

**MANAGING WATER CONFLICT AND COOPERATION  
IN CENTRAL ASIA**

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## **ABSTRACT**

Aybolek Ovezova: Managing Water Conflict and Cooperation in Central Asia  
(Under the direction of Erica J. Johnson)

The collapse of the Soviet Union left countries of Central Asia to experience political confrontations over territory and water rights. Additionally, independence of Central Asian countries resulted in the change of control systems, including transboundary rivers of the region. Resource capture, and isolation of Uzbekistan and Turkmenistan in early years of independence, from water cooperation, as well as engagements, brought to the competition over water resources. Moreover, upstream-downstream controversy and water politics in Central Asia have been intensifying at a fast pace in recent years. This paper discusses why Central Asian governments undergo conflicts over water and how those concerns can be addressed for an effective cooperation. In this regard, this paper provides analysis of the existing legal frameworks, in particular, over Amu Darya river. As a result, I argue that countries in the region need third-party participation for creating effective water management and cooperation.

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*“A drop of water is a grain of gold”  
(Turkmen proverb)<sup>1</sup>*

## **Chapter One: INTRODUCTION**

### **1.1. Problem Statement**

Turkmenistan and Uzbekistan are two conflicting countries in the heart of modern Central Asia. Amu Darya, one of the major rivers in the region, flows through Turkmenistan and neighboring Uzbekistan. Irrigation season comes, and with it do the encounters, ill engagements, and fights over the flow of the Amu Darya River at the local level, particularly among the farmers and people living in the border of the above-mentioned countries. It starts right about the time when the upstream country, Uzbekistan, cuts the flow of the river, leaving the downstream country, Turkmenistan, without water to irrigate its' lands (See map of region below). In particular, farmers of the two neighboring countries fight because of the water shortages as well as sharing the river during the irrigation season. As a result of the water shortages and growing demand during the irrigation season Central Asian countries experience emerging water related conflicts among upstream and downstream riparians, despite the bilateral and multilateral agreements signed during the first decade of their independence.

Countries across Central Asia ratified a set of bilateral and multilateral agreements in 1991 and onward. The governments also established river basin organizations to strengthen transboundary rivers cooperation in order to provide their protection and with the purpose of governing the use of water resources sustainably in the region. In addition, each government

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<sup>1</sup> “Turkmenistan marks national holiday “A Drop of Water is a Grain of Gold”” Turkmenistan magazine article retrieved from <http://www.turkmenistan.ru/en/articles/16091.html>

entered into bilateral environmental agreement with a country sharing a transboundary river. Regardless of the legal frameworks and interstate cooperation, water cooperation is ineffective in the way that people in the villages encounter problems such as water shortages followed by harvest loss or, moreover, inter-farmers conflicts. My thesis, thus, asks: What potential do international water cooperation agreements have to regulate water conflict and scarcity? Why don't existing agreements work? What aspects of the existing agreements work and what potential do they have to serve as models to resolve the region's water sharing challenges?

Each regional bilateral and multilateral environmental agreement explicitly sets out the water allocations, roles and responsibilities of each party. However, all countries in the region experience political tensions and compete over water resources for the development of agricultural production in their countries. This type of interstate attitudes and relations create obstacles in an international communication and establishing effective interstate water cooperation. More recently, unilateral decisions such as Turkmenistan's construction of the Golden Age Lake to which water is diverted from the Amu Darya river and Tajikistan's Rogun Dam construction on the Vakhsh river, which forms the waters of Amu Darya add to the existing problems and create potential conflict over water resources (Islamov, 2009). Existing water frameworks in the region are either bilateral or multilateral and have been signed on a political will of the governments without third-party intervention. In the case of Central Asia's water agreements, third-party participation could enable accountability and overcome domestic politics and excessive focus on energy sector (issues that I discuss below). Those ongoing conflicts and excessive use of the region's water resources for irrigation without an effective interstate water cooperation system will also damage ecological system and create other range of consequences. Additionally, there is a lack of trust between the nations sharing waters in the region, which

impacts possibility of cooperation on water agreements, information sharing, and enforcing agreements. To overcome these challenges, I argue that there is a need for third-party intervention in the multilateral agreements. In most studies, third-party intervention is discussed when the governments reach a stalemate at the negotiations (Shamir, 2003). Moreover, the history of such negotiations shows that third-party participation in water related talks, acts as a mediator, therefore positively affects the course of negotiations and facilitates improvements of the water related issues. It is also known that the role of the United Nations Organization, the World Bank or regional water commissions can be powerful in reaching peaceful agreements in the water related disputes around the world (Gleick, 1993). For example, the Indus Water Treaty between India and Pakistan is one of the best examples where the World Bank played a significant role in resolving the water related disputes between India and Pakistan in 1960s.

However, in the case of Central Asia, third-party intervention is required for enforcing an international environmental treaty for joint regional cooperation of the water resources. Since the water cooperation between countries in the region is challenging, third-party participation through either the United Nations or the World Bank can facilitate to reduce risks of misunderstandings arising from the resource competing approaches among countries in the region. The UN's or the World Bank's intervention as third-party facilitator can't be emphasized enough to reach effective water agreement between the countries in Central Asia.

In this paper, I will analyze four types of approaches to transboundary water cooperation in the Central Asian region: unilateral approaches, bilateral agreements, multilateral agreements among regional countries, and multilateral agreements with third-party participation. In particular, I examine the 1992 agreement on Cooperation in the Field of Joint Management and Conservation of Interstate Water Resources in Central Asia, which was the first regional

multilateral agreement. The 1992 agreement established the Interstate Commission for Water Coordination (ICWC) to monitor regional water use and the Amu Darya and Syr Darya river basin organizations (BVO), which are executive bodies of the ICWC.

As an example of regional bilateral agreements, I analyze the 1996 bilateral agreement on Water Cooperation between Turkmenistan and Uzbekistan. The Golden Age Lake project by Turkmenistan and Tajikistan's Rogun Dam construction are discussed as one example of unilateral decisions on water resource governance. Finally, I analyze the United Nations Water Convention, a regional multilateral agreement with third-party participation that has been ratified by Kazakhstan, Turkmenistan and Uzbekistan. The United Nations Water Convention, which was adopted in Helsinki in 1992 and went into effect in 1996, offers the best potential for regional water cooperation and conflict prevention because it obliges parties to reduce and use the transboundary waters in a reasonable and equitable way for conservation of ecosystems. This agreement is the key international environmental agreement to the extent that there is third-party participation as well as binds at least three countries in the region.

Scholars and experts in the field of peace and conflict studies discuss the role of water in the conflicts, which can occur internally and at international level. A number of studies examine the role of legal frameworks as well as failures and successes in water cooperation and preventing water disputes. Given the growing water conflicts in the region, I argue that Central Asia is at the critical point where there is a need for third-party intervention to implement bilateral and multilateral environmental agreements. To demonstrate my argument, I refer to secondary sources on water management, using water stress indicators, water databases, and framework agreements on transboundary waters and qualitative comparative analysis of the best



practices in the water conflict and cooperation in order to apply them to the cases of Central Asia's international water agreements.

## 1.2. The Role of Water

Water is the most precious resource and the most essential for life. Globally, the use of water varies from domestic purposes to agriculture, industry and recreation. The groundwater levels are decreasing whereas demand for water is increasing along with the population growth, economic development and urbanization. The World Bank estimates the global population growth to reach 9 billion people by 2050 while it is 7 billion today. Population growth will also affect 50 percent increase of the agricultural production demand and 20 percent of water withdrawal globally. Agriculture is the largest water-consuming sector, with irrigation accounting for 70 percent of global water withdrawals. The UN-Water agency<sup>2</sup> reports that in the least developed countries in the world, agriculture accounts for 90 percent of water intake. The UN-Water analyses also include the limits of water use per capita per year: basically, a person needs minimum of two liters of fresh water for drinking per day, which is roughly one cubic meter per year. However, some developing countries are reaching projected physical limits today, consequently creating water stress due to the fact that water withdrawal is exceeding the rates of replenishment (Cai et al., 2003). The Central Asian region heavily depends on its agricultural sector and irrigation. The waters in the region have been used intensively for several decades now and have reached a serious stress point. Given the decreasing water availability, scholars argue that water contributes to the conflicts (see for example, Gleick, 1993; Homer-Dixon, 1994) and moreover, the future wars will be fought over water resources (Gizelis and Wooden, 2010; Brochman and Gleditsch, 2012). I will discuss water conflict nexus in the following chapter of this paper.

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<sup>2</sup> UN-Water is the United Nations inter-agency entity established in 2003; more information is available at <http://www.unwater.org/about/en/>

Water is also significant for economic and social development (Cicchetti et al., 1975; Phillips et al., 2006), and attached to the conflicts around the world. However, water's role in the economic development depends on the effective and integrated water resources governance (Sadoff and Grey, 2002; Hoekstra and Hung, 2004). I discuss this aspect and the role of effective water agreements with a potential third-party intervention in more detail in the following chapters. As World Bank reports, because of the increasing water resource challenges, countries around the world cannot grow sustainably. Therefore there is a need of effective water governance for sustainable development. Moreover, effective water governance strategies and cooperative arrangements should take into account the growing water scarcity and quality, which is decreasing, and feasible water allocation management.

According to the UN-Water statistics, forty six percent of the earth surface is covered by transboundary river basins. The term transboundary rivers often refers to “transboundary waters and that is a source of freshwater shared among multiple user groups with diverse values and different needs, associated with water use. In this way, water crosses boundaries – be they those of economic sectors, legal jurisdictions, or political interests.”<sup>3</sup> There are 276 transboundary river basins in the world: 64 in Africa, 60 in Asia, 68 in Europe, 46 in North America and 38 in South America. Sixty percent of the world's 276 international river basins lack a cooperative management.<sup>4</sup> Cooperative management is similar to collaborative management, joint management, and participatory management or stakeholder management. According to the Oregon State University's definition, “cooperative management tries to achieve more effective

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<sup>3</sup> Further definition and information may be found: <http://waterpartners.geo.orst.edu/faq.html>

<sup>4</sup> Source: <http://www.unwater.org/statistics/fr/>

and equitable systems of resource management.”<sup>5</sup> This requires engagement of stakeholders to working together and sharing knowledge, power and responsibility.

Central Asia is one of the world’s regions that fail in managing the transboundary waters, contributing to conflicts as well as finding it hard to build effective frameworks and initiatives to address ongoing water related issues.<sup>6</sup> Since the collapse of the Soviet Union and the independence of all five Central Asian states in 1991, the regional countries signed and ratified a set of bilateral and multilateral agreements and established River Basin Organizations to facilitate the transboundary waters governance and cooperation. Central Asian countries also became parties to the international environmental treaties, to the joint water treaties in the region as well as member states of the Interstate Commission for Water Coordination of Central Asia (ICWC) and the Interstate Fund for the Aral Sea (IFAS), established in 1993.

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<sup>5</sup> Source: <http://oregonstate.edu/instruct/anth481/ectop/ecco-m.html>

<sup>6</sup> The riparian countries on the Nile River basin serve as another example of the water management struggling countries.



**Figure 1: Map of Central Asia. Source: FAO**

It is a known fact that during the Soviet Union, water governance and related issues in the Central Asia were not apparent. The central apparatus, i.e. Moscow, solved water resources issues by co-supportive methods, i.e. while resource poor countries: Tajikistan and Kyrgyzstan provided timely provision of the water supplies on yearly basis, they were taken care energetically by oil and gas rich countries. Any maintenance of the reservoirs and rivers were covered by the soviet system. When the USSR came to an end, so did the structural support and cooperation that was in place to some extent in Central Asia. These countries were not ready or prepared for independence as they depended on central decision-making of Moscow apparatus in their past.

It is also necessary to note that Soviet Union water regime in Central Asia was focused on agricultural development and not on effective water governance and environmental concerns. The waters in the arid Central Asian region were extensively used for high-levels of cotton cultivation, a particularly water intensive crop (FAO Aquastat Survey, 2012). Even after the breakup of the Soviet system, countries continued using the water irrationally that already brought to the Aral Sea disaster, which in turn brought to local catastrophes in Karakalpakstan, autonomy under Uzbekistan, and the health hazards in these regions have come to high levels. The salty and chemical waters have caused not only kidney and liver failures, but also cancerous effects on the population of those regions. Aside from this, the environment has taken a major blow as it has added greatly to greenhouse effects and the nearby lands are covered largely with salts, moreover, dusty salty storms are in the verge of developing. Consequences of the Aral Sea problems extend to the city of Dashoguz in Turkmenistan. Given these negative impacts on the affected area, as well as conflicts over the use of the transboundary rivers, countries in the region need collaboratively address these issues for a sustainable development.

### **1.3. Conclusion**

After the collapse of the Soviet Union, the Central Asian countries ratified international environmental treaties and conventions, and signed multilateral and bilateral framework agreements on the transboundary rivers cooperation. Sharing water is a real problem for the five states in the Central Asian region, and, in fact, a potential for more sustained conflict unless the state leaders come to the table to address the issues and find solutions for cooperation.

Ineffective state institutional regulations and lack of cooperation on water resources governance between riparian countries lead to conflicts during the irrigation season. Due to the shortage of water resources and the lack of effective implementation of the existing water cooperation agreements, riparian countries along the Amu Darya and Syr Darya rivers in the region are exposed to social and economic degradation. For example, farmers along the Amu Darya basin experience decrease in their harvest, loss of their livelihoods, and encounter disputes with the farmers of the neighboring country. Given the significance of the water and the necessity for effective governance of transboundary rivers in Central Asia, the goal of my thesis is to provide analysis of the advantages of third-party participation in the bilateral and multilateral environmental agreements.

In the following chapter, I will be discussing existing literature and secondary sources on the water related issues in Central Asia as well as around the world. This chapter will analyze existing literature on the water and conflict, water and economic development, and water and governance. Chapter 2 will also examine potential best practices and approaches in the water conflict prevention and resolution that could be applied in the case of Turkmenistan and Uzbekistan. Chapter 3 will be a case study, where I analyze those existing approaches to water

cooperation agreements in Central Asia and demonstrate the strengths and weakness of the different models.



## **Chapter Two: LITERATURE REVIEW**

### **2.1. Introduction**

Landlocked and mountainous Central Asia also has sandy deserts, mostly in Turkmenistan and Uzbekistan. The Karakum desert covers 80 percent of the total territory of Turkmenistan and Kyzylkum desert is situated between Syr Darya and Amu Darya in Uzbekistan. The climate is extremely continental, dry and hot. The rainfall in the region is distinctively low; therefore agriculture heavily depends on irrigation from the Syr Darya and the Amu Darya, the region's most important feeder rivers. Turkmenistan and Uzbekistan share one river, Amu Darya, to meet all their water needs, which raises issues and disputes at the village levels. In my paper, I am examining, given the strategic importance of the agriculture and irrigation as well as environmental implications in the Amu Darya, what potential do international water cooperation agreements have to regulate water conflict and scarcity? Why don't existing agreements work? What aspects of the existing agreements work and what potential do they have to serve as models to resolve the region's water sharing challenges?

Water can be a catalyst for a conflict but effective water cooperation can also be a catalyst for peace. It is imperative for the Central Asian countries to address the water issues for the security and sustainable development in the region. I argue that countries in this region need for third-party intervention to implement bilateral and multilateral environmental agreements. This chapter will analyze existing literature on the water and conflict, water and economic development, water and governance, and water and peace. Based on the analysis of the existing

literature I make recommendations for how the countries might learn the best approaches to prevent the conflicts, and I examine the suitability of those approaches for the Central Asian countries in the case study in chapter 3.

## 2.2. Water and Conflict

Regardless political constraints among Central Asian countries, there have never been interstate-armed conflict, except a few internal, ethnic and border tensions between Kyrgyz, Uzbek and Tajik communities, and the civil war in Tajikistan. However, the absence of interstate water wars does not imply that countries have been cooperating on the water resources. It has been long since the water problems exist in the region and the governments fail in addressing the issues around the shared waters and mitigating conflicts. According to the president of Uzbekistan, Islam Karimov, regional water disputes around the transboundary rivers will result in war in the future.<sup>7</sup> Uzbekistan has been experiencing water problems with Kyrgyzstan and Tajikistan over Syr Darya river and hydroelectric dams on the basin during the last decade.

Studying geopolitics of transboundary waters, Gleick (1993) identifies historical evidences when the water resources were used as instruments of conflicts. According to his studies, political motivations and military expansionism were underlying goals of creating the water related conflicts in the history. He discusses political tensions over the Jordan River in the Middle East that contributed to the 1967 Arab-Israeli War; the Nile River is another example that has been a trigger for the conflicts among the riparian countries in the northeastern Africa. Today considering global population growth and increasing demand for water for agricultural, industrial and economic development with unequal water allocations, international disputes over water can escalate to aggression and severe tensions. Gleick (1993) provides a list of the regions with the projected conflicts over transboundary waters. He identifies the Middle East, central Europe and in parts of southern and Central Asia as regions exhibiting vulnerabilities to conflicts over water. In Central Asia, competition over agricultural production and water resources has been creating

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<sup>7</sup> “Uzbek Leader sounds warning over Central Asia water disputes” Reuters, September 7, 2012  
<http://www.reuters.com/article/2012/09/07/centralasia-water-idUSL6E8K793I20120907>

tensions at the local and state levels. Interstate cooperation fails to find solutions on disputed water governance system that could benefit every country in the region.

FAO Aquastat, 2012 report includes survey between internal renewable water resources and total renewable water resources in all Central Asian countries. The survey shows that two countries in the region are experiencing water scarcity. For example, the measurement of internal water availability in Turkmenistan estimated 275 and 589 cubic meters per capita in Uzbekistan, which are indicating water stress in both places. The threshold for water stress is below 1,700 cubic meters per capita (Table 1).

**Countries with annual internal renewable water resources (IRWR) of less than 1 700 m<sup>3</sup>/inhabitant**

Country	Internal renewable water resources per inhabitant		Total actual renewable water resources per inhabitant	
	2001	2011	2001	2011
	(m <sup>3</sup> )			
Afghanistan	1 991	1 457	2 759	2 019
Turkmenistan	309	275	5 442	4 851
Uzbekistan	652	589	1 951	1 760

**Table 1 Indicates Water Stress in Turkmenistan & Uzbekistan. Source: FAO.**

Given this calculation, water scarcity in Turkmenistan and Uzbekistan creates many other problems affecting the entire region. Gleick (1993) argues that water scarcity and competition for water access will result in a threat to a national security. He also identifies different types and scales of conflicts that range from regional conflicts at the village level, between different subnational entities or between several states sharing the international rivers. Therefore his focal questions include predicting when and where conflicts over water could happen and identifying the link between water resources and conflicts. His analysis applies to the countries I am

studying, in terms of that disputes at the village level have been taking place every irrigation season for a few years.

Based on my research on water and conflict nexus, some scholars also emphasize that conflicts over water occur at both interstate and intrastate levels. According to the Uppsala University's Department of Peace and Conflict Research definition, interstate conflict occurs between two or more states whereas intrastate conflict is within the borders of one country but between government and one or more groups. Intrastate water conflicts occur when there is a social grievance and deprivation over the loss of their harvest or food insecurity due to the lack of water for irrigation or environmental change. Based on the water shortages during the irrigation seasons in the region as well as potential causes of the interstate and intrastate conflicts of the future wars, my assumption is that if the governments of all countries across Central Asia don't improve water cooperation on the Amu Darya and Syr Darya rivers, the states may experience either of the interstate or intrastate conflicts over time.

Scholars and experts studying resource scarcity also suggest that conflict over water might arise from environmental changes. Homer-Dixon (1994), for example, provides hypotheses on how the environmental changes can cause social effects, which, in turn, create acute conflicts. His analyses show that "environmental scarcity" is one of the causes of water problems and contributes to conflicts. Homer-Dixon (1994) introduced the concept of environmental scarcity and it is comprised by "environmental change, population growth and unequal social distribution of resources". Further, he also explained the environmental change is a manmade degradation of water quantity, and the renewable resource becomes a deficit or not replenishable. Central Asia is experiencing environmental scarcity owing to the Aral Sea crisis,

which is a result of the excessive use of waters of the Amu Darya and Syr Darya rivers that started in the Soviet period and continues today.

Homer-Dixon (1994) argues that environmental scarcity will impact all sectors of the country and consequently create heated conflicts. With the population growth and increase of the ecological deprivation, states will have fewer resources to mitigate conflicts. His analyses describe issues in Central Asia to some extent, however, even with the economic decline in the agricultural production, countries in the region have opportunities to compensate and address the problems with its oil and gas resources. His study is missing political and economic factors, for example, a wealthy country is most likely to accommodate resource scarcity and suppress violence. In addition, Homer-Dixon's (1994) argument is that environmental scarcity provokes a civil or interstate conflict rather than intrastate, which is the case of the Central Asian countries. Interstate conflicts may evolve over time when a riparian country feels limits in realizing its objectives and profits. In the case of Central Asia, interstate conflict can only occur at national levels, rather than local levels. Nevertheless, his discussion supports my arguments, in terms of that two countries out of five in the region are affected by the water scarcity and population growth. However, there is a need to prevent the interstate conflicts between farmers along the shared rivers. Since existing legal frameworks in the region are not effective in preventing these types of conflicts, there is a need for third-party intervention to enable effective interstate water governance and cooperation.

Raleigh and Urdal (2007) also discuss the water resource scarcity and conflicts at the intrastate level, and yet the research is different from previous studies in the way that they consider political and economic factors in examining the relationship between water and conflict. They argue that political and economic factors of a country may affect the course and length of

any water related conflict. According to their research, water scarcity contributes to a conflict and the places with high resource scarcity are more vulnerable to any type of conflict. Even though this study discusses internal conflicts, I assume the likelihood of any type of conflict can take place in the Central Asian countries at any time, unless the governments improve water cooperation to prevent any further negative consequences such as migration of people from rural to urban areas or neighboring countries, or any threats to a national security.

Gizelis and Wooden (2010) article examines relationship between political and democratic institutions, water scarcity and intrastate conflicts. They argue the likelihood of internal conflicts highly depends on the political regime type of the country, and their result shows that democratic country is more likely capable and willing to reduce water problems and societal grievance. They argue that democratic countries consider actors at all levels and concerns, and the scarcity problem is addressed at early stages before exacerbating into an intrastate conflict. They don't imply that democratic country may not have a resource scarcity or have a better understanding of environmental scarcity, but democracies are effective at addressing the resource scarcity to avoid intrastate conflicts. Their assumptions are based on the data of 98 countries during 1981–2000, however, they exclude Central Asian countries in the study categorizing them as highly water dependent countries but not water-stressed. Although, according to the updated data on water scarcity level, the region is water stressed. The time period, which is 1981-2000, they use to test their hypotheses may have caused constraints to include Central Asia and thus the region has not been considered in examining the links between political regime types, water scarce level and conflicts. In the end, their finding on the relationship of political regime types and the likelihood of conflicts is helpful in understanding the Central Asian water problems.

Brochmann and Gleditsch (2012) find that neighboring countries sharing one river have the highest risk of interstate conflicts. Authors refer to the Jordan River in the Middle East as well as tensions over the Nile, in particular downstream Egypt's concerns on the water flow. Authors explain the likelihood of the conflicts depends on the countries' interaction, which is shaped by opportunity and willingness. Opportunity enables a country to go to war, whereas willingness is shaped by a country's choice to take any actions. Further, they explain that democratic countries have much lower risk of conflicting than the countries with autocratic political regime. Considering this study, countries' willingness and political regime types play a significant role in addressing problems around the shared rivers.



### **2.3. Water and Economic Development**

Integrated water resources governance helps sustain the environment, agriculture and communities. In this chapter, apart from the water – conflict nexus, I am also examining the relationship between water resources and economic growth to test its impact on the water issues between countries of the Central Asia. In this regard, as I mentioned earlier in my paper, agricultural sector plays a great role in the entire region. Therefore water has a strategic importance for irrigation in all five countries. Since the Soviet Union period, irrigation has been critical to the economic development in the countries across Central Asia.

Scholars and economic analysts find a direct link between water and economic development. For instance, a case study by Cicchetti et al. (1975) examined the impact of water resources investment on the economic growth in the Southwest region of the United States. The overall finding is positive, in other words, water resources investments contribute to the economic development. Moreover, they argue that the nature of investment, the state economy, and the amount of investment affects the degree of development. Although, this research is not applicable to Central Asia owing to several factors such as geographical, institutional and political variables, this particular study is a contribution to understanding the importance of economics of water, and that a state benefits from effective water cooperation and governance that increases economic growth and more likely reduces conflicts.

Considering Turkmenistan's hugely deserted area, water scarcity level and conflicts at the villages, it is important to examine how these factors contribute to its overall agricultural productivity. For example, O'hara (1997) analyzes irrigation and land degradation in Turkmenistan. The paper emphasizes importance of agriculture and its dependence on the water supply in the country. Based on the large deserted territory and salinized lands of the country, the

study results indicate decline in the agricultural production, which in turn negatively affects the economy of the country. In addition, the author argues if the government is not going to take any actions to improve governance of the water resources, the situation will deteriorate over time. However, according to the World Bank, economic growth in Turkmenistan increased by 10.3 percent in 2013 and has maintained stable growth in 2014. Considering that author's predictions do not correspond to the current economic growth, Turkmenistan's GDP growth can be explained by its oil and gas resources exports. Based on these assumptions, Turkmenistan heavily depends not only on its agricultural production but also on its oil and gas resources. Most likely, the water problem in the country is not in top priority whereas oil and gas export revenues can compensate and address the social needs. The same assumption may also be applied to energy resources rich Uzbekistan where natural gas exports accounted for 13.4 billion cubic meters in 2012 (CIA World Factbook).

Sadoff and Grey (2002) provide hypotheses on how countries sharing a river could have benefits of the cooperation on an international river. The benefits include environmental, economic, political and catalytic; economic development that is to say, when the river basin is managed well, it can efficiently improve as well as increase the water resources availability and overall productivity of the basin system. Countries will mitigate conflicts and cooperate only if they find reasonable incentives. Well-managed river refers to effective water governance, which I will be discussing below. Briefly, I argue that water governance on the transboundary rivers between Central Asian countries exist, but not effective. The rivers systems are not well managed thus result in the conflicts at the village levels.

Referring to the Dublin Principle Four<sup>8</sup>, Hoekstra and Hung (2004) emphasize that water should be treated as an economic good. Their study is set out in a way of data report that estimates required water quantity for crop production as well as virtual water exporters and importers in different places around the world. Virtual water is defined as the water embedded in a product, that is to say, the water used during the production process. Hoekstra and Hung (2004) develop the concept such as water scarce country could import water-intensive crops, and export crops or products that consume less amount of water. They also identify regions with substantial virtual water imports that include Central Asia. Cotton, rice and wheat are the major crops produced in all five countries in the region and have negative impact on water regime and use. Excessive use of the rivers for irrigation in the region may contribute to another disaster like the Aral Sea. The environmental implications of the irrational use of waters coupled with the lack of interstate water cooperation can cause rapid deterioration of the ecosystem in the region. As a recommendation, countries might consider using the concept by Hoekstra and Hung (2004), importing water-intensive products and exporting crops that require less water, or at least, reduce the cotton production and export.

Phillips et al. (2006) find the concept of virtual water positively affecting the country's vulnerability to a conflict. They state that food imports tend to reduce internal as well as external conflicts. Hoekstra (2010) emphasizes that virtual water trading could promote effective global water use at the same time providing food security. These studies show that it is possible to reduce the impact on water scarcity, using the concept of virtual water trading. This will

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<sup>8</sup> Dublin Principle – a conference on water concerns that took place on January 31, 1992 in Dublin, Ireland. Recognizing the growing water scarcity and misuse of water that causes threat to sustainable development, the conference report developed “recommendations for action at local, national and international levels, based on four guiding principles.” Principle Four states “Water has an economic value in all its competing uses and should be recognized as an economic good”. More information is available at <http://www.wmo.int/pages/prog/hwrrp/documents/english/icwedece.html#introduction>

significantly help countries to manage the water scarcity and prevent damage to the ecosystem, and enjoy overall benefits.

In addition, even when introducing these new concepts in the region, energy resources rich countries can sustain its economic growth stable on the account of exporting oil and gas resources. This new concept will also enable those countries reduce the competition over water resources use and mitigate ongoing interstate farmers conflicts.

Nowadays, water is mostly associated with conflicts and wars, competition for water and limited access of water either for drinking or irrigation. Water does not serve as a sole cause and yet contributes to conflicts. Nevertheless, water can be a catalyst in the peace building as well. Wolf et al. (2005) explain that water conflict has never been strategically and economically viable. They list a few transboundary river basins where riparian countries have successfully reached peaceful cooperation over the past decades. For example, despite the long since animosities between countries such as Israel and Jordan, negotiations over the Jordan River resulted in the peaceful basin developments. Cases of India and Pakistan negotiations over the Indus River, or the Nile River shared by eleven countries in the northern Africa serve as examples of effective cooperation and river basin governance system. However, these successful settlements of the water related disputes were reached with third-party participation. The World Bank in the Indus River basin or the United States in the Jordan River basin played a significant role in facilitating conflict prevention and enforcing effective water agreement.

The goal of the international Water Laws, Conventions, treaties and river basin organizations underlies promoting peace and sustainability. Each of them play significant role in facilitating peace talks over shared rivers. While some countries are successful in complying

with the treaties and laws, thus benefiting from it, there are a few other places like countries across Central Asia that encounter problems in using water as a tool for peace building.

Literature on the water and peace studies shows water has a great importance in the peace building. As part of the water for peace initiative, Cosgrove (2009) discusses the importance of cooperation over shared waters in peace building. Moreover, international water conflicts have been resolved peacefully, and that water for peace builders could help in the peace building process in different ways, such as facilitating riparian countries in the process and enforcing governance of the water resources and cooperation.

## **2.4. Water and Governance**

Ostrom et al. (1999) discuss local lessons and global challenges of the common pool resources (CPR) through examining institutions that were successful and unsuccessful in providing fair and sustainable access to them. Authors argue that governance of the resources depends on the cooperation and interaction of the international institutions at the regional, national and local levels. In the absence of interaction and coordination among water users, there is likely overuse of the waters without considering its negative impacts on the others. This reflects the case of all waters and its users in the entire Central Asia. Authors argue for successful governance of the CPRs, there should be a communication, trust and information exchanging between the users and stakeholders.

According to O'hara (2000), water governance and cooperation challenges of the Central Asian countries is rooted in the Soviet Union's strategies that some of the independent governments have inherited. The author makes recommendations on how to transform those former water resources regimes for sustainable development of the region. For example, when developing a new strategy, policy makers should consider people's needs as well as meeting demands of the changing society and economy. Other solutions include creating farmer/water user association and provide with the training and knowledge skills to manage water utilization, estimating water requirements and irrigation needs at the local levels. This is a feasible approach only in case the governments understand implications of the new water governance strategy and support farmers in improving the current system.

Legal and institutional mechanisms play significant role in the cooperative management. However, Bernauer (2002) is skeptical about the efficiency of the water laws in practice in resolving problems in the international rivers. He argues that policy makers should cautiously

consider political, social science and economics when designing the water laws and agreements. It is also imperative to consult the riparian behavior and the environment to design positively affecting cooperative agreements. Despite the framework agreements and international laws and conventions, people at the village levels particularly on the Amu Darya basin experience water shortages during the irrigation season, lose water-based livelihoods and encounter conflicts with the farmers of the neighboring state. Although, the water allocation for water sharing countries has been agreed and signed by the heads of states, the reasons behind these conflicts of interest have not been clearly identified. There is a need for immediate actions in resolving water related disputes by the authorities of those countries. Otherwise, as the president of Uzbekistan, Islam Karimov, believes, countries may experience interstate wars in the future.

According to the Global Water Partnership definition “water governance refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society” (Rogers and Hall, 2003, p.7). The entire Central Asian region has always been raising concerns on the water governance. Considering increasing water resources scarcity and potential conflicts on shared waters around the world, international community urges all countries to establish effective water governance and making it as the highest national priority.

Contrary to Bernauer (2002), Rogers and Hall (2003) argue that important factors such as international agreements, partnership, and community level involvement and cooperation are required for achieving effective water governance. In this regard, Central Asian countries meet all requirements except the community level engagement and cooperation. All countries in the region entered into number of joint multilateral/bilateral agreements and became parties to the joint river basin organizations since the first day of independence.

In 1992 The United Nations Economic Commission for Europe (UNECE) adopted the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (The Water Convention), which entered into force in 1996. The Water Convention sets values on institutional cooperation between riparian countries, and effective mechanisms for cooperation and water governance. The Convention obliges parties “to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and equitable way and ensure conservation and restoration of ecosystems” (UNECE Water Convention, Part I, Article 2). Kazakhstan ratified the Water Convention in 2001, Uzbekistan in 2007 and Turkmenistan in 2012. In addition, Uzbekistan became a party to another United Nations Convention on the Law of The Non-Navigational Uses of International Watercourses in 2007. Part II Article 5 of the Convention states “equitable and reasonable utilization and participation” and the Article 7 is on “obligation not to cause significant harm” to the river. Considering water resources challenges that countries have been facing, these international treaties have less impact on improving the situation in the region.

McKinney (2003) explains gaps and challenges Central Asian governments face in governing transboundary waters as well as mitigating water related conflicts. According to his findings, in particular, Turkmenistan and Uzbekistan need high political will for effective cooperation and engagement in the interstate water related issues. Governments seem to be hesitant to review the water allocation terms of the existing agreement between countries.

Another perspective of the effective water regime includes cooperative management mechanism, discussed by Wolf et al. (2005), can reduce potential conflicts over shared rivers. It is imperative to consider all potential countering interests, different perspectives that can offer win-win solutions, collaboration during the decision-making in the cooperative management.



This type of mechanism is necessary in the case of Central Asia, however, countries will have to, first, recognize those ongoing water conflicts and challenges, and then this mechanism would be viable to implement.

Zaelke et al. (2005) argue that good governance, the rule of law, and compliance are the crucial and interdependent aspects in achieving sustainable development. Authors describe the governance including both formal and informal law and the government. Whereas good governance, which represents transparency and accountability among other significant features, constraints the power of government in the public and the private spheres. In its turn, good governance depends on the rule of law and compliance. In the absence of compliance, treaties have no meaning, therefore defeating peaceful cooperation and governance of the common pool resources.

Based on the studies and assessments of successful water governance on the shared river basins, I have identified river basins with similar problematic features, and yet they have been able to reach peaceful agreements, and create effective water regime and cooperation. For example, the Indus Water Treaty signed in 1960 between India and Pakistan, the Mekong River Basin Agreement, and the Jordan River Basin Agreements between riparian countries seem to be similar to the case of Amu Darya and conflicts along the basin. The general similarity of all three cases includes a transboundary river, centralized governance, and conflicts, which occurred after the independence in all places.

The Indus Water Treaty between India and Pakistan has been of the most successful agreements on water sharing. The history goes back to the British India period, but the conflict started escalating after the independence when the water and irrigation were crucial for both upstream and downstream countries: India and Pakistan. The hostile, ill political relations

between India and Pakistan due to the lack of trust and conflicts over the territory issues make the case very classic and applicable in the case of Turkmenistan and Uzbekistan.

Negotiation attempts to resolve potential security threat over sharing the water took several years with no success. The final peaceful agreement had been reached in September 1960 by the facilitation and mediation of the World Bank. The role of the World Bank in this particular case is an example of the mechanism, which has been used and resulted positively in the case of India and Pakistan. The Indus Water Treaty covers both technical and financial concerns of the parties. In addition, Pakistan received financial aid to construct the water reservoir. While India gained access to the three eastern tributaries of the river, Pakistan received unrestricted use of the western part of the river. One of the provisions of the treaty emphasizes appointing “neutral expert” or the mediator in case of occurrence of any water disputes between the riparian countries (Wolf et al., TFDD case study). This case is a good example of third-party mediation approach, which played a significant role and makes the governments accountable for implementation of the commitments. Third-party mediation and participation approach could help countries in the Central Asia in the same way or to some extent to resolve water related obstacles for interstate cooperation.

Similarly, the Mekong River is the twelfth longest river in the world, and flows through China, Myanmar, Laos, Thailand, Cambodia and Vietnam. There was no serious conflict over the use of the Mekong River between riparian countries. The agreement makes a good example from the perspective of that all users understand the economic incentives and ecological sustainability of effectively managing the water. In addition to the agreement, riparian countries established Mekong River Commission in 1995, which plays an important role in a decision and policy making at the regional level (Wolf et al., TFDD case study). The purpose of establishing

such entity is described as the need for integrated water governance for sustainable development and reducing poverty in the riparian countries. The Mekong River Basin Agreement and compliance by the parties makes the case efficient in a way that there is a commitment and political will at the national and regional levels considering the relationship between water and social, economic and sustainable development. Also, it should be noted that the UN facilitated the communication and overall project between riparian countries.

These two cases of the shared rivers show that third-party engagement as well as regional governance can play a key role in resolving or preventing the water related disputes. In both cases, riparian countries established active involvement with international community and compliance with the regional and international treaties. The outcomes indicate the “win-win” situation for all stakeholders on both rivers.

The feature that makes these cases different from Central Asian water politics underlies existence of the political willingness to engage with all end-users, transparency and accountability in the water governance. The institutions in all above-mentioned countries are decentralized, whereas it varies in Central Asia. For example, in Turkmenistan and Uzbekistan they remain centralized and under state control. In addition, incentives such as economic or peace and security provision by third-party participation enable countries to cooperate and govern international watercourse effectively.

## **2.5. Conclusion**

According to the discussed literature in this chapter, the water is linked to every aspect of life, to economics, wars as well as to peace building. Given the current water politics and political confrontations around the water issues in Central Asia, there is a potential for water wars in the near future. The water wars can be caused by the overuse of shared waters, economic decline and people's grievances and deprivation owing to the water shortages, lack of political cooperation or dialogue in mitigating the small-scale conflicts, and also, political regime types of the governments. I argue that third-party intervention approach is needed to achieve effective interstate water regime and cooperation for a sustainable development of the region. The role of organizations such the United Nations or the World Bank is powerful to engage Central Asian countries in the water related disputes and interstate cooperation. Next chapter is the case chapter, where I will elaborate my arguments. In the following chapter, I will discuss the models of agreements and analyze whether they fall short or can be a cornerstone for an effective water governance and cooperation in Central Asia.

## **Chapter Three: CASE STUDY**

### **3.1. Need for Water Cooperation in Central Asia**

Considering ongoing poor cooperation on transboundary waters, negative environmental implications, and potential for water conflict between countries in the region, my thesis questions are what potential do international water cooperation agreements have to regulate water conflict and scarcity? Why don't existing agreements work? What aspects of the existing agreements work and what potential do they have to serve as models to resolve the region's water sharing challenges? To answer these questions, I am analyzing cases of the water governance dividing into models such as unilateral, bilateral, multilateral agreements signed by regional countries, and multilateral agreements with third-party enforcer.

Given that existing bilateral and multilateral legal frameworks fail in promoting regional water cooperation, in this paper I argue that there is a need for third-party intervention to enforce and implement the international water treaties between all Central Asian countries to prevent ongoing and future interstate water conflicts in the region, and to solve water scarcity and environmental problems. In order to answer my thesis questions and support my arguments, I will provide geographical details of the region, water resources and the role of agriculture in the economy as well as water regime before the independence of Central Asian countries. Further I will discuss models of agreements that are in place and the role of an agreement enforced by third-party. These models of agreements will suggest potential avenues for cooperation to

mitigate ongoing water conflicts at the village levels with neighboring countries including environmental sustainability in the region.

### 3.2. Context

The total territory of Central Asia is over four million square kilometers and population of around 94 million people accounting for 1.3 percent of the global population (FAO, 2012, p.26). Late twentieth century, collapse of the Soviet Union played a significant role in the history of Central Asia. Today the region includes Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (Figure 1) (McKinney, 2003). All these countries declared independence from the Soviet Union in 1991, and took responsibility for rebuilding and managing their state systems. Like any other objectives, the Soviet central planning system maintained the water allocation and maintenance issues throughout the region. The dissolution of the Soviet system and transition from central planning resulted in unexpected challenges in the state building, governance, and water cooperation. Transboundary water resources governance was one of the issues that required immediate attention.

Central Asia is an arid region, and as a whole, consists of vast deserts. Karakum desert occupies 80 percent of Turkmenistan, and Kyzyl-Kum desert is located in Uzbekistan. The region has two major transboundary rivers: Amu Darya and Syr Darya that flow to the Aral Sea and feed the whole Central Asian region. In old times, Central Asia was called Transoxiana, which had the meaning of a land between the Amu Darya and Syr Darya rivers (Weinthal, 2006).

The longest river in Central Asia, Amu Darya originates in Pamir Mountains in Tajikistan, and is shared by Afghanistan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan<sup>9</sup>. The basin's area is 309,000 square kilometers and 2,540 kilometers long (Amu Darya Basin Network). The river flows west across Tajikistan, Uzbekistan and Turkmenistan and finally

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<sup>9</sup> For the purposes of this study, I am analyzing water issues and agreements among Central Asian countries. Although Afghanistan is important partner in future water sharing agreements, but I do not include analysis of Afghanistan in my thesis because it is not currently a member of the agreements or treaties that I am examining in this chapter.

flows back to Uzbekistan's Karakalpakstan region (Votrin, 2003). Amu Darya's 62 percent water and Syr Darya's 30 percent water provide with the surface water resources in the entire region. Both rivers are extensively used for agriculture and food security (Vinogradov and Langford, 2001).

Land use						
Country	Total area		Cultivated area			
	Area	in % of total area	Area	In % of country area	per inhabitant	per person economically active in agriculture
	ha	%	ha	%	ha/inhab	ha/ec.act.pop.
Afghanistan	65 223 000	14	7 910 000	12	0.2	1.3
Kazakhstan	272 490 000	59	23 480 000	9	1.4	19.9
Kyrgyzstan	19 995 000	4	1 351 000	7	0.3	2.7
Tajikistan	14 255 000	3	875 000	6	0.1	1.1
Turkmenistan	48 810 000	10	1 910 000	4	0.4	2.7
Uzbekistan	44 740 000	10	4 651 000	10	0.2	1.7
<b>Central Asia</b>	<b>465 513 000</b>	<b>100</b>	<b>40 177 000</b>	<b>9</b>	<b>0.4</b>	<b>3.3</b>

**Table 1. Land use in Central Asia. Source: FAO.**

According to the United Nations Food and Agriculture Organization (FAO), the cultivated land in 2009 was estimated 40 million ha, which is 9 percent of the region's total area (Table 2) (FAO, 2012). The same report provides details on the total water abstraction for the entire region estimating 145 cubic kilometers per year. Due to the fact that Uzbekistan has the largest irrigated lands in Central Asia, the country has the highest water withdrawal, accounting for 56 cubic kilometers, which is 39 percent of the total. Since both major Amu Darya and Syr Darya rivers flow through Uzbekistan, the country has advantage of using both rivers in its agriculture and irrigation.

Moreover, considering high value of the agricultural production and water use in the country, Uzbekistan's water politics create tensions with its neighboring states. In the past decade, Uzbekistan has been experiencing interstate water disputes with Kyrgyzstan and



Tajikistan over Syr Darya and the dams on the basin (ICG, 2014). Uzbekistan seems to be isolating itself from interstate cooperation over transboundary waters in the region, which is necessary for sustainable development of each Central Asian country. For example, articles by Karaev (2005), Allouche (2007), Azam and Makhmejanov (2010) elaborate on Uzbekistan's move from regional integration to political as well as economic isolationism which brought to the stagnation in water cooperation between the regional countries. Just like any other riparian country, Uzbekistan's participation in reaching an effective water agreement is imperative, especially when Uzbekistan has access to two major rivers in the region. Due to the political discrepancies or unilateral actions of some riparian countries, there is a need for third-party to enforce multilateral or bilateral agreement.

According to the World Bank's 2013 report, Kazakhstan, Turkmenistan and Uzbekistan are the most economically powerful countries in the Central Asian region, where the state economy accounts for abundant oil and gas reserves. On the other hand, water is the most valuable resource in the oil and gas rich region and the entire region depends on the agrarian industry. The list of primary crops produced in the region includes wheat, rice and cotton lint. Cotton production has always been a top priority for all Central Asian countries. According to the International Cotton Advisory Committee (ICAC), Uzbekistan ranks the 6th largest producer of cotton and the 3rd largest exporter worldwide. High water consuming cotton production uses roughly 10,000 cubic meters of water per ha (Peachey, 2004). Most of the cotton fields in Uzbekistan are located on the southwest of the country and on the Amu Darya river basin along the borders with Turkmenistan (ICAC Uzbekistan Cotton Fact Sheet).

Central Asia, politically as well as economically, is a strategic region.<sup>10</sup> However, considering the Aral Sea disruption (discussed below) and the economical significance of the agriculture for all countries in the region, irrigation in the agriculture adds significantly to the problem of regional water governance. These water problems and lack of cooperation in managing waters make the region complicated. Water resources in the region have been historically a vital and most controversial natural resource. Political tensions, competition over natural resources such as water, and neglectful attitude towards the regional cooperation in international water regime resulted in the Aral Sea crisis, which has critical implications for water use along the Amu Darya and Syr Darya river basins, as these two rivers feed the Aral Sea.

Poor water resource governance in Central Asia started in the Soviet Union period. The Aral Sea, once the fourth largest lake in the world, has started desiccating dramatically in 1960s (Vinogradov and Langford, 2001). Prior to the water depletion, the basin supported 75 percent of the region's population and economy. The Soviet government's cotton monoculture pressure and diversion of the rivers feeding the sea resulted in the destruction of the Aral Sea basin. Consequences of this disaster are hugely impacting health and environment throughout Central Asia and in Turkmenistan and Uzbekistan in particular, causing the spread of the desertification and demise of ecological balance in the region as well as the increase of dust storms and the damage to biological diversity (Peachey, 2004). The Aral Sea crisis is an example of the worst manmade environmental disaster and a result of the inadequate water regime policies (Mosello, 2008). The need for water cooperation in the Amu Darya river basin is all the more extreme given these circumstances.

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<sup>10</sup> Oil and gas resources rich region is at the crossroads of Asia, Europe and the Middle East, as well as surrounded by Russia and China, countries with the economic and trade interests in Central Asian countries. Considering the war in Afghanistan, the United States determines its overall interest in the region as the security and stability, and has military bases in three of Central Asian countries.

### 3.3. Models of Agreements

In order to answer my thesis questions, I will analyze some of the existing water agreements organized according to “models of agreements”: *unilateral, bilateral, multilateral within region, and multilateral with third-party participation*. Considering that upstream countries in the region take actions without any consent of a downstream country, unilateral actions should be examined since those actions affect all water user groups. Examining bilateral agreements will help to understand why Turkmenistan and Uzbekistan continue experiencing seasonal conflicts over water. Multilateral within region has importance since Central Asian countries signed joint multilateral agreement during the first year of independence. Whereas multilateral with third-party participation helps analyze feasibility of this model, which existing literature suggests is the best option for resolving water related disputes, enforces cooperation among the riparian countries and using shared waters in a rational and equitable way for sustainable development.

During the Soviet Union, Central Asian countries enjoyed the central planning and provision of energy, food, and security as well as governance of transboundary rivers. With the dissolution of the Soviet Union in 1991, Central Asian countries became independent and moved forward from the Soviet central planning and started nation building. Culturally and politically similar countries of the region had to address the water governance challenges and the Aral Sea crisis during the first years of independence. The governments signed a number of international and regional environmental treaties for saving the desiccating Aral Sea and conservation of water resources in the entire region. Nevertheless, the region continues experiencing water shortage problems, environmental consequences of the Aral Sea disruption and conflicts over sharing transboundary rivers. In particular, Uzbekistan has been arguing over territorial issues, sharing

the international watercourses and infrastructure projects on the Syr Darya and Amu Darya rivers with Kyrgyzstan, Tajikistan and Turkmenistan over the past decade.

Soon after the independence, countries across Central Asia adopted a number of regional multilateral as well as bilateral transboundary water governance agreements, established river basin institutions and commissions to ensure effective use and protection of the transboundary waters. Ratification and compliance of water resources agreements and conventions absolutely depend on the political will of the Central Asian countries. Regardless of this fact, countries experience irrational water use and conflicts at the village levels. I argue that there is a need for third-party intervention in the multilateral agreements. The role of either the United Nations Organization or the World Bank can be powerful in reaching peaceful agreements in the water related disputes.

### ***3.3.1. Unilateral Water Governance***

Despite existing water cooperation agreements, it is general practice for some countries in the Central Asia to take unilateral actions on the shared river basin, thus creating political tensions with other riparian countries and contributing to the conflicts at the village levels. Tajikistan's Rogun Dam or Turkmenistan's Golden Age Lake projects make a good example of the unilateral water governance in the region. These projects have completed without any consent of another riparian country or the party to the bilateral/multilateral agreement. Consequently, it has caused Uzbekistan's concerns, because in this case Uzbekistan loses its control over the Amu Darya river (Wegerich, 2008).

As mentioned earlier, Turkmenistan shares Amu Darya with Tajikistan and Uzbekistan. Alternative water resources in Turkmenistan comprise Tejen (1,124 kilometers), Murgap (852 kilometers) rivers flowing from the Kopetdag Mountains in the country, and the Karakum Canal, which was built in the mid-1950s by Soviets to increase the cotton production. In addition, the government of Turkmenistan constructed the Golden Age Lake with the capacity of 150 cubic kilometers in the Karakum desert. The water to the manmade Karakum Canal and the newly constructed Golden Age Lake is pumped from the Amu Darya and triggers concerns for Uzbekistan. The Golden Age lake project started long before the death of former president Niyazov with the idea to solve the environmental, water, social and economic problems in the country, and positively impact on the water quality in the water collector and the lake. The project, funded by the government of Turkmenistan, started operating in 2009. However, due to the dry climate and huge water evaporation in the area, environmentalists and water experts have expressed deep concerns regarding the Turkmen government's actions of diverting water from the Amu Darya, which will contribute to the environmental problems in the region (World

Rivers Review, 2009). Uzbekistan raised concerns since the Amu Darya provides water to the lake, thus accused Turkmenistan of overusing the fixed water terms (Wegerich, 2008).

Tajikistan also acted unilaterally to construct the Rogun Dam, which Uzbekistan loudly opposes. After the breakup of the Soviet Union, countries in the region canceled the Soviet energy sharing and water governance system. Since then, Tajikistan had to find the ways to resolve the energy shortages during winter. According to the news media, through some foreign loans, Tajik government is financing the dam construction<sup>11</sup>. Although, the World Bank didn't provide funds for the entire project, the Bank assisted Tajikistan in conducting necessary assessments of the feasibility of this project. Overall results show that the project will have positive impact on the prosperity and development of Tajikistan (World Bank press release, July 2014). Due to the long-standing water disagreements, countries need third-party for a peaceful settlement of the issues in the region. Successful cases with third-party participation illustrate accountability and feasibility in staying committed to the agreement obligations, consequently preventing those unilateral actions on a shared river basin. In this context, since Uzbekistan expresses dismay regarding the Rogun dam project, the World Bank's assistance to conduct effective assessment of feasibility is helpful to ensure that downstream countries will not be affected.

Weinthal (2006) argues that by virtue of high demands on the region's water resources, Central Asia may experience conflicts at interstate and intrastate levels. In particular, unilateral actions such as Tajikistan's Rogun Dam and the Golden Age Lake in Turkmenistan are a trigger for a conflict with Uzbekistan, given that both projects are relevant to the Amu Darya. Uzbekistan raises concerns over the artificial lake's effects on the shared river. Unfortunately,

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<sup>11</sup> "Пока Кыргызстан ждет, Таджикистан строит Рогунскую ГЭС" Radio Azattyk, November 25, 2014. Retrieved from <http://rus.azattyk.org/content/article/26709024.html>

unilateral decision-making concerning the common pool resources in the entire region is a commonly practiced method. These types of actions that Central Asian governments take support my argument to have third-party to encourage cooperation and effective water governance system in the region.

### **3.3.2. *Bilateral Agreements***

Bilateral water agreement between Central Asian countries is concluded on mutual consents, and considers equal share of the water, sets out roles and responsibilities of the water user groups. In this section, I will be examining the bilateral agreement between Turkmenistan and Uzbekistan on water cooperation signed in 1996. Factors such as political differences and confrontations may affect the course of international water cooperation in Central Asia.

Since the first years of the independence, Turkmen-Uzbek political relationship suffered confrontations over the territorial, border and natural resources issues. Turkmenistan (488,100 sq. km<sup>12</sup>) and Uzbekistan (447, 400 sq. km<sup>13</sup>) have about the same size of the territory, and together comprise 20 percent of the total territory of Central Asia (FAO, 2012. p.25). Due to the hot and dry climate, both countries heavily depend on the water resources for irrigation of the farmlands. While the Amu Darya is the only major river in Turkmenistan, Uzbekistan has advantage of utilizing waters of the Syr Darya as well.

According to the International Crisis Group's (ICG) observation, the reasons behind the undercurrent of hostility between the states' leaders can be explained by the disputes over territorial and water rights. Indeed, water disputes might have come close to causing national-level conflict between the two countries. The International Crisis Group (ICG) report states, for example, that "[w]ater issues were rumored to be behind a military stand-off at the border in 1995, and Uzbekistan seems likely to take a very strong line against further unilateral decisions by Turkmenistan to increase its water intake from the Amu Darya" (ICG Asia Report No34,

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<sup>12</sup> Central Intelligence Agency, (2014). Central Asia: Turkmenistan. In The World Factbook. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/tx.html>

<sup>13</sup> Central Intelligence Agency, (2014). Central Asia: Uzbekistan. In The World Factbook. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/uz.html>



2002). The same report by ICG quotes Uzbek water experts' concerns that, considering the demographic and irrigated land difference between Turkmenistan and Uzbekistan, water quotas should be reconsidered. In particular, Uzbek water experts believe that allocated water limits for Turkmenistan should be less than it is now. However, the water allocation has been agreed and signed by the presidents of both countries in 1996 agreement.

In addition, although there was no evidence, Niyazov accused Uzbekistan in aiding the assassination attempt on him in November 2002.<sup>14</sup> Political relations between Turkmenistan and Uzbekistan have fairly improved since then, nevertheless, conflicts at the village levels continue happening over sharing Amu Darya waters. An article by the Jamestown Foundation on the Turkmen-Uzbek relationship discusses that after the accusations and ongoing confronted relations, Niyazov and Karimov had a meeting in 2004, where the presidents discussed improving political relations and cooperation under the pressure of increasing energy prices globally as well as the mutual concerns over the Russia's domination on the gas trade in the region. The situation started improving rapidly only after Berdimuhamedov, Turkmenistan's second president, came to power in 2007. Within a year, two presidents exchanged with state visits and since then, the governments maintain stable political relationship.<sup>15</sup> As it is observed in the news articles, a dialogue of the Turkmen-Uzbek state visits concentrate on the regional and energy security, economic interests and trade cooperation. These topics dominate the agenda, whereas the water resources problem falls under the general discussions. For example, an article

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<sup>14</sup> "Turkmenistan's Niyazov Crushes Opposition Movement" *Eurasianet.org*, January 3, 2002  
<http://www.eurasianet.org/departments/rights/articles/eav010703.shtml>

<sup>15</sup> "Uzbekistan and Turkmenistan: Can Common Interests Push Old Quarrels Aside?" The Jamestown Foundation. *Eurasia Daily Monitor*, Volume: 10. Issue: 189. Retrieved from  
[http://www.jamestown.org/regions/centralasia/single/?tx\\_ttnews%5Btt\\_news%5D=41523&tx\\_ttnews%5BbackPid%5D=661&cHash=94fd0b5f18df65a2b108bd087585cf56#.VRoNaZPF\\_w](http://www.jamestown.org/regions/centralasia/single/?tx_ttnews%5Btt_news%5D=41523&tx_ttnews%5BbackPid%5D=661&cHash=94fd0b5f18df65a2b108bd087585cf56#.VRoNaZPF_w)

on one of the first meetings of the presidents discusses common interests of the two countries and their active involvement in the energy and gas sectors.<sup>16</sup> Another interesting article about the governments' interests on the regional security and fight against terrorism emphasizes the strengthening partnership of these two Central Asian countries.<sup>17</sup> Distinctive article provides detailed information on the Turkmen and Uzbek gas concerns as well as the Central Asia-China gas pipeline, where both governments work together.<sup>18</sup>

Regarding the transboundary rivers and cooperation, landlocked and arid Turkmenistan and Uzbekistan are competing over agricultural production development and water resources. The agricultural sector contributed around 14.5 percent to GDP of Turkmenistan and 19 percent to GDP of Uzbekistan in 2013 (World Bank, 2014). The cotton is one of the major crop productions in both Turkmenistan and Uzbekistan, and has been inherited from the Soviet legacy. According to the International Cotton Advisory Committee (ICAC), Uzbekistan is the 6<sup>th</sup> largest cotton producer and the 3<sup>rd</sup> largest exporter in the world. Whereas Turkmenistan ranks the 9<sup>th</sup> cotton producing country worldwide, and the second after Uzbekistan among former Soviet Union countries. After the collapse of the Soviet Union, both countries have been competing to become independent in crops production (Abdullayev et al., 2009).

Given the importance of water resources and strained political relations, signing an agreement on water regime and cooperation between Turkmenistan and Uzbekistan was crucial.

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<sup>16</sup> "Uzbekistan is looking west, Turkmenistan east" Fergana news information agency, 13.03.2008. Retrieved from <http://enews.fergananews.com/articles/2342>

<sup>17</sup> "Uzbekistan and Turkmenistan Confirm New Supply Routes" The Jamestown Foundation. Eurasia Daily Monitor Volume: 6. Issue: 43. Retrieved from [http://www.jamestown.org/single/?no\\_cache=1&tx\\_ttnews%5Btt\\_news%5D=34666&tx\\_ttnews%5BbackPid%5D=7&cHash=6d1b17fd3d#.VRoK\\_ZPF\\_w](http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=34666&tx_ttnews%5BbackPid%5D=7&cHash=6d1b17fd3d#.VRoK_ZPF_w)

<sup>18</sup> C. Henderson, 2010 "Shifting sands in Central Asia: Geopolitics of Natural Gas Flows." Retrieved from <https://www.bu.edu/iscip/Vol20/henderson.html>

In 1996, these countries reached consensus on the terms of the treaty and signed bilateral Agreement between the Government of the Republic of Uzbekistan and the Government of Turkmenistan Concerning Cooperation on Water Management Issues (Volovik, 2011). The agreement provides equal (50-50) share of the Amu Darya's flow between Turkmenistan and Uzbekistan, and obliges the parties to ensure that water discharges to the Aral Sea as well. According to the treaty Uzbekistan agreed to pay the rent, operation and management of the Tuyamuyun reservoir, which is located in the territory of Turkmenistan (UNEP report, 2011). The hydro complex is supposed to provide water for irrigation in Khorezm and Karakalpakstan regions of Uzbekistan and Dashoguz region in Turkmenistan, where the farmers are affected by the water disputes. Unfortunately, due to the lack and/or classified information, the agreement is not made public and all existing literature on the treaty is discussed briefly. On the basis that is available to review, in theory this bilateral agreement serves as preventing any type of water conflict and enables cooperation. However, in reality, this bilateral agreement falls short since Turkmen-Uzbek farmers blame each other in overusing the water and cutting the flow of the river.

Even though issues never get publicity, farmers along the river basin of both countries, in particular, Turkmen farmers experience water shortages and encounter fights with Uzbek farmers during the irrigation season. According to the Turkmen farmers, neighboring Uzbek farmers cut the water flow thus leaving the downstream Turkmen farmers without water for irrigation of their lands. These types of issues have been occurring for several years and yet remain unresolved. Due to the fact that there is no free media in both countries, such conflicts at the village level never get published or more importantly, attention of the presidents. Moreover, the local authorities suppress farmers' grievances and disputes.

Based on my field experience during 2011–2012, I can state that people in the villages at the Uzbek border, experience water shortages and fight with the neighboring farmers. As part of my job I was doing in Turkmenistan, I used to travel to the border checkpoints of the country and spend days and weeks in the field. It was one of those days, when my colleague and I had a conversation with local people on their everyday life in the village. During our talks, one of the farmers mentioned about the repeated water shortages, which was disturbing them. He explained that such water situation repeats almost every irrigation season, and that they didn't know how to handle the issues. When I talked to other people in the community, they talked about the same experiences. The village authorities keep promising to improve the situation, and yet issues remain unresolved. My conversations with local farmers support the evidence of the lack of involvement in finding a solution at the national level as well. There are three main reasons why such cases are not well covered by local media or academia at all: unresponsiveness of the village authorities to the needs of farmers; the suppressive regime at the village level; and the absence of opportunities for conducting necessary interviews by media with farmers or relevant community members.

Unfortunately, because of the corruption at all levels of the government structure, these issues do not get to the attention of the national leaders. Farmers who need water in the field do not consider any agreement for rational use of water. The bilateral agreement between Turkmenistan and Uzbekistan should enable national authorities' provision of capacity for equitable use and prevention any sort of conflict. In this given case, third-party participation could facilitate effectiveness of this bilateral agreement, which prevents water disputes and water scarcity implications before the situation escalates.

### ***3.3.3. Regional Multilateral Agreements***

This model of agreement is an environmental treaty that binds three or more parties to water governance and cooperation. Considering the role of water and agriculture, Central Asian countries developed a regional water cooperation strategy that replaced Soviet central planning system. In 1992 all five Central Asian countries signed a fundamental regional Agreement on Cooperation in Joint Management of Use and Protection of Water Resources of Interstate Sources. This agreement serves as a key legal framework for regional water cooperation through joint governance of water allocation and sets out equal rights of the signatories to use and protect the transboundary water resources, the roles and responsibilities of the member states to do no harm or actions that affect other water user groups in the Central Asia. Establishing an organization, the Interstate Commission for Water Coordination (ICWC), responsible for management and coordination of the Amu Darya and Syr Darya rivers followed the key regional agreement.<sup>19</sup> All five Central Asian countries are signatories to this joint water agreement as well as members of the ICWC. However, these institutions fail in managing transboundary rivers fairly and in a peaceful way. Unfortunately, studies on international watercourse and Central Asian region illustrate that this model of agreement is inconsistent with the standards of international legal regulations (McKinney 2003; Libert et al., 2012). Presence of third-party in this model of agreement enables accountability and feasibility to address an environmental scarcity and mitigate interstate water conflicts in the region as well as sustainable use of water resources.

ICWC claims to operate ensuring equal water allocation, determining water policy and limits in water use for each country in the region. The organization is chaired by the representatives of all five Central Asian countries and meets quarterly to make decisions on

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<sup>19</sup> Official website of the ICWC, information retrieved <http://www.icwc-aral.uz/statute5.htm>

water allocation. It is obligatory for all member states to vote for decisions and each country has a right of veto.<sup>20</sup> According to the ICWC, the organization is responsible for the transboundary water resources cooperation in the region and makes decisions on the water allocation and monitoring. The Scientific-Information Center of the institution provides analytical data on the water use and ecological situation in the region, as well as approaches and mechanisms in improving water governance. The center works in collaboration with the scientific organizations of all member states in the region. Practically, all member states should provide data on the water and ecological conditions to the centralized scientific center.

The ICWC also includes the Basin Water Management Organizations (BVOs) for both Amu Darya and Syr Darya rivers. The chairman of the Amu Darya BVO is appointed by the ICWC and financed by three riparian countries: Tajikistan, Turkmenistan and Uzbekistan. According to the website of the ICWC, Amu Darya BVO is responsible for the operation of water supply, planning water withdrawal, creating automated mechanisms of the water resources governance in the basin.<sup>21</sup> Also, the website explains that the BVO conducts its work on impartiality and neutrality to provide accurate data. Tajikistan, Turkmenistan and Uzbekistan are the member states to the ICWC and the Amu Darya BVO. Wegerich (2008) explains how the institutions might be failing in collecting and providing trustworthy data on the quantity of the water utilization in member states. The reason is that countries control its data and hesitate to share. Moreover, author argues that Uzbekistan has strong impact on the Amu Darya BVO, which makes the basin organization not neutral as it is supposed to function, and this fact has negative effects for all riparian countries.

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<sup>20</sup> Official website of the ICWC, information retrieved from <http://www.icwc-aral.uz/activity.htm>

<sup>21</sup> Statute of the Basin Water Association “Amu Darya”, retrieved from <http://www.icwc-aral.uz/statute9.htm>

Like the bilateral agreement model that I have discussed in the previous section, this certain model is not effective either. Despite the joint management agreement, countries fail in respecting the treaty obligations. The reason behind is that every country in this region, especially, Uzbekistan has been competing for hydro hegemony, using waters to the full extent for the development of agricultural productivity (Wegerich, 2008). Therefore, Central Asia needs third-party to facilitate agreements and water talks at the national levels.

#### ***3.3.4. Multilateral Agreements with Third-Party***

In this given model, I am discussing the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) adopted by the United Nations Economic Commission for Europe (UNECE). The Water Convention's goal is to ensure a sustainable use of international watercourses by facilitating cooperation and coordination of the water user groups. In light of sustainable development and emerging need for addressing water scarcity, Kazakhstan (in 2001) Uzbekistan (in 2007) and Turkmenistan (in 2012) are the only three countries in the region that ratified the Water Convention. In particular, Uzbekistan and Turkmenistan seem to be realizing the water scarcity problem.<sup>22</sup> The incentives of signing the international environmental treaty can be explained by commitment to achieve peace and security in the region.

The Water Convention establishes values on institutional cooperation between riparian countries, and effective mechanisms for cooperation and water governance. In particular, Article 2 under Part I of the Water Convention obliges parties “to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and equitable way and ensure conservation and restoration of ecosystems”, and the Part II requires parties to cooperate at national and international levels, conducting consultations and information exchanges. Uzbekistan, the only country in Central Asia, became party to another United Nations Convention on the Law of The Non-Navigational Uses of International Watercourses in 2007. Part II Article 5 of the Convention requires using water equitably and reasonably as well as participation, Article 7 obliges not to cause significant harm to the river, Article 8 on the obligation to cooperate, and Article 9 on the regular exchange of data and information.

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<sup>22</sup> Statement by Turkmenistan at the Conference of the Parties to the UN Framework Convention on Climate Change in December 2011. Available at [https://unfccc.int/files/meetings/durban\\_nov\\_2011/statements/application/pdf/111208\\_cop17\\_hls\\_turkmenistan.pdf](https://unfccc.int/files/meetings/durban_nov_2011/statements/application/pdf/111208_cop17_hls_turkmenistan.pdf)



Based on the fact that Central Asian countries are joining a number of international and bilateral environmental treaties and the institutions, both countries are in favor of the legal water frameworks and conservation of the watercourses. For example, in his speech at the United Nation's 67<sup>th</sup> Assembly in 2012, the Foreign Minister of Uzbekistan emphasized protection of the water resources for the regional security and expressed the government's commitments to the water conservation in Uzbekistan.<sup>23</sup> However, in practice, the governments fail to cooperate at international level, and moreover, ignoring water shortages during irrigation seasons as well as environmental implications such as water scarcity. The water disputes at the village levels in both countries are the result of lack of trust, communication and interaction with the neighboring riparian state at the national level.

Considering discussion on the good governance and effectiveness of the treaties by Zaelke et al. (2005), my understanding is that good governance depends on the rule of law and compliance. In the absence of compliance, treaties have no effect, therefore defeating peaceful cooperation and governance of the common pool resources. Due to the growing tensions around the water resources and its politics in Central Asia, Ziganshina (2009) argues that regardless of the ratified legal frameworks all five countries in the region appear to be neglecting commitments and obligations of existing legal frameworks. Considering this, I would like to emphasize the need for third-party enforcement for regional water cooperation. Presence of third-party in the regional water resources agreement can facilitate current shortcomings of those existing legal frameworks and ensure countries stay committed to the treaty obligations.

Along with other international organizations, the United Nations Regional Centre for Preventive Diplomacy for Central Asia (UNRCCA) in Ashgabat is very active in facilitating

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<sup>23</sup> "In UN speech, Uzbek Foreign Minister stresses water conservation as key to regional security." Press release, 28 September, 2012 retrieved from [http://www.un.org/apps/news/story.asp?NewsID=43135#.VRo6IpPF\\_w](http://www.un.org/apps/news/story.asp?NewsID=43135#.VRo6IpPF_w)

Central Asian countries to identify and address potential security threats and strengthening cooperation between the countries in the region. Recent report on the challenges and opportunities of the regional economic cooperation in Central Asia by the UNRCCA outlines the lack of trust and cooperation among countries across the region. This creates obstacles in political engagements, political dialogue, and multilateral and bilateral environmental agreements between upstream and downstream riparian states. The role of the mission is expressed in building trust, effective communication among Central Asian countries. The mission facilitates workshops and seminars on the water resources cooperation and identifying priorities in peace building for the state officials in all five countries. The organization is also implementing projects on training state officials of the Central Asian countries in the field of international law, peace-building and conflict management, negotiations skills.

However, based on the extended water problems at the local levels, countries still experience lack of trust or information sharing on the water use at the national level. According to scholars, the Water Convention's shortcoming is that the treaty is not resolving legal problems, effective only on the treaty parties and the language of the treaty is vague, which can result in a conflictive interpretation (Wolf, 2009). In fact, only three co-riparian countries out five ratified an international treaty in Central Asia. Regardless of the efforts of the UNRCCA in building capacity and creating a platform for the regional countries for cooperation in the water related issues, the role of third-party participation with peace and security incentives is not effective either. As an independent and international United Nations organization, UNRCCA has a great potential in facilitating political developments around water issues, as well as advising and assisting countries in Central Asia to overcome the challenges of lack of trust, garner participation in Central Asian water cooperation from the broader UN community, and the role

of civil society in enforcing and encouraging cooperation. However, the UNRCCA's mission and resources include providing peace and security with almost no financial incentives to offer. Therefore, nations who depend on their agriculture and water resources are inconclusive in enforcing water agreements and cooperating with a country on the same water basin. In most cases, nations cooperate when there is a financial incentive. (India and Pakistan that have been discussed is one of the examples to receive financial support in the similar case.)

In this context, the World Bank can also serve as third-party facilitator to address concerns over water resources and develop effective strategies to conserve water as well as sustainable development in the region. Like in the case with India and Pakistan, socioeconomic incentive coupled with peace and security can bring countries together and promote cooperation for sustainable development. In fact, the World Bank has different projects in improving water system in all countries across the region. However, the Bank is important to facilitate in developing new strategy for effective joint water governance, and cooperation to change the situation of water concerns in Central Asia.

### 3.4. Conclusion

Results of the discussed models of agreements in this chapter show that existing legal frameworks and the river basin organizations in the region fail in governing waters effectively and with the co-riparian cooperation. Although, all countries in the region entered several environmental agreements at the international, regional and national levels, governments do not fulfill treaty obligations. The Interstate Commission for Water Coordination of Central Asia (ICWC) claims to act as a high level authority in monitoring and water allocation decision-maker in the entire region. The institution makes decisions based on the ecological condition and water use data, collected from the local scientific information centers of the member states. The ICWC, Amu Darya BVO and the 1996 water cooperation agreement between Turkmenistan and Uzbekistan should ensure that both riparian countries receive allocated water with no disruption. However, the water flows from upstream to downstream not according to the rules and regulations of the agreement. Riparian countries do not trust dataset provided by the Amu Darya BVO, due to the fact that Uzbekistan's strong influence on the river basin organization. In addition, unilateral actions of the co-riparians on a shared river add to the environmental degradation, growing water scarcity problems and strained intergovernmental relations. The UN Water Convention has significance to the region, however, without involvement of all five countries across Central Asia fails in resolving transboundary river issues. Therefore the World Bank, another potential third-party facilitator, has a socioeconomic leverage to help countries to address the water issues.

The role of World Bank in Central Asia is important for several reasons: countries in the region are still developing, because of the of the weak socioeconomic resources, nations are vulnerable to inter- and intra-conflicts, the region have to reduce using water for cotton

production that affects waters in the entire region and the disappearing Aral sea. On top of these reasons, two out of eight Millennium Development Goals (MDG) of the World Bank speak of “Ensuring environmental sustainability” and “Develop a Global Partnership for Development”. Therefore, it is imperative for the World Bank to support the region for environmental, social and economic sustainable development. It is true that few countries in the region are rich in hydrocarbon resources, and yet since the region also depends on its cotton production and its benefits, the region needs World Bank to facilitate water resources negotiations, enforcing effective cooperation, and building capacity to reduce cotton production and excessive use of rivers.

My observation, based on the conversation with farmers at the Turkmen-Uzbek border, describes ongoing water disputes that have been taking place for several years, and there is a need for the governments to address those issues. The governments show awareness of increasing water scarcity in the region and around the world. Yet, the interstate water cooperation is at the poorest level that cannot address water problems. As a result, these countries need third-party to facilitate an effective strategy for resolving long-standing rivalry, conflict over shared waters.

## **Chapter Four: CONCLUSION**

The goal of my paper was to analyze the questions: what potential do international water cooperation agreements have to regulate water conflict and scarcity? Why don't existing agreements work? What aspects of the existing agreements work and what potential do they have to serve as models to resolve the region's water sharing challenges? I also argued that there is a need for third-party to enforce effective legal framework for regional cooperation and addressing water related disputes between riparian countries in Central Asia.

According to the United Nations Food and Agriculture Organization, two countries out five in the region, Turkmenistan and Uzbekistan, are water stressed. The estimated renewable water availability in Turkmenistan accounts for 275 cubic meters per capita, and 589 cubic meters per capita in Uzbekistan, which are indicating water stress in both places. The threshold for water stress is below 1,700 cubic meters per capita (FAO, 2012). Regardless this fact, agriculture remains to be one of the major incomes in both countries with primary crops such as wheat, rice and cotton. While Uzbekistan is the 6<sup>th</sup> largest cotton producer and the 3<sup>rd</sup> largest exporter in the world, Turkmenistan ranks the 9<sup>th</sup> cotton producing country worldwide, and the second in the Eurasia (ICAC).

Considering increasing water disputes and water scarcity around the world, I reviewed existing literature on water's relation to the conflict, economic development, and governance. Based on the data resources and the literature, the findings include that there was no war fought over water in the history. Drivers and causes of any war is explained by the social grievances,

which in fact, can occur owing to the water shortages causing decline in the agricultural production and the negative impact on the economy of a nation. In the same chapter, I tried to explain that water can contribute to the conflict, but also can be a catalyst for a peace. Its likelihood depends on the type of water governance and whether nations understand incentives of effective water cooperation. I have also analyzed the best practices in water cooperation in different parts of the world. My intention in analyzing these river basins were aimed at finding feasible approaches that could be applied in the case of the Amu Darya river. Lessons learned on these successful river basin governance studies include that third-party involvement can facilitate the resolution of water conflicts and promote interstate water cooperation. This approach also provides government's accountability and commitment to the compliance with the treaty provisions. Trust and political dialogue also play an important role in reaching effective water cooperation and governance.

Further, in my case study I analyzed the international and regional legal frameworks that countries across the region joined since the first days of independence. To have a better understanding of the environmental treaties, I focused on the key agreements and used models of agreements to elaborate on each of them. The models of agreements I analyzed include: unilateral, bilateral, multilateral as well as multilateral within third-party intervention. Considering existing and growing water disputes between riparian countries, neither multilateral, nor bilateral water cooperation agreements are effective. In addition, the data that water basin organization in the region collects and provides appear to be not accurate because of the Uzbekistan's strong influence on the institution. Analysis of the UN Water Convention as third-party intervention suggests that it is not improving either. In other words, because only three countries out of five ratified the international environmental treaty, the legal document is

ineffective. At the international level, not all countries are actively engaging in the water conservation treaties, and interact in the water cooperation with hesitation. The reason behind the lack of cooperation can be explained by the resource capture and competition in developing its agricultural productivity in the regional countries. It is true to Uzbekistan where the cotton production contributes to the economic growth in the country. The UN Water Convention promotes equitable and fair use of transboundary rivers, sustainable development as well as peace and security. However, these incentives might not be beneficial for Central Asian countries for developing effective cooperation. Therefore, an alternative potential third-party can be the World Bank. Given the entire water crisis in the region, the need for the World Bank to facilitate countries in this subject is all the more extreme.

The role of World Bank in Central Asia like in the case of India and Pakistan water management resolution is all the more needed. World Bank's participation in the Central Asian water cooperation not only resolves potential future wars in the region, but also supports countries in the region to develop sustainably. First and foremost, countries in the region, particularly Uzbekistan, need to reduce its cotton production. In this case, World Bank can assist not only by financial support but also providing technologies or techniques of capacity building, which can affect using fewer waters. "Ensuring Environmental Sustainability" and "Develop a Global Partnership for Development" are the two out of eight MDGs of the World Bank. These two goals are pertinent to Central Asia, and should serve as incentives and motivations for the World Bank to engage in this particular region and its water issues that have been creating more challenges and will continue unless they are addressed.

Based on the literature on water and conflict as well as my field observations, my conclusion is that particularly Turkmenistan and Uzbekistan demonstrate to experience a



potential water war in the near future. Therefore the need for third-party intervention to encourage effective water cooperation in Central Asia is all the more extreme given these circumstances. Loss of livelihoods due to the water shortages and unresponsiveness of the authorities can force farmers at the Amu Darya basin to take weapons and start fighting with people in the neighboring village.

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