

Some remarks on the current efforts for future protection of the Kura water resources through trans-boundary cooperation and modernized national policy measures

Abstract

Azerbaijan locates in the downstream of the Kura river basin. Protection of the bio-resources of the Kura River is important for the future welfare and health of the population living in this basin. Therefore coordinated action for the rational use of the water resources between basin countries is necessary to mitigate main trans-boundary problems of changes in hydrological flows, worsening of the river water quality, degradation of the ecosystem and intensified flooding due to the observed consequence of global climate changes taking place in the recent period. This manuscript outlines the proposals within UNDP-GEF Kura - Araz Project ((Kura II Project) to improve interaction and cooperation between Azerbaijan and Georgia as a model for future deepening of the relationship between all basin countries to protect fresh water resources and ecological safety of the entire river ecosystem.

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Introduction

Kura River is the main waterway in Caucasus area, originates from eastern Turkey, with the total length of 1515 km and inflow to the Caspian Sea through Georgia and Azerbaijan. The main tributaries are Alazan, Iori, Agrichay, Turianchay, Geokchay, Akstafa, Kurakchay, Terter, Xachincha, Araz, Arpachay, Akara, Khrami rivers. The basin covers Turkey, Georgia, Azerbaijan Iran and Armenia with the total catchment area of 188000 km². Elevation of the river in the source is 2740m and at the end point 28m above sea level, for this reason the ecosystems of the basin are significantly diverse and include a wide range of landscapes, from semi-deserts, arid lands to the alpine grasslands. Share of the countries in the basin is as follow: Azerbaijan -52,9 x 10³ km², Iran -40 x 10³ km², Georgia -36.4 x 10³ km², Armenia -29.8 x 10³ km², Turkey -28,9 x 10³ km². The river water usage structure in the basin includes for irrigation -68%, heat-power engineering -11.0%, industry -6.9%, and domestic water use -6.3%, agricultural water supply -5.2%, forestry -2.6%. Water consumption increase during the last three decades in Azerbaijan has been observed by 7.0%, East Georgia 7.0%, Armenia 8.5% and Iran (4.1%).¹ In 2015 total consumed water in Azerbaijan was 8567x10⁶ m³, from which 6057x10⁶ m³ is consumed by the agriculture sector.² Kura River is a very important fresh water source for the Azerbaijan Republic, as the water taken from the Kura basin is estimated 86% from the total water abstraction in the country. Due to the agriculture development in Azerbaijan, Armenia and Georgia and population raise it is expected increase of the water withdrawn by 3.59 x 10⁹ m³. It will lead decrease of the outflow to the Caspian Sea by 25.1%.³ Azerbaijan is particularly vulnerable, since the rivers provide about half of the country's drinking water and 60% of its irrigation water, while in Armenia and Georgia the water used for drinking is withdrawn from the groundwater. Irrigated agriculture makes up averagely more than 80% in Azerbaijan, 60% and 75% in Armenia and Georgia consequently. River water pollution taken place before entering into Azerbaijan. The water quality is worsened by raw municipal and

industrial wastewaters and return flow from agriculture, imposing health, ecological and aesthetic threats. Water pollution takes place due to the mining industry, agriculture and livestock activities starting from the upstream basin countries.^{4,5} The cooperation between the countries has been developing since long time.⁶ Since the beginning of the 2000s, with the support of the international organizations several integrated projects have been implemented to strengthen capacities in the basin countries for efficient joint water management.³ The governments of Azerbaijan and Georgia has taken the policy to aligning of the national legislations with the European Union Environmental Directives. The necessity to preserve quality and quantity of the water has been turning into the common concern in each country due to the increase in the water consumption, population growth, diversification of the economies and enlargement of the local agriculture. UNDP-GEF Kura Araz Project ((Kura II Project) is the continuation of these efforts which started in June 2016 and ends in June 2020. The main objective of the project is to elaborate Strategic Action Plan (SAP) and elaboration of the Integrated Water Resources Management principles. Along the main components forwarded to support capacity building, stakeholder education, enhanced governance, the project planned to support bilateral legal agreements.⁷ The discussions during the 6th meeting of the steering committee of the national policy dialogue in water sector of Azerbaijan held on 26 April 2017 in Baku. Presentation "Azerbaijan European Union Water Initiative plus for the Eastern Partnership" is introduced to the participants. Summary of my critical view and comments on the efficient realization of the program is summarized as follow. Generally, in Azerbaijan, there is not a remarkable conflict between the main water users. But shortages in water resources management are absolutely evident due to the location of the country. Current deficiencies on water management originated from insufficient adaptation of existing legislation to the market economy, partial mixing or duplication of responsibilities between various agencies, poor infrastructure (both of for river flow monitoring and irrigation water management), farming system based

on the small landholding and land fragmentation, as well as and lack of the sufficient experienced local experts. According to my view within this project the national policy dialog for better water governance at national level can be realized in the following directions:

- a. Improvement of existing legislation based on the experiences gained during the last 2 decades (after regaining of the independence) in the country with comparable assessment of currently applied EU and advanced international rules.
- b. Strengthening of the institutional structure of water management in the country to avoid duplication of the responsibilities and/or any matter in water management left without attention; a clear definition of the responsibilities and power of each agency.
- c. Integrated measures to improve the internal water use by main consumers which should be included: modernization of the existing water facilities, irrigation and hydraulic systems and structures; application of water saving modern irrigation technologies, alternative water usage for agriculture and irrigation to save freshwater; agriculture land consolidation to optimize plot sizes and water usage.
- d. Modernization of the all related infrastructure for the qualified monitoring on water flows, consumption, water quantity and quality, including application of the modern equipment and facilities.
- e. Integrated measures for development and/or improvement of legislation, economic, financial and institutional arrangements for trans-boundary cooperation. It is necessary to complete adoption of agreement with Georgia. However the Kura-Aras basin includes other countries and therefore this issue will need more deep development and interactions in the next stages of the trans-boundary coordination.
- f. The benefits of cooperation between Azerbaijan and Georgia will lead to more clean water access due to deep wastewater and industrial water treatment, based on advanced technologies, which will serve to strengthen the health of the population and to protect river bio-resources in both countries. Joint financing of the pilot project(s) for water treatment may be considered good practical start for such cooperation.

On the basis of strongly developed cooperation between Azerbaijan and Georgia, the future coordination will be easy to be applied for all basin countries. The fair-minded trans-boundary water management can be achieved by application of the following principles:

- i. Usage of available water resources with consideration of the required ecological and sanitary flows.
- ii. Consideration of the: geographic location of the country; the volume of the internal water resources.
- iii. Dependence of each country (district) from the water source; size of the country and population.
- iv. Specific volume of water per-capita; structure of water use, including character of agriculture/industrial use; the quality of the waste/industrial water discharged into the rivers; other sources of possible pollution.
- v. Based on the analyses on above situation, improvement measures and adaptation policies for each basin country can

be proposed and recommendations for the implementation elaborated.

- vi. Learning of the lessons on the achievements and shortages for trans-boundary water cooperation between EU countries and from other regions especially arid zones can be regularly discussed and the trips and study tours of the relevant stakeholders to these regions organized.

In order for strengthening efficiency of the project components, is proposed:

- I. The content and principles of monitoring.
- II. The methodology of monitoring - the unification of standards in the project countries.
- III. The methodology of operative information exchange.
- IV. Setting of periods and sequence of exchange of information including procedures and periods of the mutual inspections.

It is essential training of qualified personnel capable to apply modern methodologies and use of the new equipment. The realization of the scientific research program with the involvement of the scientists from the basin countries, as well as academic experts from well-known advanced study centers, can promote future activities more efficiently and scientific staff better for knowledge and experience in future studies. Regional Commission composed of appointed experts from each country on the permanent base can be established as an effective tool for successful bilateral policy discussions to support initiatives and reach consensus on the trans-boundary water management within the project and in future actions. Addressing of the key trans-boundary issues in the line of the best European practices will serve enlightening effect on the expansion of cooperation with other countries of the basin in future and generally to raise the culture of the water usage in agriculture, industry, household consumption and protection in whole basin ecosystem.

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Conflict of interest

The authors declare no conflict of interest

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