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V.A.Dukhovny

Water and globalization: case-study of Central Asia

The present-day world is enmeshed in global nets more than ever in the world history. The information space has already been formed according to joint rules of Internet and electronic messaging and ensures instantaneous communication and momentary dissemination of any news thus bringing about apparent unity of the world. At the same time, many other (financial, trade, economic, legal, and institutional) networks, each having its own existential and game rules, being in motion and interacting with each other, represent nothing else but a phenomenon of globalization, which, at least, represents one of fundamental of the world's present state, its past transformations, and future prospects unless rule over the world. Obviously, water sector as one of economic branches and, at the same time, of environmental management has been occupied by this process since 50s in the last century. Globalization investigators, including both supporters and opponents, highlight its several aspects:

- political, economic, technological, and environmental;
- cultural, ideological, and even religious ones, though not particularly pronounced but currently, in the period of information and communication revolution, have especially strong influence.

Each of globalization aspects produced its effect on water sector in countries, regions, and in the world as a whole. Undoubtedly, these aspects play different roles at each development stages, as well as degrees to which globalization penetrates at regional and national levels are different. This depends on degree of anti-effect of the governance and its opposition to such phenomena. Water sector became involved in all the aspects of globalization even in the periods and in those countries where water sector was developed independently within national boundaries. Dynamics of the processes is quite representative in Central Asia, which despite being behind the iron curtain for a long time, could not withstand the world trends and tendencies. The effect of globalization is so faceted and multifactor that it is necessary to distinguish between positive and negative sides of this process. An attempt to analyze the influence of "globalism" was made below using water sector in Central Asia as an example.

Globalization – first, showed advantages

Globalization, as a process of propagating certain influence on a global scale, became actually apparent in the water sector in the 1950s. This process at its initial stage was to some extent connected with development of world professional organizations pertinent to water, as well as activities in addressing water issues carried out by UN agencies, which also emerged at that period: the International Commission on Irrigation and Drainage (ICID) and International Association of Hydrological Research (IAHR) established a little later. They were the pioneers that as early as the 1950s undertook great efforts establishing national committees of these organizations in many countries - both developed and developing ones - and creating their common forum for experience, knowledge and information exchange. All of them significantly promoted cross-penetration of water management approaches practiced by developed countries into developing countries and experience of former "socialist states" – into "capitalist states" and vice versa. Of great importance was the fact that it had been this very activity, which had contributed not only to scientific and professional capacity building, "know-how" exchange, but to forming human links too. Subsequently, these relations exerted considerable impact on emergence

of world-wide water professional community by the end of the 20th century. And nowadays, we have been witnessing rapid upsurge of diverse activities launched by the international water community. Activities carried out by interstate organizations of the UN system played the role of no small importance in disseminating "know-how" and in the first line this assessment applies to the UNESCO with its water program, in which a great number of participants from various countries on both side of the "iron curtain", as well as from developing countries, had been involved. The same applies to regional commissions of the UN (the ESCAP, ECCLAC, ECA, etc.) and associated international scientific centers specializing in water-related issues such as the JASSA, CGIAR, etc. At that time representatives of water science and practice of the former Soviet Union very actively participated in world-wide water forums. Suffice it to say that the Minister of water management of the USSR E.E. Alekseevsky was the President of ICID, outstanding soviet scientists A.N. Askochensky, V.V. Poslavsky, K.K. Shhubladze, B.G. Shtepa used to be vice-presidents of this organization. The IX World Congress of ICID was successfully held in Moscow in 1975, and the first Afro-Asian Conference of this organization was held in Tashkent in 1976. These events promoted attention to significant success in the fields of developing land reclamation and water management in the former USSR, winning world-wide prestige for soviet specialists in addressing the issues of water management and concurrently involving them in the process of improving principles and approaches to water management on a global scale. Our specialists had drawn international information and experience from abroad on such advanced methods of water application as drip irrigation, some kinds of sprinkling, on approaches to developing automation, especially hydraulic automation. At the same time, the soviet scientists had made great contribution to the world development through its school of hydrology, especially as it applies to assessment of water resources, maintaining records of their fluctuations and plotting hydrographs of the flow under statistical uncertainty, construction of high dams, some of which (Nurek, Toktogul, Bratsk and other dams) had no equals in dimensions in the world. Great efforts had been given to elaborating the so called "complex methods" of new lands development and irrigation in desert areas on the basis of experience obtained in the course of implementing large scale development projects in desert areas of Central Asia, Kazakhstan, reclamation of formerly abandoned lands in Azerbaijan, Volga region, Kalmykya and other territories of our former Motherland. All these, while adding authority to domestic science and practice and prestige to our specialists, helped at the same time enhancing external commercial relations including contract projects implemented by us within agreements concluded with various countries as well as contractual deliveries of equipment and technologies from abroad to us. Business activity in the field of water management had spread not only in countries of the so called "social camp" (Vietnam, North Korea), but in the third world countries too such as Egypt, Syria, Yemen, Mozambique, Iraq, etc. Creation of the Aswan High Dam on the Nile River was an undoubted great success of soviet hydro engineering theory and practice; this project had not only large technical, but also political significance, demonstrating to the whole world technological and organizational potential of domestic hydroenergetics. Activity boom in the water sector in the 1960s-80s resulted in elaboration of a new water management and land reclamation concept, which had turned irrigation, drainage and water management into recognized methods and means to eradicate and reduce poverty, famine and solve many social problems of the modern world. Noteworthy in this connection is the comment in the book for visitors made by the Prime-Minister of Turkey Suleiman Demirel during his visit to a site of newly integrated lands in the Hunger Steppe in 1967: "Rulers, who are willing to provide their people with bread, jobs and opportunities of happy development, should come here and make use of this wonderful experience of social reconstruction through applying it in own countries".

The 1970s-80s marked a new stage in propagation of global influence on water development processes. It was during these years that humanity regained, so to say, discernment - progressive forces of the world had realized that continuation of unrestrained natural resources use by Man without care for limitation and ecological requirements may lead not only to zonal disasters but their transition to a global crisis. Though this movement initially failed to gain world-wide momentum, nevertheless, it initiated formation of two important factors of global water policy. The first factor is framing of certain world principles that go back to Brutland's call: "Man! You have not inherited nature from your ancestors, but borrowed it from your descendants". This call has won the world-wide recognition and promoted creating prestige for those countries, which started following the principles of nature conservation in its original condition for future generations. Though the prestige effect (being of great significance for political leaders and public movements, especially in developed countries) is not a key factor, which can restrain the world from destructive drive towards consumption of nature resources, at any case is able to exert immense moral and ever-growing political influence.
Under the influence of activities of the Club of Rome (Forester et al.) in 70s and the Systems Research Institute in Vienna, the Soviet Union formed opinion on a need for environmental dimension in all large-scale public actions and programs. The State Committee for Nature Conservation was established, a few government panels were organized for the Aral Sea and the Caspian Sea problems, etc. The «green movement» was supported by the Government and resulted in a number of governmental rules and decrees. In particular, one document was the Resolution on Socio-Economic and Environmental Improvement in the Aral Sea Basin that laid the basis for future joint water resources management in the basin by establishing Basin Water Organizations for management of the Amudarya River and the Syrdarya River (BWO «Amudarya» and BWO «Syrdarya»).
Water Codes of USSR and of respective Republics reflected largely new ideas and corresponded, in many respects, to new world tendencies. On the other hand, the Soviet management technique, being only formally democratic, did not allow proper involvement of stakeholders and the general public in elaboration of the mechanism enabling public participation in and control over implementation of those quite appropriate but left mainly on paper decisions.
The second factor is emergence of documents that form the legal basis for natural resources use and water resources use at both international and national levels. The «Helsinki Rules», then, _fter a long-standing campaign, the Ramsar Convention, Convention on Combating Desertification, European Convention of 1992, UN Convention on International Watercourses of 1997. It is not surprisingly that Central-Asian countries just after gaining the independence were forced to set up their legislation and interrelations with neighbors on base of old traditions but within UN framework. Though issues of legal force and jurisdiction are very vague in these documents, but nevertheless they give some possibility to conceive the essence of purposeful political movement of international community towards equitable and reasonable water resources use, as well as adherence to the "do not pollute, and the polluter pays" principle.
While reviewing the first phase of globalization in water sector in Central Asia, as well as all over the whole former Soviet area, one can note the positive effect of globalization as reflected on legal, scientific, and technological progress, on establishment of cultural exchange between the countries that previously were isolated from each other, and on formation of additional values through joint actions. Moreover, the foundation was laid for penetration of water technologies in both directions on commercial basis.

Period of independence – new momentum to globalization
Declaration of independence by Central Asian countries in September-

October 1991 posed a problem to new Governments – where to go, which way to choose for economic and political development. Naturally, water sector has found itself on road fork due to close relation to public priorities and directions, particularly in light of agricultural reforms. Taking into account that the world did not see the examples of shifting from underdeveloped socialism to capitalism and to free market, the governments of five Republics tried to find a model to emulate among the model capitalistic economies.

The world opened up before Central Asia, and Central Asia opened up before the world. This openness was two-fold: groups of no political nature, mostly of water professional and, in general, of highly-qualified unbiased western professionals were surprised by realities, scientific and technological capacities that we had and, at the same time, they critically tried to review our shortcomings and mistakes.

Just because of such integration, the understanding was developed of community and difference of our technical approaches, our shortcomings and ways to overcome them. Collaboration was gradually established with leading specialists that facilitated joint elaboration of a number of program documents such as "The Aral Sea Basin Program _ 1» (1994), «Key provisions of the Aral Sea basin water strategy» (1996), programs «WARMAP» (Water Resource Management in Aral Sea Basin, 1995) and others. One cannot but recognize such outstanding specialists as Guy le Moigne, Janusz Kindler, Bob Rangli, Arrigo di Carlo, Michael Armitage, Jutzchak Alster, Joop de Schutter and many others who made great contribution to the collaboration.

Collaboration of these specialists together with regional water institutions contributed to development of new approaches based on up-to-date technologies, information technique, computer application and so on. Moreover, western work style with stakeholder involvement has become quite widespread. These two factors promoted public understanding of the importance of environmental demand and conservation. Thus, in 1993, in contrast to ICWC, IFAS established a Commission for Sustainable Development, which, however, showed poor realization of its activities. But "nature abhors a vacuum", and thanks to Kazakh specialists, a Regional Environmental Center was established and succeeded in boosting relevant activity on a regional scale.

Water institutions were joined by cohort of environmental partners. Finally, this has led to implementation of pioneer environmental projects (wetland restoration in Sudochie lake, biodiversity rehabilitation in Amudarya and Syrdarya deltas, etc.).

Another side of openness is transformation of the region into a scene of game of politics. Their main tools, strangely enough, were not the diplomatic activity of newly established embassies and missions but activity of international financial institutes that skillfully combined their financial facilities with certain political conditions and recommendations. The political orientation of "Greeks giving gifts" had several official aims: prove disastrous nature and inconsistence of socialistic system and finally undermine credit to its ability; impose, under the pretence of democracy and progress, their vision of the future regional development. However, here one aspect was hidden: transformation of the region from raw materials-producing appendage of the Soviet monopoly into the market for their competing economies and the source, first of all, of fuel and energy resources. Central Asia had quite powerful production, agricultural, and human potentials. In order to achieve their aims, these potentials should be destroyed.

For that quite favorable local conditions were formed – break-off of economic relations with Russia, loss of federal subsidies, and, at the start, inability of Central Asian national governments to employ their potentials for generation of own financial resources for government regulation and support of available potential. These conditions have led to certain economic recession, setback in agricultural production, disruption of scientific potential, huge brain draining, and deterioration of educational attainment.

What the region's countries should be oriented at? The requirement of all international financial institutions is privatization. Self-sufficiency as a prerequisite of economic stability and as a new form of the slogan "Rescue of drowning man is in his own hands" has led to industrial retardation at first, and then to liquidation and stealing of the huge stock. For instance, in Uzbekistan, the stock of water sector was comprised of more than 10 million m^3 of reinforced concrete per year, 12 thousand km of drainage ceramic pipes, 15 thousand tons of polyethylene goods, hundreds excavators, levelers, drainage machines, pumps and pumping units, devices, facilities, etc. Since 1991 to 1996, this huge capacity was destroyed, and the privatized rest of the stock accounted for less than 10 % of former one. Moreover, many items, such as drainage pipes and machinery were completely liquidated and stolen. The states were not able, did not understand, and could not assess such destructive process, which, finally, led to loss of economic potential in the whole water sector and, as a consequence, in irrigated agriculture. If previously, preventive flushing was undertaken annually in 2000 km of subsurface drains, now it was reduced to 200 km. The only thing to do is just to be surprised at such conditions where 60-70% of the length of subsurface drain remained operational, though the lifetime is more than 30 years, of which the last 15 years showed minor maintenance and preventive repair (10 times lower than required). Orientation towards complete privatization of irrigated agriculture and denial of cooperation forms were more fatal. The regional irrigated agriculture adapted to larger mechanized forms of production literally became degraded and lost considerable value of its water and land productivities.

It is interesting that though western suppliers of the world grain such as USA, Canada, and China, as well as of cotton such as USA and China directed their attention to large-scale farming and high level of mechanization, recommendations for our region were aimed at small-scale privatization. As a result, the mean plot of arable land was reduced to 1 ha in Kyrgyzstan, 4-6 ha in Kazakhstan, and 10-15 ha in Uzbekistan. Practical high-efficiency production of such crops as cotton, wheat, and corn is impossible under given conditions. Thus, in years of time, an opposite phenomenon is observed: consolidation of plots. For example, by 2005 in Southern Kazakhstan province, the mean area of land plot increased to 18 – 20 ha through subtenancy, transfer of title to tenancy, etc.

Besides, Japanese approach, which is the most appropriate for our countries and oriented towards small-scale farming, while combining cooperative and regional forms of ownership and responsibility was disregarded and not disseminated in our region.

Decrease in irrigated agriculture productivity under transition from customary mode of communal and team work fell at the same with drop in agricultural production prices (Figure 1).

Fig. 1 Change in agricultural production prices, 1961-2002

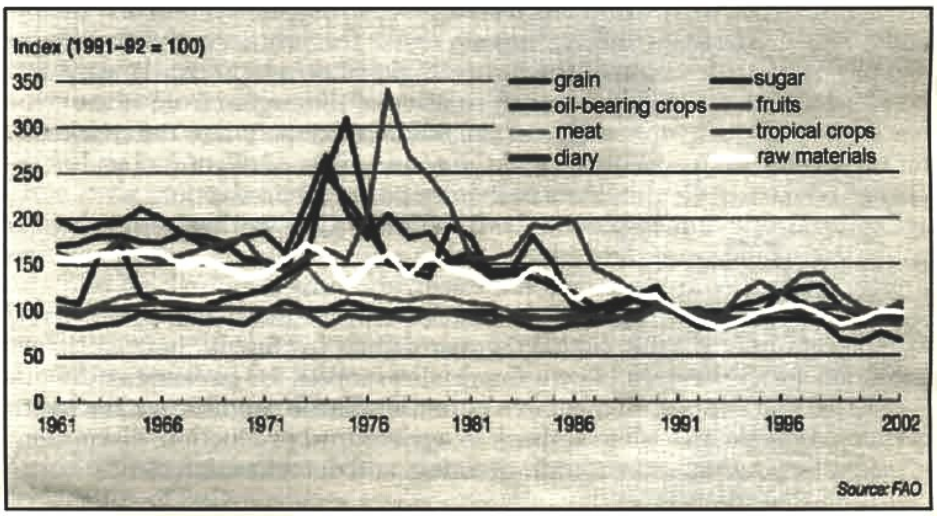


Figure 1 shows that over the last 15 years, grain prices decreased twice, cotton – 1.5 times, rice – more than two-fold. This has led to abrupt drop in profitability of irrigated land in the region. Data of WUFMAS program and WB A-2 program in Table 1 show that the mean profitability of irrigated land decreased from 300 … 980 US$/ha in 1993 … 95 to 150 … 580 US$/ha in 2002.

Table 1: Comparative data on level net productivity of irrigation lands in Central Asia

	Productivity	
	1996	*2001*
Kazakhstan	982	356,0
Kyrgyzstan	759,9	578,9
Tajikistan	719,2	334,6
Turkmenistan	483,0	296,0
Uzbekistan	250,7	151,4

At the same time, calls for the full payment for water-supply services and the transfer of responsibility for irrigation and drainage maintenance to farmers have caused that farmers and water management institutions were not able to maintain required operability of irrigation and drainage systems, particularly of sprinklers and vertical drainage. As a consequence, more irrigated lands were abandoned (about 1.0 Mha in Kazakhstan and 260 thousand ha in Kyrgyzstan).
The case of Makhtaaral district in Southern Kazakhstan province is typical. Here, given the efficiently operating vertical drainage in 1980 – 99, raw-cotton yields averaged 3,5 t/ha. Over 1991 – 97, drainage fell out in an area of 90 thousand ha because of lack of control and maintenance by operational services, with following spread of salinization.
Though the Kazakh Government took a loan from the Asian Development Bank and the World Bank for drainage system rehabilitation in approximately 35 thousand ha, the drainage system was constructed but since 2003, it is not operable due to lack of maintenance as farmer's net income of 250 – 300 US$/ha cannot cover the required maintenance costs of 60-80 US$/ha. As a result, cotton yields have been less than half of previously achieved level at 1,7 – 1,8 t/ha for almost decade.
Water sector faces the same degradation. Budget deficit and tendency to fill it through fees from water users have led to situation when over the last 15 years financing of main hydraulic networks and structures was reduced several times – to 14-15 US$/ha against previous 80 – 120 US$/ha, with larger share of this financing covering even more expensive electric energy.
Thus, in economic terms, raised regional openness to the world tendencies had negative effect and even, to a certain decree, destructed sustainability of water sector and irrigated agriculture in general.
At the same time, it would be incorrect but to mention the great positive effect of increased attention to water over the last 10-15 years. Undoubtedly, this could not but have an effect on Central Asia.

Water is a definite subject of world attention.
The transformation caused by propagation of understanding that the world water deficit and its zonal manifestations are growing have stimulated active establishment of international organizations and initiatives, involving a lot of various governmental, non-governmental organizations, decision-makers, intellectuals, water professionals in the process of all mankind development with its water-intellectual, water-ethical, informational and technological dimensions. The World Water Council, four World Water Forums, Global Water Partnership, Kyoto Protocol, "Water Vision" Report at the Second World Water Forum in Hague and Bonn Conference resolution played an immense role in attracting attention of policy makers (and not only water management

and nature protection agencies) to imminent water resources depletion and a necessity for radical reorientation of the water sector from meeting water demands to managing water demands and achieving potential productivity of water use in all sectors and industries while reducing unproductive water losses. Dissemination of advanced approaches to addressing water issues and methods of management, their popularization facilitated practical steps along these lines in many countries. At that, of great importance is understanding that possibility to meet the need of society (under specific water consumption of 250 – 450 m3/year/per capita even in arid climate of Jordan and Israel) is based not only on modern technical networks and decisions but also on very strict and principal policies pursued by these states, which stimulate water saving and conservation techniques, support pertinent financial and legislative systems of modern water use and management, and demonstrate public participation and involvement in management and maintenance of the water sector. Of no less importance are efforts undertaken by the ADB, Swiss Agency of International Development and Cooperation, Global Water Partnership, European Union with its Water Initiative in order to demonstrate advantages of Integrated Water Resources Management (IWRM). Instructive examples have been shown by basin management system in France, water confederations in Spain that have already been in existence for 70 years, water communes in Italy – all of them combine basin hydrographic management with active participation of water users and their representatives gave first shoots of such transition.

Japanese experience is worthy of praise, in particular, the way this country manages to harmonize interests of nature and society under immense density of population. The appropriate attention should be given to similar careful and respectful attitude to water demonstrated in Holland, Canada, Switzerland. Appropriate activities should be undertaken by developed countries and countries with transitional economy in order to organize the process of following these and other best examples, and what is essential - to make use of the instruments of rational natural resources use.

International financial organizations – their role in globalization

Positive contributions made by the World Bank and other organizations of IFI system were apparent at the first stage of transition from the former soviet system to market relations, when highly qualified professionals from these organizations selflessly and driven by high human aspirations tried to render assistance to local specialist in coping with rules and regulations of these institutions permitted now, after 10 years, to introduce certain advanced technologies, equipment, computerization, informatics and sophisticated methodologies.

After 15 years of donor involvement, water and environmental bodies of Central Asia understood differences in approaches of various donors in their collaboration with partners.

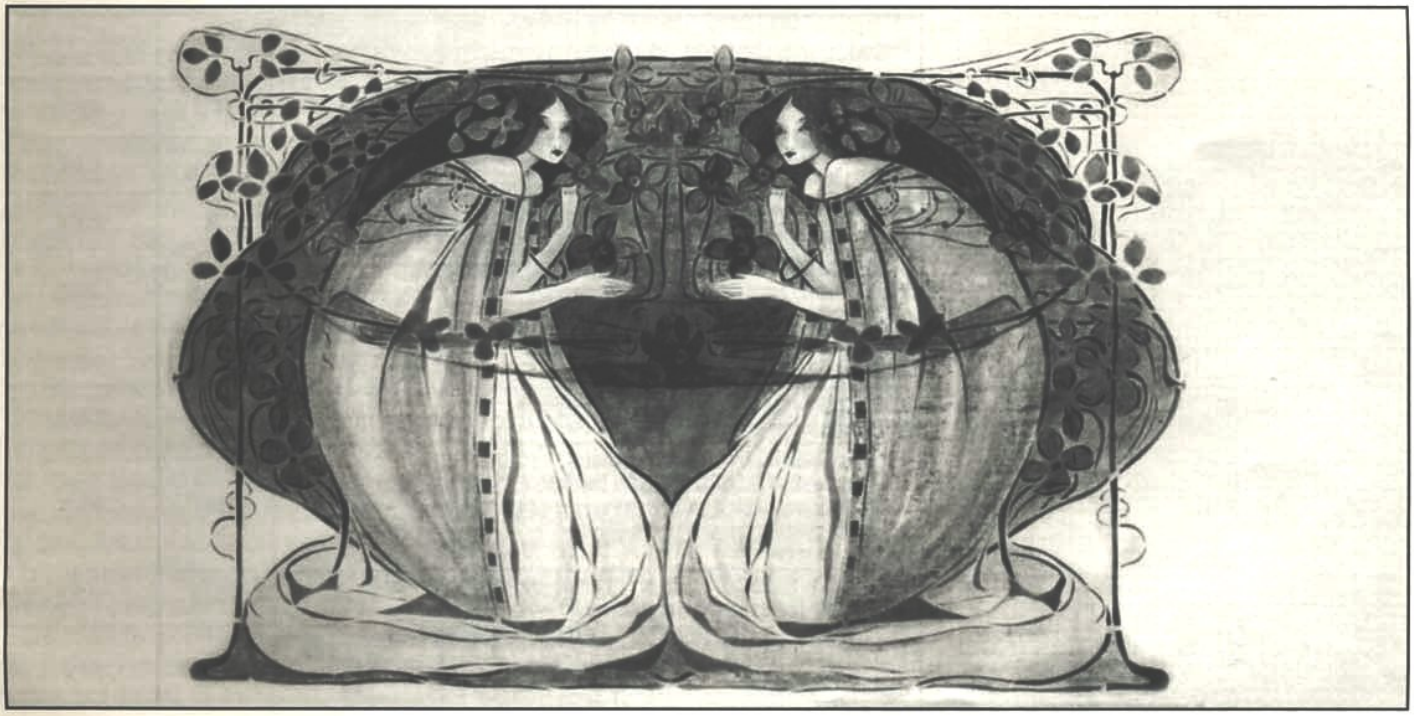
A range of donors supports local beneficiaries in order to create opportunity of self-expressing, sustainability, democratic approaches to solution of their own issues firstly under donors' support and then under their monitoring and participation. They provoke support of strategic approaches on long-tem basis, training of local specialists in advanced methods and practice, preparation of own professionals and their penetration in western "approaches" as well as creation of own ones adopted to new conditions. For example, project "IWRM-Ferghana" implemented by SIC ICWC together with IWMI under SDC (Switzerland) support, automation of structures and canals inn Syrdarya River, ICWC Information Exchange project, ICWC Training Centre activity under CIDA, McGill University support, etc. Such projects lay strong foundation of survival and effective functioning; here donors act in interests of local needs and try to satisfy priority and tasks put by beneficiaries without any political, economic and other conditions under full trust during project implementation stage. Local specialists are

considered as equal partners and executives. Such donors are Switzerland, Canada, the Netherlands, NATO program "Science for peace", ADB, EU program FP-5, FP-6, INTAS. Another group of donors imposes their priorities over beneficiaries, doesn't trust local specialists, delays with funds allocation during long time and puts conditions under which 70-80% of donation returns to donors themselves to pay their consultants, equipment, etc. Moreover, such projects usually are not oriented to final results – fact of funds allocation is most important but not its effectiveness.

It is necessary to consider separately collaboration with the World Bank in the Aral Sea issues. World Bank is based on complicated bureaucratic system where decision on selection, preparation, approval and acceptance of project through all Bank officials takes several years even for objects, which are in principle supported and low-cost. Strategic project "Improvement of water resources and environment use in the Aral Sea basin", 12.2 million USD of total cost uniting five Central-Asian countries funded by GEF has been prepared within 4 years. Project has been completed in 2003, Terms of Reference is not fulfilled but money is spent and all are satisfied – consulting company obtained money, the World Bank closed project, only the region did not receive strategy, which was expected.

Meanwhile, at the first stage of ICWC and WB cooperation, work was well-organized when "Main provisions of regional water strategy for the region", as a base of this project, was implemented by local specialists with their equal participation and one moderator from the World Bank (prof.J.Kindler). But further the World Bank gave local specialists (not institutions) the role of assistants making "black" job and obtaining salary tens time less compared with foreign specialists. In result of limitations in financial capacity, imposed on borrowers and grant-givers, local organizations can't independently take part in bidding and competitions that led to destruction of research and design institutes.

One example of high effectiveness of donor support showed the Swiss Agency for Development and Cooperation (SDC). SDC has allocated funds for implementation of the automation and monitoring system in hydraulic structures of BWO "Syrdarya" in Ferghana Valley. The Kyrgyz company "SIGMA" was contracted to this work under control of SIC ICWC. The company has worked for space industry earlier. "SIGMA" automated all structures in short period of time, with average cost of 6 thousand USD per automated point. The accuracy of water



distribution raised from ± 10 to ± 2 % under extremely variable flow regime of the Naryn River in tail-water of Toktogul cascade, with daily flow fluctuations ranging within 200 m³/s. For comparison, the same work done by French companies in Southern Golodnostepskiy canal (Uzbekistan) had the higher-order cost per gate. Appreciation by well-known French automation expert Herve Plusquellec of work done by "SIGMA" is characteristic. "According to actual data on automation system performance in Uchkurgan waterworks facility, one can note that the system operated stably and performed key functions of automation and data collection on waterworks' technological parameters during 2002-2006. Through automated regulation of water level in upper pool and regulation of water discharge in feeder canals of the Big Fergana Canal and the Northern Fergana Canal, the system ensured stable water supply in these canals, given the considerable discharge fluctuations in upper pool of waterworks because of daily power-generation regime in Uchkurgan HEPS. Moreover, it is necessary to note that the costs of the system were much lower than of those in western countries".
Thus, effectiveness of donors' assistance could be increased to a greater extent provided that more trust and reliance are placed in local capacity of countries-beneficiaries. This analysis on donor's contribution to ASBP-1 and a number of other projects implemented together with ICWC's institutions (Table 2) shows that on average only 30% of funds - that loudly appear in ODA reports as assistance to developing countries – actually reach beneficiaries. The two extremes are SDC, INTAS, and ADB projects where 70% of funds are directly allocated to beneficiaries (as Table 2 shows) and the assistance of USAID, TACIS, where this accounts for 10 ... 25 %. There is no doubt that donors must retain functions of permanent control over final results and general monitoring of implementation progress, but should abstain from exercising painstaking supervision of every working step. To ensure successful implementation of integrated regional programs there is a need for establishing Boards of Donors that could address coordination and interaction issues. Such kind of arrangement will allow the international donor community to effectively utilize funds and avoid dissipation of resources, duplication of advertising campaigns and rivalry among donors. At the same time, this might facilitate augmentation of donors' community prestige, concentration of joint efforts on providing assistance to developing countries and improving local living conditions.

Table 2: Analysis of donor funds used directly by beneficiaries

Project	Donor	Project cost	of which used by beneficiaries
«Key provisions of the water resources management strategy in the Aral Sea basin»	Global environmental facility	540,0	420,0
«Generalization of past irrigation and drainage pilot projects in Central Asia»	WB	100,0	100,0
GEF Project «Water and environmental management in the Aral Sea basin»	GEF	22500,0	5200,0
Development of recommendations for sharing costs and benefits under joint interstate and intersectoral use of water and energy systems in transboundary rivers	USAID	22160,0	204,0
Automated control and monitoring system in headwork of interstate canal Dustlik»	CIDA	1520,0	600,0
«Water resources management and agricultural production in Central Asian countries»	EU TACIS	10781,0	2796,0
«Capacity building in the Aral Sea basin», «Development of a modeling tool on the basis of water- socio-economic development-nature interaction in Central Asia for training and application by decision makers»	UNDP	220,0	104,0
«Automation and control system of Uchkurgan waterworks facility in the Naryn River»	SDC	5954,2	4116,0
«Integrated water resources management in the Aral Sea basin in order to restore wetlands in Southern Prearalie»	NATO	240,0	195,0

Water sector monetization

Significant lack of investments in water resources development led to appearance of two negative phenomena. The first is "water – commodity" tendency promoted by many monetarists, who called for full payback for water formation, extraction, delivery and use, and the second one is privatization of water entities.

Slogan stated by former World Bank Vice President Ismail Serigeldin "water is the oil of 21 century" gained big support from financial circles. They sow in it way to water monetization and making it source of profit like global goods – oil and gas. USA in some state supports water right incorporation. In regions of intensive development like Denver where all water has been distributed during 19 century and this led to monthly auctions where cost of one stock for 1m^3 of water increased up to 20USD. Stakeholders firstly sold stocks for saved water and then water from all irrigated area. If this trend would expand all over the world, mankind will loose 40% of food produced by irrigated agriculture. It does not threat to America – this reach country will nourish its population but what will do developing countries? Who will buy water to support poor and environment?

But water (unlike oil) is a vital element of noosphere –it is blood of life, subject of nature and social provision, which non-observance will lead to mankind death. Only air is equal to water in its meaning for human beings because nothing can replace water and air. Without oil and gas people can live all their life but without water only one week! Oil can be replaced by coal, fire-wood, hay or electricity, Brazilians already successfully use bioethinol instead of oil, but nothing can replace water. Principle of water economic value, according to Dublin Declaration, should only support its rational use but not its trade. Water can become good only after satisfaction of social and ecologic needs under certain conditions: water scarcity, possibility of its delivery in any time without damage to basic needs and capability of competing uses to pay for excessive water.

Attempts to legalize trade of water as a commodity were made in NAFTA – North American Free trade Agreement – and in WTO. New General Agreement on trading services (GATS) indicates the water supply services under the category "environmental services". Kavanah and Mander (2002) are absolutely right in proving that water monetization and privatization according to free market law deprive water of social good properties since this way access to water is ensured only to that who has money to pay.

Unfortunately, these trends touched our region as well when the provoked by some donors upstream countries began to compare water with gas and oil and require from downstream countries not their share of common cost but charges for water as a good.

Fragmentary acquaintance of poorly prepared representatives of "new democracy" with international experience supported by some international consultants began campaign for sale of natural water from transboundary rivers to downstream countries, for example Naryn water to Kazakhstan, Tajikistan and Uzbekistan by 12cents per 1m^3! Water sale by "Imperial valley" system to Los Angeles and San-Diego or water auctions in Colorado are taken as a precedent, but is forgotten that not water but license for water was sold.

At the same time, sale of free water limits within WUA and between them as well as creating economic intensives for water saving should be supported and expanded.

Another side of trend "water-good" led to market largest mega-companies with their aspiration for privatization. Though it was covered by generous goals – covering deficit of funds for water resources development through private capital attraction, it led to increase of water charges, decrease of payback and investment outflow from water sector. Fortunately, privatization experience was limited by Traktebel participation in Kazakhstan, from where this company was forced to go away, potential of social possibilities of water and power consumption

turned to be unprofitable for such methods.
Discussions on issues of private participation in water management have still been seething with passion. But one thing is clear – water management as such being an element of state security cannot be turned over to private ownership; the private sector may be involved only with regard to providing certain services for water management under strict state supervision, constraints and regulation. Companies and capital attraction to water management improvement, water infrastructure development, water conservation and wastes utilization should be promoted by the state because experience of water managers can help in water conservation improvement.

Globalization of water resources
Can we speak about it on the whole? For instance, if in Brazil 17 thousand m^3/year of water is available per person, this can have no effect on coverage of water shortage even in northern Mexico, which has 1400 m^3/person/year, let alone shortages in sub-Sahara or Takla-Makon desert. Water demand of mankind is so huge and transportation is so expensive that transfer of water from water-rich Turkey to money-rich Israel mainly remains as subject of plans and comparisons rather than of feasible actions.
Nevertheless, thanks to Toni Allan and Michael Rosegrant, many works appeared that treat water as a resource of global character. In his very interesting summarization, Ashok K. Chapagain founds that water globalization is reflected in:

- establishment of many global and regional institutions intended to address the problem of transboundary water use and develop policy coordination between the governments. As the examples he shows Commission for the Mekong River, Regional Commission for Okavanga, and the Nile River initiatives;
- water transfers from one basin to another one;
- bottled water trade;
- privatization of water by recognizing it as an economic good;
- virtual water as the way of global influence on water use efficiency and deficit settling.

The first two points are of regional nature, rather than of global one. The quantity of bottled water trade of 143,8 Mm^3 (Gleik, 2002) is insignificant so that one can speak about possibility to cover water deficit on a global scale. Moreover, no one can site examples of bottled water export-import between countries. Water bottling technology, as well as equipment for these purposes is easy to procure and install; therefore, this is a local process for meeting demand of any country or any region suffering from shortage for water of good quality.
Privatization of water by recognizing it as an economic good, as mentioned above, is rather a tool of financial and economic pressure, and number of its supporters, especially in light of water conservation for the environment (who should pay for nature's demand???) has been decreasing.
There are more concrete mechanisms influencing global movement in terms of water. Those are:

- production prices of irrigated agriculture as the main water consumer in the world;
- electric energy prices and their dynamics in light of the growing prices of thermal resources and the attempts to transform hydropower into geopolitical tool similar to gas and oil;
- growing "virtual water" pressure as the way to provoke international competition in contrast to a need for development and support of irrigation in developing and transition countries.

Recent agricultural production prices in the world market are far from

reflection of actual crop production costs in irrigated lands. The collapse of USSR fell at the same time with abrupt landslide of agricultural production prices, which was mainly caused by subsidy policies of the world leaders such as USA and the European Union. One cannot better describe this process as A.Shady did : «Subsidizing of national agriculture by developed economic systems is the cause of large distortion and lack of support to billions of the poor. These systems can assist the rich to become richer from agricultural subsidies currently reaching 300 billion $/year. Major actors are the European Union (EU) through its Common Agricultural Policy, which accounts for half of the EU's budget, from which 100 billion $ were allocated to European farmers in form of subsidies in 2002 and the United States of America, with its subsidies reaching 40 billion $ in 2002 and ever growing. At the most, 10% of subsidy recipients, accounting for 313 000 farms, received more than 104$ billion subsidies in USA in 1995-2004. This is 72 % of the total subsidies during this period. When considering all countries of OECD, this form of support accounts for 31 % of the total farmer's receipts, including: 18 % in USA; 36 % in EU; 70 % in Japanese; and, 75 % in Switzerland.

Example of cotton prices is characteristic. USA, while producing 3,6 Mt of raw-cotton, grants almost 4$ billion per year to cotton-growing farmers, i.e. 1000 $/t. This means that production of each ton of raw-cotton for American farmers is half-price of that for Central Asian producers. USA, while being one of the world's major cotton suppliers after China, set dumping of the world cotton prices from 1750 ... 1880 $/t to 880 – 1200 $/t in recent 10 years of 20 century.

Practically, western subsidies made it impossible for our fruits and vegetables to compete with the European products in Russian market, and Russia has been buying cheaper fruits and vegetables which taste is much worse. Thus, developed countries protect their national markets and agricultural production in their countries and, concurrently, promote commodity intervention in developing countries. As mentioned above, this led to the situation when present world prices on agricultural products have gone down by nearly two times in comparison with 1980. In this connection, development of agricultural production in many developing countries became unprofitable and started declining without powerful state support. Figuratively speaking - developed countries have been turning developing countries into "drug addicts" dependent on import as a "narcotic shot in the arm". Today the consequences of this "shot" might be not as painful as it could be in future when domestic commodity producers are eliminated, and world prices once again go up resulting in even more miserable living conditions of the poorest population in these countries.

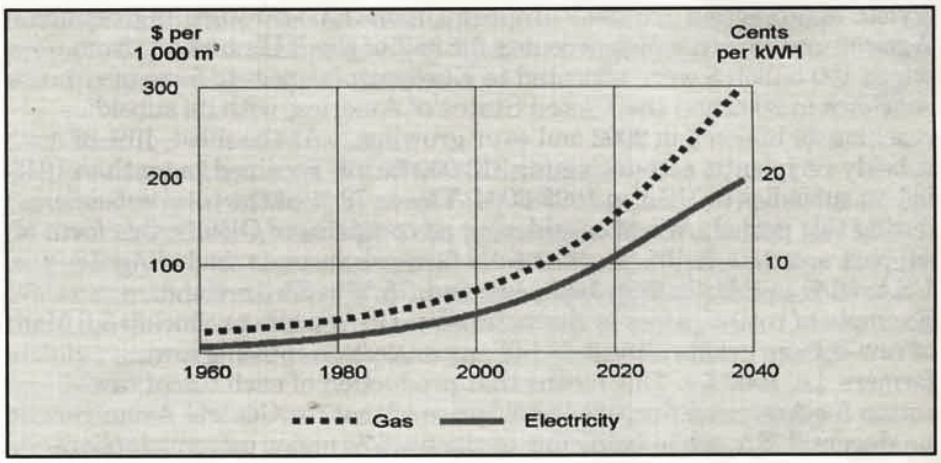
If the country imports more than 30 percent of food products, then such situation constitutes a menace to the food security of this country. But agricultural production is closely connected with overall economic development of each country, since agricultural sector obtains its resources from 8 sectors of economy, but itself provides inputs necessary for functioning of 60 other sectors of economy. According to studies conducted by the Russian Academy of Agricultural Sciences, - I am citing their findings – "every person employed in agricultural production provides another 5 workers with jobs beyond the agricultural sector".

Advocates of globalization make believe that huge large-scale agricultural and industrial production and unlimited trade would be the determinants in fighting famine and environmental degradation. They forget that capital's egoism and its derivatives, as well as aspirations of the rich for becoming richer, while ridding of the general global famine and poverty challenges through crumbs of charity stand in the way of these good intentions. Such charity has also created a global network of near-philanthropic lobby which under the pretence of help to the poor and hungers captures a substantial share of funds in their pockets.

Hydropower production prices are another factor of global effect on water sector, particularly on irrigated agriculture. The fact that the key power production centers are usually located in upstream creates

competition for flow regime with irrigated agriculture, which is located in mid- and downstream of rivers. Here a risk arises that the two tendencies – the suggested growth of energy costs (Figure 2) due to increase in oil prices and the drop in agricultural production prices – would create incomparable, in economic terms, possibilities of meeting the upstream countries' demand for compensation of the so called "lost profit".

Figure 2. Growing world fuel and energy costs



Hitherto, this problem has been created only concerning Naryn-Syrdarya cascade. Kyrgyzstan and Tajikistan utilize their water resources first of all in the interests of meeting their own energy demands and concurrently for exerting certain pressure on downstream countries. The attempts of upstream countries to utilize their hydropower potential – consummated and future in order to obtain the maximum profit is understandable. Besides, in Soviet times, the principle of the general international law such as "do not harm, otherwise pay" was understood and applied in Master-plans for the Amudarya River and the Syrdarya River, and currently the cult integration was foreseen by exploiting the hydropower potential in such a way so that to avoid conflict with irrigation interests in mid- and downstream and with delta's demand. Today, all the regional countries exploit hydropotential only on the basis of large water-management systems constructed during the Soviet period but they moved aside from well-recognized principles by transiting from irrigation to mainly power-oriented releases from upstream waterworks. This problem was partially solved by the Agreement of 1998, according to which the excess electric energy generated above the demand through summer releases should be compensated by mid- and downstream countries at agreed prices. Currently, electricity prices (2...3 cents per kWh) are still comparable with market prices (1 kWh of thermal energy costs 4,5 cents) but what we can expect in the future. Therefore, as early as now Uzbekistan is striving for almost full satisfaction of its demand for additional water quantity through releases from Andizhan reservoir and, partially, through construction of in-stream reservoirs. This works well in humid and normal years but fails in dry years.

Moreover, prospects of hydropower development in the region, including an opportunity to construct cascade of Kambarata HEPS in the Syrdarya River, Ragun in Vaksh River, Dasht and Dzhuna in Pyandj River attracted attention of both the World Bank and even the large funding forces in USA, Iran, China, and Russia. A possibility to export hydroenergy to Pakistan, Afghanistan, China and other energy-deficit countries will create commercialism for power sector and ability to demand, as a lost profit, 2 – 2,5 times higher prices of winter electric energy.

The solution should be found in several directions at the regional level:

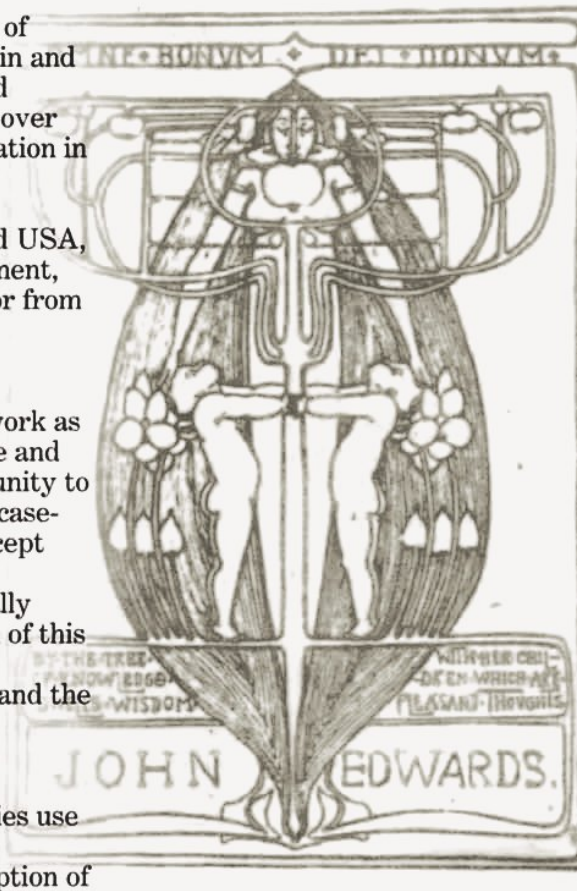
- early conclusion of new Agreement on the Syrdarya and the Amudarya, which should fix conditions of new construction and operation regimes of canals including both hydropower interests and irrigation and

environmental releases. In particular, this Agreement should clearly set obligations of the parties regarding observance of river demand as a natural object and of other countries' demand. The principle "not do harm, otherwise pay" implies that any country that caused damage or planning to undertake actions that may cause damage should enter into negotiations with the neighboring countries and implement a set of measures to prevent the expected change or compensate losses or pay compensations for damage.

Thus, the agreed actions are needed to prevent probable damage or the joint implementation of any measures. At the same time, one should bear in mind that the successful parity management of transboundary waters is feasible only if all the countries are aimed not at maximum effect for one country but at observance of the so called Pareto principle, according to which every party would get a maximum effect without damaging another party.

The present relations in Naryn-Syrdarya cascade result in regular neglect of the Syrdarya river's demand in summer and flood in lower reaches in winter. If one evaluates these social and economic losses and presents the results to hydropower men, then it would be hardly advantageous for the latter to strive for maximum profits. Thus, if we agree on achieving of equal profits, the solution could be found: the effect of hydropower development while meeting clearly reasoned social and environmental demands, with specified compensations;

- the riparian countries by uniting with the countries interested in electricity must establish a water-power consortium for construction and operation of HEPS cascades that would balance the demand of electricity supplier proceeding from the demand of country-recipients and the satisfaction of irrigation, nature and other downstream users' demands as specified by ICWC;
- for each basin, establishment of Basin Council as a public body that directs activities of BWO and is comprised of ICWC members, i.e. representatives of national Governments responsible for provision of water, as well as representatives of all provinces located in the basin and big water users such as hydropower sector, delta management, and environmental conservation. Their involvement and public control over management will promote equal and equitable water use and allocation in transboundary rivers.



It is advisable to consider and apply the experiences of Canada and USA, where HEPS management is separated from river water management, and hydropower men buy water from US Bureau of Reclamation or from Canadian provincial hydro-companies.

The concept of "virtual water"

This concept has been recently developed thanks to Tony Allan's work as the volume of water required to produce the product or the service and that, as if, is exported from country to country and creates opportunity to reduce water demand, especially in water-scarce countries. In the case-study of Middle East countries, such as Israel and Jordan, the concept was demonstrated as the means of country survival when water discharge was up to 500 m^3/year/capita. Hoekstra A.Y. and especially recently Chapagain A.K. made great contribution to dissemination of this concept.

The approach is quite interesting from the position of researchers and the analysis of end-distribution of water used in various products and services between countries. However, this does not make any new discovery in the general picture: taking into account virtual water, countries G8 consume 1675,6 m^3/capita/year, whereas other countries use only 1160 m^3/capita/year.

But the top among the water users is taken by USA, with consumption of 2483 m^3/capita/year, and the minimum water of 702 m^3/capita/year is consumed in China. A very interesting situation takes shape: USA uses more than 330 km^3/year of the products produced with foreign water (and

hence is responsible for pollution and depletion of almost 8% of the world's total "blue" water resources). Chapagain estimated similarly that the EU countries used 20% of water taken out of the Aral Sea. These estimation did not consider losses in irrigation systems, with contribution of which "the European Union's share in depletion of the Aral would exceed 30 – 35 % !!!». From these positions, undoubtedly, the approach of "virtual water" is interesting for balancing the effectiveness of one or another crop production under different conditions, for selecting the most effective crop and comparing their potential purchase in external or internal market. However ... all authors make estimations only in terms of water, while forgetting at all about economic indicators – income derivatives, especially in processing, marketing, consumption, about economic benefits of agricultural production, the role of associated effects, and the social importance of irrigated agriculture.

Moreover, the water dependency index, considering virtual water is introduced in contrast to food independence.

The water dependency index as it proposed and assessment of water deficit based on virtual water give perverted idea of possibility of national food self-sufficiency. Worner noted correctly that under price fluctuations in international market, an opportunity of developing countries to provide their people with food at reasonable prices may be lost due to jump in import commodity prices or drop of export commodity prices. Therefore, proposed by Hoekstra and Hung index seeming as satisfactory (water dependency index as the ratio of the net virtual water import to the total national water appropriation) may respond to export price drop and reduce import, thus improving supposedly "water self-sufficiency", though at the same time food self-sufficiency turns out to decrease considerable. From these positions, national food security is more important than farfetched water security. The index of which share of consumed food is produced in country will guarantee that free market jumps will not create critical social situation in the country.

All works mention in passing about very important aspect of irrigated agriculture in developing countries, i.e. about its social importance as one of the main factors of rural employment and source of income for not only those occupied directly with irrigation but with associated sectors, services, etc. In this context, our analysis under the EU DG Research D-25's RiverTwin Project (2006) is representative regarding the role of irrigation in generating of GDP in rural area of the irrigated Tashkent oasis. The size of income generated in large irrigation schemes and officially accounted is comparable with that obtained from production and consumption of crops in own production plots. The latter sometimes exceeds the first mentioned element of rural incomes. The calls of some globalists to orient towards the experience of countries ensuring employment in industry are hardly feasible for developing countries, with low incomes, taking into account that the cost of 1 work place in industry (10 – 16 thousand $) several times higher than that in agriculture (1 – 2 thousand $)

Thus, virtual water as an indicator of food production profitability or non-profitability in any country is a potential theme for research and macroeconomic exercises. As applied to transition countries with deficit of available assets and poor purchasing capacity, virtual water is a counterweight of national or regional self-sufficiency regarding food or primary agricultural products. Subsidy policy in developed countries along with propagandizing of virtual water concept can undermine financial potential of local producers in the future as well, when food and agricultural production prices will increase (this is realistic proceeding from WTO policy). Then famine challenges will exacerbate as we allow destruction of infrastructure potential in the countries.

How to apply and resist the global challenges? National policies «vis a vis» globalization

So, from view of information, research and technological exchange, openness and opportunities to apply institutional, managerial,

communication and various innovation advances, the global tendencies should get widespread development and be used in water sector and water-using branches, first of all, in irrigated agriculture. Along with this, the specific "spirit of water" should be developed. This implies the spirit of the sanctity, general accessibility to, and general responsibility of the society before water and water users for maintenance of its exclusiveness and rational use – the general understanding that it is impossible to monetize water and transform it into a commodity, to pollute and deplete water. It seems that there are good lessons to learn from, including Japan, Canada, Holland, and Switzerland. These water-abundant countries have established an understanding of the uniqueness of water as both nature element and the public good. This does not mean that water should not be evaluated in economic terms; moreover, only stable and reliable financial background dedicated to conserve and improve water potential may serve as the basis for future sustainable balance in the society under conditions of imminent water shortage.

Water ethics, which was widespread among all religions and ideologies, should be realized in water treatment culture, in cultivating of understanding among all generations that water is unique for both human and nature, and in elaborating of specific global water code as a book of indisputable rules regarding water relations in context of water right!!! From this point of view, the international water law and UN documents (human rights, international conventions) do not give clear recommendations and guarantees of enforcement mechanisms regarding the right of safe water, right of water for food production and right of water for the nature. This does not allow these documents to be used as the basis for future sustainable water supply of people and society as a whole. The respective impediments are vagueness and uncertainty of many provisions in the international water law that may be interpreted by any country to its own benefit, on the one hand, and the lack of understanding of the enforcement mechanism as a chain of obligations and rights of actors and the possibility of influence from the bureaucratic mechanism of national, provincial (governor) and local hydroegoism at all levels of water hierarchy – from basin to water consumer, on the other hand. The understanding of a need for elaboration of strong and obligatory rules and regulations within the interstate agreements and the principles of water management at national level should be opposed to the above mentioned. In our region, water-related, transport, energy, economic and other interests are very closely interlinked, especially taking into account certain isolation of national boundaries, and only cooperation – and water as its pivot – may ensure sustainability and long-term prosperity and peace in Central Asia.

The more reliable "compass" in this cooperation are efficient regional legal and institutional frameworks coupled with present-day national system of water governance, which includes National Water Code and future development strategy stipulating efficient and rational water use, widespread implementation of integrated water resources management (IWRM) at all levels of water chain, along with public participation and water user initiatives. All this should be based on our local traditions of careful water treatment.

At the same time, one should also bear in mind that the forces of monetary globalization and monetary egoism will be searching for various forms and loopholes to exert their pressure on economy, policy, culture and education so that to perpetuate the power of money and discontinuity of social stratification problems. As Aly Shady underlines in the above mentioned summary: "In water sphere, one should not ignore those who are involved in water challenges proceeding from their grasping interests. These are large corporations that actively work in the world's food production chain: industrial contribution to agriculture (realization of the 10 best commodities amounts to 370 billion $), among which Syngenta, Bayer, BASF, Monsanto and DuPont; food companies of processing industry and traders (realization of the 10 best commodities amounts to 363 billion $), among which Nestle, Cargill, Unilever, Midlend Arkera

Daniels (ADM), Craft's foodstuff; food retail dealers (realization of the 10 best commodities amounts to 777 billion $), including Wal-Mart, Carrefour, Royal Ahold, Metro AG, Tasco. Besides, there are great interests of hydropower corporations, manufacturers of hydraulic machines and their accessories, financial corporations of charity and egoistic nature.

How to resist these phenomena? There is only one way. This is to strengthen national and regional policies that oppose and make use of global tendencies, regional capabilities, and advantages. John Ralston Saul in his book «The collapse of globalization» demonstrates that the theory that prioritizes the freedom of market and competition as the main driver of the economy and progress has led to a chain of crises like the collapse of Asian economy in late nineties, recession of Canadian development in the same period of time, and the aggravation of unemployment even in OECD countries in absolute terms. In contrast, the cases of China and India that by adapting to globalization trends have been dictating to the world their rules of game and oppose to those trends their high and stable development rates. The reason of their success is a strategy and purposeful national policies that take into account the market's driving forces and global challenges.

The driving forces of globalization are the specificities of modern market: particularly, market of food, fuel and energy resources; deficit of some natural resources; respective natural and social phenomena. One may say literally that these forcers, besides apparent management mechanisms and tools, are controlled by specific "icebergs" such as international financial institutes, international financial and business monopolies generated by this globalization. Protectionism, subsidies, PR and even fight against terrorism are appear now as "pro-globalization", while trade barriers, customs fees and liberties, international unions and agreements, and wise national policies are the sides of «consglobalization» that advocate national rights, food self-sufficiency, etc.

China showed an excellent example of benefiting from anti-global strategy in cotton production and processing. Taking into account low raw-cotton prices, China processes all of its cotton, 4.5 Mt, in textile manufactures under support of the Government and buys about 1Mt of cotton at low prices and processes it. Now China is the world supplier of textile at expense of advanced technologies and cheep labor force.

In contrast to subsidies in developed countries, China has developed its own system of supporting agriculture and water sector. As a result, these two sectors achieved the highest level of development both regarding growth rates and crop yields, thus allowing to feed China's population running into billion and to provide export of goods.

The role of subsidies in irrigated agriculture, in water sector depends on the forces that manage the subsidies hiddenly from the sphere of our interests. Whereas subsidizing of food and technical crop production in developed countries is aimed at market penetration in developing countries, the latter should protect their commodity producers. The only response to "external" subventions must be internal subsidies or protection of domestic producers through introduction of customs and tax barriers for foreign importers. But here domestic bureaucrats, intermediaries, lobbyists enter into the game with their private interests, who are eager to make money at any cost, and frequently, promote import to the detriment of fellow-countrymen instead of favoring own production. Consequences of such harmful actions affect not only agricultural producers; they exert negative impact on the whole complex of social welfare in rural areas, development and maintenance of transport communications, secondary processing industries and supplementary enterprises, etc.

All these form a tight tangle, and incompetent solutions, which seemingly look like helpful, often end up in failure on the national scale. Let us take up, for instance, provision of subsidies for water management. The World Bank and other IFI all the time, starting from the moment of obtaining independence, urge on Central Asian countries the suspension of

rendering support to water management. To the credit be it said of the Uzbek, Kyrgyz and Turkmen leaders they have not allowed it. Kazakhstan authorized almost complete abolition of sources that had formerly supported water management, and especially land reclamation. Initially, everything went well in this country, - the Ministry of finance was pleased, but on the other hand, wells of vertical drainage, in particular in southern areas of Kazakhstan, went out of service. Farmers could not afford to cover operation and maintenance cost at the expense of their income. Gradual salinization (that had been forgotten in the past) now has proliferated like cancer all over Southern Kazakhstan, and crop yield on lands, which formerly used to produce 3-3.5 tons of raw-cotton per hectare, decreased down to 1.7-1.8 tons! To the Kazakh Government's credit, at present great program for subsidizing agriculture and water sector provides large support to these sectors in Kazakhstan.
Along with improvement of national policies, a response to globalization should be regionalization – cooperation of regional community, which permit to develop common measures of regional security: water, power, food and ecologic one. It will allow to smooth demographic, land and water resources and ensure peace and prosperity of the region. The results produced on our demonstration plots in all countries of Central Asia show that most inexpensive grain is grown in Kazakhstan, most cost-effective sugar and potato are produced in Kyrgyzstan, fruits and vegetables – in Tajikistan and Uzbekistan, maize – in Uzbekistan. If it is possible to reach an agreement (like it's done in the EU) on domestic and regional foreign-trade prices on agricultural produce, then the region would be able to fully provide itself with all necessary food products. It is appropriate to mention here that forward- looking calculations for 2025 allow making a conclusion: - if this is not done then Kyrgyzstan and Tajikistan will fail to meet their demands for food products even in case of planned development of irrigation.
Cooperation within CAR based on understanding of mutual interests of all participants should be a barrier to harmful hydroegoistic trends because 60% of rural population in our countries and 100% of all population, directly or indirectly, depend on water and irrigated agriculture, and, the latter, as in other countries, is linked with water supply sustainability and security.
Without negating positive implications of global challenges for our countries, one should note certain salient tendencies and unseen undercurrents, which pose a number of threats – so the Central Asian States must give consideration to them in their strategic planning and decision making.
People of our countries united by long-term common cultural, human, social, legal and religious traditions, should be oriented to positive sides of globalization and elimination of its negative sides by regionalization.

The authors

Alessandro Battilocchio
Member of the European Parliament

Stephen Blank
Strategic Studies Institute
US Army War College
Carlisle Barracks PA

Victor Dukhovny
Director, Scientific Information
Center of Interstate Coordination
Water Commision (SIC ICWC)
Uzbekistan

Yulia Semikina
Journalist
www.continent.kz