Interstate Coordination Water Commission (ICWC)
Scientific-Information Center (SIC)

TRANSBOUNDARY WATERS AND THEIR JOINT USE - HYDROLOGICAL AND POLITICAL ASPECTS

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Introduction

Modern water resources use and conservation management comes out of understanding necessity of linkage between economic, social and ecological criteria of society and countries. Both economic growth and social requirements increase originating growing water consumption gradually comes into conflict with necessity of nature itself needs account as water user and water consumer in zonal, regional and even global scale. Nevertheless, finding reasonable balance between these three strategies of water management is a goal and common approach for all world community demonstrated especially on the Second World Water Forum in Hague. Main condition for that is integrated management of water resources (IMWR) combining integrity equitability, linkage of all levels of hierarchy and public participation. IMWR role is particularly important under conditions of international, transboundary water basins where additionally to account of internal national interest. National interest should be taken into account, along with principle of the most effective and rational water use sovereignty and international water right come to the scene.

Peculiarities of the water resources modern management principles together with transboundary character of water are outlined in this report.

1. Water at present and in future

Hundreds years ago the time has passed, when water management was limited by possibility of its diversion from water sources and water delivery to place of its use. Today water becomes deficit resource all over the world. According to International Institute of Water Management (IWMI) 25 % of world population or 33 % of population from developing countries face certain water deficit. In 2025 more than 1 bln. peoples will live under conditions of "absolute water hunger", including 280 mln. in India and 380 mln. in China. But this situation could worsen twice if mankind would not understand necessity of principal changes in attitude to water and will continue to act according to "as previously" scenario.

During past 100 years water consumption increased by 6 times (for next 100 years we have no such possibility!). Due to this provision of population by tap water achieved 80 % and sewerage - 50 %. Irrigation with its growing scale during past 40 years led to food production double increase proving possibility to overcome starvation even in such giant countries as India and China!

But all this is only part of matter; let us look at the consequences of water-economic activity:

- 20 % population has no access to safe water for drinking purposes;
- 15 % world population or more than 800 mln. receive only 2000 calories per clay;
- annually 3-4 mln. die from water-related diseases;
- irrigation and water used destroyed half of deltas, wetlands of previously rich with water rivers;

- economic progress destroyed ecosystems in most of developed countries and countries in transition making huge damage to biodiversity. Along with Aral Sea deltas of big rivers from Yellow in China to Colorado and San Hoakin in USA are subjected to desertification.

Mankind begun to understand, that following short-term benefit can turn against the nature in interest of future generations. But this understanding is not sufficient: rigid ecological water management is necessary combined with deep wish and understanding of all society to follow rules of this management and limit consumption at potential-possible level such a way, in order to keep nature and water sources for coming generations.

One of the most important indicators of water resources management is good combination of water resources and their consumption. Let us look how these two definitions are balanced in the world (fig. 1). I. Nemirovich [1] referring to Enegman and Le Roy determines, that from 133 th. km^3 of rain, snow and ice, coming to the earth as precipitation, 72 th. km^3 evaporate and rest 41 th. km^3 recharge ground waters and are used by mankind (I. Shiklomanov [2] specifies this figure as 42.78 th. km^3). From this amount available for use water resources are determined as 14.0 th. km^3 (Falkenmark gives figure 12.6 th. km3), from which nature needs account for 9.8 th. km^3 and 4.2 th. km^3 remains for mankind (or 700 m^3 per capita annually). According to I. Shiklomanov water diversion is 3 973 km^3. It means that world already consumes about 95 % of water resources!

Let us look at our region. Taking into account ecological requirements level of secure water diversion is determined as 2 200-4 000 m^3 per capita!

Future water supply should take into account a range of destabilizing factors (fig. 2): population growth, economic development, growing pollution, decreasing safe water available, as well as water decrease to climatic changes.

If we remind that there are 20 countries with population 300 mln. possessing 100-1 000 m^3 water per capita annually under similar conditions, it becomes clear, that we can survive and protect the nature if society, politician and, in first turn, we - water servants would be strictly follow this line directed to:

- prevention of unproductive water losses;
- increase of water use productivity;
- keeping water quality;
- permanent following nature requirements to water.

2. Water resources management - what is it?

There is a simplified opinion that water resources management is just water delivery in certain places and certain time and water organizations' main tasks are to obtain more water from parent bodies and more money to maintain staff and structures providing their proper performance.

But modern water management is much more complicated if to take into account tendencies which are originating under impact of external and internal factors mentioned above.

Well, what is the objective of water management in modern understanding?

Water resources management should provide permanent needs of society and nature in water of needed amount and quality in operative, annual, multi-year and prospective aspects.

In other words, water management is permanent keeping balance between resources and water needs. Let us look what does it consist of? In first approximation it is simple (fig. 3), but it is very complicated system (fig. 4). In this complicated system we distinguish very clearly:

- natural water resources (precipitation, surface and ground runoff) as well as return waters originating under human activity impact; these waters can change with climatic changes;
- water requirements over economic sectors with regard to their non-renewable consumption;
- ecological conditions and requirements;
- social environment and economic development;
- finally, the most important component - political environment.

Water is a specific product of management because its penetrating properties make any changes and impact on it spread over all interrelated spheres, oblasts and space (fig. 4).

It is understood, that political, social and ecological environment play important role in widening possibility for more deep and comprehensive involvement of all water resources, improvement of their formation, keeping its quality and, simultaneously, management of water requirements, instead of previous declaration of water requirements, as well as rigid organization of management and distribution of water.

All aspects of complicated interrelations within water system are solved easier if they are considered in close link and combination. Because of that within each country necessity appears in coordination, uniting and linkage of actions related to water resources management. What should be done in order to prevent general conflict between man and nature, indicated in fig. 2?

Apparently need exists in following:

for situation potential assessment	trends and information and analysis
for resources and consumption forecast	information and analysis
for planning measures on achieving potential	technical base
	technical decision
technical level of water productivity	financial resources
for institutional framework of management	legal base
	structural potential
	water pricing, resources and pollution fees
	water users participation
	economic incentives

In general, all these efforts should be coordinated by governmental body within the country and at the basin level within one hydrographic unit. Just similar system exists in Spain since

1916, in France, Holland and many others. It existed in Central Asia since 1928 in Zerafshan basin, but, unfortunately, was not developed and at last turned to administrative structure within an oblast.

3. Hydrological aspects of management

Both theoretically and practically all specialists of water sector understand very clear direct interrelation of all waters within the frame of hydrological cycle within the hydrographical basin on base of laws of balance and mass transfer but little take it into account in their activity, water is permanently recharged, used, move, return and re-used within the hydrographic basin and all this is closely connected.

Each hydrographic basin has main river trunk, its tributaries, supply of dynamic groundwater and formed return waters. Natural water availability depends on precipitation over watershed, evaporation from this area, runoff modulus formation, inflow from snow packs and glaciers melting as well as groundwater seepage to the rivers.

Total water balance is distributed between natural inflows and outflows and those anthropogenic components, which are brought by human. These forms are so different that it is difficult even to list them, but all of them impact connected with them components. Let us try to systematize them:

Changes	Result, consequences
• increase or decrease of forest over watershed	• rise or fall down of groundwater table; • change in annual flow volume and distribution; • increase or reduction of erosion;
• farming in zone of resources formation, including irrigated, expanding	• increase of erosion; • land productivity increase; • runoff turbidity increase; • inflow increase to groundwater and its level downstream;
• increase of water diversion for irrigation and other needs from surface water	• flow reduction downstream points of diversion; • river water quality worsening; • return water formation; • increase of inflow to groundwater and its quality aggravation; • soil quality changes; • inflow to deltas reduction;
• the same from groundwater	• groundwater table fall down; • infiltration increase; • runoff modulus changes; • unsaturated zone and water consumption increase;
• release of polluted water into the rivers	• river water quality worsening;

- dam construction
  - evaporation increase from water surface;
  - stagnation;
  - siltation;
  - river water turbidity reduction;
  - flow regime changes;
  - winter river regime worsening;
  - inflow to groundwater increase;
  - flooding;
  - flash up in canals

But all changes can be regulated if certain criteria of ecohydrological sustainability are developed and followed:

- water and salt exchange between river and watershed and should be minimized;
- water and salt exchange between unsaturated zone and groundwater should aspire to zero;
- total water diversion from the river should not exceed certain limit, within which there is no damage to natural requirements (river deltas, wetlands, etc.).

Following these criteria not only in year of average humidity but for both dry and wet years requires accurate information, forecast and models as well as discipline of management and use within the basin and its parts, that, unfortunately, in our practice is often violated, disbalance and breakage of regularity of water availability occur even under conditions of separate countries.

Natural and anthropogenic uncertainty parameter is one of the reasons, which makes basin's hydrographical management more complicated. There are 3 types of hydrological uncertainties:

- natural flow fluctuations;
- possible errors caused by insufficiency of knowledge, incorrect information or its absence, incorrect models or their absence, inaccurate measurement, incorrect approximation, etc.;
- uncertainty of decisions on river management or in watershed which leads to changes influencing other parts of the basin or river or groundwater (Simonovich, [3]).

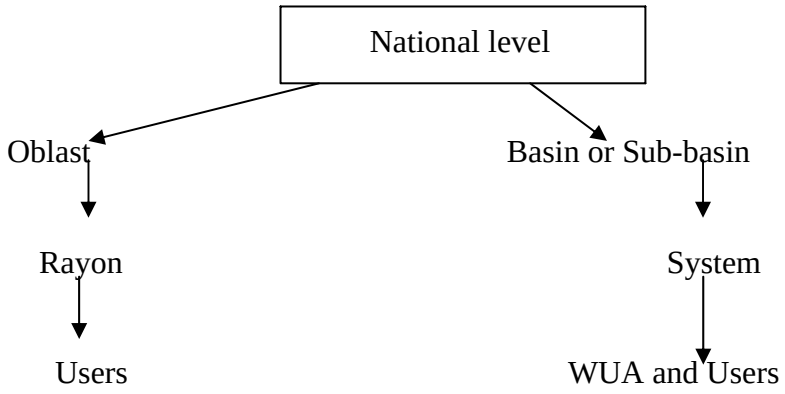
Last time in our region information provision is very weak at the national level. Number of gauging stations on main rivers reduced; information about water quality is almost absent; observations on glaciers in Kyrgyz Republic and Tadjikistan. Station on Fedchenko glacier is destroyed. Information exchange is very weak both between countries and inside them. Hydrometeorological service made its information too expensive that increases uncertainty inforecast. Example of that is dry year 2000, where Hydrometservice did not predict low water and made big damage to agriculture.

4. Political aspects of water resources management

In Constitutions of all countries is declared that providing with water economics and society is obligation of state. It is understandable because water like a food is a vital product for human survival. But states attitude to water is different.

Let us consider some political aspects.

Water resources formation, conservation and development as well as water distribution at inter-provincial level are the functions that should be performed by governmental bodies. But state should fulfill a range of other political functions. Water has several hierarchic levels of management which can be established differently:



The first principle of management is called administrative and it exists inmost of our countries. Main shortage of this principle - boundaries of basins and sub-basins do not coincide with administrative ones. This is reason for impossibility of strict planning and management at the level of water units that breaks regularity in water allocation, awareness reduction and management violation as a reflection of command style.

The second principle - hydrographic, when water resources management is fulfilled over Basins, systems and representatives of oblasts and rayons participate in this management on demographic base. This principle is recognized all over the world. This is one of the main roles of state - to determine corner stone of water resources management at the country level and create possible "favorable political environment" for water resources management (box 1).

State's role is very important in water sector financing. All developed countries subsidy water sector.

Box 1

What comprises definition "favorable political environment" for water resources management

First of all:

- political support and priority for water sector;
- government determines and distributes responsibility for different level of hierarchy in water resources management.

Parliament

- water-ecological legislation and control over its following.

Governments

- definite body responsible for coordination and management of all water related activity at the level of country and control it;
- formulate national water policy;
- set up regulation, rules and relations within the state, providing water laws fulfillment;
- provide selection of management principles by hierarchic structures (administrative and hydrographic);
- nominate and approve bodies responsible for management at other levels of hierarchy;
- establish water resources information base and provide access to it for all bodies concerned;
- provide division of regulation and service functions, support and regulate private sector participation particularly at lower level of hierarchy;
- provide collaboration on transboundary waters;
- provide system of financing from governmental sources and fees for water guaranteeing sustainability of water system functioning;
- support creation of necessary institutional structures in water resources management;
- provide investments in water sector according to national water policy.

There are several examples:

- USA - large system of water resources formation, protection and management are funded by state down to the district level through US Bureau of Reclamation, states services, US Environmental Survey as well as basin inter-state organizations like Tennessee Association; water users unit and irrigation districts, pay for water within their area;
- Canada - the principle is the same differing only by farmers and users participation in payment 25 % of capital investments for water system improvement;
- Holland - all management, development and reconstruction of water sector is performed by governmental bodies down to level of water users in water supply and farming;
- India - all management to level of group and WUA at expense of government, associations received subsidies for new irrigation technique (sprinkler and drip irrigation) and for energy supply.

From our point of view, the same principle should be implemented in our water sector management but using certain financial tools. These tools definition and creation of possibility for water bodies to perform their activity - this is also a part of political line of appropriate "favorable political environment" creation for successful water resources management (box 2).

Linkage of hydrological and political aspects of management is possible only by means of "Integrated system of water resources management".

It is worth to note that in USSR this method called "Integrated method of water resources development for irrigation" was successfully developed and applied under large massives of irrigated lands in Golodnaya Steppe, Karshy, Kzylkum, Asht, Kzylkara Steppe, Karakum canal and to irrigation massives in Central Asia.

Unfortunately neglecting by politicians this method maintenance requiring additional investments, leads to growing losses of land productivity that is happened in Golodnaya Steppe, Arys-Turkmen complex and others.

Integrated water resources management (IWRM) is formed as a process promoting coordinated water and related resources development and management with purpose to maximize economic and social wellbeing of society without damage to living ecosystems (Torkil Jonch Clansen 4). Interrelations of all waters, outlined in section 3, claim for integration.

Integration supposes two basic categories of linkage - natural systems, which are critical indicator of water resources availability and quality, and social system, which determines share of use, water disposal system, protection from pollution and social sustainability worsening. IWRM supposes linkage between and within these categories taking into account temporal and spatial fluctuations. Transformation of water management into public matter with water users participation, which differs from specialized close water activity, distinguishes IWRM from traditional fragmental approach.

Use of IWRM approaches assists water managers to see how public opinion influences on water demand and how to change water management for management promoting water saving (box 3).

Box 3

Interdependence calls to unity

IWRM means associations.

Associations in NATURAL SYSTEMS:

- between land and water use
- between surface and ground waters
- between upstream and downstream
- between fresh water systems and maritime systems
- between nature and mankind

Associations in natural systems management - in HUMAN SYSTEMS:

- main water use in national economics
- provision of coordination on between sectors
- provision of partnership between public and private sectors of management
- involvement of everybody in water resources management

Water is a matter of everybody

IWRM does not permit to mankind to imagine its activity separately from environment?

When we analyze human activity or services system, practically all aspects of integration require understanding of environment, its possibilities, vulnerability and limits. Perfect integration is not realistic. But under appropriate understanding of natural system as a starting point we can undertake measures on support of integration approach to decision-making on water resources management at all levels - from individual farm to international river basin.

One of examples - economic purposefulness in water resources management. This purposefulness means 3 aspects: aspiration to governmental policy, financial priorities and planning, which takes into account all difficulties of water resources development; risks related to water and its use; encouraging private sector to make correct technological, productive and consumable choice based on real water value, providing possibilities and mechanism of participation of all parties concerned in decision making on water resources distribution, conflicts resolution, etc.

National power and industrial policy can influence on water resources and vice versa. That is why these sectors development should be evaluated from point of view of its influence on water resources and environment. This is not simple task as it seams. IWRM should comprise procedures for cross-sectoral information exchange and coordination as well as technique of assessment of separate projects impact on water resources and society as a whole.

Integration of governmental policy influencing on private sector in order to make reasonable decision on investments and involving all parties concerned in the process of planning and decision-making is difficult to realize. How governments can achieve it?

Integration is an art and science of mixing in needed proportions different aspects in one working unit. But it is known that integration itself can hot guarantee development of the best strategies, plans and management schemes like mixing to poor ingredients does not give good dish.

Following IWRM private organizations and governmental agencies can be guided by several criteria, which take into account social, economic and natural conditions. The first is equity. All people should have access to safe water of needed amount and quality to support their life. The second is economic effectiveness. Water resources must be operated with maximum effectiveness due to their limitation and vulnerability and the last but not least this is ecological sustainability. Water resources should be exploited such a way that to support living system providing it for next generations.

If these values are guiding, what specific measures should be undertaking by IWRM?

Simultaneous development and strengthening of 3 elements - environment, institutional roles and practical tools of management is necessary. Favorable environment includes national, provincial and local policy - and legal base. Latter set up rules of game, which allow to par-

ticipants to play their roles. "Rules" should promote participation of all users bottom top and top-bottom; starting from national level and ending by village and municipality or from level of watershed to basin level.

Complementary to governmental agencies private ones and water users associations should be involved which will provide participation of all. All sectors should play their role in providing access to water bringing in equilibrium in development, conservation and management of water as an economic and social good.

Role of government in environment protection should be role of mediator, initiator and conductor but not a manager from top to bottom. Formulation of national water policy, creation of legal base of water resources management, separation of regulation from service functions, private sector involvement are very important aspects.

As to intuitional roles they should be used in sphere of human and financial resources, traditional norms development and to determine acceptable forms.

There are no stereotypes for all cases. Nevertheless, institutional development is very important for formulation and implementation of IWRM policy. Clear separation of responsibilities between actors, appropriate mechanisms of coordination filling juridical gaps and determining authorities responsibility, are parts of institutional development.

And, at last, "guidebook" on management with set of practical tools should be developed in order to help water managers. IWRM task is selection, adaptation and use of exact set of these tools for given situation. In this connection 5 categories arise:

- Water resources assessment. This includes network for data collection and technique of ecological impact assessment and tools to manage risks in case of draught, flood, etc.
- Communication and information. Awareness increase is mighty tool for management improvement, especially if it is accompanied by possibility of informed participation of water users.
- Tools for water allocation and conflict resolution. Water allocation should be performed by means of combination of regulatory and market tools based on cost-benefit analysis. Tools for conflict resolution can give guide for problems solution arisen between upstream and downstream, between economic sectors and between man and nature.
- Regulatory instrument include direct control as, for example, land use plans and benefit regulation as well as economic tools (prices, tariffs, subsidies, etc.) and self-regulation stimulation. For instance, by means of marking technology, new and traditional, technologies can provide progress in water and other sectors, which do not influence on water supply and demand.

Role of different factors in IWRM establishing can be analyzed in detail with participation of big governmental and water organizations role (box 4).

5. Transboundary water resources

Independence of natural basin boundaries from administrative ones created problem of frontier, international or transboundary waters. Though river basins and groundwater basins do not have administrative limitations and do not require visa regime but can not be ignored because legislation of each country defines its water policy, standards and different approaches even to one river.

According to UN Center of Natural Resources, Power and Transport there are 214international river and lake basins over 44 countries.

Table 1

Distribution of international river and lake basins between the regions

Region	Number
Africa	57
Asia	40
Europe	48
North and Central America	33
South America	36

Main definition "transboundary waters", like and legal provision in international water right, is insufficiently clear. Moreover, changes have being occurred between Helsinki Rules (1996) and UN Convention (1992) and Convention on non-navigation water use of 1997 did not help to Central Asian countries in clarification of international water right. It became even more uncertain.

Conventions and Helsinki Rules differently interpreted field of joint use, protection and management of water resources. Moreover, in Convention of 1992 definition of international water courses less clear than for transboundary waters. Our definition of transboundary waters was formulated by all members of regional group of "Main provisions of water resources management strategy in the Aral Sea basin":

Transboundary waters include:

- surface waters - river flow, their tributaries, which are formed and have transboundary position, i. e. which mark and cross the boundaries between two or more states as well as water resources of artificial water bodies formed in result of human involvement;
- ground waters located on the territory of two or more states or connected with transboundary surface waters;
- return waters changing quality and/or quantity of transboundary waters or formed on the territory of two or more states.

It's understood, that transboundary water use creates difficulties because degree of uncertainty increases for all above directions:

- uncertainty of water forecast and account;
- uncertainty of information;
- certainty of decision and its implementation.

For Central Asia transboundary water resources constitute significant volume, i. e. 70 % of all waters is transboundary.

Table 2

Average multiyear resources of surface waters of transboundary rivers in the Aral Sea basin, km^3/year

State	River basin				Totally formed in basin
	SyrDarya		AmuDarya		
	is formed	available for use*	formed	available for use*	
Kazakhstan	0.749	8.2	0	0	0.749
Kyrgyzstan	21.391	0.2	1.5	0.3	22.891
Tadjikistan	0.7	2	42.6	7.2	43.3
Turkmenistan	0	0	1.549	22	1.549
Uzbekistan	2.8	11	1.2	22	4
Afghanistan and Iran	0	0	8.05	2.5**	8.05
Total	25.64	22	54.899	54	80.539
*) ICWC agreed intake limit **) According to Scheme of integrated AmuDarya water resources use (1984)					

Under these conditions strict agreement of transboundary resources management can help in sustainable water supply of the country and prevention of ecological damage caused by up-stream country. There are ranges of principal provisions in transboundary water resources, which is necessary to quantity:

- where are boundaries between transboundary and national waters?
- how to unite principles of equal right on transboundary waters use and sovereign right of each country to use its water resources on its own?
- how to understand principles of equal and reasonable transboundary water use of each conjuncted country? What are criteria?
- what is responsibility of the country for international rules violation in transboundary water resources use?

Through Conventions of 1992 and 1997 do not
Give clear response on these questions, let us try to find principal approaches:

1. Naturally, that any water diversion within own territory, particularly in zone of formation, will lead to changes in main rivers and tributaries' regime as well as to quality aggravation. Nevertheless, principles 21 and 22 of UN Stockholm Conference of 1972 can be taken too benchmark.

"States ... have sovereign right to exploitate own resources (of water) according to their ecological policy and responsibility, being assured that this activity will not cause damage to environment of other states outside of their jurisdiction" (Article 21).

"States will collaborate in the future in development of international water right regarding compensation for damage due to pollution and others caused by activity within jurisdiction or control to those states and territories located outside their jurisdiction".

In March 1977 UN Conference on water resources in Mor del Plato added:

"Regarding use, management and development of separated water resources national politicians should take into account right of each state to use resources in equal right according to requirements of solidarity and collaboration".

From these provisions conclusion can be done: national water on transboundary resources can be used each country in such a way that, it would not cause any damage to reparian countries' right for equal and equitable use and to their environment. Degree of possible violation of transboundary waters on the border with national ones is determined by agreement between countries.

This provision is very important for our region where within the limits of national waters cascade structures are located (Togtogul on Naryn; Nurek on Vakhsh), which management during last years dramatically changed river's natural regime and sometimes caused significant ecological and economic damage to the countries.

Necessity for conservation of the rivers as natural objects should be taken for a base, and extreme river discharges opposite in sign should be taken for criterion of maximum (or minimum) release parameter.

2. Next important aspect – what are water allocation criteria. Neither previous experience and international treaties analysis, not previously mentioned international laws can not be used by new independent states as a guide for these criteria development. This has place in many countries, particularly located upstream, when they start to interpret their right on transboundary water use within own territory as a right to use and execute any regimes of release. Two provisions should be separated: right to use own limits according to volumes (or even requirements for volume increase) from right to form flow regime by their own. What should be taken as a base? We think that international lawyers and specialists in field of water resources should be involved in integrated water management in order to explain how to combine main rules of international water right:

- all countries' right on equitable and reasonable water use with regard for previous use;

- rule “do not harm”;
- rule “pollutant pays”.

From out point of view, water allocation criteria should take into account three major principles:

- water consumption per capita should be oriented on “technologically achieved water volume which is economically profitable”. Our assessment, based on world experience and advanced methods of water use analysis, shows that at the moment it can constitute approximately not more than 1 500 m^3 per capita per year and in the future - 1 000 m^3;
- historical rights of population for water supply, not only for consumption, but as well as for environment needs;
- current priority of all reparian countries.

Regarding principle of equal and reasonable transboundary water resources use of each reparian country, it seems expedient to accept necessity for each country at least to cover its needs in water on the technically grounded level (or potential) specific water consumption for those crops and water consumers which exist (or reasonably planned), but according to currently achievable level of water use.

3. Principle of “equitable and reasonable water use” should be combined with principle “do not harm”: if such use already caused damage, its further interpretation will only aggravate situation. What should be done? From our point of view, we should consider principle of limit on sustainable ecologically safe water diversion as a main principle – this is about 76 km^3 for our region. Apparently, it is achievable but not at once. At present time Aral Sea basin population accounts for 38 mln., i. e. 2 000 m^3/capita/year. Let us set up limit for each country taking into account that countries with similar conditions should follow the same limit. In this connection we do not consider Israel, Saudi Arabia or Jordan with 200-500 m^3/capita, but Egypt with 900 m^3/capita/year, with similar level of water use and national income. I think, nobody can reach it just now. This requires establishing fund of ecological security of the basin within IFAS. Everybody, who violates limit, should pay to IFAS sum of damage caused and should follow this limit! Similar approach will permit to unite all three above-mentioned provisions of water right. Besides, this approach will unite institutional, legal and financial aspects of water management on transboundary rivers and give possibility to organize joint investment in water resources development. We understand, that this approach introduction is a very difficult task, but public awareness increase will help in it.

6. Problems of transboundary water courses and ways to overcome

Taking into account that IWRM for transboundary waters becomes more complicated, it is necessary to draw your attention to issues of sustainable development under conditions of bilateral and multilateral treaties on transboundary waters.

1. Coordination of all countries activities on transboundary water resources should be understood necessity for all reparian countries. The most convenient form of this coordination is joint organizations in form of Commissions, Committees, BWOs, etc.

Obligatory condition of their successful activity is a set of basic principles:

- equality of representativeness;
- consensus;
- transparency;
- treaties;
- parity;
- equality in participation.

2. Unity of technical, methodological and modeling approaches to management by means of special working groups creation on each direction with operative single technical agreed policy and planning principles.

3. Creation of basin, open for all, systems of information exchange creation of open permanent exchange by both meteorological and water resources use efficiency data for transboundary resources.

4. Establishing joint financial mechanism by means of special agreements between countries on sources of funding:

- operation
- development
- maintenance
- ecological situation improvement
- water saving, etc.

5. Distribution of cost and benefit gained from transboundary resources use. Upstream countries bear expenses to combat floods, erosion, and observation on drinking wells and glaciers. On the other hand, downstream countries are forced to protect their deltas, embarments. All this should be compared with effects gained on transboundary waters and using different methods to be cited to agreed decision.

Separate question – financing joint projects and maintenance of the regional basin organizations.

Underlining polyhedrality of management in general and, particularly on transboundary sources, we would like to ground necessity of very careful decision making in the river basins in order only agreed and reasonable collaboration would manage actions of each decision – maker.