

TRANSBOUNDARY RIVER BASIN MANAGEMENT: EXISTING PROBLEMS AND POTENTIAL SOLUTIONS ON AN EXAMPLE OF KURA-ARAKS RIVER BASIN

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The Caucasus region is home to transboundary river basins such as the Kura, Araks, Sulaks, Terek, Choroki, Enguri, Kuban, and Rioni. The Kura and Araks Rivers have the largest drainage area and are mostly situated in the South Caucasus SC (Figure 1). In the Kura-Araks river basin over 40 river segments and tributaries cross international borders and therefore could be considered as transboundary rivers (TACIS 2003, Ewing 2003).



Figure 1: Map of the South Caucasus with delineated Kura-Araks basin

The basin includes two main rivers Kura and Araks. The Kura River contributes 55% of the flow and the Araks River contributes 45% correspondingly. The river system has around 10,000 tributaries and covers five countries: Armenia, Azerbaijan, Georgia, Turkey and Iran, (TACIS 2003). The total basin area of the Kura Araks is about 190,000 km², and approximately 16 million people live in the basin (UNEP/UNDP/OSCE 2004).

During the Soviet times Kura-Araks basin was shared between three countries: USSR, Turkey and Iran. After the dissolution of the Soviet Union, the Kura-Araks Basin became an international river basin also with respect to the South Caucasus states: Armenia, Azerbaijan, and Georgia. The main

problems in the Basin include not only the issues related to the quantity and quality of the water, but also the lack of internal and joint management and monitoring of the river system. These countries also share problems of poverty, political instability bureaucratic and structural issues, involvement of various international organizations, historical biases of the people who live in the region, and more importantly, ongoing ethnic, religious, and cultural conflicts. However, despite these obstacles, the countries recognize that they depend greatly on this river system, whose waters they have to share. Armenia, Azerbaijan, and Georgia gained their independence in 1991 after USSR collapse. During the Soviet era, all three countries were within the USSR and water resources management of the Kura-Araks basin was contingent upon the policy that the USSR was implementing at the time. When they became independent states, these three countries did not have any water resources management regulations or water sector legislation. However, each country has developed and adopted water codes within the last 15 years: Armenia adopted the Water Code in 1992 and revised in 2002; Georgia and Azerbaijan approved Water Codes in 1997.

Availability of water resources in these three countries is also different. Georgia has an oversupply of water, while Armenia has some shortages based on uneven distribution of water throughout the country and year accompanied with water resources poor management system. Azerbaijan has a lack of water (TACIS 2003). The main water use in Georgia and Armenia is agriculture, while Azerbaijan uses the Kura-Araks Rivers water primarily as a source of fresh water.

In the South Caucasus almost 80% of the wastewater load is discharged into the Kura River and its tributaries (UNECE 2003). The Kura-Araks river basin is excessively polluted due to discharge of poorly treated or untreated urban and industrial wastewater as well as agricultural runoff.

The Kura-Araks river basin was and is in the focus of many international and donor organizations like the European Union, United Nations, World Bank, U.S. Agency for International Development, Swedish International Development Cooperation Agency, and the North Atlantic Treaty Organization and others. Major projects done in the region includes the European Union Technical Assistance Commonwealth of Independent States-Joint River Management Project in cooperation with UNDP, the NATO/OSCE South Caucasus River Monitoring Project and USAID's South Caucasus Water Management Project.

While the three countries are willing to cooperate on water-related issues, they have not solved their political, economic, and social issues. It is necessary to gain an understanding of the geographical, historical, and political situation, problems and conflicts of the region in order to understand what is required to resolve the regional issues involved in transboundary water management. Besides, not only the water-related issues should be examined, but also historical and political issues in Armenia, Azerbaijan, and Georgia should be taken into account while developing the further steps and actions aimed at strengthening the effectiveness of integrated water resources management and cooperation on local, national and regional levels.

WATER RESOURCES OF THE KURA-ARAKS BASIN

The Kura-Araks Basin is situated south of the Caucasus Mountains. Its borders are northeastern Turkey, central and eastern Georgia, almost all of Azerbaijan and Armenia, and northwestern Iran. The Kura River originates in northern Turkey (185 km), passes through Georgia (390 km), and Azerbaijan (789 km) and then directly discharges into the Caspian Sea. There are 6,500 small and medium sized rivers in the basin (TACIS 2003). The total length of the Kura River is about 1,364 kilometers (km) and it has an average discharge of 575 million cubic meters per year (MCM/yr) (CEO 2002). The Araks originates in Turkey and after 300 km forms part of the

international borders between Armenia and Turkey, for a very short distance between Azerbaijan and Turkey, between Armenia and Iran, and between Azerbaijan and Iran. The Araks River joins the Kura River (80 km) after crossing the Azerbaijan border (TACIS 2003). The Araks River is about 1,072 km long and it has an average discharge of 210 MCM/yr.

Table 1

Total Watershed Area of the Kura-Araks Rivers

Country	Population (million, July 2003 est.)	Kura River		Araks River	
		% of total basin area	Area (km ²)	% of total basin area	Area (km ²)
Armenia	3.3	15.79	29,741	22	22,090
Azerbaijan	7.8	30.70	57,800	18	18,000
Georgia	4.9	18.43	34,700	-	-
Turkey & Iran	-	35.06	66,000	60	61,000
Total	16	100.00	188,241	100.00	101,090

Table 1 shows that water resources are not distributed equally in the South Caucasus (TACIS 2003, USAID 2002, CIA 2004). While Georgia has more water than it needs, Azerbaijan is left with a water deficit; furthermore its groundwater is of poor quality. It obtains 70% of its drinking water from the Kura-Araks river basin. Armenia has a surface water shortage but has a large fresh groundwater stock that it uses for drinking water (TACIS 2003).

Table 2

Indicative Water Balance in the Kura Basin (in km³)

	Armenia	Azerbaijan	Georgia
Precipitation	18	31	26
Evaporation	(11)	(29)	(13)
River inflow	1	15	1
River outflow	(8)	(18)	(12)
Underground inflow	1	3	1
Underground outflow	(1)	(2)	(3)

Note: There are different numbers from the different sources regarding the water balance in the South Caucasus

Table 2 shows that the most precipitation and evaporation occurs in Azerbaijan followed by Georgia and Armenia in that order; the figures shown in parentheses indicate depletion (TACIS 2003).

Table 3

Land use in the Kura Basin (in km²)

State	Land Area	Disputed Area	Forested Area	Agriculture			
				Arable Land		Meadow, Pasture	Other
				JRMP	CIA		
Armenia	29,800	1,500	4,250	5,600	5,215	8,300	10,091
Azerbaijan	86,600	2,000	7,590	15,290	16,714	20,936	12,00
Georgia	67,700	600	10,900	7,700	7,813	NA	NA

Water is used for municipal, industrial, agricultural, irrigation, fishery, recreation, and transportation purposes. The main water use is agriculture, followed by industry and household uses. Table 3

shows that Azerbaijan has the most arable land, Georgia and Armenia are ranked as second and third correspondingly (TACIS 2003, CIA 2004). Table 3 shows that even though Azerbaijan has the most arable land it is the one that is faces a water deficit. Azerbaijan withdraws 57.9% of its actual renewable water resources, Armenia withdraws 28.2% of its actual renewable water, whereas Georgia withdraws only 5.2% of its actual renewable water. However, as a water resources rich country Georgia's withdrawal per capita (cubic m) is 635 m³ while Azerbaijan's is 2,151 m³, and Armenia's is 784 m³. It is evident that per capita water withdrawal is disproportionate to water availability among the three countries. The main rivers have only two reservoirs; but, the tributaries have more than 130 major reservoirs. The total capacity of the reservoirs and ponds is almost 13,100 MCM (TACIS 2003).

WATER-RELATED ADMINISTRATIVE, LEGAL, AND INSTITUTIONAL ISSUES

After gaining their independence from the USSR in 1991, Armenia, Azerbaijan, and Georgia began to revise their administrative and legal frameworks as well as their water codes. Because of new legislation and governmental reorganization in these three countries, the responsibilities and the content of the water code are still changing. The administrative organization of each country is very complex. Institutional structure of the water resources management sector is very complicated in all three countries. Each of the countries has a wide range of ministry committees and agencies that have responsibilities and an interest in water management. Thus, the communication and coordination problems within all these entities are the main obstacles in managing the South Caucasus' water resources. In addition, communication is a major problem in the region. This can be seen between the countries, within the individual countries, and between international entities and governments. Data exchange is an ongoing and incomplete job resulting in continued miscommunication between the entities. Each of the countries adopted a new water code after they became independent. Armenia was the first to adopt its water code in 1992 and harmonize it with the EU Water Framework Directive in 2002. Both Georgia and Azerbaijan adopted their own water codes in 1997.

There are currently no water treaties among the three countries. This is directly related to the political situation in the region. However, there is recognition of the importance of water and river basin management, which provides them with a good foundation for a transboundary water management agreement. The lack of coordination in river basin management makes it difficult to overcome the issues the region faces in relation to the function of the rivers in Armenia, Azerbaijan, and Georgia (TACIS 2003). There are also other political issues which make signing an agreement difficult among the countries. Nagorno-Karabakh is one of the main obstacles, which makes it difficult for Azerbaijan and Armenia to sign a treaty even though it may relate only to water resources management. Another obstacle is the Javakheti region of Georgia. Ethnic Armenian groups in Javakheti that are seeking greater autonomy and closer ties with Armenia have led to a confrontation between Armenia and Georgia and a resumption of hostilities in the region (SIDA 2002).

Armenia has not yet signed transboundary water-related conventions, but the new Water Code takes into account the transboundary aspects of water. The Water Code also sets the principles and first steps for river basin management, which is a very important step for transboundary water management.

As a downstream country suffering from a water shortage, Azerbaijan is open to signing international water-related conventions (TACIS 2003). Azerbaijan signed and ratified the Helsinki Convention and wants Armenia and Georgia to ratify it. However, in the area of international

conventions, Azerbaijan is far behind Georgia and Armenia. Also complicating the situation in Azerbaijan is the ownership of the water which can be the State, municipalities, or the private sector.

Georgia has decided to harmonize its legislation with international development. Georgia has signed more international conventions than Azerbaijan and Armenia and is currently discussing ratifying the Helsinki Convention.

EXISTING CHALLENGES AND FURTHER STEPS TO FOSTER COOPERATION

The main obstacles suppressing the successful collaboration among the river basin countries from social and economic perspective are lack of trust among the countries, socio-economic instability, historical issues, refugees and immigration, poverty, lack of specific funding to address water resources planning, management and protection issues. From the political and management perspective the following reasons could be mentioned: unstable political situation in countries, lack of democracy, existence of ethnic conflicts, regional and global interference, discrepancy in legal field, absence of relevant transboundary, bi-lateral, or multi-lateral agreements among the countries, lack of cooperation and communication national and international levels, lack of coordination among water-related projects carried out in countries, outdated infrastructure and poor monitoring.

Meantime, it is also important to note that even though ongoing disputes exist among these countries, they are accustomed to working together and being part of a similar culture since they were part of the former Soviet Union. During the Soviet Union era only a couple decades ago, these countries were sharing the Kura-Araks Basin along with their other resources. Despite their religious and cultural differences, they still share the same fears and hopes for their future (Vener 2006). While the countries sharing Kura-Araks river basin are willing to cooperate on water-related issues, they have not solved their political, economic, and social issues. The work in the basin will be the first step towards cooperation and it is possible that they will be able to carry this positive spirit into resolving other areas of conflict. To address this it is necessary as a first step to bring together the stakeholders to determine how to meet society's long-term needs for water and coastal resources while maintaining essential ecological services and economic benefits to balance human, industrial, agricultural and environmental needs (USAID 2006, GWP 2006).

In order to improve water resources management and monitoring related activities the Kura-Araks river basin countries and particularly Armenia, Azerbaijan and Georgia, which are willing to become a EU member in the future, can review their respective legislation to harmonize it with the EU Water Framework Directive. The Kura-Araks River Basin Management Plan could be developed and approved in all five countries to ensure effective and equal benefit from using the available water resources. Further on the efficient mechanisms should be established and enforced to implement the basin management plan and coordinate various water resources related projects and parties. Special technical committee consisting of well-recognized experts representing each country can be established to discuss each party's involvement, approaches and priorities through a series of regular meetings. At early phases of this initiative various international organizations and donor's can support establishment and operation of committee and if necessary meetings can be carried out in an independent country located outside the basin boundaries. It is also necessary to gain an understanding of the geographical, historical, and political situation, problems and conflicts of the region in order to understand what are the measures required to resolve the regional issues related to the management of transboundary water resources.

Based on the mentioned factors it would be possible to carry out capacity building and awareness raising initiatives, as well as develop and implement in-country policies and programs aimed at fair

and equitable sharing of resources and associated benefits, reveal the mechanisms and approaches for dispute resolution, identify relevant mitigation measures. These will result in creating and maintaining enhanced local capacity and knowledge, and will lead to enhanced cooperation among the institutions involved in water sector in the region, better donor coordination and taking full advantage of the synergy from donor contributions as well as improved management of transboundary water resources from financial, economic, social, technical and environmental perspectives.

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