KURA RIVER – TRANSBOUNDARY WATERCOURCE OF CAUCASUS

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The Kura river is the main waterway of South Caucasus and the main river of Azerbaijan. Having the total catchment area of 188 thousand sq. kilometers (including the territories of Turkey, Georgia, Armenia and Azerbaijan) it has its catchment area on our territory about 53 thousands sq. km or 30 percents of total. The river length in Azerbaijan is 915 km or 65 percents of total length. Nearly all small rivers of Azerbaijan (except some rivers of North-East and South-East regions) belong to the Kura basin. So, the protection of water resources of Kura is of a great importance for our country.

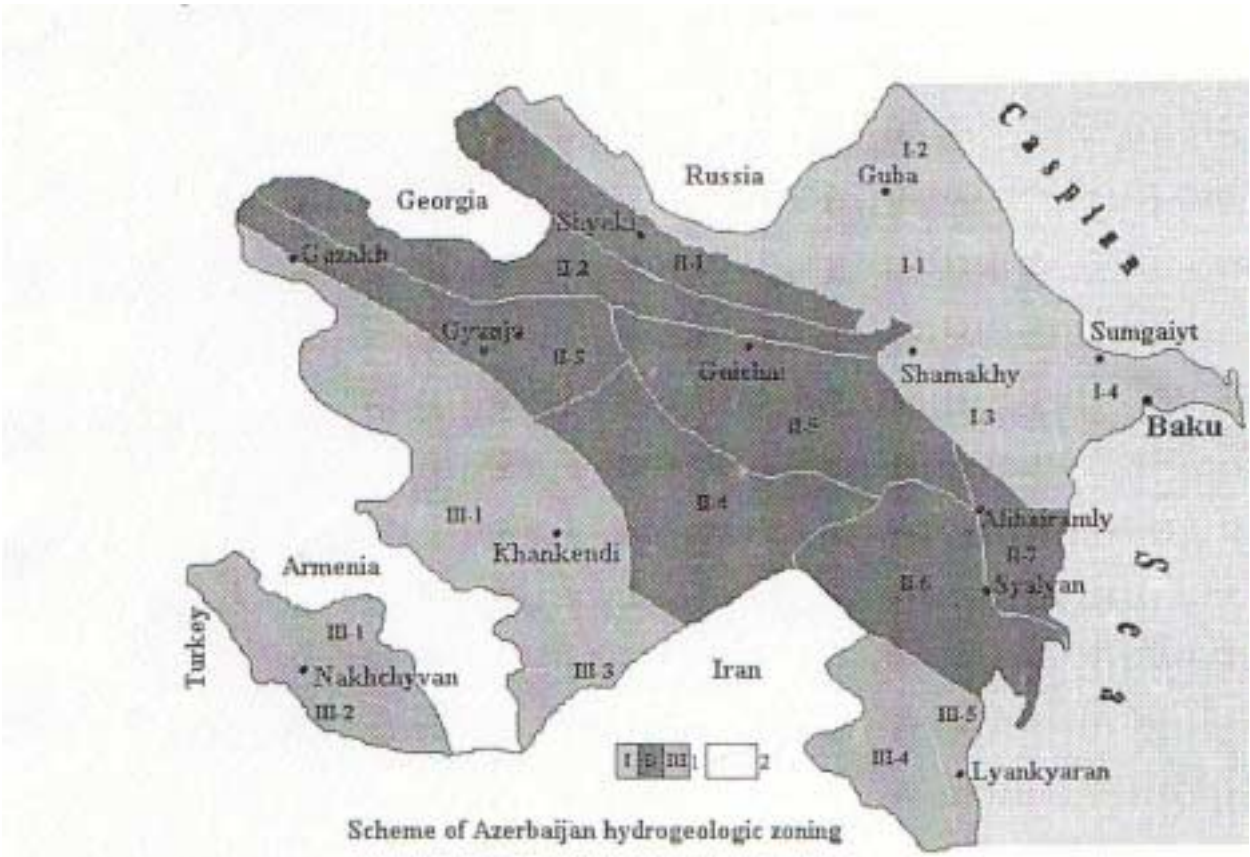
Some hydrological data about Kura river and its main tributaries are shown in the table

Table
HYDROLOGICAL DATA ABOUT KURA RIVER AND ITS MAIN TRIBUTARIES

Name of the river	Where river flows into (side)	Length, km	Catchment area	High-rise position, m			Middle gradient of river, %
				source	the end of the river	Average high of catchment	
Kura	Caspian sea	1515	188000	2740	-28	-	1.8
Alazan		413	16920	2560	75	-	6.1
Iori		398	4840	2560	51	-	7.2
Agrichay	Alazan (l)	134	1810	3200	135	1168	22.9
Turianchay	Kura (l)	180	1840	3680	-4	819	20.5
Geokchay	Turianchay(r)	115	1770	1980	-1	538	17.2
Akstafa	Kura(r)	133	2586	2422	210	1418	21.0
Kurakchay	Kura(r)	126	2080	3000	18	508	24.5
Terter	Kura(r)	200	2150	3120	3	1820	15.5
Khachincha	Kura(r)	119	557	2100	10	1558	17.5
Araz	Kura(r)	1072	102000	2990	-11	-	2.8
Arpachay	Araz(l)	126	2630	2985	780	1968	16.7
Akara	Araz(l)	128	5540	3080	268	1835	21.9
Khrami	Kura(r)	220	8340	2422	255	-	9.8

The Kura river is staying main source of drinking water for 70 percents of population of Azerbaijan, including the main cities – Baku, Ganja and Sumgayit. So, the quality of Kura river water resources is one of most important problems for the country. Unfortunately, the river inflows from the Georgian territory being polluted by oils, phenola, heavy metals, organic pollutants, detergents. These data will be presented for period 1985 to 2002 years. Water in the Kura-Araz river system is heavily polluted from sources outside Azerbaijan. Municipal sevage

containing more than 40000 t of nutrients, and hundreds of tones of strong acids and heavy metals(Cu, Pb, Mo, and Fe) from copper-molybdenum plants, are released into these rivers (presumably) before crossing the border.The accidents in large industrial centres of Georgia, mainly in the Rustavi city, also cause strong pollution that is monitored till the Mingechavir water reservoir. Of course, the situation in Azerbaijan is not much better than in Georgia. Outside the Baku/Sumgait area, only 9% of sewage water undergoes biological treatment and 36% receives no treatment at all. Of the population in Azerbaijan, 80% live in areas without modern water or sewage networks. Existing municipal sewage systems and waste water treatment systems are obsolete and work not efficiently. At the same time more than 20 towns and cities still do not have municipal waste water treatment systems at all. Runoff from agricultural areas adds large amounts of fertilizers, pesticides, and sediment. In the areas of intensive agriculture, mainly of cotton and grape-growing production, pesticides and copper ions are noticed. The total discharge is about 64 mln. cub. meters of municipal and industrial waste water per year.



Scheme of Azerbaijan hydrogeologic zoning

1. Hydrogeological regions; 2. Boundary of hydrogeological regions;
I - Greater Caucasian hydrogeological basin: I-1 - Greater Caucasian mountain - fold region, I-2 - Gusar region;
I-3 - Gobustan region and the abjacent part of the Near-Caspian lowland, I-4 - Absheron region.
II - Kura depression hydrogeological basin: II-1 - Alazan-Agichai region, II-2 - Adjinour-Jeiranchel region,
II-3 - Gyanja-Gazakh region, II-4 - Mil-Garabakh region, II-5 - Shirvan region; II-6 - Mugan-Saliyan region;
II-7 - South-Eastern Shirvan region.
III - Lesser Caucasian hydrogeological basin: III-1 - Lesser Caucasian mountain - fold region;
III-2 - Nakhchyvan region; III-3 - Jabrail region; III-4 - Mountain-Talysh region; III-5 - Lyankyaran region.

Fig.1

Table

THE TOTAL POLLUTION LOAD FROM POLLUTION SOURCES IN WATER OF KURA RIVER BY V.SHIKHLI (ON THE FRONTIER WITH GEORGIA)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Nitrogen ammon.	**1.4**	**1.4**	**1.2**	**2.2**	**1.6**	**1.4**	**6**	**2**	**6**	**3**	**4**
Copper, Cu+	**9**	**8**	**11**	**12**	**5**	**8**	**11**	**9**	**9**	**11**	**6**
Phenola	**8**	**20**	**10**	**18**	**17**	**16**	**17**	**15**	**12**	**14**	**15**
Oil products	**3**	**2**	**3**	**2**	**2**	**4**	**3**	**6**	**3**	**2**	**4**
Saprophyte bacteria	**300**	**360**	**290**	**320**	**291**	**276**	**330**	**371**	**368**	**401**	**400**
Coliform bacilli	**22**	**26**	**19**	**23**	**22**	**26**	**31**	**38**	**41**	**47**	**44**

Azerbaijan faces serious challenges on both the supply and quality of its water resources. Rivers are the principal sources of water, with underground aquifers supplying about 10% of annual consumption. As was mentioned above, 70% of the river flow originates outside the country, in Turkey, Armenia, Georgia, Iran and Russia, with implications for water control and major negative impact on water quality. Per capita water resources in Azerbaijan (1500 cub.m.yr) are 47% of those in Armenia, 13% of those in Georgia and 8% of those in Russia. Compounding the problem, loss from the country's inadequately lined distribution channels is estimated at 50%, resulting in a rising watertable and salinization as well as shortage of irrigation water. On average, water provided for agriculture falls short of the need by 3,7 km^3 yr. Similarly, about 50% of the drinking water distributed to the Absheron Peninsula, where Baku and Sumgait are located, is lost from the antiquated pipe distribution system (2, 6, 7).

Taking into account low environmental level of habitants living in Kura river basin and the danger of the rise of contamination of rivers with industrial wastes after recovery of national economy in the South Caucasian countries it is easy to forecast worsening of the situation.

A massive deforestation, which highly grew since 1993 due to social and economical problems, negatively impacts to surface waters and conduces to soils erosion. Most part of forests cut down is located within the Kura and Araz rivers basins.

Despite efforts made on inter-governmental level as well some short-term programs in the field of water resources management and public education implemented with a support of donors, the situation is changing slightly because the measures have fragmentary character and can not solve the problem generally.

The countries having transboundary waterways, understanding unity of unique ecosystem of South Caucasus, now recognize as necessary joint and coordinated efforts which would be possible only after designing of the full scale program of sustainable development of Kura and Araks rivers basins.

CONCLUSION

Major positive factors in the environmental outlook for Azerbaijan include the laws enacted, the international conventions signed, and the few but rising number of dedicated people who voice concern for the environment. If this number reaches a size able to influence the government, and same processes will take place in other South-Caucasian states, substantial progress could be made. Negative factors of great importance are the slowly-changing political and economic power structure and the low level of economic development. But in transboundary context the thirteen-year war conflict with neighboring Armenia and 20% of territory being occupied has main impact hindering successfully solve the problems of Kura river basin.

There are no remedies throughout the world in transboundary problems full-successful and comprehensive solving. However, if the Caucasian governments and folks will show their goodwill, there is possible to make step-by-step efforts, maybe with a support of international interested organizations to move things slowly in the right direction.

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