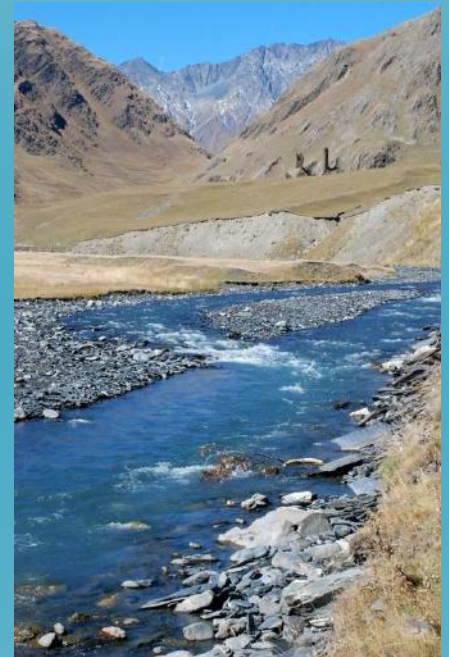
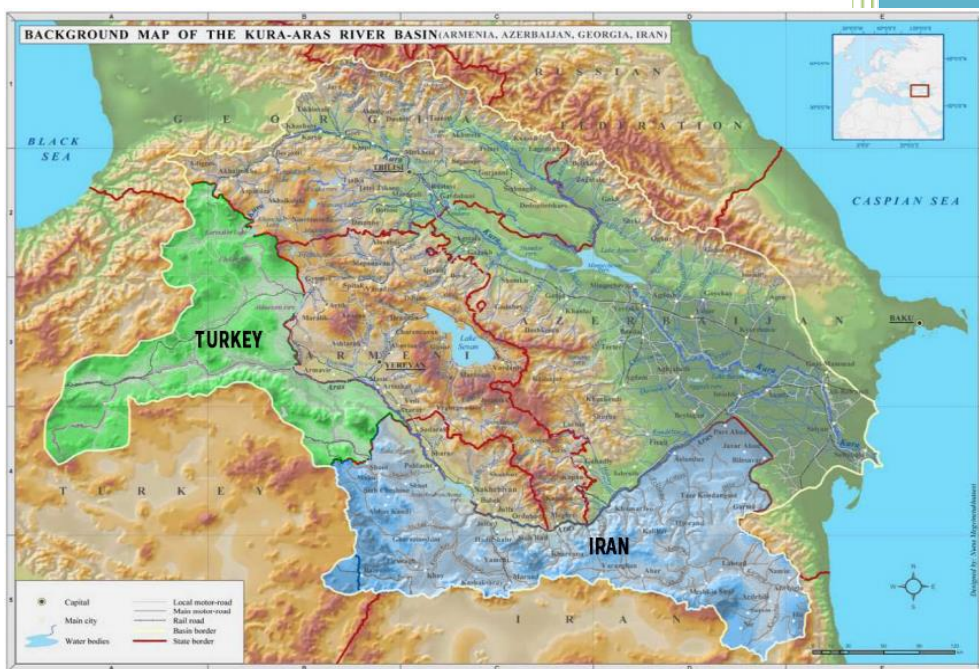
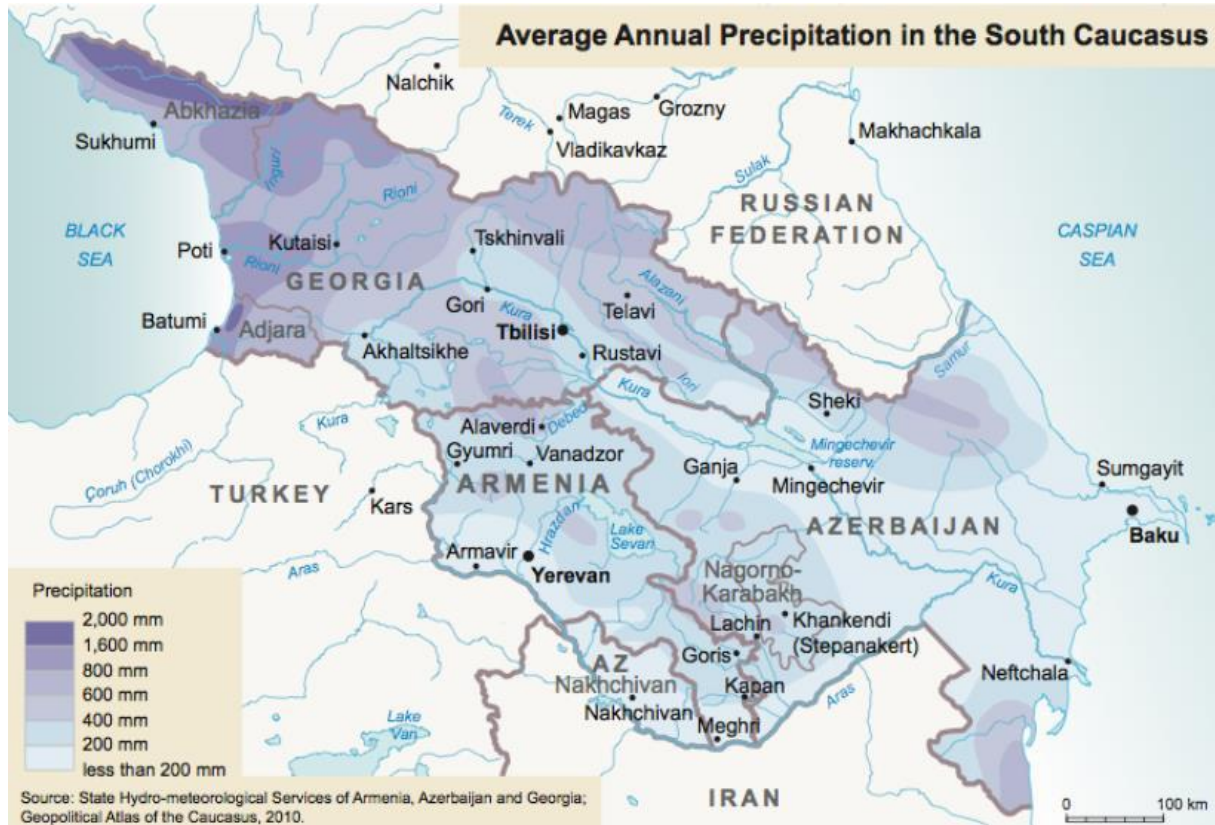


Transboundary Rivers and Water Diplomacy in

2017

The South Caucasus





REPORT NO.:10

Title of Report: Transboundary Rivers and Water Diplomacy in the South Caucasus.

Author of the Report: Dursun YILDIZ¹

PREFACE

Gas-politics and Hydro-politics in 21st century have been incorporated into Petro-politics which defined the policies in the cold war period. That state highlights the Hydro-geopolitics of the South Caucasus.

First and foremost, step to render regional stability sustainable is building confidence, and implementing policies which are to ratchet up international co-operation and interdependency.

Single country oriented management of water resources does not solve the problems of the transboundary water resource management in the South Caucasus region. It needs an innovative water-politics at the basin level can address the environmental and social-economic development needs in the region.

The region's economic, political, and security dynamics are closely tied to its hydropolitics. The Kura-Aras River Basin is the largest in the South Caucasus, and its water resources underpin the development of all sectors of the economy. Freshwater shortages are characteristic of the South Caucasus. Additionally, the quality of water in the Kura and Aras Rivers is low due to pollution. A significant lack of trust and technical know-how in the region, as well as an asymmetry in resources available for environmental protection, are main obstacles to cooperation.

We wish that this report would contribute to regional peace and stability.

Respectfully

Executive Board of Hydropolitics Academy

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¹ Civil Engineer, Expert on Water Politics, President of the Hydropolitics Association



The past cannot be changed. The future is yet in your power.

Hugh White

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Political Map of South Caucasus

1. INTRODUCTION

South Caucasus region is a globally strategic corner of the world where Russia, Eastern Europe, the Middle East and Central Asia converge. The region is of high geo-strategic importance for Russia, Iran, Europe and the United States, not at least due to the presence of Caspian oil and gas resources and pipelines (Vener 2006). Water management problems are now emerging as a cross-cutting issue critical to the stability of volatile regional relations and delicate geopolitical dynamics in the area.

After the Soviet Union's dissolution, the Kura-Aras Basin became an international river basin with respect to the South Caucasus states of Armenia, Azerbaijan, and Georgia. Despite differences among these countries, they depend greatly on the Kura-Aras Basin. This dissolution also brought a necessity of new hydro politics relations between riparian Armenia, Azerbaijan, Georgia, Turkey and Iran.

Deterioration of water quality and decreasing annual water quantity in the Kura-Aras river basin has significant transboundary consequences in the downstream countries. Therefore, Trans-boundary water management has been very important for South Caucasus Region. Because Azerbaijan and Armenia have 70% of their territory lying within trans-boundary river basins, Azerbaijan depends on more than 50 per cent of water resources originates outside of their boundaries (Ubiliva2003). Pressing concerns such as flood mitigation, improvement of water quality, operation of hydraulic infrastructure, and wetlands conservation, all have trans-boundary dimension. For instance, the Kura and Aras Rivers provide about half of the drinking water and 60% of the irrigation water in Azerbaijan. Together with Armenia, Azerbaijan is particularly vulnerable to droughts, since semi-arid and arid areas are advancing.

About two fifths of the territory of South Caucasus is in trans-boundary river basins. The Basin countries Azerbaijan, Armenia, Georgia have been in the progress of development. Therefore, utilization of the water resources with projecting and implementation of the hydraulic structures on the rivers of Kura, Aras, Samur and irrigation projects will be essential for the basin countries. But even basin countries development plans need collaboration between riparian states, it has not been achieved yet.

The confrontations related to the transboundary water resources are conditioned by unequal distribution and reduction tendency of water, construction of uncoordinated water structures, irrigation development, lack of confidence, using the water under occupation and water structures as provocation tools, pollution, long term conflicts between riparian states, weak cooperation between state regional governmental bodies, as well as between state

environmental structures and NGO, lack of compatibility of water standards, legal and institutional differences.

Although South Caucasus states have been independent countries, water allocation system has been carried out according with the principles stated in USSR era. The distribution of transboundary Aras and Kur rivers water potential has not been regulated legally yet amongst five states Turkey, Azerbaijan, Iran, Georgia and Armenia. Lack of multilateral agreement on what drives the sub basins' water quantity and quality still constrains consensus on the benefits of improved and collaborative water management at the regional level.

In fact, several bilateral agreements on joint water resources management exist. Some of them were made during the time of the Soviet Union. According to UNDP, Armenia and Azerbaijan consider themselves bound to these treaties. Moreover, Georgia has made bilateral agreements with Armenia and Azerbaijan in 1997. For most of these agreements, it is not clear how relevant they are in practice.

Related with international agreements, Azerbaijan signed the UN Convention on the Protection and Use of Transboundary Water Courses and International Lakes in 1992 and ratified it in 2000. However, Georgia and Armenia did not sign the convention. 1997 UN Water convention has not been ratified yet by any countries in the region.

Future projections indicate more extreme weather events and continuing ice and snow melting in the region. The model does not project changes in river discharge, but the projections on rainfall happening less regularly but more intensely indicate an increased risk of floods and droughts.

During the recent years, a marked decline in precipitation has been observed in the Caucasus countries. In Georgia, the 1998 and 2000 summers were dry causing significant economic losses in terms of reduced agricultural production in both rain fed and irrigated areas, which gave rise to food shortage. In 2000, a severe drought affected the northern region of Armenia causing devastation to subsistence farmers in the mountainous areas who depend on rain fed irrigation. Droughts are also common in Azerbaijan, particularly in the Kura Aras lowland, which receives very little precipitation. In these years, the extremely dry summers caused significant economic losses to agriculture and fishery.

In Caucasus, the main user of water is the agriculture, followed by households and industry uses. It is significant, that usage of water resources and supply were changed after the break-up of the Soviet Union. In the period of Soviet Union, the losses of water in irrigation and water supply system were high. Only a small percent of water was reused.

It is important to consider the quality of Surface and Ground waters in the region. The water quality is one of the main environmental problems with the lack of effective rules and regulations in the countries as well as multilateral agreements between riparian. Organic and chemical substances, heavy metals, hazardous chemicals, and oil products are the main polluters of the basins of Southern Caucasus Rivers.

Apart from other transboundary rivers Kura-Aras has a high degree of international importance in terms of both quality and quantity in the region. It covers Georgia, Armenia, Azerbaijan, Turkey and Iran. Kura –Aras water basin, includes two main rivers, the Kura, Aras and their tributaries, which covers three countries: Armenia, Azerbaijan, Georgia and part of Turkey and Iran. The total area of the basin is about 190 000 km². The Kura takes the source from Northern Turkey and passes through Georgia and flows in Caspian Sea in Azerbaijan (Ubilava 2003).

The total basin area of the Kura Araks is about 290,000 km², and approximately 16 million people live in the basin (Vener 2006).

The total length of Kura river is about 1,515 km long and its main tributary, Aras river length is about 1,072 km. The basin is rich with biodiversity and wetlands. The rivers are mainly used for agriculture, domestic, households, industrial, and hydropower generation and recreation purposes (TACIS ² 2003). Whereas Armenia and Georgia have abundant underground water reserves, which are used as a major source of drinking water, Azerbaijan is almost entirely reliant on the Kura river for all types of water uses.

1.1. The transboundary water problems existing in the basin

The problems existing in the basin are related to both quantity and quality of water. Water shortage is acute for Georgia and Azerbaijan, since rainfall disappears from West to east of the basin. The average annual precipitation in Central Georgia, where the Kura enters Georgia from Turkey, is 500 mm but is 200 mm in Azerbaijan, where the river flows into Caspian Sea (Ubilava 2003).

Similarly, evaporation rates soar from west to east. Drought periods in the Kura basin are very common. This has seriously affected the economies of Georgia and Azerbaijan. Overall, despite the efforts to manage river flow the region faces both floods and shortages. Water quality is lowered by raw municipal and industrial wastewaters and return flow from agriculture, imposing health, ecological and aesthetic threats.

The Choriki river shared by Turkey and Georgia is also in need of sediment management measures in the operation of the new Turkish dam are properly implemented to avoid the erosion problem in Georgia coastline.

Jointly monitor basin's surface water quality project³ started in late 2002 and formally ended in December 2009, can be taken as a making progress for the management of trans-boundary water resources in the region. The project has also been a model of collaboration and cooperation in other transboundary basins. The project has been served not only collect valuable data, but also improved collegial professional relationships among the participants.

Efforts made have been limited on trans-boundary issues in the South Caucasus region because of political tension in the region and lack of regional development goal. The regional

² Technical Assistance: Commonwealth of Independent States (TACIS) The EU TACIS Joint River Management Program (JRMP) Funded by the European Union

³It was a project from the North Atlantic Treaty Organization's Science for Peace Programme

conflicts can be regarded as an important obstacle to increased cooperation on water resources.

Considering this reality, it can be said that making progress for the management of transboundary water resources need certain mutually beneficial steps such as the adoption of broadly recognized principles, joint venture on some water structure construction, joint management and incorporation of transboundary water issues in revised legal and institutional frameworks, institutional design for local context.

It also requires a new hydro policy paradigm, adaptive water management, benefit sharing approach, focus on scales inside the basin, promoting spillover effects, and a broader regional vision. Smaller-scale transboundary frameworks, tailored to specific issues, may constitute a fit-for-purpose approach that helps achieve practical progress in the context of broader basin-level approaches.

In summary, the transboundary water resource management policy makers in the South Caucasus region should be aware of that regional specifications make sustainable transboundary water solution difficult and single country oriented management of water resources does not solve the problems. It needs an innovative water-politics starting from smaller scale to broader basin level approach addressing win win, mutually beneficial, collaborative paradigm and institutional design for local contexts to which international transboundary law applies.

1.2. The South Caucasus As a Crossroads Region:

With the Soviet Union now just a memory, the EU and the United States are expanding into Russia's old sphere of influence: the immediate post-Soviet neighborhood in Eastern Europe, the Caucasus and Central Asia. At the wake of the Russia-Georgia war last August, the EU launched the Eastern Partnership — an ambitious outreach effort that many regard as an attempt to loosen Russian influence in these regions. OSCE, NATO, USAID, TACIS and the EU have also invested heavily in projects in the South Caucasus.

The South Caucasus also remains vital to Russia – the dominant power in the region in the last 150 years. Last May, the Kremlin included the resources in the Caspian Sea Basin, where Azerbaijan is a major player, in a document outlining Russia's security strategy until 2020. The country also co-chairs, together with France and U.S.A, OSCE's Minsk Group that serves as a deal broker in the Nagorno-Karabakh issue.

The shifting allegiances of the region's three countries feed the competition for their favors and resources. While Georgia – an important transit country – has clear pro-Western and – NATO orientation, Armenia and gas-rich Azerbaijan remain undecided between their traditional friendly ties with Russia and their ambitions for Euro-Atlantic integration.

“Russia will always be there, no matter how other powers get involved,” said Natalia Mirimanova — an International Alert consultant and expert on conflict analysis and security resolution in the South Caucasus.

2. WATER AND LAND RESOURCES

2.1. The Kura-Ara(k)s Basin

The Kura-Aras Basin is situated south of the Caucasus Mountains. Its borders are northeastern Turkey, central and eastern Georgia, and northwestern Iran. It contains almost all of Azerbaijan and all of Armenia (Figure 1).

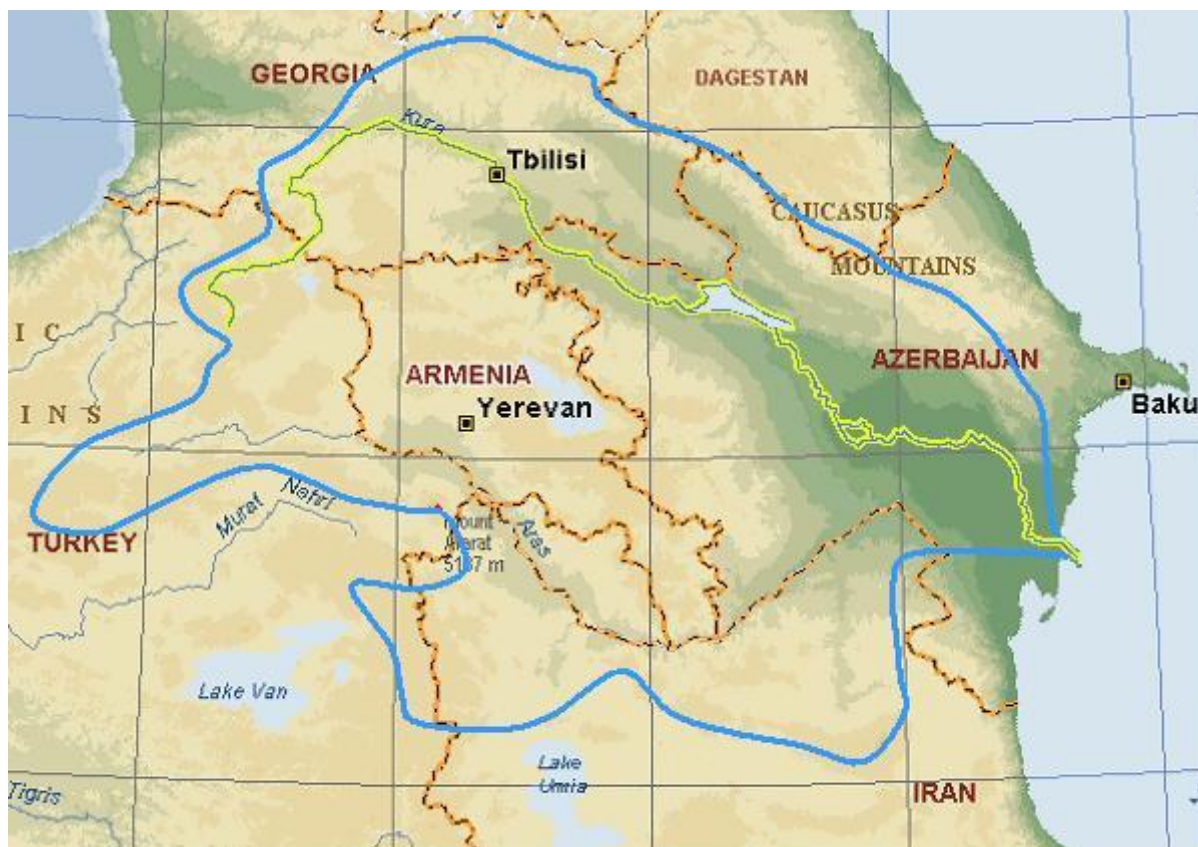


Figure 1. Map of South Caucasus with the Kura-Aras basin outlined in solid line (from Vener 2006).

The Kura River originates in northern Turkey, flows through Georgia and Azerbaijan, and then directly discharges into the Caspian Sea. The Kura River's total length is about 1515 kilometers and average discharge at its Caspian Sea mouth is about 55km^3 .

The Aras River 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 Aras River joins the Kura River in Azerbaijan. It is about 1072 km. long and has an annual average flow of 21 km^3 (TACIS 2003).

But Kura and Aras River flow has changed in time. Variation in hydrological flow is caused by numerous human interventions including direct water abstraction from surface and groundwater bodies, and increased evaporation due to impoundments, urbanization and deforestation. This has significant transboundary consequences. At the confluence of the Aras River the natural annual flow of the Kura River is approximately 32.3 km³, while the natural annual flow from the Aras at the same point is 12.3 km³. However, the annual flow of the Kura River has decreased as 19.6 km³ in 2005, while the annual flow from the Aras at the same point has also decreased as 9.0 km³. It is calculated that 40 % of the Kura's natural runoff and 27 % of the Aras runoff is lost to the Caspian Sea



Figure 2. Average Annual precipitation in the South Caucasus.

Table 1. Watershed area of the Kura and Araks River in each country of the South Caucasus (TACIS 2003, Vener 2006).

Country	Population (millions) (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	16.0	100.00	188,241	100	101,090

Table 2. Land use in Kura -Aras Basin (km²). (TACIS 2003, Vener 2006).

State	Land Area	Disputed Area	Forested Area	Agriculture			
				Arable Land		Meadow/ Pasture	Other
				JRMP	USCIA		
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	12,000
Georgia	67,700	600	10,900	7,700	7,813	NA	NA

Table 3 Kura- Aras Basin average annual water balance (km³) (TACIS 2003, Vener 2006)

	Armenia	Azerbaijan	Georgia
Mean annual rainfall (km ³)	18	31	26
Evaporation (km ³)	(11)	(29)	(13)
Surface water inflow (km ³)	1	15	1
Surface water outflow (km ³)	(8)	(18)	(12)
Groundwater inflow (km ³)	1	3	1
Groundwater outflow (km ³)	(1)	(2)	(3)

Table 1. shows the distribution of watershed area by country. Land use in the region is shown in Table 2. The water values in Table 3 shows that water resources are not distributed equally in the South Caucasus. While Georgia has very rich on water resources, Azerbaijan face some water shortage problems in some regions; furthermore, its ground water is of poor quality. It obtains 70 per cent of its drinking water from the Kura-Aras Rivers. Armenia has a surface water shortage but has a large fresh ground water stock that has already been utilized for drinking purpose (TACIS 2003). Table 3 and Figure 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).

Water is used for municipal, industrial, agricultural, irrigation, fishery, recreation, and transportation purposes in the region. But the largest amount of water is used in agriculture sector, followed by industry and household uses. Table 2 shows that Azerbaijan has the most arable land followed by Georgia and Armenia. Even though Azerbaijan has the most arable land, it is the one facing a water deficit.

Azerbaijan withdraws 57.9 percent of its actual renewable water resources, Armenia withdraws 28.2 percent, whereas Georgia withdraws only 5.2 per cent. However, as a water resources-rich country Georgia's withdrawal per capita is 635 m³ while Azerbaijan's is 2,151 m³, and Armenia's is 784 withdrawal is disproportionate to water availability among the three

countries (Vener 2006). 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. With respect to storm water and sewage effluent discharges, the Kura-Aras receives 100 percent of Armenia's, 60 per cent of Georgia's, and 50 per cent of Azerbaijan's.



Figure 3. Kura-Aras River Basin

2.2. Climate Change Effects in the Region

Changes in climatic conditions in the Kura-Aras river basin are likely to be complex and diverse⁴. During the last century, a significant area of the territory had seen air temperature increase by an average of 0.03-0.06 0C per 10 years (TDA 2007).

According to the local most probable climatic scenario⁵, it has been calculated that an increase in temperature of 0.5-1 0C in the Basin will result in flow reductions even if the level of

⁴ Possible variations of climate in the region were analyzed on the basis of global climate change scenarios proposed by the World Meteorological Organization and the results of mathematical modeling of total atmospheric circulation, from the laboratory of hydrodynamics, Preston University, USA. The evaluation of the change of river flows has been performed on the basis of statistical analyses of hydrological lines of observation, as well as by means of mathematical modeling of river flows. (TDA 2007).

precipitation remains the same. For example, near Tbilisi, flow rates will be reduced by 5-10 % in the Kura River. However, the extreme scenario would see an increase of 2 °C and a 10% reduction in precipitation has been calculated, resulting in a 50% flow reduction. This would have a dramatic effect on the environment and socio-economic development in the region and the implications would be impossible to forecast.

According to study (TDA 2007) ' climate change has to some extent already affected more sensitive and vulnerable biodiversity and ecosystems in the basin over the last decades. However, if global warming continues to follow more pessimistic scenarios, then the effect will be much more dramatic and will have significant impacts on the hydrological regime, ecosystems, agriculture and the national economies in the basin'

The research carried out on climate change affect in the Kura-Aras river basin countries, shows that in Azerbaijan temperature is increasing but the annual precipitation rate has remained unchanged. Consequently, it is presumed that with increased evaporation, river flows in the Azeri part of the basin are decreasing. In Armenia, there is a reduction of precipitation which also negatively affects river flow. In the Georgian part of the basin there has been an observed increase in temperature and a reduction in precipitation (TDA 2007).

It is anticipated that the expected decrease in the precipitation because of climate change will increase desertification in the semi-arid regions of Azerbaijan. Climate change impact scenarios show that by 2050, water resources will decrease by 15-20% and desert areas will increase by 25-30%. (Valieva 2013). It is also expected that the expected increases in glacier melting in the Caucasus Mountains because of increased temperatures will increase floods. Both the droughts and the floods that are expected to increase, necessitates the construction of water storage and flood detention dams in the Aras and Kura rivers and their joint operation (Valieva 2013). In this regard, Azerbaijan's efforts to seek international support continue, and a project involving Azerbaijan and Georgia supported by UNECE has been prepared and is about to be signed. This project aims to work on sustainable water management in two countries' transboundary river Kura. However, this project is an initial step and more cooperation will be needed to achieve sustainable water management.

The UNDP/ GEF Project on Reducing Transboundary Degradation in the Kura Aras River Basin showed that "From a transboundary waters perspective the most immediate consideration in the region is that less water will be entering across the border from their upstream neighbors, both as a direct consequence of reduced river flows due to lower precipitation and higher evaporation and evapotranspiration, and as an indirect consequence of climate driven increases in water demands of their upstream neighbors. Azerbaijan is the

⁵ According to existing global climate change scenarios, warming is expected in the basin with the average annual temperature increasing by the middle of the 21st century by 1.5-2.0 °C compared to the average temperature of the 20th century. The annual amount of precipitation is expected to slightly decrease.(TDA 2007)

most dependent downstream riparian, but also both Georgia and Armenia are downstream riparian areas of other countries. (UNDP/ GEF Project 2013).

3.DAMS AND RIVERS AFFECT TO HYDROPOLITICS IN THE REGION

3.1. Megri Dam –Armenia

In Armenia, after a short period of energy shortages at the end of 2013, plans have been made to develop hydroelectric power plants to reduce its dependence on Iran and Russia. Armenia, which currently has 12 hydroelectric power plants, took action to build the Megri HEPP on the Aras River under this plan. The Megri dam worth \$323 million with an output of 130 MW, Armenia signed a BOOT investment program with Iran's Tavan AbAraz on October 15, 2010 (Kavkaza 2012).

However, even though Azerbaijan opposes a very tough duel against the construction of this dam on the Aras River which forms the border with Armenia. Armenia, which has a problem in political relations with Azerbaijan due to occupation of the Nagorno-Karabakh, has not taken this protest very seriously.

The Arpacay Reservoir and the western side of the Aras River are a vital part of Armenia. However, very difficult topography in this region does not allow the economic development of these water resources. Armenia, finding very hard financial resources for the care of small HEPPs in the western part of the country, cannot make an attempt to make a new dam on the Debed River from Georgia.

The Debed River is a transboundary river between Georgia and Armenia located in the Kura River basin and has a reservoir of 8340 km². A total of 708,000 people live in this river basin. Approximately half of this transboundary river basin is located within the borders of Armenia and the population living in this region is around 260,000. There is EU projects⁶ on this river. Problems between Georgia and Armenia on the use of this river's water potential have slowed Armenia's plans to build a dam on this river.

EU is pushing for the closure of the Metsamor Nuclear Power Plant, which has been operating since 1970 and has the capacity to cover 40% of Armenia's energy, but has been damaged in

⁶ "EU Tacis Project: Trans-Boundary River Management Phase II for the Kura River - Armenia, Georgia, Azerbaijan Draft River Basin Management Plan For Debed River Basin".

the earthquake of 1988. EU has requested that the power plant be closed until 2016. In this case, Armenia will have to do more hydropower plants for its energy needs. This means that the country will develop more of the transboundary water resources, which will lead to increased tension in the riparian countries.

3.2. Mingechevir Dam –Azerbaijan

The tension and hot clash between Azerbaijan and Armenia is still threatening the water structures. After the clashes that broke out in the border between the two countries in August 2014, Armenia hinted that it could target the dams by making build up in the border.

Sarsang Reservoir Case



Sarsang Reservoir

Photo: www.wikipedia.org

Sarsang Dam was built in 1976 on the Tartar River, the reservoir, situated within Karabakh, holds 560 million cubic meters of water. When armed fighting has ceased in 1994 between Azerbaijan, Armenia over Karabakh, Azerbaijan lost not only territory, but also access to the 560 million m³ Sarsang Reservoir.

Sarsang reservoir, situated within Karabakh, used to provide drinking and irrigation water not



only to the remote mountainous region itself, but also to six surrounding regions now occupied by Armenian and separatist forces. Among them is the mostly Azerbaijani-controlled region of Tartar, a land of rolling hills situated on the line of contact between Azerbaijani and Armenian forces.

After the 1994 ceasefire following the Nagorny Karabakh war, Azerbaijan could not longer use the reservoir. Tartar's population of roughly 102,000 people, mostly Internally Displaced Persons (IDPs) from Karabakh and the occupied regions, have no other high-volume source of water. They lose access to Sarsang's water during the region's hot and dry summer, and regain it in the fall and winter, when de-facto Karabakhi officials open the floodgates without notice.

3.3. Regional Dispute on Water Use

Locals living along the Tartar River are looking for an immediate, practical solution to the problem. Over the years, the Tartar regional government has drilled over 400 wells as a substitute for when reservoir water is not available, but residents claim the well water does not meet their needs, either. Resolving the Sarsang problem might play a positive role to cooperate in the region.

The 26 January 2016 resolution issued by the Parliamentary Assembly of the Council of Europe (PACE) said that more than 20 years of neglect of the key Sarsang reservoir posed “a danger to the whole border region.” The state of disrepair of the reservoir, which lies inside Nagorny Karabakh and is controlled by Armenians, could lead to a “major disaster with great loss of human life and possibly a fresh humanitarian crisis,” PACE said. However, critics in Armenia and Nagorny Karabakh accused PACE of supporting Azerbaijan's viewpoint rather than looking at the situation objectively.

3.3.1. Deliberately deprived of water and danger

In December 2015, Parliamentary Assembly of the Council of Europe (PACE) rapporteur Milica Marković of Bosnia-Herzegovina asserted that 'The inhabitants of bordering regions of Azerbaijan are deliberately deprived of water.' She warned that a lack of regular technical maintenance for the Sarsang dam means that the reservoir endangers the entire area. A 26 January 2016 resolution issued by PACE called on the Armenian government to stop using water resources “as a political tool.” It called for an immediate withdrawal of Armenian armed forces from the surrounding area to allow engineers and hydrologists access to the reservoir to examine its condition. Both Armenia and the de-facto Karabakh government which it protects have denounced the resolution as a propaganda ploy and insisted that the reservoir meets international standards. But the report addressing the Sarsang reservoir issue is also pointing out very important point stressing “...(Armenia)... is “deliberately” depriving

border regions of Azerbaijan of water." If this action is true it fits the UN definition of genocide per Article II, paragraph c⁷:

Article II

In the present Convention, genocide means any of the following acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such:

- (a) Killing members of the group;
- (b) Causing serious bodily or mental harm to members of the group;
- (c) Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part;**
- (d) Imposing measures intended to prevent births within the group;
- (e) Forcibly transferring children of the group to another group

Definition in this article II, paragraph c should be considered by all upstream riparian states in the World in their own water management policy.

3.4. Regional Hydropolitics

The water management of each country in the region during the USSR depended on the plan made by Moscow. With the disintegration of the USSR, a water management gap and transboundary rivers has emerged in this region like in the Central Asian countries. Prior to 1992, these countries which managed water resources with Moscow central planning had no legal and institutional infrastructure, norms and standards for independent water management. The regional rivers, formerly polluted rivers only in the U.S.S.R, have emerged as Transboundary Rivers polluted by other countries after the disintegration of the U.S.S.R.

For example; The Kura-Aras river system is a new transboundary river system that participates in the world literature with the disintegration of the USSR in 1989. Three countries using these rivers also have problems in terms of water pollution and water quantity. In general, Georgia suffers from a problem of water withdrawal, Armenia has insufficient water management problem, and Azerbaijan has insufficient water problem⁸. The waters of the Kura-Aras river system are mainly used for agricultural purposes in Georgia, for agriculture and industry (mostly nuclear power plant cooling water) in Armenia and for

⁷ (<https://treaties.un.org/doc/Publication/UNTS/Volume%2078/volume-78-I-1021-English.pdf>)

⁸ Technical Assistance to Commonwealth of Independent States 2003

drinking and utility water in Azerbaijan. Approximately 80% of the wastes of the countries are discharged into the Kura-Aras river system⁹.

As it is shown in Table 3, water resources in the South Caucasus are not evenly distributed in region's countries. The highest rainfall falls on Azerbaijan, and the river flow from the country is the highest. While Georgia has more water potential than it needs, Azerbaijan is experiencing water shortage in terms of quantity and quality. The groundwater is contaminated. It supplies 70% of drinking water from Kura and Aras which is a transboundary river system¹⁰. Armenia also suffers from surface water problems. However, the large groundwater resources of this country can be used for drinking and using water.

As mentioned above, work on establishing the legal and institutional infrastructure of water management in the countries of the region suffering from water shortages started immediately after 1992, Armenia revised its work in 2002 based on the EU Water Framework Directive. Georgia and Azerbaijan adopted new water management principles in 1997. In addition, efforts to establish a water quality monitoring network among the riparian countries in the region began in 2002.

Even though the countries of the region have shown some positive attitudes towards co-management of water, much progress has not been made due to political, economic and social problems since 1992. For this reason, there is no multilateral water management agreement between the three countries.

With the contribution of EU projects, steps taken in the region's countries on planned, efficient and sustainable management of the water can be expected to provide a useful infrastructure for the management of transboundary waters. However, there are some problems in this region that are difficult to negotiate and to solve. At the beginning of these problems, the Armenian occupation of Nagorno-Karabakh belonging to Azerbaijan comes.

Another problem area in the region is the Javakethi region of Georgia. This region is located on the border of Turkey-Georgia and its population is around 100,000. About 90% of this population is Armenians. For this reason, Javakheti is generally regarded as a region prone to separation. This region is more integrated with Armenia than Georgia and has local autonomy demands.

⁹ United Nations Economic Committee for Europe 2003

¹⁰ Technical Assistance to Commonwealth of Independent States 2003

In light of the conflict between Armenia and Azerbaijan, any transboundary problem between the two states becomes politicized. Azerbaijan's grievances towards Armenia mainly center on pollution and reduction in stream flow. In 2011, the government of Azerbaijan went as far as accusing Armenia of deliberately polluting the rivers that rise in the Armenian territory and flow into Azerbaijan.

Recognizing the scale of the problem, improving the management of water resources and reducing degradation of the basin have been on Azerbaijan's agenda for some time. Azerbaijan's government has been reaching out to the international community for help with enhancing local capacity and regional cooperation (Valieva 2013).

Certain successes have been achieved already. Azerbaijan and Georgia, aided by UNECE, are in preparations to sign an important interstate agreement. A first of its kind in the region, the agreement aims to govern usage of the Kura River water resources through trans-boundary cooperation. But more work is needed to reach a sustainable solution (Valieva 2013).

3.5. Water Pollution in the Region

Water pollution is a contributing factor in the deterioration of the environment, and increased pressure on an already overburdened ecosystem. Chemical substances of anthropogenic origin enter the trans-boundary basin of the Kura River from various surface springs. Having become constant components of the water, polluting substances pose a real threat to the region's ecosystem. Since the basin contains high population density, the health of millions living in the region is in danger by way of exposure to water-borne diseases (Valieva 2013).

The vast majority of the population in the three countries is still employed in the agricultural sector. With irrigated agriculture, being the dominant user of water resources in the South Caucasus, fertilizer and pesticides tend to be the main sources of pollution of surface water with organic compounds of nitrogen and phosphorus. The largest negative impact is observed during snowmelt in early spring, when nitrates and phosphates used the previous fall are washed out of the soil. Excess nitrogen and phosphorus in surface waters cause excess algae growth and health problems in both humans and livestock. Furthermore, irrigation must be matched by drainage to protect soil structure. However, inadequate drainage collector systems degrade river quality, leading to an increase in soil salinization.

Much of the region's municipal and industrial wastewater as well as agricultural run-off flow directly into the basin's surface waters. The region is lacking in the infrastructure necessary for the establishment of basic sanitary and hygienic conditions in the water. Sewage systems only cover part of the region's territory – mostly major cities, with sewage systems in rural areas rarely in place. The majority of the water treatment facilities were built 20-30 years ago

and are currently obsolete, or in poor condition, due to improper maintenance. Only a few treatment facilities are functioning.

Generally, industrial and household wastes are released into the same sewage systems. Heavy metals enter the basin waters from extractive, metallurgical and chemical enterprises as a result of the flooding of contaminated industrial territories located along the banks during overflow of rivers (Valieva 2013).



Figure 4. Kura-Aras River Basin

3.6. Variation and Reduction of Hydrological Flow

The hydrological regime in the Kura-Aras river basin (Fig.4) is influenced by a complex of natural and anthropogenic factors. The natural fluctuations of river flow due to climatic variables such as precipitation and temperature has been observed in the basin. Variation in hydrological flow is caused by water abstraction from surface and groundwater bodies, and increased evaporation due to impoundments, urbanization and deforestation (TDA 2007).

This has significant transboundary consequences. At the confluence of the Aras River the natural annual discharge of the Kura River is approximately 32,3 km³, while the natural discharge from the Aras at the same point is 12,3 km³. The discharge of the Kura River is about 19,6 km³, while the discharge from the Aras at the same point is 9.0 km³ in 2005. It is calculated that 40 % of the Kura's natural runoff and 27 % of the Aras runoff is lost to the Caspian Sea (SIDA Technical Analysis, 2005).

In fact, it should be noted that severe water deficit has not occurred in the basin to date and consequently shortages of water have not presented any serious threats to the population. However, population growth and rapid economic development in the basin countries will impose increased pressure on surface and groundwater resources (TDA 2007).

For instance; water shortage problems in the agriculture sector have already taken place in Georgia during the last decades although principally as a result of the deterioration of the existing irrigation supply network. Large areas of agriculture lands have not received irrigation water for many years leading to a decline in production and increased poverty levels in rural areas.

A similar trend has occurred in Armenia. Water shortage problems in Azerbaijan have resulted in insufficient levels of water for water intensive crops: often they are irrigated only twice instead of 6-7 times (TDA 2007).

Water resources are most limited in Azerbaijan, which compared to Georgia has approximately 8 times less water measured in terms of both per km square and per person (TDA 2007). As a result, the country is considered to be a region with a limited water supply (SIDA Technical Analysis, 2005). The most arid areas are in the Aras sub basin, where more than half of the whole basin population lives. The Kura-Aras plain in Azerbaijan is also very arid and Azerbaijan's dependence on surface water resources from this is high (TDA 2007) making upstream water abstraction in the Aras sub-basin a very sensitive issue from a transboundary perspective.

4.BI-LATERAL WATER AGREEMENTS IN THE BASIN

- The convention of 1927 between the U.S.S.R. and Turkey on the Regulation of the Use of trans-boundary Waters (50/50 between the parties) (Taslakyan 2014).
- The convention between the U.S.S.R. and Turkey on the Utilization of Trans-Boundary Streams signed on April 8, 1927, included several provisions for the protection of water quality. (Taslakyan 2014).
- The agreement of 1957 between the U.S.S.R. and Iran on Establishing the Regime on the Soviet-Iran Border and the Procedure of Settlement of Boundary Disputes and Incidents. Under this agreement, the parties would take the responsibility to preserve the boundary waters in due condition of purity, protect the resources against pollution and exchange information on a regular basis. (Taslakyan 2014).

- The agreement of 1957 between Iran and the USSR on the Joint Utilization of Trans-Boundary Waters of the Rivers Aras and Artak for Irrigation and Power Generation purposes. Under this agreement, the waters and energy resources of the rivers Aras and Artak were shared 50/50 between the parties (Taslakyan 2014).
- Agreement between the Republic of Azerbaijan and Georgia on cooperation in the field of protection and sustainable use of water resources of the Kura River Basin, the UNECE Bilateral agreement (Taslakyan 2014).
- Interstate Commission of Armenia and Turkey on the Use of Akhuryan Water Reservoir (Taslakyan 2014).
- Armenia-Georgia Agreement on Cooperation in the Sphere of Environmental Protection and Natural Resources, signed on May 3, 1997 in Yerevan and came into force on November 30, 1999(Taslakyan 2014).

4.1. Water Conventions

This section describes some of the major legal instruments for water allocation in international settings. Certain notions of sharing extend from human interactions to those between nations in the international arena. When a watercourse covers more than one nation and the resource has been developed and use of it is growing, then problems of defining entitlements to use appear. Within one nation, these issues can be controlled by the definition of water rights and institutions devised to equitably develop and use the resource. However, in the international setting, the notion of property rights does not hold between countries and institutions of law are enforced by agreement between countries, not by an overarching authority. When it comes to water resources, several attempts have been made to develop general rules of international law that guide the civilized sharing of water in transboundary settings. The principles generally hinge on the notions of equality, reasonableness, and avoidance of harming one's neighbors. In addition, the rules call for the prevention of conflicts through information sharing, notification and consultation with of basin riparians¹ over proposed works. These rules have developed under the auspices of the United Nations and they are embodied in three documents:

- Helsinki Rules on the Uses of the Water of International Rivers, International Law Association (ILA, 1966)
- Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UN-ECE, 1992)
- UN Convention on the Law of the Non-Navigational Uses of International Watercourses (UN, 1997)

The Helsinki Rules and the UN Convention are intended to be framework documents providing guidance for the construction of more specific multilateral agreements governing

particular transboundary situations (the SADC Water Protocol and the Mekong Basin Convention are good examples of this).

The Helsinki Convention is an example of using these principles for the basis of a regional convention (e.g., the European Union Water Framework Directive). Below we consider many of the elements of these conventions.

4.2. International Water Allocation Rules

The allocation of water in transboundary watercourses is generally based on equitable apportionment with existing uses receiving higher priority. General international allocation rules or principles establish a framework for multipurpose river basin development and use pursuant to more detailed and site specific international agreements. The main allocation rules were spelled out in the International Law Association “Helsinki Rules” of 1966 and later codified in the UN General Assembly Convention of 1997.

Helsinki Rules (1966): Each basin State is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin (Article IV). What is a reasonable and equitable share within the meaning of Article IV is to be determined in light of “relevant factors” in each particular case (Article V.I.). Relevant factors to be considered include, but are not limited to (Article V.II.):

1. The geography of the basin, including in particular the extent of the drainage area in the territory of each basin State;
2. The hydrology of the basin, including in particular the contribution of water by each basin State;
3. The climate affecting the basin;
4. The past utilization of the waters of the basin, including existing utilization;
5. The economic and social needs of each basin State;
6. The population dependent on the waters of the basin in each basin State;
7. The comparative costs of alternative means of satisfying the economic and social needs of each basin State;
8. The availability of other resources;
9. The avoidance of unnecessary waste in the utilization of waters of the basin;

10. The practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among uses; and

11. The degree to which the needs of a basin State may be satisfied, without causing substantial injury to a co-basin State.

The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable share, all relevant factors are to be considered together and a conclusion reached on the basis of the whole (Article V.III.). A use or category of uses is not entitled to any inherent preference over any other use or category of uses (Article VI).

UN Convention on Non-navigational Use of International Watercourses (1997): A river basin is defined from the Helsinki Rules. Riparian nations have a right to participate in the "optimal utilization" of the watercourse in an "equitable and reasonable manner" and a duty to cooperate in the protection and development of the resources. The cooperation includes obligations of information sharing, notification and consultation between the riparian nations. The 11 Helsinki Rules factors are combined to form 7 and the principle of no appreciable harm is invoked to protect downstream riparian. Below is an abbreviated presentation of some of the more important aspects of the Convention.

- **Article 5. Equitable and reasonable utilization and participation:** Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal and sustainable utilization thereof and benefits there from, taking into account the interests of the watercourse States concerned, consistent with adequate protection of the watercourse. Watercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof.

- **Article 6. Factors relevant to equitable and reasonable utilization:** Utilization of an international watercourse in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including:
 - a. Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
 - b. The social and economic needs of the watercourse States concerned;
 - c. The population dependent on the watercourse in each watercourse State;

d. The effects of the use or uses of the watercourses in one watercourse State on other watercourse States;

e. Existing and potential uses of the watercourse;

f. Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;

g. The availability of alternatives, of comparable value, to a particular planned or existing use.

- **Article 7. Obligation not to cause significant harm:** Watercourse States shall, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States. Where significant harm nevertheless is caused to another watercourse State, the States whose use causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard for the provisions of articles 5 and 6, in consultation with the affected State, to eliminate or mitigate such harm and, where appropriate, to discuss compensation.
- **Article 9. Regular exchange of data and information:** Watercourse States shall on a regular basis exchange readily available data and information on the condition of the watercourse
- **Article 10. Relationship between different kinds of uses:** No use of an international watercourse enjoys inherent priority over other uses; with special regard being given to the requirements of vital human needs.
- **Article 11. Information concerning planned measures:** Watercourse States shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse.
- **Article 12. Notification concerning planned measures with possible adverse effects:** Before a watercourse State implements or permits the implementation of planned measures which may have a significant adverse effect upon other watercourse States; it shall provide those States with timely notification thereof.
- **Article 20. Protection and preservation of ecosystems:** Watercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses.

4.3. International Water Rules and Water Rights

Three of the main theories of international water rights that govern water distribution practices around the world are as follows (Shiva 2002):

- Territorial sovereignty theory
- The natural water flow or absolute integrity theory
- The equitable apportionment theory

The territorial sovereignty theory is also known as the Harmon Doctrine¹¹, which maintains that riparian states have exclusive (sovereign) rights over waters flowing through their territory. This justifies any type of water use by the state, irregardless of the downstream impacts. Originating in the US, this law has been rescinded in favour of more neighbour-friendly laws but Turkey has chosen to invoke it as part of their cause.

The natural water flow theory refers to territorial integrity of watercourses, stating that a river is a natural part of the territory of a riparian state and that the state is entitled to the natural flow of the river, unhampered by upstream riparians. This theory is closely linked to the notion of historic rights or established user rights (Shapland 1997).

The concept of equitable apportionment is more recent and has its roots in the arena of international law relating to international watercourses. The term “international watercourse” was adopted by the UN International Law Commission and is part of the formulation of the Law of Non-Navigational Uses of International Watercourses (the UN/ILC Law) that apply to waters which are situated in different states.

Although first presented in 1959 it was not presented for ratification until 1997. In the interim, the most widely used law for use of International Rivers was drawn up in Helsinki in 1966. The Helsinki Law gave rights to existing uses of water on shared water resources and is based largely on the principle of equitable utilization. It promoted the equitable distribution of uses and does not give any particular use a priority over the other.

4.4. Basin Countries Interest to International Agreements

Kura-Aras Basin Countries have signed several international agreements concerning Environment protection (Table 4) and convention on Transboundary Rivers (Table 5).

As shown in Table 4. and Table 5, among the basin countries Azerbaijan is the most sensitive country to international agreement. Table 4 also shows that Azerbaijan is the only country that has already ratified all International Conventions among the riparians.

¹¹ The theory is named after J. Harmon, US Attorney General who used it in 1895 to settle a dispute with Mexico other water disputes with Canada, p.100

Table 4. International Environmental Agreements, which the Kura-Aras Basin Countries are Party to (TDA 2007).

Name of Convention	Date	Status in Armenia	Status in Azerbaijan	Status in Georgia	Status in Iran
Roma Convention on Plant Protection	1951	NS	R	NS	NS
Ramsar Convention on Wetlands of International Importance	1971	S	R	R	R
Convention on the International Fund Establishment for Compensation of Oil Pollution Damage	1971	NS	NS	R	NS
Paris Convention for the Protection of World Cultural and Natural Heritage	1972	R	R	NS	R
International Convention for the Prevention of Pollution from Ships	1972	NS	R	R	NS
Convention on International Trade in Endangered Species of Wild Fauna and Flora	1973	NS	R	R	R
Geneva Convention on Prohibition of Military or Any Use of Environmental Modification Techniques	1977	R	NS	NS	NS
Geneva Convention on Long-range Transboundary Air Pollution	1979	R	R	R	NS
Bonn Convention on the Protection of Migratory Species of Wild Animals	1979	NS	R	R	R
Bern Convention on the Conservation of European Fauna	1979	NS	R	NS	NS
Vienna Convention for the Protection of Ozone Layer	1985	R	R	R	R
Montreal Protocol on Substances Depleting the Ozone Layer	1987	R	R	R	R
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1989	R	R	R	R
Espoo Convention on Environmental Impact Assessment in Transboundary Context	1991	R	R	NS	NS
Rio Convention on Biological Diversity	1992	R	R	R	R
Framework Convention on Climate Change	1992	R	R	R	R
Convention on the Transboundary Effects of Industrial Accidents	1992	R	NS	NS	NS
Protocol on Water and Health of Helsinki Convention on Protection and Use of Transboundary Watercourses and International Lakes	1992	S	R	S	NS
Helsinki Convention on Protection and Use of Transboundary Watercourses and International Lakes	1992	NS	R	NS	NS
London Convention on Civil Liability for Oil Pollution Damage	1992	NS	NS	R	NS
Bucharest Convention on the Pollution of Black Sea and Other Issue	1992	NS	NS	R	NS
Convention on the Protection of Black Sea Against Pollution	1993	NS	NS	R	NS
Paris Convention on Combating Desertification	1994	R	R	R	R
Kyoto Protocol of UN Framework Convention on Climate Change	1997	NS	R	R	R
Aarhus Convention on Access to Public Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	1998	R	R	R	NS
Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemical and Pesticides in International Trade	1998	S	R	NS	R
Stockholm Convention on Persistent Organic Pollutants	2001	S	NS	R	R

Note: S – Signed; R – Ratified; NS – Not Signed.

Table 5. International Conventions which the basin countries are party to

International Convention	Armenia	Azerbaijan	Georgia	Turkey	Iran
Ramsar Convention on Wetlands of International Importance	R	R	R	R	R
Convention on International Trade in Endangered Species of Wild Fauna and Flora	R	R	R	S	R
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	R	R	R	R	R
Espoo Convention on Environmental Impact Assessment in Transboundary Context	R	R	NS	NS	NS
Strategic Environmental Assessment Protocol to the Espoo Convention	S	R	S	NS	NS
Rio Convention on Biological Diversity	R	R	R	R	R
Convention on the Transboundary Effects of Industrial Accidents	R	R	NS	NS	NS
Protocol on Water and Health of the Helsinki Convention on Protection and Use of Transboundary Watercourses and International Lakes (UNECE Convention)	S	R	S	NS	NS
Helsinki Convention on Protection and Use of Transboundary Watercourses and International Lakes (UNECE Convention)	NS	R	NS	NS	NS
Paris Convention on Combating Desertification	R	R	R	R	R
Framework Convention on Climate Change	R	R	R	R	R
Kyoto Protocol of the UN Framework Convention on Climate Change	R	R	R	R	R
Aarhus Convention on Access to Public Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	R	R	R	NS	NS
Stockholm Convention on Persistent Organic Pollutants	R	R	R	R	R

Source : Developed from Lusine Taslakyany 2014

R :Ratified , **S**: Signed . **NS** : Not Signed

All this indicates that among the basin countries Azerbaijan is more sensitive and ready to cooperate on the base of all international rules and regulation in the basin.

5.INTERNATIONAL LAW AND TRANSBOUNDARY WATER GOVERNANCE

It is estimated that international river basins that include political boundaries of two or more countries cover 45.3 percent of the Earth's land surface, host about 40 percent of the world's population, and account for approximately 60 percent of global river flow (WWI 2005). In total, there are 263 transboundary basins which include the territory of 145 states (Akech 2009). Major rivers, such as the Amazon, Nile, Rhine and Mekong, involve five or more countries. These shared watercourses can give rise to significant bilateral or multilateral disputes. The geography of transboundary water resources also presents a challenge of governance, given the prevalence of national approaches to water management. Further, the hydrologic relationships between groundwater and surface rivers and lakes have become better understood, leading to calls for international law to extend to connected groundwater systems. Groundwater makes up 97% of the Earth's fresh water resources, excluding the

resources locked in polar ice (Mechlem 2008). Globally, it provides about 50% of the current potable water supplies. It also delivers approximately 40% of water used by industry and between 20-30% of the water used in irrigated agriculture. Groundwater ensures the baseflow of rivers and lakes, keeps springs flowing, vegetation growing, and wetlands wet (Mechlem 2008).

The Articles on Law of *Transboundary Aquifers* were adopted by the International Law Commission at its sixtieth session, in 2008. The number of transboundary aquifers is estimated to be more than 270 transboundary river basins.

Typically, international law has primarily been concerned with the ‘development and optimal use’ of watercourses, and it is only in recent times that ‘the ecological services provided by water and the resulting importance of conserving and protecting water quality have become important concerns’ of the international law of watercourses. Accordingly, the incorporation of the environmental dimension in international instruments dealing with water should therefore be seen as a work in progress.

A rich body of customary law has developed in response to conflicts over the use of shared watercourses. These principles of customary law are now expressed in the international instruments on transboundary water resources. These are the United Nations Framework Convention on the Law of the Non-navigational Uses of International Watercourses of 1997 (the International Watercourses Convention) and the International Law Commission Draft Articles on the Law of Transboundary Aquifers. It should be noted that the first 1997 convention has only entered into force in 2014.

The International Watercourses Convention is a framework convention rather than a treaty establishing firm rules for the conduct of states party to the agreement. It thus envisages that watercourse States will, in their agreements governing shared watercourses, apply and adapt its provisions to suit their unique needs¹².

It establishes a number of key principles to which such agreements ought to adhere. The first principle is that watercourse States shall ‘utilize an international watercourse in an equitable and reasonable manner¹³.’ Second, watercourse States are obliged to ‘take all appropriate measures to prevent the causing of significant harm to other watercourse states’ and where significant harm nevertheless is caused to another watercourse State, ‘to take all appropriate measures... to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation¹⁴.’ Third, it mandates watercourse States to ‘cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal

¹² International Watercourses Convention, Article 3.3

¹³ Id, Article 5.1. In determining what amounts to “equitable and reasonable utilization” watercourse states are required to take into account a number of factors enumerated in Article 6, and which are to be considered together.

¹⁴ 11 Id, Article 7.

utilization and adequate protection of an international watercourse¹⁵.’ The Watercourses Convention therefore sees cooperation in good faith as being critical to the implementation of the arguably conflicting principles of equitable utilization and prevention of significant harm (Beyene & Wadley 2004). Among other things, cooperation is to be achieved by establishing ‘joint mechanisms or commissions,’ ‘in order to attain optimal utilization and adequate protection of an international watercourse¹⁶.’ Fourth, watercourse States are required to exchange information on the condition on the watercourse on a regular basis¹⁷. The fifth principle is that a watercourse State seeking to implement or permit the implementation of ‘planned measures which may have a significant adverse effect upon other watercourse states’ is obliged to provide the latter with ‘timely notification¹⁸.’

Another important feature of the Convention is that it requires watercourse States to ‘individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses¹⁹.’ The Convention therefore places particular emphasis on the protection and preservation of ecosystems.

The ILC Draft Articles on the Law of Transboundary Aquifers seek to provide for the protection and management of groundwater resources, which have been neglected as a subject of international law, despite their social, economic, environmental, and strategic importance. In terms of scope, the Draft Articles apply to

- (a) the utilization of transboundary aquifers;
- (b) other activities that have or are likely to have an impact upon those aquifers; and
- (c) measures for the protection, preservation, and management of transboundary aquifers (Article 1).

Compared to the UN Watercourses Convention, Article 1(b) is new because the ILC recognized the need to protect aquifers against harm resulting, for example, from fertilizer or pesticide use or industry discharges in aquifer recharge zones.

In many respects, the Draft Articles are similar to the UN Watercourses Convention and enshrine the fundamental principles of customary international law on water resources, namely the principle of equitable and reasonable utilization (Article 4), the obligation not to cause significant harm (Article 6), and the obligation to cooperate, which requires states to establish joint mechanisms for cooperation (Article 7).

¹⁵ Watercourses Convention, Art.8(1).

¹⁶ Id, Article 8

¹⁷ Id, Article 9

¹⁸ Id, Article 12.

¹⁹ Ibid, Article 20.

These foregoing international instruments are reinforced by various regional agreements and initiatives, including the United Nations Economic Commission for Europe's Convention on the Protection and Use of Transboundary Watercourses (the UNECE Convention), the Draft Agreement on the Nile River Basin Cooperative Framework, the Southern African Development Cooperation (SADC) Protocol on Shared Watercourse Systems are good examples, the Amazon Cooperation Treaty, and the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin.

In practice, a key challenge will relate to the application of these two instruments in view of the hydrological interlinkages between aquifers and surface waters and ecosystems.

5.1. Trends in the Transboundary Water Governance

To what extent are the foregoing principles of international law implemented in practice? Perhaps the most effective means by which states sharing transboundary water resources can ensure compliance with the principles is through negotiating bilateral or multilateral agreements that establish appropriate institutional structures for the joint management of such resources, including mechanisms for the settlement of disputes. Such agreements therefore appear to be the most suitable device for cooperation in the governance of transboundary water resources.

Nevertheless, the basins where such formal agreements exist are still in the minority, with formal management institutions established in only 117 of the 263 basins (Brochmann & Gleditsch 2006). Further, such formal agreements often contain vague formulations, with critical issues such as water allocations being left unsettled, while enforcement mechanisms are usually lacking²⁰.

Effective cooperation in the governance of transboundary water resources requires the establishment of basin institutions, such as river basin organizations. In practice, however, there is a 'large gap between rhetoric and action, not only at the political level in terms of willingness to cooperate, but also at the practical level of establishing the proper data and information base and the analytical tools needed for meaningful cooperation²¹.'

5.2. International water law in general

Historically, we see that upstream and downstream riparians have advocated extreme and self-interested theories:

Upstream riparians have promoted the theory of absolute territorial sovereignty: that any state may use any watercourse within its borders as necessary, without regard to downstream riparian.

²⁰ Ibid.

²¹ Global Water Partnership, Integrated Water Resources Management, supra note __ at 45.



Downstream riparians have claimed absolute territorial integrity, that is, the exclusive right to the natural, uninterrupted flow of the river from the territory of upstream riparians.

However, neither theory has received much support from legal writers or international tribunals, who tend to prefer the principle of equitable utilization.

The principle of equitable utilization is grounded in the doctrine of limited territorial sovereignty and integrity within a given river basin. Under this principle, a basin state's sovereign rights to the waters of international rivers within or adjoining its territory are limited by the corresponding sovereign rights of other basin riparians. A state may thus utilize the water to the extent that this use does not interfere with the reasonable utilization of other basin states.

Efforts to codify international law concerning watercourses date to the beginning of this century, but the most important efforts are recent: The International Law Association's (ILA) 1966 Helsinki Rules and the United Nations' 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses (hereafter, the Helsinki Rules and the UN Watercourse Convention). The ILA, a non-governmental scholarly organization, adopted the Helsinki Rules in 1966 (ILA 1967). Delegates to this meeting proposed that international waters have to be shared equitably and reasonably. In 1970, the United Nations General Assembly gave the International Law Commission (ILC) the task of codifying and developing the law regarding "non-navigational use of international watercourses" (Resolution 2669; ILC 1994). The ILC's work ultimately resulted in the UN Watercourse Convention, opened for signature in 1997 (UN, 1997).

Like the Helsinki Rules, the UN Watercourse Convention provides for the equitable and reasonable utilization of international watercourses. Both sets of rules list factors for determining what is reasonable and equitable, including: geography, hydrology, climate, past and present utilization, economic and social needs of the riparians, population, costs of alternative measures, other resources, practicability of compensation in instance of dispute, and how the needs of one riparian may be fulfilled without substantial injury to another riparian (Kaya 1997).

The Helsinki Rules, although widely accepted and broad in their scope, are not binding: the ILA has no lawmaking power. The ILC, a study commission created under the auspices of the United Nations, also has no lawmaking power; however, the provisions of the UN Watercourse Convention are binding upon ratifying countries and, to the extent that they represent customary international law, other states.

6. TRANSBOUNDARY RIVER BASIN CONFLICT SOLUTION WITHIN THE FRAMEWORK OF INTERNATIONAL LAW

When we look at the law arrangements on transboundary water cooperation we can see that they are providing an international legal framework foundation for facilitating effective transboundary water cooperation.

There is a misperception that international law fails in its implementation of agreed international agreements and customary norms. But there is some other evidence to the contrary—the rule of law is a critical foundation for facilitating effective transboundary water cooperation in a many ways (Wouters 2013).

In fact, the international law framework is not a golden key to be used to open every door has already been locked by transboundary conflicts.

It provides the legal framework of substantive and procedural rules, and mechanisms for dispute avoidance and settlement that enable operational implementation of the *'rules of the game'*.

International water law²² provides a platform for identifying and integrating the relevant legal, scientific, and policy issues and aspects pertaining to the utilization of transboundary watercourses.

As it is always indicated, it is only a framework includes an international approach “that naturally doesn't take into account regional and local circumstances and and other relevant factors. That means that implementation of this international law on a seriously disputed area requires extra efforts²³.

Although the numerous agreements concluded in some basins, they suffer from inadequate implementation. States have also concluded a large number of water-related agreements for sharing the same river or lake, or their drainage basins. But challenges remain²⁴.

²² At an operational level, international law offers a range of tools and mechanisms for implementation through concrete rules containing specific rights and duties as well as procedures that can be invoked in managing transboundary watercourses or resolving interstate conflicts (Wouters 2013).

²³ Surface and groundwater do not respect political boundaries. This means that states must cooperate to manage water. (GWP Strategy 2009-2013)

²⁴ As UNESCAP observed—“ambiguous water rights and allocation of increasingly scarce water resources has emerged as the principal cause of water conflicts...and the most important challenge lies in balancing the different uses of water and in managing their economic, social, and environmental impact.” Report of the Economic and Social Commission for Asia and the Pacific, Sixth Session, UN Doc, E/ESCAP/MCED(6)/5, para 27, 9. http://www.unescap.org/esd/mced6/documents/Documents/MCED6_14E.pdf

In this context the role of the rule of law in managing transboundary water conflicts and building international cooperation deserves a closer look.

The 2011 Bonn Conference explored the water, energy and food nexus, and with a series of recommendations (The Bonn 2011) urging governments to “adopt a basin-wide perspective reflecting the principles of integrated water resources management”. For transboundary river basins, it recommended that States should look to incorporating benefit sharing in water sharing²⁵.

This is also consistent with regional State practice. The Mekong Rio Message says that “transboundary cooperation can enhance a broader set of benefits and opportunities than individual country approaches²⁶”

The ‘traditional’ international water law framework, which focuses primarily on use-allocation, covers some core elements relevant to water use in its broadest sense. However, new issues emerge, which challenge the established legal order such as human rights and rights to water, the water/energy/food nexus, trade in water, land-grabs and so forth (Wouters 2013).

These may require innovative approaches reflected in relevant multilateral arrangements, in ways that facilitate effective inter-State cooperation. In this regard, a more coherent read-across relevant multilateral treaties as they relate to transboundary water resources management important.

The case studies carried out by Wouters (2013) on—the Zambezi, Niger, Mekong, Danube and Drin— showed that ‘the cooperative efforts aimed at jointly managing transboundary watercourses was crystallized in legally binding arrangements, often linked with other supporting instruments and backed up by institutional mechanisms’.

²⁵ This is the approach promoted and facilitated under the UNWC. Bonn 2011Nexus Conference,Draft Policy Recommendations,Chapter4:Taking action: scope,rolesandresponsibilities.http://www.water-energy-food.org/en/conference/policy_recommendations/ch4.html

²⁶ Some of the key messages included,“Water,food and energy are key strategic resources for the individual riparian countries that adopt policies and make decisions at the national level.This may on the one hand create barriers to cooperation,but on the other hand a nexus approach can contribute to regional stability if countries can agree to cooperate”,and,“In addressing the nexus it is recognized that water management needs to respect the basin and aquifer as the basic unit,from the smallest catchment to the major transboundary basins.Hence the opportunities and trade-off softhe nexus need to be addressed at the basin level,and transboundary river basin and aquifer management entities should be empowered to play their role in influencing national decisions. ”See Mekong 2Rio:International Conference onTransboundary River Basin Management 1-3 May 2012 ,Phuket,Thailand.

More research is needed to explore how international law might facilitate transboundary water cooperation. Specifically, it is needed to examine how the current patch work of legal regimes might be made more coherent and fit for purpose to address contemporary issues such as new security paradigm, environmental concerns, climate change, advancing the human right to water, and addressing the legal issues relating to burgeoning 'land-grabs' as wealthy nations seek to ensure their future food security.

The transboundary river basin countries water diplomacy also needs to be improved. It also needs an innovative approach to consider mutually beneficial interest of the riparian states at the base of regional development approach.

Although there is a need to improve the coherence and consistency of the rules of law that apply to transboundary water resources development and management at the international, regional and national levels, the existing international law provide a useful framework to improve cooperation.

Convention on the Law of the Non-navigational Uses of International Watercourses adopted by the General Assembly of the United Nations on 21 May 1997 has been into Force in 2014 haven't been ratified by Azerbaijan, Armenia and Georgia. Even if it shows that riparian states are not close to cooperate on the basis of a general framework convention, the region is not away from accepting international rules and regulations as shown in Table 4 and Table 5.

Because of the Kura Aras Basin countries are party to most of the International Conventions which can facilitate to acting together to protect the environment and not to give any significant harm to riparian concerning transboundary water quality and quantity.

All circumstances given above shows that if riparian states in the region have a political will there is a legal platform to avoid rising tension concerning transboundary water management.

Transboundary river basin conflict solution in the region within the framework of international law is very much depend on political will of the riparian states to implement supporting instruments and institutional mechanisms. This has already been started with the implementation of the real-time monitoring of water quality and quantity system. This can continue with second step forward to be sensitive and not to give significant harm concerning released transboundary water quality and quantity to downstream countries under the control of an internationally supported Institutional Mechanism.

6.1. International water law in the Kura-Aras Basin Case

One of the main points highlighted by the UN Watercourse Convention is the optimal and beneficial uses of watercourses (Article 5). Water allocation agreements, while certainly of central importance, are not the only tools for ensuring such optimal use. Conservation is another important component of water basin management schemes. Therefore, all of the Aras-Kura basin riparians should take serious measures to conserve water immediately. First, they

should implement modern irrigation methods. Another important tool for maximizing the potential for equitable utilization measure is the treatment and reuse of wastewater.

In addition, more emphasis should be given to the selection of suitable crops, such as those that require less water to grow or that tolerate more saline water. Land that is more fertile should be given priority for irrigation, and less fertile land should be allocated to crops that can be dry-farmed or to other uses entirely. All of these activities should be supported by various activities undertaken to promote public awareness of the problems involved and their potential solutions.

Article 3 of the UN Watercourse Convention encourages riparian states to conclude watercourse agreements that will apply the principle of equitable and reasonable utilization to a particular international watercourse. To determine the equitable and reasonable share of each party, all parties can cooperate on joint basin-wide studies to collect data and inventory land and water resources. Under the Helsinki Rules and the UN Watercourse Convention, such an agreement should include a specific duty to provide prior notification of any planned work. The establishment of a joint watercourse institution to receive relevant information and evaluate the possible harmful effects of unilateral water development projects would facilitate the implementation of the agreement (Caponera 1996).

7.EVALUATION AND CONCLUSIONS

Caucasia; throughout history, has become an important point of intersection between continents and cultures as well as creating trade and migration routes. The Caucasus, which forms a bridge between East and West and is the most sensitive region of Eurasian geography, attracts the attention of the entire world from the political and economic fronts.

The Caucasus is a geographical area where security issues arise due to the conflicts arising from the ethnic religious differences and political border disputes, the displaced refugees (such as Nagorno Karabakh Azerbaijani, Ahiska Turks), international terrorism (especially terrorist incidents in Chechnya and Dagestan, North Ossetia), the efforts of power centers to change the status quo with the aim of penetrating the region, rich energy resources and lines, economic and political imbalances.

The Caucasus, which will not lose its geopolitical and geostrategic significance today and tomorrow, as it has been in the past, is always subject to uncertainty and instability because of power struggles on it as a consequence of its internal dynamics.

In fact, strategically the gateway to Central Asia is Georgia, which is a bridge between East and West. At the same time, the territorial integrity of Georgia where energy lines are transported from Central Asia and the Caspian Basin to Turkey is important for Turkey. The fact that Georgia is the coast of the Black Sea and Azerbaijan's Caspian Sea increases the geopolitical, strategic and geo-economic significance of these two countries.

The fact that the Caucasus is in a position to become a stage for great struggles, increasing conflicts of interest in the coming period and the difficulties of the countries in the region increase the global accounts which can be done through the water problems in this region.

After the disintegration of the USSR, the Kura-Aras river that the greatest river of the South Caucasus, suddenly began to carry the transboundary river characteristic between Armenia, Azerbaijan and Georgia. There is currently no multilateral water use agreement between the three countries on this river, and after countries' independence a small-scale water quality monitoring network has been established with support from international projects. No international watershed management organization has been formed in this basin. For reasons explained at the beginning of the article, the security and stability of the countries of the region are very important for the West countries. For this reason, both the EU and NATO support water management in order to promote technical cooperation and to prevent potential problems in the region. In this context, a project for real-time monitoring of water quality and quantity in Transboundary Rivers in three countries has been implemented by NATO support. The data obtained from the project, which started in 2002 and completed in 2009 and cost 1.2 million euros, is published monthly on a web page of Azerbaijan.

The first step in any water resource planning is effective monitoring of water usage in the basins. Some technical-level work has already been undertaken through the NATO-OSCE South Caucasus River Monitoring Project, which ended in 2009. Such programs provide access to reliable quality data both locally and regionally. The information exchange has the power to strengthen cooperation by contributing to mutual trust, joint assessment, and policy-making. The data gathered could eventually be used for a creation of a basin treaty. Additionally, knowledge sharing and increased cooperation lower the risk of conflict and may later diffuse to upper levels of governments (Valieva 2013).

This measurement and observation network in the region has provided a very important technical support for water management cooperation and has become a very important starting point for developing a dynamic water management model between the three countries. This model can also make a significant contribution to the technical infrastructure of a water management agreement in the basin. However, this initiative should be supported by observations of ecosystem water needs and groundwater.

Transboundary Water Issues

The transboundary water negotiation process inevitably requires time, patience, and a willingness to shift perception towards viewing water as a naturally shared resource. Consequently, the emerging theory of a “community of interests” in sharing international watercourses is receiving increasing attention in negotiations.

The attitude of riparian countries is prone to be influenced by the desire to maintain national sovereignty as countries attempt to preserve as much freedom and control as possible. As a result, many international agreements refer to certain aspects of water planning or particular developments rather than overall principles of planning and management. A more holistic approach is necessary to ensure that basic water needs are met while maintaining water quality and conservation practices for the future

The key issues associated with national sovereignty are determining the rights of states to waters that flow through their territory and the obligations they have to downstream riparians. In most resolved disputes, the leading negotiating tool has not been “rights-based,” in terms of a sense of entitlement, but rather “needs-based,” e.g., irrigable land, population, and requirements of specific projects. Often the needs of downstream riparians are favored in negotiations and protected in transboundary agreements with little mention of upstream needs except in humid regions.

International law cannot decide the allocation of the waters of the Kura-Aras Basin. Nonetheless, law provides a basis for negotiation. Equitable utilization is inherently flexible. It will not produce definitive solutions and allocations, but will serve as a foundation for negotiation and cooperation.

An international watercourse agreement would lay down rights and obligations of riparians more precisely. In addition to the agreement a joint watercourse institution is necessary to realize cooperation among the watercourse states. To reach such an agreement, inventory studies of water and land resources of all the parties must be completed. This will enable them to base their needs on objective criteria, rather than subjective political ambitions. This will also be benefit to all countries in the region to increase ability to adapt to the impact of climate change in the Kura-Aras River Basin.

Transboundary Water Management in the Region

Regarding the management of the transboundary waters of the South Caucasus, five neighboring nations of Georgia, Azerbaijan, Armenia, Turkey and Iran should be brought together. Azerbaijan, Armenia and Georgia, which are the main actors on the transboundary waters of the region, are countries that both receive water from their neighbors and release water to their neighbors at downstream. Because of these features, it also creates a unique transboundary water model.

When the total water potential of the region is observed, although the water resources in the region are unevenly distributed among these countries, it is seen that there is sufficient water and small river, stream and creek systems spread throughout the countries. This alleviates the potential water problem between the countries of the region compared to other problematic regions in the world. In this region, an international transnational water basin management organization is needed. This structure should prevent the deterioration of the quality of the transboundary waters in the region and should make the existing waters more available. The

South Caucasus river observation project has been a very advanced step in this regard and has provided a very important support for the enhancement of cooperation.

The biggest political problem before the sustainable and effective transboundary water management agreement in the South Caucasus is the Nagorno-Karabakh conflict between Azerbaijan and Armenia. Despite its ability to block water cooperation in the region, it is unlikely that water will be a direct cause of conflict in countries in the South Caucasus. However, the increasing strategic importance of the region and the political tensions between the countries of the region will cause this issue to always be on the agenda. Looking at the power asymmetry between Azerbaijan, Armenia and Georgia among the countries in the region, it seems that Azerbaijan, which has a partial water problem, has the ability to deter attempts to block the water right in the region. However, the most important actors of the future international water management problem in the region will be global forces that will try to expose the region to global hegemony policies, not the countries of the region.

At present in the region, it seems difficult to sign and implement a multilateral water use agreement in which Azerbaijan, Armenia and Georgia will be included. However, even if the countries in the region do not take an advanced step forward in transboundary water management, they should be able to "cooperate in conditions that would prevent the problem from getting worse". In the region, a cooperative initiative should be initiated on what should be not done firstly, rather than what needs to be done. The water resources in the region are under the threat of pollution and climate change. Unless measures are taken for pollution, the potential for pollution in the water resources that are expected to be reduced by climate change impacts will increase. This may cause pollution in the soil, and may also limit the economical treatment of water resources.

In order to prevent the problem in this watershed, the countries of the region need to expand and strengthen the cooperation that started with the water observation network project. In order to be able to access this project at the level of a "watershed management organization", complementary steps are needed to quickly see beneficial results. In this regard, first of all, the reduction of industrial, organic and agricultural water pollution which is increasing rapidly can be considered. The small steps to be taken to solve this problem in the basin can bring countries closer to each other.

Until the year of 2050, the South Caucasus is not only a geography that will be under the threat of climate change affect and pollution. This geography will also be of constant interest to global forces for reasons such as the USA revolt on the axis of the Asia Pacific, Russia's return to the international system, Caspian oil, USA plans for Black Sea domination.

This makes the region's transboundary water problems part of its plans to destabilize the region as it did in Central Asia. Being aware of the facts of the region, it is very important for

the countries of the region to seek for a water management cooperation to start from the problems in the watershed, such as the reduction of pollution.

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