

# PROBLEMS OF TRANSBOUNDARY WATER MANAGEMENT IN AZERBAIJAN

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The main sources of water in Azerbaijan are rivers, and auxiliary -underground waters, lakes, glaciers and melted snows. There are more than 8350 rivers of the various sizes in the country. They belong to the Caspian sea basin. About 98 % of the rivers have length less than 50 km. The length only Kura and Aras rivers exceed 1000 km. The total length of the rivers is about 33665 km in the country. The average density of the rivers are 0,39 km/squares km, which is less than in the neighbouring countries: Georgia - 0,85 km/squares km and Armenia -0,87 km/squares km.

Water resources of the rivers of the country are formed from local and transboundary watercourses. The local rivers are formed in territory of the country. Their volume of the mid-annual drain makes 10,3 cube km. The transboundary rivers partly is formed outside of the country and volume of their mid-annual flows is 20,6 cube km.

If local rivers waters would be regularly distributed among the population of country every citizen might get 1226 cube meter of water in a year.

Kura basin water provides about 65 % of all territory of the Azerbaijan Republic. Kura is the biggest river in Caucasus. Its length is 1515 km, the area of water accumulation is 188 thousand square km. Kura river has a length 174 km in Turkey (the area of a water accumulation - 5500 square km), 435 km in Georgia and 906 km in Azerbaijan. About 69 thousand square km of Kura basin is located in Turkey and Iran. More than 65 % of basin territory (122,2 thousands sq km) are located at height 500 m above sea-level. This is mainly area, which is sources of forming and transit flow and 35 % (65,8 thousand sq km) is area, where losses happen. 52 % of river resources are formed from waters of glaciers and snows, 30 % from underground waters and 18 % from rains. The mid-annual consumption of water is 30 cube m/s in the border of Turkey and Georgia, 200 cube m/s in Tbilisi, 420 cube m/s in Mingachevir and 854 cube m/s (26,9 cube km/year) in the outfall of the river.

The largest tributary of Kura river is Araz. Its length is 1072 km and forming area is 102 thousand sq km (54,2 % of the area of Kura basin).

The Araz is a natural border between Turkey and Armenia, as well as Iran and Azerbaijan. In the territory of Azerbaijan it merges with Kura. 46 % of river water is formed from underground water, 38 % from ice and snow, and 16 % from rain waters. Natural average flow of Araz river is 290 cube m/sec or 9,16 cube km/year.

Water resources of local rivers (10,3 cube km) differ from 19,8 cube km to 6,8 cube km depending on year. So local flow is two times less than flow of transboundary rivers coming from neighboring countries (Turkey, Iran, Georgia, Armenia and Russia). Therefore all actions carried out in upper stream of Kura and Araz related to water reflected in the water management and ecological conditions of Azerbaijan.

Water of the transboundary rivers of Kura, Araz and their tributaries partially used for economic needs, managed by hydraulic engineering constructions and polluted by anthropogenesis activity in middle and upper streams. The problems cause threat for existence of rivers, lakes and parts of landscape. The level of anthropogenous influence on water resources varies during the year and between years and depends on water use. All small and middle rivers dry up in Kura basin because of water use. For example, more than 70 % of the water of Iori river is spent for irrigation and water supply in Georgia. Nakhchivan Autonomic Republic of Azerbaijan has serious problems because of transfer water from Arpachay river to lake Sevan. Pollution of tributaries of Araz river in the territory of South Caucasus cause serious ecological consequences. Razdan (Zangi) river serves as a waste collector for industrial and household drain for

Yerevan, Razdan, Charenchavan and Abovyan cities. The wastes of the mining industry of Kafan and Kajaran are thrown to transboundary river Ohchuchay, which flows into Araz river. Then it is transported through territory of Azerbaijan into the Caspian sea.

Kura river coastal zone has the similar problematical situation. Strongly polluted river in the territory of Georgia and Azerbaijan then flows into drinking water-pipes system of Baku. At the same time, every year Kura river carries to Caspian sea about 14-16 million tone of firm substance, 5-6 million tone dissolved chemicals, 190-200 tons phenols and more than 100 tons different metals.

Azerbaijan has a long term traditions in irrigated agriculture. More than 85 % agricultural products are cultivated in the irrigated lands. The total area of the irrigated lands is 1.4 million hectares. The agriculture annually consumes nearby 14-15 cub km of water. This is approximately 4 cube km more than volume of the waters formed in the country. Pollution of Kura and Aras rivers and their tributaries causes negative effects for Azerbaijan. As it was already mentioned, waters Kura river are partially used and for the drinking purposes, which exacerbates the situation. Turkey, Armenia and Georgia do not use it for drinking purposes .

Hydro-energy with capacity 1000 MW is produced on cascade water reservoirs of the Kura river and other small hydroelectric power stations. The fish is cultivated in Mingechevir water-reservoir.

The population of countries located in Kura basin increases, which reduces volume of water for each person. It requires careful use and protection of water. So, international documents on rational use of water resources of the transboundary rivers should be adopted.

Azerbaijan has serious problems because of quantitative and qualitative limitation of water in the neighboring countries. These problems are following:

- \* . More than 70 % of the population of Azerbaijan use transboundary waters for drinking and household needs.
- \* . Among the countries of Southern Caucasus only Azerbaijan has signed the Convention on the protection and use of transboundary watercourses and international lakes (Helsinki Convention), and creation of effective regional cooperation is impossible because of insufficiency of capacity in systemic level.
- \* . Azerbaijan is a Party of Convention on Caspian biodiversity Protection, has obligations on purity of Kura river, flowing to Caspian Sea.
- \* . After disintegration of Soviet Union the new states were formed in South Caucasus which have no the perfect legislation and institutional structure for rational management of water resources.
- \* . In connection with economic difficulties of the transition period in the new countries of the former Soviet Union water cleaning constructions are in faulty condition and the majority of sewage flows into the transboundary rivers.
- \* . The systemic capacity on water supply and canalization mismatches the requirements, with increase of a population, migration, demographic changes in the country.

Azerbaijan carried out number of activities for creation systemic and institutional capacity on the integrated management of transboundary water resources after gaining independence. For instance, Azerbaijan has signed number of Conventions:

- 1) Convention on the Protection and Use of Transboundary Watercourses and International Lakes
- 2) Espoo Convention on Environmental Impact Assessment in a Transboundary Context

At present time Azerbaijan carries out negotiation for joining Conventions on Transboundary Effects of Industrial Accidents. More than 10 national laws were adopted ( Melioration and irrigation, Water Codex, Hydrometeorology activity, Water supply and waster waters, Environmental Security, Environmental Protection, Water management of municipality, Ecological education and Ecological awareness, Reception of Ecological information, Security of the hydro technical plants, etc).

Azerbaijan has signed Agreement between the European Union the National Action Plan on *European Neighbourhood Policy* on 2006. The plan contains following items on the water issues:

- Develop framework legislation and basic procedures and ensure planning for key environmental sectors, including in the national environmental action plan on water quality and continue the process of convergence with European requirements;
- Take steps to apply Integrated Water Resource Management, enhance prevention of pollution of transboundary water resources, including through enhanced monitoring and the elaboration of an Action Plan;

- Ensure active participation in the Eastern European, Caucasus and Central Asia component of the EU Water Initiative;
- Identify possibilities with neighbouring countries for enhanced regional co-operation, in particular with regard to water issues;

There are several bodies acting in this field in Azerbaijan. The joint-stock company Melioration and Water Management is responsible for water use, agriculture, melioration and hydraulic engineering constructions, joint-stock company «Azersu» for management of drinking water, the Ministry of Ecology and Natural Resources for protection of water objects, and Ministry of Energy and Industry for hydropower construction.

The projects on integrated use of transboundary water resources in the South Caucasus within the International Programs of TACIS, UNDP, NATO, USAID, REC and Worldbank are realized.

These projects can be subdivided on following groups: -Management of Water resources, -Drinking water and canalization, -Irrigation and drain, -Environmental policy, -Public awareness, -Local initiatives

As results of these projects many recommendations on protection and rational use of transboundary water resources are developed and realized. The ways of democratic reforms in the water management are defined. It is necessary to note, that in some cases the continuity and coordination were not followed during realization of these projects.



#### References

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