Prof. V.A.Dukhovny,
Director, SIC ICWC

Again about re-distribution of Siberian river flow to the South

Hardly anyone has disregarded a book of Yuriy Luzhkov "Water and the World". It is not enough saying that the book aroused a strong interest. It roused many past emotions and opinions. The book has revived hopes that most of Central Asian society lived in during heated discussions about expediency of this "project of the century" 25 years ago. At the same time, the book has woken up those unique preservationists who awakened after the longstanding slumber of this problem and of themselves. After all, their opportunity to "overthrow" the project, which virtually was approved by numerous resolutions of the Soviet Government, Plenums and Conventions of the Central Committee of the CPSU and by opinions of various commissions, allowed them to make a show in media and challenge the government, which advocated this ambitious project (until it had become ruled by the contradictory figure of Michael Gorbatchev).

From this point of view, the acknowledgement by one of major statesmen in present-day Russia that the decision to refuse the project was wrong is as "a honey for soul" of those who developed, struggled for and advocated the project. Water is distributed quite unevenly in the world - it is abundant in the places, where it causes harm, and is lacked in other places, where it is urgently needed. That is why there is growing concern over present water supplies in many countries and regions in the world, and more serous threat is posed for the future - not only because of current water shortage in some parts of the globe. The main reason is the tendency to convert water into the oil of XXI century, with all fatal consequences, among which the gravest ones are monetarism, covetousness, speculation, and attempts to manipulate human masses for selfish ends. As early as now, there are multiple examples, where water becomes a factor of certain ultimatum-like pressure of one country on another one. Need one look far for an example? Let us consider the course of Kyrgyz powermen from JSC "KyrgyzEnergo", who own the Naryn cascade of reservoirs and HEPS. Since 1994, the design operation regime of Toktoghul reservoir, which used to accumulate water in winter for releases in summer to the benefit of agricultural sectors in all four riparian states of the Syrdarya basin, has been changing gradually in the opposite direction - water accumulation in summer and releases in winter for power, which is more expensive in this time. Whereas before independence, on average 6.5 – 7 km^3 of water were released in summer and only 4 – 5 km^3 in winter, by 2008, this ratio has changed to 4.5 – 5 km^3 in summer against 7 – 8 km^3 in winter.

In high-water 2002…2006, despite persistent recommendations of the Interstate Commission for Water Coordination that it was advisory to accumulate water in Toktoghul necessary for long-term regulation, the powermen met momentary commercial interests and released much more water than the mean annual flow of 12.2 km^3. As a result, by low-water period of 2007-2008, the level in the reservoir dropped quickly to that of dead volume. And speculative trade has started – "if you want water for irrigation, you should pay 8.5 cents/kWh!", which is 10 times more than the net cost of HEPS and even twice as much as the net cost of thermal stations. "If you do not pay, we will accumulate water in summer for winter releases."

As a result, given the average natural flow probability of 75 % in 2008, all irrigation water users, including irrigated areas in Kazakhstan, Tajikistan, Uzbekistan, and even in Kyrgyzstan received about 55-70 % of their water limits, and consequently, the irrigated areas in the Syrdarya river basin incurred losses of hundreds of millions dollars. It is difficult to say what profits KyrgyzEnergo have gained as a result of such activity during those years but two grave consequences of such hydroegoism were evident - suffering of Kyrgyz people during the cold winter 2007-2008 and long-term losses due to floods in the Syrdarya downstream. This could have been avoided. This is proved by a new line of conduct in the Kyrgyz Ministry for Energy and Industry after appointment of the new Minister. After setting strict energy supply regime since December 1, 2008, water releases from Toktoghul have been reduced by 25-30 % against planned ones and were half of those

exercised the same months in the previous year. The World Bank also warned about this. According to WB's experts, unaccounted energy losses exceed 40 % in Kyrgyzstan!!!

Hydropower priorities and attempts to force Kazakhstan and Uzbekistan to supply fuel on preferential terms have caused another one negative consequence, which constantly brought discord into country relations in terms of water - downstream countries lost confidence in possibility to establish equal and mutually beneficial sharing of transboundary rivers due to the fact that upstream countries tend to profit from priority of their interests and make water flow volumes equal to fuel resources. Serious objections of Turkmenistan and Uzbekistan to construction of additional large reservoirs in upper watershed zones should be considered just from this point of view. It may turn out that reservoirs designed in the Soviet time in order to ensure water supplies through the long-term flow regulation could (and already) become a tool of interests of their owners and cause that downstream countries depend catastrophically on will and aspirations of the leadership of both energy monopolists and upstream countries themselves. This possibility is suggested from numerous publications, such as "Kyrgyzstan must master the rivers!", "The world of water's sacred nature", as well as from categorical unwillingness of those countries to ratify the two international Conventions – EU Helsinki Convention 1992 and UN Convention 1997.

A question may be raised: how this concerns flow re-distribution to the south? This has direct concern since the will to have the guaranteed water source for the region causes anxiety that this source may be a lever of political pressure in hands of a third country. Moreover, taking into account geopolitical importance of Central Asia as a scene of mega-forces competing latently over their dominance, this anxiety is quite great.

Let us think whether water is needed for the region? A favorite trump card of the opponents of water transfer is as follows: first, you should learn to use your water properly and then turn your eyes to other's water. They say, before it has been proved that water would be available only till 2000-2005; however, these years have passed and, maybe with frictions and problems, but Central Asia has been still existing with their resources. Here, one should consider analysis and practical forecasts. Primitive comparison shows that both population growth rates (including before outflow from certain zones) and national product rates and industrial and agricultural production volumes have dropped sharply as compared to earlier planned ones. In essence, currently we live with these indices at the level of eighties. Moreover, in many respects, the countries managed to live under conditions of growing water deficit. This does not correspond to level of Israel or Jordan but now water use is well lower than that in the eighties. For example, unit water use per one hectare of irrigated land is 17606 m^3/ha against 16834 m^3/ha in 1980 in the region as a whole (see Table):

Comparison of unit irrigation water use in 1980 and 2007

	Irrigated area, thousand ha	**Water use, Mm^3**	**Unit use per 1 ha, m^3/ha**
	South Kazakhstan		
1980	684,0	12830,0	***18757,3***
2007	696,0	7423,0	***10665,2***
	Kyrgyzstan		
1980	454,0	3895,0	***8579,3***
2007	402,0	3308,0	***8228,0***
	Tajikistan		
1980	607,0	11820,0	***19472,8***
2007	684,0	11261,0	***16463,5***
	Turkmenistan		
1980	918,0	20823,0	***22683,0***
2007	1843,0	24737,0	***13422,1***
	Uzbekistan		
1980	3567,0	55510,0	***15562,1***
2007	4247,0	44640,0	***10510,9***
	Total		
1980	6230,0	104878,0	***16834,3***
2007	7872,0	91369,0	***11606,8***

Besides, now the region consumes only 2394 m^3/year per capita instead of 4500 m^3 in 1980! Idle evacuations of water both into Prearalie and the Aral Sea and into closed ponds like Arnasay have increased due to disorder and non-coordination of energy releases. In fact, the region has nearly the same unrealized potential for water conservation and rational water use as it had in the eighties during the Soviet period. At that time, we oriented towards such advanced irrigation schemes as Hunger Steppe, where unit water use per hectare was 8.0 – 9.5 thousand m^3. Now, the integrated water resources management in the Fergana Valley shows that modern improvement of institutional and technological mechanisms allows achieving the same unit water use and reducing withdrawals, for example, from 1 billion m^3 per year to 680-700 Mm^3 into the South Fergana canal system during the growing season in order to feed 85 thousand ha of land, several cities and numerous villages. Realization of this potential is on the agenda, and I believe that it will conquer the region slowly but surely. To this end, both national and reinforced cooperative regional efforts are required. The latter should be aimed at efficient water use and systematic withdrawal reduction both through implementation of IWRM and revision of water-consumption norms, wider application of already initiated automation, development of extension services for farmers, enforcement of Water User Association, and improvement of financial mechanism. All this would allow achieving planned 9.0 – 10 thousand m^3/ha on average in the region. Besides, those, who regularly indicate Israel as an example (and me too), should bear in mind that Israel uses 5.5 thousand m^3 of water for irrigation plus 500 mm of rainfall (or 5000 m^3/ha), i.e. in total 10.5 thousand m^3/ha. We have, on average, only 250 mm of rainfall or, as a whole, 11.5 – 12.5 thousand m^3/ha – this is a little more than in Israel.

In 2030-2035, from 62 to 70 millions will live in the region, depending on development scenarios. However, other destabilizing factors should be considered as well: climate change threatens to increase the water needs by 10-15 % due to temperature rise; the impact of climate change on flow is expected to be as 7-8 % reduction of flow along the Syrdarya river ($\approx$ 2.5 km^3) and 15 % reduction of flow along the Amudarya river (7.0 km^3). Afghanistan is increasing their claims to Amudarya's water as situation stabilizes in the region. Thus, a clear need becomes visible for additional water source. Now, North Kazakhstan, including the metropolitan area of Astana, survives through expensive water supplies along Irtysh-Karaghanda canal, which capacity turned to be uncalled during independence due to abrupt reduction of irrigation areas in central and northern zones of Kazakhstan used to be irrigated by sprinkling. However, even this source is under the threat of developing irrigation in Sinkiang along the Black Irtysh, where the Chinese people expect to divert half of the flow - 4.5 km^3 per year. Hence, it is clear an urgent need for additional water for Central Asia.

Under conditions of increasing climate change, acceptability of any change to flow from the Ob river is put under question less and less. Augmentation of Siberian river's flow has been evident in recent years. The Frozen Isthmuses' Protection Campaign of the Arctic and North Atlantic Oceans (FIPC) more and more appeals to the world community in light of a threat to loose the ice cap on the Northern Pole, with one of major arguments being the augmentation of Siberian river flows into the North Atlantic Ocean. "The Arctic region gets 2 % of the total heat balance from the rivers receiving warm water from south to north. The warm river water flows onto the sea surface, and this has considerable effect on ice melting in the Arctic sea, particularly near river estuaries along snow coast. The passage of dark ice stretches from these Siberian estuaries to hundreds of kilometers towards the center of the ocean. Moreover, since 1970s, Siberian rivers' flow raised to 35%. This leads to abrupt increase in heat inflow to the Arctic" (Albert Kallio, President of FIPC).

However, an increase of flow in the Ob river poses hazard to Russia from view of flooding of prospective oil fields located along inundation-prone valleys of the river and its downstream zone. Protection of these fields and respective rise in price of oil production may cost billions of dollars.

Thus, the interests of Central Asia, Russia and Europe (and maybe the whole world) close up in single solution - Siberian river flow re-distribution to Central Asia is fairly needed by the mid of current century. The question is how to solve this under present conditions? Maybe, contrary to aspirations to use water as a means of geopolitical pressure, we could find ways to show to the

world that water should be treated as a core of cooperation and solidarity rather than as a bone of contention and a means of profit. Perhaps, we could become an example for the world politicians and water community regarding how to ensure access to water for all people on equal and mutually beneficial basis?

Then, what does Yuriy Luzhkov propose new so that to make the project cheaper as compared with its previous "Soviet" version? First, and quite attractive, this is gradual development of the project to be started directly from supply of Ob's water not to Central Asia but to water-scarce three Russian provinces, such as Kurganskaya, Swerdlovskaya, and Tchelyabinskaya. This would reduce original costs for construction of base, communications and allow cost covering as early as starts financing of the phase 1 of the canal from Russia to Russia. Such approach would help to estimate costs more precisely, raise bumps and, then, start expanding length and discharge of the canal further to the south. Moreover, evidently such interesting solution would enable designers and constructors to find wiser approach to reducing the price of construction under local conditions.

Hardly could be expected that, as a whole, the project's cost can be reduced against that estimated during the Soviet period. It will increase rather. A pipeline option, which the author mentions in passing, will never be cheaper, though in case of water delivery, which was implemented by Libya together with the British in the project "Manmade river", much lower discharge cost about 1.5 $ per 1 cubic meter of head intake a year. Given the planned delivery of 18 km^3 to the south, this will cost 20 billions in prices of the year 1990 and, taking into account inflation, the cost of delivery will double. In terms of annual costs, the price of 1 m^3 of water will be about the same 10-12 cents that Yuriy Luzhkov mentions. However, this price can only be born by remunerative crops, such as orchards, vineyards, and vegetables that yield $1000…2500 of net profit per hectare or 13-40 cents per cubic meter of water. Undoubtedly, neither cotton nor grain can bear such cost. But if we create consortiums aimed at supplying neighboring (and far) Russian regions with high-quality vegetables and fruits: early cabbage, pomegranate and peaches from Uzbekistan; grapes, dried apricots and raisins from Tajikistan; excellent citrus and fresh and dried melons from Turkmenistan; spring potato and tomato from Kazakhstan, then this water could be compensated, especially if Russia or the European Union bear a share of costs, taking into account an importance of the canal for the North Atlantic Ocean and the Ob downstream.

Some time, an apologist of Russophiles - the great but malicious writer Solzhenitsyn - called on the leaders of the Soviet Union to get rid of Central Asia - "the parasitical underbelly of Russia" as he labeled our region. The great people make mistakes as well. The "underbelly" turned out to be prosperous, and a geopolitical game takes place over the resources of Central Asia: USA, the European Union, China, Iran, and Turkey are not indifferent to future joint development in the region. This way, maybe contribution to such water development can help to establish linkage between Russia and its former brothers?

There are certain points in the Luzhkov's work that give rise to doubts. Some pages tell about establishment of the mutually beneficial consortium, which was mentioned above. However, he writes about water sale in other pages. The sale of water as an economic good makes regional water supply quite unsustainable. The markets ask 10 cents per cubic meter today and will ask 20 cents tomorrow. Farmers will be waiting for water while the tops (as in case of KyrgyzEnergo in 2008) bargain. In order to make water supply sustainable and reliable, the long-term concessions should be concluded for joint production, processing, marketing, and delivery of output in exchange for water. Irrigators, taught by powermen's hydroegoism, fear "water dictate" of the market and, therefore, other forms of sustainable, faithful, clearly stated water partnership are needed on mutually beneficial basis. This consortium can be developed as a cooperative association but conditions of funding should be also fixed.

Yet the countries' leaders are silent - they are examining the situation. The long-term decisions are always difficult to make. And now this is not easy!