working groups all technical documentation on the WARMIS-2 DB (in Russian) according to the inventory (appendix 2).

8. Purchase of cartographic materials for RWG and national centers, which is necessary for GIS, is a question to be solved as soon as possible. National coordinators should submit to December 1, 1997 required maps' nomenclature in scale 1:100 000 for agreed planning zone.
9. It is considered as necessary to submit on the next ICWC meeting for consideration draft «Agreement about information exchange within the framework of the ICWC information system».

Director SIC ICWC

WARMAP Regional Coordinator

WARMIS Regional Coordinator

Director SIC ICWC Kazakh Branch

National Coordinator of WARMAP

Kazakh group

Director SIC ICWC Kyrgyz Branch

Director «Kyrgyzgiprovodkhoz»

Director SIC ICWC Tadjik Branch

Director «TadjNIIGM»

Director «Turkmengiprovodkhoz»

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T.S. Sarbaev

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N.K. Nasirov

M.M. Sarkisov

V.I. Antonov

B. Yusupov

Sidik-Khodjaev

## Appendix 1

### List of Shortcomings on the Experimental Version of WARMIS-2 DB

1. Data on subbase «Hydroenergetic» are not available and it is impossible to check subbase interface.
2. Subbase «Economy» has no interface (forms, reports, etc. are not available), there is no coordination between subbase and other subbases' structure (including codes).
3. Subbase «Economy» requires correction and extension.
4. All subbases require to check input data, certain subbases need additional development, coordination and additional information supply.
5. GIS is developed only partially and requires to be supplied by concrete information at least for one planning zone in concordance with appropriate textual bases of water block in Access medium.

6. WARMIS-2 DB documentation is not available which is necessary for its operation and for system accompaniment, thus DB interface needs additional development. Besides, the following works performance is necessary:
  1. Program modules prepared for work with WARMIS DB require experimental test in the national centers using actual objects with appropriate preparation of additional specific data.
  2. Certain national groups did not submit documentation on previous paid phase:
    - 2.1 Minute on national development  
Kyrgyzstan  
Kazakhstan  
Uzbekistan
    - 2.2. Subbase «Industry»  
Kyrgyzstan  
Turkmenistan  
Kazakhstan  
Tadjikistan (not completed)
  3. Information on Namangan OGME has not been submitted to RWG by the WARMAP Projects experts.

## **Appendix 2**

### **List of Documents, which are necessary for WARMIS DB Submission**

1. Description of WARMIS DB information system
2. Description of DB classification and codification system.
3. Description of technological process of interrelations with WARMIS DB.
4. Program and methodology of DB test.
5. Specification of the WARMIS DB objects.
6. Texts of the WARMIS DB objects' description.
7. Description of the WARMIS DB objects' application.

**PROCEEDING OF THE SEMINAR ON THE PROJECT «EVALUATION OF THE PREVIOUS PILOT PROJECTS ON IRRIGATION AND DRAINAGE IN CENTRAL ASIA»****September 9-10, 1997****Tashkent****Attendees:**

Director SIC ICWC V.A. Dukhovny, Project Coordinator H.E. Yakubov, regional group members: M.G. Khorst, A.M. Shapiro, M.Yakubov; leaders of national groups: N.K. Kipshakbayev (Kazakhstan), L.M. Kiyashkina (Kyrgyzstan), M.M. Sarkisov (Turkmenistan), R.K. Ikramov (Uzbekistan), A.K. Kasimov (Tadjikistan); members of selection groups: V.I. Antonov (Uzbekistan), A.V. Zemlyannikov (Kazakhstan), T.S. Sarbaev (Kyrgyzstan), A.N. Veher (Turkmenistan), EC IFAS representative B. Khamrayev

**Agenda**

1. National groups leaders' reports about procedures and results of selection of the previous pilot projects in their countries.
2. Project Coordinator Yakubov K.E. and member of regional group A.M. Shapiro reports about the plan of the project implementation until December 31, 1997.

Exchanging by opinions the seminar decided:

1. To consider selected 155 previous pilot projects according to the protocols of the selection group, including:

Uzbekistan - 81

including in different directions: I - 31, II - 25, III - 4, IV - 20

Turkmenistan - 7

including in different directions: I - 1, II - 2, III - 2, IV - 2

Tadjikistan- 24

including in different directions: I - 10, II - 4, III - 4, IV - 6

Kyrgyzstan - 7

including in different directions: I - 2, II - 2, III - 1, IV - 2

Kazakhstan- 24

including in different directions: I - 8, II - 7, III - 2, IV - 7

2. To charge the national groups leaders to collect all previous pilot projects for consideration and contracts mounting.
3. To give them IPTRID questionnaires, regulations and contracts forms and advance payment after contract mounting.
4. The previous pilot projects' collection should be performed until December 31, 1997 according to the schedule approved.

Projects Coordinator

H.E. Yakubov

## **ABOUT RESULTS OF THE VEGETATION PERIOD OF 1997 AND CONSIDERATION OF THE WATER INTAKE LIMITS, WATER RESERVOIRS' CASCADE OPERATION REGIME IN THE AMU DARYA BASIN AND WATER RELEASE VOLUME TO THE ARAL SEA IN 1997-1998 WITH DUE REGARD TO DRY PERIODS IN THE RIVER BASIN WATER SUPPLY**

Initial water supply conditions at the beginning of the vegetation period were somewhat worse comparatively with last year.

Water resources storage in the main reservoirs in the Amu Darya basin on April 1, 1997 was 1 cu/km less.

By the Hydromet data foreseen water supply for the vegetation period of 1997 in the Amu Darya basin was expected within the limits 88-95% of ordinary value. In 1996 actual water supply was 95%.

But there were hopes for successful overcoming of a dry period. Examples of 1995, 1996 have brought certain share of optimism. But the vegetation period's results exceeded the worst expectations.

First, water situation was worse as foreseen; water supply at Kerky gauging station upstream Karakum Canal was only 81% (table 1).

Second, the national hydromet services' data on the main gauging stations were not correct, that was a cause of mistakes in management and forecasting.

Due to low water supply at Darganata gauging station BWO «Amu Darya» was forced to pass in June to proportional water allocation in the lower reaches of Amu Darya depending on inflow to the Tuyamuyun water reservoir.

Analysis of the established limits of water intake during 6 months of the vegetation period at the level of states, oblasts, main irrigation canal and river sites is presented in table 2.

Established limit was used by the Republic of Tadjikistan on 85.3% (planned volume 6357, 13 mln. cu.m, actual volume 5424, 6 mln. cu.m.) Last year this limit was used within the volume of 5302,1 mln. cu.m., growth is 122.0 mln.cu.m. The Republic of Uzbekistan used established limit on 94,9% (planned volume 14997.0 mln.cu.m., actual volume 14229,8 mln.cu.m). In 1996 16390,2 mln.cu.m were used (minus 2160.4 mln. cu.m). Turkmenistan used established limit on 94,4% (planned volume 15400 mln.cu.m., actual volume 15157,3 mln.cu.m (minus 625,1 mln.cu.m). Total for the basin established limit on the vegetation period was used on 93,0% (planned volume 36154,1 mln.cu.m., actual volume 34186,6 mln.cu.m). Last year 37208,6 mln.cu.m were used or 91,9% of 1996.

Totally during the vegetation period small disproportion (0,5%) was admitted in water use between Uzbekistan and Turkmenistan in spite of maximum efforts applied.

In the Amu Darya middle reaches two states used established limit within 97,3%, including Uzbekistan - 101,4%, Turkmenistan - 95,0%. Uzbekistan used the limit on 6,4% more than Turkmenistan within this site of the river.

In the river lower reaches established limit was used on 91,7%, including Uzbekistan 91,0%, Turkmenistan - 93,1%. Within this river's site certain disproportion was also admitted.

In the worst position within the lower reaches were water users located between the gauging station Kipchak and Takhiatash hydrostructure (Nukus hydroworks Department). If Upradic's water users used established limit on 104,1%, including Khorezm - 90,3%, Tashauz - 109,5%, Republic of Karakalpakstan - 129,4%, the water users of Nukus Department used the limits on 80,3%, including Tashauz - 78,3%, Republic of Karakalpakstan - 81,1%.

Total water supply to three main water-users was as follows:

Khorezm - 90,3%  
Republic of Karakalpakstan - 91,4%  
Tashauz - 93,1%.

Water supply during the vegetation period to compare with 1996 in the middle reaches was equal 96,5% (minus 566,3 mln.cu.m), in the lower reaches - 83,8% (minus 2573 mln. cu. M). Finally all dry period consequences were worst for the lower reaches water users.

Because of hard water situation in the Amu Darya lower reaches established plan of water supply to the Aral Sea during 5 months of the vegetation period was fulfilled only on 18,6%.

BWO «Amu Darya» makes proposal for ICWC consideration to decrease water supply to the Aral Sea adopting special protocol decision.

BWO «Amu Darya» has made certain job aimed to water situation stabilization, the measures were taken for improvement of management, control and calculation of water resources.

It is worth to notice that the low water supply situation enlightened certain disadvantages and shortcomings in the BWO and Minvodkhoz's water policy. But in spite of certain tension moments in operational management and water policy it was possible to find acceptable decisions.

During reported period there were 4 meetings of the water allocation commission for the river lower reaches. Employees which broke regulations, were punished by the BWO leadership.

In order to improve water resources intake calculation and control Minvodkhoz's specialists helped BWO to do it properly. Analysis of the river channel balance shows significant increase of discrepancies all along the river. Especially high percentage of discrepancies belongs to the site Dargan-Ata - Tuyamuyun (24,3%) and Tuyamuyun - Kipchak (28,9%).

This situation is aggravated by the following:

1. Nonreliable information of the national hydromet services about river flow.
2. Insufficient intake control by operational departments.
3. Many interventions on the places by officials from outside.

4. Water calculation aggravation on the Tuyamuyun hydrowork.

***Expected water volumes in the water reservoir on October 1, 1997  
are as follow:***

<b>Water reservoir</b>	<b>Volume on 01.09.97</b>	<b>Volume on 01.09.96</b>	<b>Shortage</b>
Nurek	10500	10543	-43
Tuyamuyun	2630	4406	-1776
Inter-system	2397	2347	+150
Total	15527	17196	-1669

Table above shows that the Amu Darya lower reaches were in worst situation. Regulating water storage in the Tuyamuyun water reservoir are minimum. Situation on the beginning of the vegetation period is evidently unfavorable.

Thus, the main tasks of Association are the following:

1. Improvement of discipline and responsibility of employees.
2. Taking measures for decrease of water losses along the river.
3. Provision of equitable and equal water resources distribution.

The vegetation period is completed. Taking into account experience, gained during low water supply year and last decade BWO «Amu Darya» suggests certain measures which could help to overcome successfully the non-vegetation period of 1997-1998 and vegetation period of 1998.

Expected water supply at Kerky gauging station upstream Karakum canal in the non-vegetation period should be about 15,0 cu. km (last year 20,2 cu. km).

Water volume in the Tuyamuyun reservoir should be 2,6-2,65 cu. km. It is the lowest volume for last decade. Because of unfavorable forecast the following measures are suggested:

1. To make 10-15% cut of intake limits for the non-vegetation period to compare with last year.
2. To shift the time of leaching irrigation on the beginning of 1998.
3. To close mostly head water intakes and do not open them to the end of year.
4. Water releases through the Tuyamuyun hydrostructure should not exceed 50 cu. m/sec.
5. To cut ecological-sanitary releases into irrigation systems.

These measures will allow to create water storage in the Tuyamuyun reservoir on 01.02.97 4,3-4,4 cu. km and to carry out successfully the non-vegetation period of 1997-1998. But to the beginning of the vegetation period of 1998 the Tuyamuyun reservoir's storage will be released to 2,3-2,4 cu. km (4,03 cu. km in 1997).

Expected water supply determined on the base of perennial forecast is 46-47 cu. km which remain hope for the successful vegetation period.

In 1997-1998 hydrological year water supply will be within the limit of 61-62 cu. km at Kerky gauging station upstream Karakum canal; which constitutes 95-96% of ordinary.

Such possible water supply level together with water saving measures will allow to give to the Aral Sea about 3,0 cu. m. Detailed proposals on water intake limits from Amu Darya and release to the Aral Sea in 1997-1998 are presented in the appendix 1.

BWO «Amu Darya» Head  
I.D. Kalandarov





Table № 1

Gauging station	April			May			June			August			September							
	Actual Flow	Calculation		Actual 1996r	Actual Flow	Calculation		Actual 1996r	Actual Flow	Calculation		Actual 1996	Actual Flow	Calculation		Actual 1996r				
		Flow 95%	%			Flow 95%	%			Flow 95%	%			Flow 95%	%					
Kerky	3385	3776	89,6	4536	6810	6704	98,4	6107	6632	8900	74,5	9660	6963	8640	80,6	9401	4669	5011	93,2	5606
Daran-Ata	1674	2105	79,5	2821	3294	4392	75	4348	3582	5814	61,6	7759	4272	5529	76,6	6764	3049	2878	106	2891

Actual flow at Kerky station was 35745 mln. cu. m against calculated one 44133 mln. cu. m or 81% (44280 cu. km in 1996).

Actual flow of Dargan-Ata station was 27954 mln. cu. m or 73.3% (31688 mln. cu. m in 1996).

Table 2

Places (localities)	Vegetation-period limit	Actual, mln.cu.m	%	Actual 1996 mln.cu.m	Actual 1997/1996, %	August		%	September		%
						Limit	Actual		Limit	Actual	
Republic of Tadjikistan	6357,1	5424,6	85,3	5302	102,3	1282,4	1178,6	91,9	868,8	856,2	98,5
Republic of Uzbekistan	14997	14229,8	94,9	16390,2	86,8	2928,7	2879,9	98,3	943,1	1983,6	210,3
KMK	2700	2821,5	104,5	2892,2	97,6	472,6	542,8	114,9	364,6	408,5	112,0
ABMK	2832	2790,7	98,5	3624,3	77,0	605,7	659,4	108,9	277,3	629,8	227,1
a) total for middle reach	5532	5612,2	101,4	6516,5	86,1	1078,3	1202,2	111,5	641,9	1038,3	161,8
Khorezm	3315	2994,4	90,3	3875,6	77,3	627,8	517,3	82,4	154,2	197,2	127,9
Republic of Karakalpakstan	6150	5623,3	91,4	6357,5	88,5	1222,6	1160,4	94,9	147	748,2	509,0
b) total for lower reach	9465	8617,7	91,0	10233,1	84,2	1850,4	1677,7	90,7	301,2	945,4	313,9
Turkmenistan	15400	14532,2	94,4	15157,3	95,9	3006,7	2610	86,8	1704,1	2429,4	142,6
Karakum canal	7623	7017,6	92,1	6299,5	111,4	1205,3	1118,9	92,8	1013,4	1036,8	102,3
Lebap velayat	2756	2838,5	103,0	3218,6	88,2	633,1	605,8	95,7	269,4	442,6	164,3
a) total for middle reach	10379	9856,1	95,0	9518,1	103,6	1838,4	1724,7	93,8	1282,8	1479,4	115,3
Dashkhovuz velayat	5021	4676,1	93,1	5639,2	82,9	1168,3	885,3	75,8	421,3	949,8	225,4
Total for the basin	36754,1	34186,7	93,0	37208,9	91,9	7217,8	6668,5	92,4	3516	5269,1	149,9
Upper reach	6357,1	5424,6	85,3	5302	102,3	1282,4	1178,6	91,9	868,8	856,2	98,5
Middle reach	15911	15468,3	97,2	16034,6	96,5	2916,7	2926,9	100,3	1924,7	2517,7	130,8
Lower reach	14486	13293,8	91,8	15872,3	83,8	3018,7	2563	84,9	722,5	1895,2	262,3
Besides, Surkhandarya oblast	1000	996,5	99,7	979,8	101,7	239,7	213,4	89,0	89,0	175,0	196,6

OPERATIONAL SCHEDULE  
of Nurek and Tuyamuyun water reservoirs since April 1997 till September 1997

Nurek reservoir	Unit	ACTUAL						TOTAL
		April	May	June	July	August	September	
Inflow:	cu m/sec.	417	771	1067	1606	1241	817	15655
Water losses in the reservoir	cu m/sec.	-50	91	31	-27	18	-37	76
Volume: - beginning of the period	mln. cu.m	5787	6063	6145	7134	9726	10515	5787
- end of the period	mln. cu.m	6063	6145	7134	9726	10515	10500	10496
Accumulated (+), released (-)	mln. cu.m	276	82	989	2592	789	-15	4709
Altitude: end of period	m	858,44	859,82	872,67	901,81	910,15	910	
Release from the reservoir	cu m/sec.	364	649	667	665	928	860	10906

Tuyamuyun reservoir	Unit	ACTUAL						TOTAL
		April	May	June	July	August	September	
Inflow:	cu m/sec.	646	1230	1406	1727	1596	1019	20155
Water losses in the reservoir	cu m/sec.	225	322	471	425	304	557	6064
Volume: - beginning of the period	mln. cu.m	4032	3928	2901	2167	2123	2138	4032
- end of the period	mln. cu.m	3928	2901	2167	2123	2138	2630	4395
Accumulated (+), released (-)	mln. cu.m	-104	-1027	-734	-44	15	-1265	363
Altitude: end of period	m	124,88	120,72	117,87	121,52	122,2	121,8	
Release from the reservoir	cu m/sec.	460	1304	1209	1318	1286	934	17214

OPERATIONAL SCHEDULE  
of Nurek and Tuyamuyun water reservoirs since October 1997 till March 1998

Nurek reservoir	Unit	ACTUAL						TOTAL
		October	November	December	January	February	March	
Inflow:	cu m/sec.	342	249	203	177	165	196	3503
Water losses in the reservoir	cu m/sec.	22	8	20	15	17	47	341
Volume: - beginning of the period	mln. cu.m	10500	10085	9356	8426	7511	6569	5787
- end of the period	mln. cu.m	10085	9356	8426	7511	6569	5949	10496
Accumulated (+), released (-)	mln. cu.m	-415	-729	-930	-915	-942	-620	4709
Altitude: end of period	m	906,05	898,65	888,85	877,45	865,46	856,76	
Release from the reservoir	cu m/sec.	475	513	530	504	500	380	7599

Tuyamuyun reservoir	Unit	ACTUAL						TOTAL
		October	November	December	January	February	March	
Inflow:	cu m/sec.	644	584	569	319	338	533	7862
Water losses in the reservoir	cu m/sec.	169	195	165	73	94	89	2066
Volume: - beginning of the period	mln. cu.m	2630	3366	3770	4322	4516	3703	2630
- end of the period	mln. cu.m	3366	3770	4322	4516	3703	2411	2411
Accumulated (+), released (-)	mln. cu.m	736	404	552	194	-813	-1265	-219
Altitude: end of period	m	121,78	123	125,5	126,95	122,68	120,78	
Release from the reservoir	cu m/sec.	200	233	198	174	580	916	6049

Water intake limits from Amu Darya and water release to the Aral Sea and deltas in  
1997-1998 hydrological year

River basin county	Water intake limits, cu. km		
	Total for year since Oct.1 1997 till Oct.1 1998	Incl. non- vegetation period since Oct.1 1997 till Oct.1 1998	Incl. vegetation period since March1 1997 till March 1 1998
Total from Amu Darya including	50,96	14,06	36,90
Republic of Tadjikistan	8,16	2,66	5,50
Kyrgyz Republic	0,15		0,15
From Amu Darya to Kerky gauging station	42,80	11,40	31,40
Turkmenistan	21,40	6,00	15,40
Republic of Uzbekistan	21,40	5,40	16,00
Besides:			
Water supply to the Aral Sea Coastal Zone taking into account irrigation releases and drainage water sanitary-ecological releases to irrigation schemes	4,50	1,50	3,00
of Dashkhovuz viloyat	0,1	0,10	
Khorezm viloyat	0,1	0,10	
Republic of Karakalpakstan	0,3	0,30	
Total to the Aral Sea and Aral Sea Coastal Zone	0	0	0,0

**Note:** Water intake limits suppose water supply for irrigation, industrial and other purposes. If water supply changes the limits should be respectively corrected.

## **INFORMATION ABOUT WATER MANAGEMENT SITUATION AND THE SYR DARYA RIVER WATER RESOURCES USE DURING THE VEGETATION PERIOD OF 1997**

Water intake limits on 1996-1997 were approved by ICWC in December, 1996 in Jambul and amplified according to the Hydromet forecast on the next ICWC meeting in April this year in Dushanbe. On the same meeting the vegetation period's results were considered and approved. BWO «Syr Darya» was charged to correct the cascade's operation regime according to amplified forecasts.

According to water supply forecast of April 8, 1997 it was expected 70-90% of ordinary. In accordance with the forecast and releases' regime from the Toktogul reservoir the available water resources were determined on the current vegetation period, moreover two options of the cascade operation regime were considered (releases from Toktogul during the vegetation period were 5,3 cu. km of 6,5 cu. km depending on the agreement between Kazakhstan and «Kyrgyzenergoholding» and its fulfillment). Water intake limits correction was also supposed in two alternatives.

Current vegetation period is going to be completed. Water situation in the region aggravated because of signing the agreement only on April 30 and it was not fulfilled in a full scale. Besides due to repair in upper water of Kairakkum reservoir it was not filled on 470 mln. cu. m according to schedule and increased water supply in April and transmission of electric energy from Uzbekistan to Tadjikistan allowed to fill it in till May.

BWO «Syr Darya» made water allocation taking into consideration actual water supply level, which dynamics is presented in Table 1 to compare with foreseen and ordinary values.

Table 1 shows that actual water supply level during given period excluding inflow to the Andijan water reservoir was higher than expected one but lower in comparison with average perennial values; in other words the dry nature of the current vegetation period was confirmed.

The greatest deviation of the forecast was noticed on the natural tributaries to the upper reservoirs of cascade: to the Andijan reservoir - much lower than expected value, to Toktogul and Charwak reservoirs - more than was expected.

Water resources available depend on release volume from the Toktogul reservoir. While Kazakhstan side fulfilled the agreement about energy acceptance only on the one third, Uzbekistan took responsibility for additional energy acceptance and natural gas supply on the meeting in Khudjand which was held on July 19, 1997. As a result releases volume from the Toktogul reservoir increased, that assisted to moderate release from the Kairakkum reservoir. Water situation in the region was stabilized and opportunity to provide all water consumers in the Syr Darya basin more effectively has appeared.





Table 1

Comparative register of foreseen and actual water resources of the SyrDarya river  
for the vegetation period of 1997, mln. cu. m

	April		May		June		July		August		September		April - September				
	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Standard	Forecast	Actual	Standard %	Forecast %
<b>INFLOW TO UPPER RESERVOIRS</b>																	
To Toktogul	570	943	1154	1358	827	1882	106	1762	1040	1286	565	766	9360	5217	8006	85,5	153,5
To Andijan	492	184	549	329	607	415	198	265	209	131	88	109	2830	2143	1433	50,6	66,9
To Charvak - 3 rivers	441	585	720	992	980	1300	777	917	434	506	277	315	5107	3629	4619	90,4	127,3
<b>LATERAL TRIBUTORIES</b>																	
Toktogul - Uchkurgan	176 <sup>1</sup>	176	263	263	225	225	155	155	96	96	68	68	1157	983	983	-	-
Uchkurgan- Uchtepe- Kayrakkum	660	787	528	482	363	438	230	335	319	407	327	373	3130	2427	2822	90,2	116,3
Andijan - Uchtepe	492	471	498	643	370	420	359	405	332	348	243	274	2308	1951	2170	94,0	111,2
Kayrakkum- Chardara	562	497	498	643	370	420	359	405	362	348	268	256	2372	2436	2569	108,3	105,5
Cahrvak - Chyrchyk mouth	220	241	249	308	215	272	163	166	134	129	158	121	1176	1139	1237	105,2	108,6
<b>TOTAL</b>	<b>3438</b>	<b>3708</b>	<b>4038</b>	<b>4517</b>	<b>3629</b>	<b>5108</b>	<b>309</b>	<b>4145</b>	<b>2771</b>	<b>3158</b>	<b>1994</b>	<b>228</b>	<b>27440</b>	<b>19925</b>	<b>23839</b>	<b>86,9</b>	<b>119,6</b>

<sup>1</sup> Determined by calculation due to cease of observations by Kyrgyzhydromet service



It is worth to underline that the main tension in water allocation is created by the Kairakkum reservoir's operation regime, which low limit of release is determined as 343,5 m under the volume of 1716 mln. cu.m due to necessity of the Makhram pumping station's functioning. Due to impossibility of cleaning of connecting canal to the Makhram station 800 mln.cu.m of water remain into the reservoir's body and are not used for profitable purposes. For this reason water intakes are strictly limited along the Fergana valley in order to provide inflow required to the Akjar gauging station and more strongly restricted downstream Kairakkum reservoir. This reservoir's regime is harmful but it touches not only the vegetation period but non-vegetation period as well because this volume of water retained in the reservoir till October 1 in January-March will be released downstream and create additional load on the Chardara reservoir and at last could be accumulated in the Arnasay evaporation sink.

Thus the Kairakkum reservoir's regime restriction draws negative consequences twice: in the vegetation and non-vegetation period.

Information about water intakes during the vegetation period from Syr Darya since April 1 till October 1, 1997 is presented in table 2. Water supply was performed according to water intake limits and on request of the water-consumers. Available water resources allocation took into account to some extent energy share accepted by the republics-consumers from the Naryn hydropower' cascade. Under low water supply conditions aggravated by the Toktogul and Kairakkum reservoirs' operation regime and non-fulfillment the agreement between Kazakh side and Kyrgyzenergoholding vegetation has been carried out in situation of tension, that sometimes provoked the local officials intervention. BWO was enforced to send its employees for assistance on the place especially in the points of high tension: BFC, NFC, Dustlik canal.

Table 2

Republic, Water site	ICWC limit, mln. cu. m	Actual	%
Kyrgyz Republic	162	156	96.1
Republic of Uzbekistan	7105	7876	111.0
Republic of Tadjikistan	1454	1593	109.6
Republic of Kazakhstan	6217	6647	106.9
Besides supply to the Aral Sea Coastal Zone	1000	1677	167,7

In spite of water supply to the Aral Sea exceeded 1,6 cu. km under approved limit 1,0 cu. km it is necessary to bear in mind that about 90% of this volume came in April - May and September that testifies about tense ecological-sanitary situation in the Syr Darya delta in summer hot period.

Water reservoirs' cascade operation regime since April 1, 1997 is presented in table 3.

Table 3

Reservoir	Inflow to a reservoir, cu. m		Releases, cu.m	
	Forecast	Actual	Acc. to the schedule	Actual
Toktogul	5216	8006	5300	6060
Andijan	2143	1433	2642	2401
Charvak	3629	4619	3619	4298
Kayrakkum	5950	5693	6322	6422
Chardara	2637	3686	5679	7822

Actual operation regime of the Naryn-Syr Darya cascade during the vegetation period of 1997 is presented in table 4.

Table 4

SCHEDULE  
of Naryn-Syr Darya Reservoirs Cascade Operation  
since April 1, 1997 till September 30, 1997

	Unit	April	May	June	July	August	Sep- tember	TOTAL
		actual	actual	actual	actual	actual	actual	mln.cu.m
<b>CHARVAK RESERVOIR</b>								
INFLOW TO THE RESERVOIR (3 rivers)	CU.M/SEC.	226	370	502	343	189	122	4619
	MLN. CU.M	586	991	1301	919	506	316	
VOLUME: AT THE BEGINNING	MLN. CU.M	1008	1330	1838	1997	1818	1434	-
AT THE END	MLN. CU.M	1330	1838	1997	1818	1434	1297	
RELEASE FROM THE RESERVOIR	CU.M/SEC.	113	173	446	396	332	168	4298
	MLN. CU.M	293	463	1156	1061	889	435	
<b>ANDIJAN RESERVOIR</b>								
INFLOW TO THE RESERVOIR	CU.M/SEC.	71	123	160	99	49	42	1433
	MLN. CU.M	184	329	415	265	131	109	
VOLUME: AT THE BEGINNING	MLN. CU.M	1372	1345	1313	1230	745	418	-
AT THE END	MLN. CU.M	1345	1313	1230	745	418	379	
RELEASE FROM THE RESERVOIR	CU.M/SEC.	82	129	192	275	171	58	2401
	MLN. CU.M	213	346	498	737	458	150	
<b>TOKTOGUL RESERVOIR</b>								
INFLOW TO THE RESERVOIR	CU.M/SEC.	364	507	727	658	480	298	8006
	MLN. CU.M	943	1358	1884	1762	1286	772	
VOLUME: AT THE BEGINNING	MLN. CU.M	9781	10011	10673	11416	11449	11464	-
AT THE END	MLN. CU.M	10011	10673	11416	11449	11464	11790	
RELEASE FROM THE RESERVOIR	CU.M/SEC.	286	272	462	633	478	161	6060
	MLN. CU.M	741	729	1198	1695	1280	417	
<b>KAYRAKKUM RESERVOIR</b>								
INFLOW TO THE RESERVOIR	CU.M/SEC.	503	310	405	406	340	197	5693
	MLN. CU.M	1304	830	1050	1087	911	511	
VOLUME: AT THE BEGINNING	MLN. CU.M	2948	3389	3154	2766	2130	1684	-
AT THE END	MLN. CU.M	3389	3154	2766	2130	1684	1710	
RELEASE FROM THE RESERVOIR	CU.M/SEC.	406	397	451	546	446	185	6422
	MLN. CU.M	1052	1063	1169	1462	1195	480	
<b>CHARDARA RESERVOIR</b>								
INFLOW TO THE RESERVOIR	CU.M/SEC.	368	349	302	139	118	126	3686
	MLN. CU.M	954	935	783	372	316	327	
VOLUME: AT THE BEGINNING	MLN. CU.M	5335	5110	4344	3244	1577	781	-
AT THE END	MLN. CU.M	5110	4344	3244	1577	781	616	
RELEASE FROM THE RESERVOIR	CU.M/SEC.	524	650	643	644	352	150	7822
	MLN. CU.M	1358	1741	1667	1725	943	389	
RELEASE TO KYZYLKUM CANAL	CU.M/SEC.	12	90	110	105	84	25	1128
	MLN. CU.M	31	241	285	281	225	65	
SUPPLY TO THE ARAL SEA	CU.M/SEC.	350	123	10	10	47	101	1677

SUMMIT IN CHOLPON-ATA DECISION ON JULY 24, 1997

**ABOUT ICWC DELEGATION PARTICIPATION IN THE EC ICID MEETING ON  
SEPTEMBER 8-12, 1997**

ICWC delegation composed by Minister of Melioration and Water Management of Tadjikistan N.A. Ashurov, Chairman of Committee on Water Resources of Kazakhstan T.T.Sarsenbekov, Deputy Minister of Agriculture and Water Management of Uzbekistan A.A Jalalov, Director SIC ICWC V.A. Dukhovny, participated in EC ICID meeting and 18 ICID European Conference in Oxford on September 8-12, 1997. 111 delegations in total number of 540 persons from all over the world took part in this conference.

The conference was greeted by Minister of Environment of the United Kingdom Mrs.A.Eagle, which mentioned high importance of irrigation, drainage and water resources management in the world she told also about job being done by British Government on modernization of management structure and control system, based on increasing participation of immediate water users in financial and institutional improvement of water resources management.

1.The Conference discussed the problem «Water is economic good». Key presentation has been done by the World Bank chief specialist in water resources John Briscoe which defended the monetary approach to the water resources management.

Nevertheless presentations from USA (R. Meinghen Dick, K.Baly and R.Gonsalez), Israel (I.Shevah), International Institute for Irrigation Management (S.Pery) convincingly refused this opinion. Final opinion has been formulated as follow:

- Water has direct economic value, but besides it has social and ecological one.
  - Water could not be an economic good, it pretends to be a good only taking in consideration its economic value.
  - Charge could be applicated only within the limits of water economic value, ecological and social value should be covered by subsidies and state investments.
2. Working group on the Aral Sea Problem meeting was held. Information of the group leader A. Shakhrizalla Ibn Abdulla, T. Sarsenbekov (report «Restructuring of national management by the water resources because of agriculture and water management privatization»; N. Ashurov (report «Water resources of Tadjikistan, problems of their use and management, their connection with the regional tasks»), A. Jalalov (report «Measures preventing ecological and sanitary-epidemic situation aggravation in the Aral side due to the Aral Sea horizon fall (Amu Darya delta»); V.Dukhovny (report «Main provisions of the regional water strategy in the Aral Sea Basin and the Aral Sea Program development»); J. Berkoff, D. Chalcroft, etc.

At the meeting it was noticed:

- necessity of ICID efforts strengthening on donors attraction to the Aral Sea Problem solution, including possibility of invitation of certain international banks and organizations, which is not participating now in the program (EBRD, British Fund DZMS, Japanese JAICA, etc.);

- though SIC ICWC included itself in the IPTRID network on the information exchange, and arranged this exchange at the ICWC organizations' level, IPTRID head-quarter (Wallingford, Washington) does not participate in this exchange; moreover, though the total financing volume exceeds 2 mln. USD, there is no allocation to support the IPTRID regional centers except ILRI (The Netherlands), which assists SIC ICWC;
  - noticing positive results of the highest level officials training in USA, Egypt, Israel and ICID aspiration for organizing seminars in Iran and India participants underlined importance of qualification improvement for the employees of provincial, local agencies and the national bodies which was evidently demonstrated during the workshop with assistance of Canada and Israel. It is necessary to develop the permanent training system under ICWC supervision. To prepare ICID appeal on this occasion to UNDP (Mr. Lenton), CIDA (Mr. Ali Shadi), the World Bank (John Heyword).
3. EC ICID accepted as new members National Committees of Kazakhstan and Tadjikistan. It is necessary to accelerate other two countries' joining ICID taking in consideration big attention which ICID pays to the region's problems.

National Committees of Kazakhstan, Tadjikistan and Uzbekistan should submit their proposals on their representatives participation in other ICID working groups and their interrelation which the Aral Basins' working group.

SIC ICWC should appeal to the Permanent Committee on technical activity (Mr. Bart Shultz) and to ICID head-quarter (Mr. Chitale) about including SIC ICWC representatives into this Committee, IPTRID Consulting Committee and the WATSave Program as a permanent observer.

4. Meeting with FAO representative Mr. Hans Wolter was held, which proposed to carry out the seminar on the program CROPWAT-FAO adaptation to the Central Asia conditions with participation of all Central Asian countries and invitation of Prof. L.Pereira and Dr. R.Boss on the end of November - beginning of December. ICWC members agreed with this proposal and decided to carry out this seminar in Tashkent or Khodjent.
5. Participating in the IPTRID working group ICWC representatives emphasized the negative sides of IPTRID activity considering it as ineffectual for the developing countries and pointed on danger for this organization to become bureaucratic one. SIC ICWC should prepare the proposals on this matter and submit them to UNDP (Mr. R. Lenton, F. Harthwell), the World Bank, ICID (Mrs. Ali Shadi, Chitale, Matudallah).
6. Options exchange was carried out with Director of South Africa Water Resources Department Mr. A.Konly. He noticed that there is a lack of highly qualified specialists on irrigation and drainage in Pretoria and our specialists may be prepared to work in South Africa. It is necessary to send Curriculum Vitae of our specialists which could be sent to work in South Africa. SIC ICWC should organize necessary documents and negotiations with the South Africa Water Resources Department.
7. Delegation has met with the United Kingdom Minister of Environment Mrs. A. Eagle and visited water supply department of this Ministry where was acquainted with a new system of water resources management in Great Britain (1990), based on strict limitation by state water and wastes, development of private initiative and activity on the level of catchment areas and counties.





## SEMINARS ON THE RECOVERY MEASURES ON THE ARAL SEA PROBLEMS

### INTRODUCTION

ICID had touched the Aral Sea Problem at first when its President Mr. John Hennessy visited the region in September 1993 and signed the Protocol with Mr. Giniyatullin Minister for Melioration and Water Management of Uzbekistan. This action is compliant with Hague ICID declaration which announces international collaboration in the field of water management within the international basins. ICID specialists were facing before the similar problems of salinity, pollution and scarcity of water resources.

According to this statement ICID organized special meeting on the Aral Sea Problem in Varna, Bulgaria in May, 1994. At this meeting the special working group was appointed from the ICID experts and representatives for scientific and concerted solution of the problems under leadership of the ICID President Shakhrizalla bin Abdulla. The special group came to conclusion that the most effective way of assistance to the local specialists are seminars.

First of all the Aral Sea Basin's states representatives were invited to the 6<sup>th</sup> International seminar «Drainage and Environment» in Lyublyana, Slovenia on April 21-15, 1996. «Special technical meeting on the Aral Sea Basin problems» was included in the agenda and was carried out on April 24, 1996. The results of this meeting were disseminated to all members of the Working group and to all ICID National Committees.

### PROSPECTIVE PLANNING

ICID is planning to organize technical seminars and training tours on the Aral Sea Basin Problems using experience gained within the decades by the National Committees. Agreement from India and Iran was obtained to organize training tours for invited from the Aral Sea Basin.

### PROPOSAL OF INDIA

India has a big experience in development and management by the wide network of irrigation canals. It has the second biggest in the world irrigated area. Technologies on on-farm water management, salinated and waterlogged lands' drainage, groundwater and canal's water use, drainage effluent use, land and human resources development by means of large network of research and training institutions allow to use water resources efficiently. India is ready to share this experience that will assist to the Aral Sea Basin development. ICID supposes the seminar for acquaintance with Indian experience in this field.

### OBJECTIVES

Seminar's objective - the Aral Sea Basin problems presentation and the experience available acquaintance in order to facilitate the efforts of the international society in the Aral Sea Basin development.

Two days international seminar «Drainage and Water Management, including saline water in agriculture and forestry on salinated lands» is supposed to be organized by the Central scien-

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tific-research institute of soil salination in Carnal. After the seminar one day trou is supposed in the field and 3-7 days visit to Radjasthan canal Project (Indira Gandy Nakhar Pariyodjana) or to Radjasthan Agricultural and Drainage Project (RAJAD).

#### TOPICS

1. Drainage control of salination - design criteria, management and operation, restoration of salinated and waterlogged lands.
2. Water management - water resources planning and use, water allocation improvement, canals lining, on-farm water resources management, irrigation technique.
3. Water quality - water quality standards in agriculture, industry and municipality, common use of surface, groundwater and drainage outflow, crop resistance to different water quality.
4. Land water resources development impact on the environment - influence on flora and fauna, lower river reaches' hydrology, human beings and animal diseases, ecosystems' degradation.

The seminar will encompass all aspects of the problems related to salt and water management in the river basins. Main reporter from India will present Indian technologies, the reporters from other countries will present the reports on the Aral Sea Problems.

#### PROPOSAL OF IRAN

Two days seminar «Methodology for the Inner and Desert Lakes Preservation» is supposed to be held the first week of October, 1997 by the Fund of Education and Reconstruction of the Ministry of Energy, Mashad, Iran. After seminar is supposed three days travel to the Desert Projects in Shakhrod, water projects in Northern provinces and semi-arid districts of Mashad. ICID will start expected activity after providing necessary financial support.

#### ASSISTANCE TO THE PARTICIPANTS

Above mentioned seminars will allow to the participants to acquaint with the India and Iran experience and use it in the Aral Sea Basin.

## **USA AND FRANCE GOVERNMENTS ASSISTANCE IN SOCIO-ECONOMIC CONDITIONS IMPROVEMENT OF THE ARAL SIDE POPULATION.<sup>2</sup>**

The Aral Sea and its Basin's problem is first of all the problem of life and health under conditions of progressing desertification of huge territory. It requires new approaches and solutions through the international collaboration because it touches the many countries' interests. New independent states of the basin can not fight this problem becoming global one. Therefore, the only way it to unit efforts of all states of the region and assist them from the side of the world community.

According to the Memorandum of Understanding between the Governments of the USA and Kazakhstan the technical assistance was granted in reconstruction and restoration of Aral-Sarybulak water intake. The financial means in amount of 4 mln. USD were allocated. Assistance is being performed through the US Agency of Environment (USAID) with attraction of American firm CH2M HILL.

The project is being almost completed. The laboratory equipment for sanitary-epidemic station and operational services of water supply department is supplied for Aralsk, Novokazalinsk and Kzyl Orda cities. Chlorinating equipment and personnel training for the pumping stations 3,4,5 and 7, «Kosaman» and «Berdykol'» were provided.

Big job has been done on the water wells reliability improvement. Thirty two submersible pumps were replaced and initial well discharge was restored.

Test pumping showed submersible pumps' proper operation and sand concentration in water was lower than allowed one, which is main criteria for well reliability.

On six pumping stations for Aralsk water supply pumps were replaced. During the mounting of pumps, motors, valves, electric control panels and piping, the local staff training was performed.

Taking into account importance of the pumping station 7 in Novokazalinsk water supply American side takes part in financing of the station 7 pumping capacity improvement which after its reconstruction will provide with water Novokazalinsk. It will allow to this city with population of 37 th. people use good quality potable water and decrease water price.

According to the Protocol of collaboration between the Government of France and Kazakhstan 5 mln. francs is allocated for 3 desalination and treatment plants provision for Kzyl Orda province. Desalination units of French firm SFEK were mounted on the farms Abai and Urkendeu on the existing selfregulated wells in Kazalinsk district hospital. Water treatment plant of Degramon production was established on the Kzyl Orda water supply site and serves the settlement Tasbuget.

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<sup>2</sup> From the report of the Republic of Kazakhstan about measures on improvement of socio-economic and ecological situation in the Aral Sea Coastal Zone in the year 1991.

These treatment plants' operation fully fits local conditions and now they are looking for the finance to purchase similar plants for Kzyl Orda city. Kazakhstan share in these projects constituted 2 mln. USD.

## **THE WORLD BANK FINANCIAL SUPPORT TO THE «PROGRAM OF CONCRETE ACTIONS» IN THE ARAL SEA BASIN**

The Program of concrete actions «on ecological situation in the Aral Sea Basin improvement on the next 3-5 years with due regard to socio-economic development of the region is approved by the Heads of Central Asian States on January 11, 1994 in Nukus. This Program includes the measures on mitigating the negative consequences and environment degradation and development of sustainable strategies of water resources management. Seven prior programs are determined containing 19 projects within the 1<sup>st</sup> stage.

The World Bank has attracted the countries-donors to its financing. At the countries-donors meeting in Paris (June 1994) 33 delegations of the governments and agencies of the European and Asian countries and also UN organizations were presented. The financing of the 1<sup>st</sup> phase was identified as 31,4 mln. USD under necessary sum 40,3 mln. USD. Actually the countries-donors are financing now the projects of total cost 15,437 mln. USD.

Within the framework of the Project 5.3 «Clean Water and Health» of the «Program of Concrete Actions» the Committee for Water Resources started technical-economic grounding of the Project «Water Supply, Sanitation and Health Preservation». This Project is financed on expense of the Kuwait Fund of the Arab Economic Development grant (KFAED). To assist in the technical-economic background development the international corporation leading by «GIBB Ltd.» (United Kingdom) was created. It includes «CES» (Germany), «KSIS» (Kuwait) and local institute «Kazgiprovodkhoz».

In concordance with the agreement between the World Bank and the Committee the special group for the water-related projects performance (PICG) in Almaty with Kzyl Orda branch has been established in order to coordinate and supervise the project implementation and provide help to consultants. This group assist to consultants from «GIBB Ltd.» in information collection and meeting appointment with different organizations.

During the period since September, 1996, when «GIBB Ltd.» started its activity, the group has submitted to the Committee the following reports: inception report, interim and mid-term reports. The project is going to be completed and the final report is expected to be submitted on May-June.

The pilot project for water supply to the Kazakh part of the Aral Side is started by its implementation. The prior objects are determined and the cost estimates are calculated. Together with the World Bank the feasibility study report is prepared which determines: source of financing - the World Bank and the Republic of Kazakhstan Government, main project's components - Aral Sarybulak 10-km main reconstruction, pumping station 7A construction completion; distribution network in Aralsk and Novokazalinsk reconstruction; ToR and order of its performance.

On the base of the feasibility study report the Agreement on loan is prepared (Pilot Project in water supply) between the Republic of Kazakhstan and the World Bank in amount of 7 mln. USD. This agreement was adopted and signed by two sides and ratified by the Parliament of Kazakhstan. According to the World Bank practice the tender was announced and the following consulting firms were invited to participate: «CES» (Germany), «CH2M HILL» (USA) and «Scott Wilson Kirkpatrick» (the United Kingdom). The proposals from these firms are obtained and work on assessment and selection of the best technical proposal is being executed. After tender completion the contract will be signed with the firm-winner within one month. Within the framework of the Project 4 of the «Program of Concrete Actions» the Committee began the technical-economic background development for the «Aral Sea Northern Part Restoration». Several meetings with the World Bank consultants were carried out. They visited Kzyl Orda province and proposed to combine two projects: «Measures on Syr Darya River Channel Passing Capacity Improvement» and «Aral Sea Northern Part Restoration» into one project «Syr Darya River Channel and the Aral Sea Northern Part Regulation» and split it into 3 parts:

1. design work and technical-economic background of the lower level dam in the northern Aral Sea (duration 15 months);
2. research and technical-economic background of the Syr Darya river infrastructure and its delta (duration 15 months);
3. detailed projects and competition works (duration 6 months).

The first two stages will be performed parallel and financed by Japanese grant PHRD. The third stage will be commenced after the two first stages completion. The financial means for this stage are being looked for.

Together with the World Bank consultants the tender documents are prepared and the tender is announced for the consulting services on the first two stages. The following firms are invited: «GES» (Germany), «DHV» (the Netherlands), «GIBB Ltd.» (the United Kingdom), «Haskoning» (the Netherlands) and «Talconsult» (Italy). The special conference was held with invitation of all firms participating in tender, Ministry of Finance, the World Bank, Kzyl Orda authorities, etc. At the conference all information available was presented and the travel to the Kzyl Orda provincial objects included into the project was undertaken.

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## **ANALYSIS OF A QUESTIONNAIRE PROPOSED WITHIN THE FRAMEWORK OF THE WORKSHOP «WATER ALLOCATION STRATEGY DEVELOPMENT »**

**19-23 May 1997**

**Tashkent**

The workshop «Rational Water Allocation Strategy Development» was held on 19-23 May in Tashkent with participation of the representatives from Canada, Israel and Central Asian Republics. The questionnaire including 26 basic and 3 additional questions with variants of answers was proposed to the participants at the workshop.

24 respondents - leaders of republican and regional water organizations of the Central Asian regions - filled in the basic questionnaire. The respondents indicated the main institutional problems in the activity of regional water organizations. They are following:

- deficit of funds (22 of 24)
- lack of equipment (20 of 24)
- poor communication (21 of 24)
- all 24 respondents indicated low level of salary
- 50% of the respondents indicated pressure of local authorities
- the same number indicated low level of hygrometry and information shortage.
- 50% of the respondents were satisfied with level of the staff proficiency.

Almost all respondents (23 of 24) consider as necessary organization of information exchange between BWOs and regional water organizations (RWO) related to use and distribution of allocated water limits; 50 % of the respondents indicated, that RWO's participate in approval of allocated limits on transboundary rivers. 75% of the interrogators consider, that RWO's activity should be connected with central water organizations through the Ministry of Water Resources (Minvodkhoz).

Up to 70% of the respondents indicated the possibility of RWO to influence on water users in water saving through establishing the water charge (services), strengthening the monitoring, spreading the advanced methods; up to 50% of the respondents - through taxes, strengthening limits and creating irrigation advice service.

Up to 75% of interrogators indicated a possibility of RWO's to influence on water quality through limits for wastes, taxes for exceeding the waste limits and charges for discharge of polluted water.

The measures which are necessary for improvement of land reclamation in combination with water saving are the following.

- improvement of network conditions (99%)
- improvement of supervision (99%)
- creation of information reclamative services (80%)
- 60% of the respondents recommended to separate reclamative service from RWO and submit it to Minselvodkhoz as a united control-advice service.

70 % of the respondents in part of implementation of the water charge between states at the basin level consider, that it would be necessary to establish price for international bodies allowances and price for construction and river-beds maintenance. Also 65% of the respondents consider, that it is inexpedient to implement charges for water as a resource.

Besides, there are 6 proposals from the respondents: two of the respondents said, that water charge for water users is inexpedient, as agriculture products have being sold at the state-established price. However, there are no state orders in agriculture in each of Central Asian States. Three of respondents said for limits strengthening. Now the limits are insignificant, in case of limits increase, charge should be taken for exceeding 80% of water allocated.

20 of 24 respondents consider as necessary establishing charge for pollution at the national level, for exceeding polluted water discharge limits, and 18 of 24 of the respondents - for permissible concentration exceeding.

At the State level most of the respondents consider as necessary establishing charge for the exceeding pollution limits.

There are various interesting opinions on the Government participation in financing of water organizations. About 60% of the respondents advise to save the budget financing. 70% of the respondents consider, that the Governmental water organizations financing should be transformed in form state charge. There are proposals on the Government participation in extreme situation elimination, in subsidies for electric power and equipment purchase. The offer on partial budget financing on the basis of water users payment for water supply service was also made.

Little more than 50% of the interrogators confirmed possibility saved water selling by water organizations. 30% of the participants agreed with a sanction for selling or transferring water surpluses (or saved limits) at the interstate level.

More than 60% of the respondents consider, that payment mechanism for water services should be organized by stages, reducing a governmental participation share on the expense of water consumers; up to 50% of the participants consider, that tariffs should be different for various categories of water consumers. Tariffs for water users should be favorable with account of a part of expenditures, which would be compensated by state. 55% of the respondents have the same opinion. Only 30% of the respondents offered do not collect a payment from water users.

It was proposed to 15 respondents to estimate the water charge introduction results in the region. 65% of the respondents indicated a positive results in the industry, and only 30% of the respondents indicated positive results in water saving in agriculture. 50% of the respondents consider, that water charge will be a guarantee for branch's financing; 60% of the participants consider, that at the initial stage the government should completely (60%) or partly cover expenditures of water organizations accordingly to share of benefit, which the government has from agriculture sector. There are suggestions that the government should cover expenditures of interfarm networks.

65% of the respondents consider, that all expenses of water organizations should be compensated by a payer on the basis of a contract. 20% of the respondents said, that payers should pay the parent bodies at the regional level and 30% of the respondents - at the state level.



70% of the interrogators indicated, that payment received from water organizations of lower level should be transferred in a definitely established sum to organizations of upper level, which is the best allocation of the means and income received from water services.

There are various opinions on creation and functioning of water users associations:

10% of the respondents approved creation of similar associations in the region, where they work;

80% indicate, that the creation of such associations is necessary;

60% consider, that the association's activity should be limited by on-farm irrigation systems;

75% consider, that property of local water organizations should belong to state; 15% say, that these organizations could exist in form of corporations; 10% consider it could exist in rental form. Such opinions show, that more attention should be paid to non-governmental associations.

The respondents were offered to give proposals on interactions between the executive water organizations and water users associations .

Unfortunately, there was only one proposal on creation such interactions on the basis of a contract. Supposed, that people, which deal with this question practically could bring more specific proposals. Apparently, we have no sufficient consideration in this question.

Questions related to water legislation are pointed out by number of unclear answers (15-30% of all answers) and 30-35% affirmative answers was given on item 22 of questionnaire. It is shows a low level of knowledge of water specialists in this question.

The answers no introduction of trade law in irrigated agriculture were separated as follows: 8 unclear answers; 8 negative; 8 positive. There is no possibility to define any relation to this question, because all categories of answers are equal.

There are 10 proposals on methods and ways of water saving stimulation, irrigation lands improvement and so on. They included: the modern water saving technique employment, financial stimulus and clearly defined control, panel sanctions, specific advantage for the exploitation organizations and water users under condition of the good result achievement, economic stimulus (payment for exceeding limit, opportunity to sell saved water), water saving technologies inculcation and so on.

60% of the respondents consider as expedient to give responsibility for the Aral Sea and Adjacent zone management to a special body within ICWC.

50% of the respondents consider, that control and licensing of interstate ground waters and return waters should be given to a special body within ICWC.

About 80% of the interrogators agree with proposals on organization of training for senior and junior staff on main aspects of water strategy under ICWC. There are proposals on organization of training abroad.

About 80% of the respondents indicate high quality staff losses, 60% - indicate an absence of new personnel. The low level of salary is a main cause. At the same time 60% of the respondents indicate the potential of available staff.

75% of the respondents consider it necessary to give BWO “Syr Darya” and “Amu Darya” and SIC ICWC the international status; 90% of the interrogator consider as expedient for each state, which is member of ICWC, to confirm a value of water supply for average perennial water supply and correct them depending on the basin water supply level; 60% - consider as expedient to give responsibility for control on water supply into the Aral Sea and adjacent zones, affirmed by ICWC, to BWOs.

As a whole, the similar works with attraction of competent opinion can be considered rational, taking into account responsibility and importance of the submitted answers.

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