THE IMPACT OF WATER SHARING IN THE INTERSTATE RELATIONS OF THE CENTRAL ASIAN REGION

By

KARIMOVA (NURULLAEVA), Nigora Lutpullaevna

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
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Dedicated to my family

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This work is dedicated to my parents and family, who have always loved me unconditionally and whose good examples have taught me to work hard for the things that I aspire to achieve. I wouldnt have been able to get to this stage without them.

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TABLE OF CONTENTS

I INTRODUCTION

The use of water in five Central Asian countries such as Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan was excessive, but after the independence from the Soviet Union in 1991, the Central Asian countries increased thier level of water consumption. Although there is a sufficient amount of water in the region to meet the needs, crumbling infrastructure and poor leadership have led Central Asian countries more than one and half times the norm usage. Population growth and demographic expansion of the agricultural sector have also contributed to an increase of consumption of water.

Since the 19th century, agricultural policies in the Central Asian countries were designed to increase production of cotton and rice and eventually to reduce the dependence on other countries such as Russia. Investments in cultivation of land and irrigation made to increase crop of cotton, without considering environmental and social consequences.

The newly formed countries deprived of subsidies from Moscow, increased production even more after gaining independence and lacking means. It's known that Turkmenistan and Uzbekistan's main agricultural income is from cotton. Since cotton is a source of very much needed foreign currency and instrument political patronage, the reforms required to reduce water consumption - in particular, the privatization of the agricultural economy and pragmatic pricing of water to stimulate preservation – have not been started.

Due to the fact that the use of the expansion of the agricultural sector, two major rivers of Central Asia are subject to increasing competition among the five Countries.

Particularly, tense situation has formed around the Syrdarya River. The Syrdarya originates in the mountains of Kyrgyzstan and flows through the territory of Tajikistan and Uzbekistan, falling into the Aral Sea. The Amudarya River[1], running from Tajikistan through Uzbekistan and Turkmenistan, flows into the Aral, almost certainly, may become the subject of controversy because the states compete for its resources and Afghanistan begins to take its portion of water.[2]

Tension is still possible to contain and not bring to a conflict, but all parties demonstrated a desire to put their profits first, even if it can have serious effects for their neighbors. Government arrangements from technical and political aspects of water management have not working efficiently, since the countries cannot co-operate well.

While Kyrgyzstan and Tajikistan hold 20 percent of the basin of the Aral Sea,[3] about 80 percent of the water resources of the zone is formed in their territory[4]. Kyrgyzstan controls the flow of water in the Syrdarya River through the Toktogul reservoir. Tajikistan plans to create an equally powerful Rogun reservoir on the Vakhsh River - one of the main side stream of the Amudarya. To counter the increased control in the upper reaches, remaining countries develop own reservoir construction plans which complicates the establishment of a rational regional management systems. Repair or replacement of old irrigation systems would decreae water consumption and better

[1] The main flow of the Amudarya is formed in the territory of Tajikistan (80%) and partly in northern Afghanistan. The river then flows along the border between Afghanistan and Uzbekistan, crosses Turkmenistan and Uzbekistan in returns and flows into the Aral Sea.- http://www.waterunites-ca.org/themes/15-transboundary-waters.html

[2] Syrdarya flows through northern Kyrgyzstan, crosses the border of Uzbekistan, Tajikistan, and then, before it turns again in the Uzbekistan. After the river crosses the southern Kazakhstan, it flows into the Aral Sea in the northern part of. The Amudarya river forms the Tajik-Afghan and then the Uzbek-Afghan border, then flows through Turkmenistan, and then along the Turkmen- Uzbek border before the collapses on Uzbekistan and flows into the Aral Sea the south.

[3] The Aral Sea basin covers an area of 1760000 sq. km. IFAS Regional Report "Integrated Land and Water Management resources of the upper flow, "The Executive Committee International Fund for Saving the Aral Sea, including B. Aral Sea Basin book 6 (Almaty / Bishkek / Dushanbe / Tashkent, 2007) p. 4.

[4] ICG interview with Duchenne Mamatkanov, Director of the Institute of Water Problems and Hydropower Academy of Sciences of Kyrgyzstan, Bishkek, 20 February 2002 See also, the Regional Report IFAS p. 6.

productivity, but such decision are costly. Nearly the half of irrigation water is lost on the way due to filtering and evaporation.[5] Only 28 % of irrigation canals were concreted to prevent filtration, and since then the state infrastructure worsens.[6] Central Asian countries do not have enough financial resources - about U.S. $ 16 billion, required to upgrade irrigation systems.[7] Due to lack of private farming and market pricing for water, farmers have little interest to invest more in sophisticated water systems. The donor community is not willing to allocate large sums for these technical solutions that themselves do not produce the desired result without much more extensive reforms of management and use of water resources.

Solving water problems in Central Asia requires a comprehensive set of programs such as political, economical and social reforms. It is necessary to restructure the agriculture in order to reduce dependence on crops that require intensive irrigation such as cotton and rice. The real market pricing for water should be in place so that private farmers have the financial interest in using less water and put means to efficient modern technologies.[8] If it is privatized, the process should be managed in a way that it will not lead to new local conflicts, as happened in some situations.[9]

The Central Asian countries need to revive spirit of regional cooperation to raise funds for restoration of declining infrastructure and construction of new systems to

[5] In Tajikistan, about 70 percent of irrigation water lost by evaporation and filtration. ICG interview with Tursun Abduzhabarov, Deputy Minister of Irrigation and Water economy, Dushanbe, 13 February 2012. Only from 69 to 80 percent of the water reaches the fields in Uzbekistan and less than 50 percent - directly to the seeding. Yuri Egorov, "The prospects are disappointing," Nezavisimaya Newspaper, July 12, 2013

[6] Philip Micklin. Managing Water in Central Asia (RIIA. London, 2000), p. 29.

[7] According to the assessment by Philip Mciklin made on Based on studies of the World Bank. Ibid, p. 40.

[8] Those users who pay cover only a small fraction of the real value of water. Association of Syrdarya water users (Uzbekistan) 0.11 sum paid per cubic meter, while cost was 0.9 scrip. Karl Wegerich. Water User Associations in Uzbekistan and Kyrgyzstan. Occasional Paper No.32. Water Issues Study Group, School of Oriental and African Studies (London. August 2013), p. 14.

[9] Sandra L. Postel and Aaron T. Wolf, "Dehydrating Conflict", Foreign Policy, September / October 2001

reduce water loss. They should also submit to supranational authorities water management system, that would establish quotas and penalize countries that do not comply with them. Potential water users, producers and consumers of electricity, as well as environmental groups should be involved in decision-making process to minimize tensions and make better decisions.

Taking into account the nature of the current relationships among these states and slow tempo of changes, none of these indigenous steps likely to be realized soon. Whole what can realistically be supposed is a row of additional reforms in management systems to cope with growing water demand and lowered collaboration among countries. Although donor states should not be abondened the task to deepen reforms and regional cooperation, they should realize the depth of counteract in the region.

The purpose of the thesis is the study of the water legislation and regulatory documents among the Central Asian countries to clarify the reasons why these countries are inefficient to work in cooperation, as well as bilateral and multilateral international treaties and agreements on the management and use of transboundary waters in the Central Asian region, systematic analysis of the legal problems of distribution and sharing of transboundary waters in Central Asia, and on this basis to develop a scientific and practical recommendations to improve the legislation in this field, means to address regional cooperation in joint water use.

This paper aims to prove four main sources of disagreements and tensions; existing both within the State Central Asia Countries, and among them:

- Lack of consistent and clear management of water resources;

- Inability to observe or use water quotas;

- The tension around the barter deals and payments;

- The indeterminacy about future infrastructure development intentions.

To test this hypothesis, this thesis provides an descrepting and analyzing of the legal framework on issues of cooperation between Central Asian countries in the field of water law; the study and analysis of existing conventions, international treaties and regional agreements on the use and protection of water resources of transboundary resources; the study of general regularities and features of formation of legislation on water and water use in Central Asia; development of proposals and recommendations for further improvement of the legislation of the CAR in the field of management of transboundary waters, in accordance with the main international instruments in this field.

II LITERATURE REVIEW

For this research paper, a wide range of sources was used, which can be classified as follows:

The first group consists of treaties, agreements, protocols, which were signed among the Central Asian countries, such as:

- *Agreement on the border between Afghanistan and the Soviet Union (June 13, 1946).*
- *Protocol between the USSR and Afghanistan on the joint execution of works for the joint use of water resources in the border of the Amudarya (June 25, 1958).* [10]

In February 18, 1992 in Alma-Ata Representatives of Central Asian countries signed the first interstate document on Water Relations known as "Agreement between the Republic

[10] Nanni, M. The Aral Sea Basin: Legal and Institutional Issues. // Review of European Community and International Environmental Law. 5 (2) 1996. – p. 130-137.

of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Tajikistan, Turkmenistan and Uzbekistan on cooperation in joint management of the use and protection of water resources inter-state sources". In accordance with the agreement, the parties established the Interstate Coordination Water Commission (ICWC), the executive bodies "Amudarya" and Basin Water Organization (BWO) "Syrdarya". Parties in the preamble stated that respect the existing structure and principles of the distribution of current regulations the distribution of water resources of interstate sources of water. This agreement was approved in the same year within 3 months from the signing date by all the governments.[11]

In March 26, 1993, presidents of CA countries met in the city of Kyzyl-Orda and signed an agreement on joint action to tackle Aral Sea and the surroundings, environmental improvement and maintenance of socio-economic development of the Aral Sea region. In turn, it was supposed to secure the vision of common problems of the region and determine the structure of the authorized interstate agencies.[12]

In January 11, 1994, in Nukus, head of governments agreed the terms on the approval of the Program on improving the ecological situation in the Aral Sea Basin in the next 3-5 years taking into account socio-economic development. They have also agreed on the approval of the main provisions of the concept of solving the issues on Aral Sea, the surrounding of Aral Sea and the Aral Sea basin, considering the socio- economic development of the region.[13]

[11] The provisions of statutes and interstate organizations pool Aral Sea. Legal collection SIC Tashkent № 3, 1998. -97 Sec.
[12] ibid.
[13] ibid

In the framework of the UN International Conference on Sustainable Development of Aral Sea basin countries, held September 20, 1995 in Nukus, head of countries signed a "Declaration of Nukus Central Asian countries and international organizations on issues development of the Aral Sea ". The head of countries also have confirmed that the previously signed and the new agreements, contracts and other legal acts will regulate the relations between them on Water Aral Sea basin and take them to a steady performance. The Declaration also contains an appeal to the international community, foreign countries and people of the world to assist collaborative efforts of Central Asian Countries (CAS) in addressing sustainable development and environmental improvement of the situation in the region. [14]

In 1996, an agreement was signed between Turkmenistan and the Republic of Uzbekistan on cooperation on water issues. The agreement consolidated the mutual recognition of property rights on water structures in each other's territory, but acting in the interests of one or both of the countries. [15]

In the Syrdarya basin, state water users in 1996 began entering into protocols and agreements between countries which established the value of compensatory supplies of fuel and energy as well as the size of vegetation releases from Toktogul reservoir to meet the needs of irrigated agriculture of the middle and the lower reaches. They are as follows:

- Agreement among the governments of the Republic of Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan on the use of fuel- energy and water resources, construction and operation of pipelines in the Central Asian region from 04.05.1996.

[14] ibid
[15] ibid

- Agreement among the governments of the Republic of Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan on water and energy resources of the Syrdarya from 17.03.1998.
- Agreement among the governments of the Republic of Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan on cooperation in the field of Environmental and natural resource management from 17.03.1998, the later joined by the Republic of Tajikistan.[16]

In 2000, bilateral agreement on cooperation between the Republic of Uzbekistan and the Republic of Tajikistan was signed in the field of rational use of water and energy resources. It created a condition for the accumulation of water in Kairakkum reservoir, and mutual flows of electricity to the parties. CAPS Countries signed an agreement on cooperation in the field of Hydrometeorology and the regional agreement on the parallel operation of power systems of CA.[17]

The second group of sources is historical publications and letters. Statements of Q. Krivoshein, Minister of Agriculture in 1912, and others published archival documents and materials.

The third group consists of sources of documents and proceedings of conferences of The United Nations. Analysis of these documents revealed new trends and fundamental developments of the principles of environmental conservation and improvement of water supply at the global level. During the United Nations Conference on Environment and Development ("Earth Summit") in Rio de Janeiro 1992, a comprehensive plan of action for the environment was adopted. It calls for the

[16] Ibid.
[17] Keshimov, A. Inter-state water allocation in the basin Aral Sea: past and present. 2003. / / www.carec.kz

maintenance of quality and quantity of fresh water and stresses the need for an integrated approach to resource exploitation of fresh water.[18] There is also the UN Convention on the Law of Uses of International Watercourses in 1997.[19] The Convention on Access to information and public participation in decision-making and Access to Justice in Environmental Matters, was held in Aarhus, Denmark in 1998.[20] The World Summit on Sustainable Development was held in Johannesburg in 2002.[21] The Summit reaffirmed The Millennium Development Goals. There were The Third World Water Forum in Kyoto, 2003, Japan [22] and International Forum on Freshwater in Dushanbe, Tajikistan, 2004. In the Forum held in Dushanbe, Emomali Rakhmonov, President of the Republic Tajikistan, was enunciated and it gave the opportunity to reflect on the world's water problems, especially with regard to Central Asia, and laid the foundation for new activities of the forum based on the results.[23]

The fourth group includes the sources of Constitution and Water Code of CA countries. The Constitutions of the Republic of Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan, and Turkmenistan are considered as relevant.[24] The Water Code of the Republic of Kazakhstan[25], Tajikistan[26], and Uzbekistan covered the related issues. [27]

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[18] The World Summit Rio de Janeiro.1992. // www.worldwatercouncil.org

[19] The UN Convention on the Law of the Non-Navigational Uses of International Watercourses. 1997. // www.worldwatercouncil.org

[20] Aarhus Convention. 1998. // www.worldwatercouncil.org

[21] World Summit on Sustainable Development in Johannesburg. 2002. // www.worldwatercouncil.org

[22] Third Water Forum in Kyoto. 2003. // www.worldwatercouncil.org

[23] International Fresh Water Forum in Dushanbe. 2004. // www.worldwatercouncil.org

[24] Constitution of the CIS. , Almaty, 1999. – p.416.

[25] Water codex of Kazakhstan. // Conference Material on the International Fresh Water Forum in Dushanbe. 2004. – p.30

[26] Water codex of Tajikistan. // Conference Material on the International Fresh Water Forum in Dushanbe. 2004. –p.29

[27] Water Codex of Uzbekistan. // Conference Material on the International Fresh Water Forum in Dushanbe. 2004. – p.29

The fifth group of sources is based on speeches, performances and interviews of leading countriesmen, officials, describing the integration policy in Central Asia. Formal presentations of Nursultan Nazarbayev and Islam Karimov are of high importance.

The sixth group of sources contains reports of international organizations. This, above all, the World Bank project materials related to management of water resources of the Aral Sea (the program Aral Sea basin), the problems of poverty in Central Asian countries and questions the efficiency of agriculture. Proceedings of the UN, UNESCO, UNDP, and ESCAP are related to the environmental challenges facing the region, for example: Environmental review of Kazakhstan, [28] Tajikistan [29] Uzbekistan [30] Kyrgyzstan.[31] The vision of the Aral Sea basin also discusses the tensions in terms of water resources by 2025.[32] The OSCE also took an active participation in the life of the region, and the report "Environment and Security in Central Asia" contained very important information.

The seventh group includes databases of statistical sources. In this work, we have intended to use the most recent data. The information is mostly contained in the records of department of the Regional Economist Intelligence Units (EIU) of Kazakhstan [33] Kyrgyzstan [34] Tajikistan [35] Turkmenistan [36] and Uzbekistan [37] in 2005. Also in

[28] Environmental Performance Review of Kazakhstan. United Nations Economic Commission for Europe (UNECE), Geneva, 2000 – p. 147

[29] Environmental Performance Review of Tajikistan. UNECE, Geneva. 2000. –p.230

[30] Environmental Performance Review of Uzbekistan. UNECE, Geneva. 2004. –p.147

[31] Environmental Performance Review of Kyrgyzstan. UNECE, Geneva. 2001. – p.178

[32] Water Related Vision for the Aral Sea Basin For the Year 2025.UNESCO, Division of Water Sciences. France. 2000. – p.237

[33] Kazakhstan Country report. EIU. 2005. –p.32

[34] Kyrgyzstan – Country report, EIU. 2005. –p.27

[35] Tajikistan – Country report, EIU. 2005. –p.30

[36] Turkmenistan – Country report, EIU. 2005. –p.27

[37] Uzbekistan – Country report, EIU. 2005. –p.58

preparation of the study, the World Bank, FAO and the UN databases provided much help.

The eighth group contains material sources of the periodical press, scientific conferences and news reports. They include Foreign Affairs, The New York times, Economist, Kazakhstan Pravda, Ecology and Reclamation Water Management, Panorama, The Times of Central Asia, Middle East Review of International Affairs, International Security, Journal of International Affairs, International Organization, Journal of Peace Research, Post-Soviet Geography, ITAR-TASS, Central Asian Survey, Central Asia and the Caucasus. This group of sources contains a vast factual materials to identify patterns of socio-economic processes and applies to the ecology and water management in CA countries. Most of these sources were found on the Web, on the official websites of the State Department of CA, as well as research and policy centers of the USA, UK, Swiss, Switzerland and library materials of ICWC in Tashkent.

The ninth group of sources contains thematic maps of Central Asia, reflecting the population density, irrigated lands and river systems of CA.

III. CAUSES TO THE FAILURE OF THE REGIONAL SYSTEM

3.1 WATER SHARING POTENTIAL IN CENTRAL ASIA

Agriculture downstream countries - Uzbekistan and Turkmenistan – almost depend entirely on the water of the Sirdarya and Amu. Southern Kazakhstan also depends from the Syrdarya River. Most of the population all Central Asian countries, for exception of

Kazakhstan, lives in rural area.[38] In Uzbekistan, scope of agricultural production 15.8 per cent of GDP,[39] and 95 percent of the crops grown on irrigated land.[40] And, more importantly, Uzbekistan, Turkmenistan and Tajikistan the main export crop - cotton - brings a significant share of foreign currency of revenue. Thus, both Uzbekistan and Turkmenistan considers water supply as a central aspect of interest of national security.

In the coming years Turkmenistan intends to add to irrigated area it additional 450 000 hectares, [41] Kyrgyzstan – increased the irrigated area 230 thousand hectares by 2005, and Tajikistan for 500,000 hectares. If these projects will be implemented each year, the capacity on the limited water resources will grow disproportionately more. As a result, irrigation groundwater level doubtless also will increase; making land in other places out of condition for agriculture.[42] In this context, concerned about forecasts made in the light regional demographic trends, according to which water demand in the next 10 years will increase by 20% 16. In other words, the water in Central Asia would be disastrous missed, and the competition will unfold consumers not only to cross-country, but also the domestic level. Even more disturbing look at the characteristics of the water- potential of Central Asia in addressing them through the prism the human factor. If at the beginning of the XX century the per capita in the region accounted for almost 0.6 hectares of irrigated land, now this value is on average less than 0.2 ha, and in Uzbekistan no - less

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38 In 1987, 42 percent of the population of Kazakhstan, 52 percent of the population of Turkmenistan, 58 percent Uzbeks, 60 percent of the population Kyrgyzstan and 67 percent of the population Tajikistan live in rural areas. Central Asia: New Trends in the economy, Academy of Sciences (Moscow, 1998), p. 21. After the collapse of the Soviet Union percentage of rural population in all these countries increased with the reduction of the industrial sector.

39 http://www.uzdaily.com/articles-id-16205.htm, "Gross agriculture output of Uzbekistan hit 14.17 trln. soums in Jan-Sep 2011"

40 Philip Micklin. Managing Water in Central Asia, p. 55.

41 ICG interview with Duchen Mamatkanov, Director of the Institute of Water Problems and Hydropower of the Academy of Sciences, Bishkek, Kyrgyzstan, February 20, 2002

42 Kyrgyzstan has increased irrigated agricultural areas in the south, which caused problems in the Ferghana region Rishtan Uzbekistan in connection with the increase of the groundwater of water.

than 0.17 hectares. It is significant that in the years 1960-2000 the area of irrigated land increased by 1.8 times,[43] but it was not enough to reduce the overpopulation in the countryside. In the major agricultural regions of Central Asia, the density of population up to 140-160 people per square kilometer, which is compared with typical rates in big cities.[44]

Rapid growth of population requires [45] additional land, and this problem compounded by the collapse in the industry, which forced many to return to agricultural labor. Although Uzbekistan and other downstream countries are focused on achieving food self-sufficiency in the implementation of agricultural programs, there is still a big need to grow cotton. This culture is the main source of hard currency, but it requires particularly intense irrigation.[46]

By 2014 Turkmenistan had plans to triple cotton production. It is expected that other countries will also increase the sown area,[47] that will lead to a huge increase consumption and loss of water. [48] Privatization agriculture is not reduced cotton production in southern Kazakhstan. The high prices encouraged farmers to take more land under this crop and use more water and fertilizer. In Central Asia, enough water

[43] Policy briefs, Research Coordination Council for International Studies, MGIMO Russia, Edition 9 (29) (December 2007) Xenia Borishpolets and Alisher Babajanov "Water resources of Central Asia in the context of regional cooperation" Moscow MGIMO - University of 2007

[44] http://www.iicas.org/articles/book_18_1_00_2.htm

[45] Annual growth rate in Tajikistan 3 percent. In Uzbekistan, the population increases annually by 2 percent. In Kyrgyzstan increase is less than - 1.5 percent, but it is higher in southern areas, where pressure on land and water resources is the largest.

[46] Karl Wegerich. "Not a Simple Path: A Sustainable Future for Central Asia", Occasional Paper No.28. Group research on water issues, the School of Oriental and African Studies (London, February 2001) p. 2. Despite the fall in cotton prices, make this culture is still more profitable than wheat. The price of one ton of cotton equals the value of 5-6 tons of wheat. Interview ICG Mahmoud Khamidov, director of the BVI "Syrdarya", Tashkent, February 1, 2002

[47] Human Development Report, UNDP (Tashkent. 2000), p. 9.

[48] To visualize the scale of this problem is to look at water use in Uzbekistan, where the volume of irrigation water in the middle 55 cubic kilometers. However, only from 38 to 44 cub. miles up the fields, and only 25-26 cubic meters. km reach directly crops for which this water is used. Yuri Yegorov, "Perspectives disappointing, " Nezavisimaya Gazeta, July 12, 2001

resources, and with good governance tension of water systems around the allocation could be reduced. But over the growing consumption of water, and as well as internal and inter-friction over its distribution will be the reason that the water will continue to be subject to competition, rather than to co-operation.

3.2 DISPUTES OVER THE SHARING THE WATER

The tense situation linked with reserves of energy and water resources and their utilization is apparent presently in many parts of the world. Over the past half-century over 500 disputes have occurred over water resources, twenty of them had to be resolved by military involvement. Almost 40 countries in this world are geographically located in areas where there is a shortage of water – these countries are located in arid climatic zones. As a result, they are 50 percent or more dependent on water that is brought from the outside.[49]

Scarcity of water resources - a key security issue of the whole region. Water is the key to prosperity in Central Asia. The population of Central Asia is growing, and the amount of water and irrigated land remained almost unchanged. Conditions of life and the future development of the region is largely determined by the availability of clean drinking water. Uneven distribution of natural resources in the region leads to the opposite approach in the regime of hydraulic structures erected in the upper reaches of the Syrdarya and Amudarya.

[49] Battle for Water Central Asia on Verge of Conflict over Water *2008-04-08 / By Sergei Sergeyevich Zhiltzov - Doctor of political sciences; By Igor Sergeyevich Sonn - Doctor of geographical sciences.* 1997-2007 Nezavisimaya gazeta

In this context, Central Asia is becoming concern for several reasons:

- Regional water systems intertwined through Soviet planning system, and of management. Now they must often controlled by five quarrel some neighbors, not really eager to cooperate.

- The economy of Central Asian countries heavily dependent on irrigation. Irrigation provide cultural elite cash means and ability to control patronage relationships that form the basis of their power.

- Poor management of water resources and huge cost overruns made the water region vulnerable to the problem of water shortage and catastrophic natural changes that are already observed round the Aral Sea.

- The CA countries are more are in the position "Zero gain" on the resources and other issues, while increasing water consumption rates, save that for long it will be impossible.

- Downstream states are more strong in the military and economically than headwaters of the country - an disparity that present in most water of conflict. However, mutual and strong dependence on transboundary waters will also mean that lose much of the country as a result of the struggle for the water. War is a very high-priced way to control of resources, and most Countries prefer an agreement. "The trend even in places where water conflicts are inevitable risk is the exchange of water in the world, and structural changes in water use, "- wrote one the expert. "The emerging consensus is well expressed by the words "water is causing for conflict and the reason for detention the world.[50]

[50] Leif Ohlsson, “Water Scarcity and Conflict”, in Security Challenges of the 21st Century (Bern/Frankfurt, 1999).

Water always is important and acts a main role in inner conflicts. Specialists in this area debates that the smaller scale differences, the higher the risk of violence and this idea is encouraged by the Central Asia, where local conflicts are more serious than massive.[51] Water contributes to the overall feeling of anxiety throughout the region. Concern about Water - this is a complex web of thread tensions, which are interwoven with drugs Islamism, ethnic rivalries and border disputes[52]. None of these factors might not lead to general war, but problems between the Central hinder the economic development of countries, foment extremism and sometimes lead to violence. The decline of agricultural land and water shortages also mean that many young people are becoming less economic opportunity, and they are more likely to join the rebels or extremist groups.

Disputes over water and energy resources already touched many people, especially in such delicate areas as The Ferghana Valley, where people suffer flooding in winter and summer drought due to the fact that Kyrgyzstan pulls the water through the dam production of electricity. Kyrghyz in their all freeze in winter as a result of lack of gas supplies from Uzbekistan to return for irrigation water. At the local level, water disputes and rising lead to violence. Tensions often occurs between the residents and kyrgyz - tajik villages on the border between the two countries due to for access to the disputed sources water supplies. Disputes over resources could provoke a wider ethnic conflict when the land disputes have led to ethnic unrest in Kyrgyzstan, as a result of which killed hundreds of people.

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[51] Ibid,

[52] See ICG Asia Report No. 14, Islamist Mobilisation and Regional Security, 1 March 2001 (Osh/Brussels); ICG Asia Report No. 25, Central Asia: Drugs and Conflict, 26 November 2001 (Osh/Brussels); and ICG Asia Report 33, Central Asia: Border Disputes and Conflict Potential, 4 April 2002 (Osh/Brussels).

Growing costs, poor maintenance of systems and privatization of public water supply services only exacerbate the burden on local water systems. Water supply affects the poor who eventually forced to give most of the their income for this resource. Problems irrigation, drinking water, flooding and deterioration of soil borne additional burden on people with difficulty recovering from the economic difficulties and social change.

IV. AGREEMENTS ON SHARED WATER RESOURCES MANAGEMENT

Currently, water relations between the basin countries of Syrdarya are governed by two major agreements:

- Following the collapse of the USSR, in 18th of February 1992, "The Agreement between the Republic of Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and the Republic Uzbekistan was signed on cooperation in joint management and protection of transboundary water resources."
- Then, "The Agreement between the Government of the Republic of Kazakhstan, the Kyrgyzstan Republic and the Government of the Republic of Uzbekistan on water and energy resources of river basin Syrdarya. " was signed in March 17, 1998.

The Agreement dated February 18, 1992 was approved by the governments of the parties. It was the foundation for future work, which laid the basic principles of joint management of water resources of interstate water of sources.

4.1 A POSITIVE EXPERIENCE RESULTS

As examples of effective agreements are:

- Agreement in 1996 years between Uzbekistan and Turkmenistan "On cooperation in Water Management ", and the agreement between Turkmenistan and the Republic Uzbekistan "Friendship, confidence building and development cooperation" (Bukhara, 19 November 2004) provide the legal foundations for meetings of presidents of State on a regular basis for consultation on all matters of mutual interest. Article 13 of this Agreement is recorded "The high contracting parties shall develop cooperation in the field of ecology, environmental protection, rational use of natural resources. They promote concerted action in this area on regional and global levels, seeking to establish an international system of ecological security. "

Heads of State signed the Agreement between the Government of Turkmenistan and the Government of the Republic of Uzbekistan on the intersection of Turkmen-Uzbek border officials serving economic facilities, located in the border regions (Bukhara, 19 November 2004 g). It included the detailed arrangements to ensure the maintenance of water facilities of one contracting party located on the territory of another party.

- Agreement between the Government of the Republic of Uzbekistan and the Government Republic of Tajikistan on cooperation in the field of regional water and energy resources for the period February 2005 to April 2005.

4.2. CHALLENGES AND PRIORITIES FOR THEIR SOLUTIONS

The main problem in dealing with cross-border cooperation is a failure, and in some cases and ignoring direct obligations adopted by the parties to the agreements, which could potentially lead to emergency cases. Thus, in the above-mentioned intergovernmental agreements of 1992 and 1998 between the basin countries specify the conditions for the inadmissibility without each other's permission on erection of any waterworks that change regime of the river Syrdarya and the work of existing water facilities.

Unfortunately, the fulfillment of obligations under intercountries on delivery of fuel energy resources also left much to be desired. In the year of the signing of Framework Agreement, in 1998, because of abounding, Kazakhstan has delivered to Kyrgyz Republic about 150.4 thousand tons of coal instead of 566.7 thousand tons, and adopted 150 million kWh of electricity instead of 250 million kWh. Uzbekistan adopted this year as only 74.9 million kWh instead of 200 million kWh. In 1999, Kazakhstan exceeded the commitment to coal, but it pulls gas in Uzbekistan 169 million cubic meters. The Uzbekistan in 2000 exceeded its liabilities on the gas, but Kazakhstan pulls angle 31.4 thousand tons, and so on. There was no stability to meet the obligations between the basin countries in connection with the fact that even when there were the same volume interstate deliveries every year, they were highly dependent on the dryness of the year.[53]

It should be noted that a positive role in the Agreement "On water and energy resources of Syrdarya river basin " concluded in 1998 between the Republic of

[53] Analysis of existing agreements between Central Asia in the field of water relationship in terms of national interests. Kazakhstan Ministry of Agriculture Republic of Kazakhstan Committee on Water Resources, January 2006

Kazakhstan, the Kyrgyz Republic and the Republic of Uzbekistan (Republic of Tajikistan joined in 1999).

However, to date, requires a radical revision and refinement of many embodied in its provisions. Since these agreements are not settled the division of water and energy problems, there should be a long- settlement flows, fees and compensation for the settlement of runoff requirements and the nature of regimes, to ensure appropriate conditions in organizational measures to executive bodies, responsibilities and mechanisms for redress in case of breach of contract, etc.

Naryn-Syrdarya cascade of hydropower plants is a network of hydraulic construction of complex applications. It was designed and built in primarily to guarantee the provision of water for agriculture in all the CA republics (Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan) during the growing season.

The design mode of the Naryn-Syrdarya cascade of reservoirs provided for the storage of water in the largest reservoir Toktagul power plants in wet years, as well as in the winter and release it into the required quantities for agriculture during the summer.

After the formation of sovereign countries, energy regime affected countries situated in the mid and the lower reaches of the river because of the unilateral change in operation of irrigation reservoir Toktagul 5.

National legislation of Uzbekistan regulates the use of interstate water bodies (rivers Amudarya, Syrdarya, Zarafshan, the Aral Sea and others), located within the country and other countries of the Aral Sea are regulated in accordance with international treaties and agreements (Law RU. "Water and Water Use," 1993).

Some points that should be decided by the management of water resources in the region:

- The exact division of surface water, groundwater and waste water collection-to national and transboundary (delineate, delimit the international water and swimming pools and to identify their resources, organization of work on offer transboundary water management and allocation of costs to do; develop the selection rules of transboundary ground waters, taking into account their relationship with runoff regime and water availability, tributaries, etc., to develop provision of quality control of transboundary waters of different mineralization for different water users).

- Modern water-power relations in the region should to improve. Develop a clearer and more detailed mechanism interaction and to legitimize its corresponding additions or protocols, or special arrangements that will get rid of the need of signing annual agreements. In these documents, details should be clarified for the different water years such things as: compliance with the conditions of environmental flows and the share of water for natural complex, multi-accounting regulation, the share of different countries and their obligation on electricity and fuel; responsible for compliance mutual obligation, evaluation of regional and national projects work.

- Improving the organizational structure of water resources at both the regional and national levels. These issues, and also additional specific projects aimed at the rehabilitation of individual water projects reflected in the proposals to Water ASBP-2, approved at the meeting ICWC May 6, 2003 in the city of Almaty.[54]

[54] Analysis of existing agreements in terms of national interests of the Republic of Uzbekistan, Khamraev S. R. : Deputy Minister of Agriculture and Water Resources Republic of Uzbekistan, member of the ICWC, January 2006

- The development of regional and national information systems, their interaction and the order of mutual awareness and exchange of operational and analytical information, especially regarding the data under low water and floods; linking data to the BVI, and hydro-meteorological “Minvodkhoz” (MAWR), particularly in terms of immediate awareness of expenses and changes in water levels in rivers.

-. The development of environmental protection measures by minimizing the interaction of river and irrigated land, surface water and groundwater.

V. WATER LIMITS AND BARTER AGREEMENTS

There are two key areas of conflict among and within the CA countries on water resources. Firstly, the issue is about how the water of the Aral Sea basin should be divided among and within countries. Secondly, the other issue is the functioning of various barter and payment procedures that bundle water and energy together to provide upstream countries with the latter, and downstream countries with the former. These issues, water quotas and barter agreements, will be at the heart of any new international agreement in the Aral Sea basin.

5.1.WATER ALLOCATIONS

In 1992, “The Almaty Agreement” sets quotas for water use that were close to those established under the Soviet Union period. Uzbekistan, Kazakhstan and Turkmenistan, the three richer CA countries, received the largest quotas from the Amudarya and the Syrdarya. The upstream countries were given much smaller quotas,

reflecting their smaller population, low cotton production and the Soviet era decision that agriculture would not be intensively developed in these countries.

That division almost immediately caused intense objections. Kyrgyzstan and Tajikistan wanted to expand irrigated fields but at the same time the downstream countries were expanding their farming sectors dramatically to compensate for a sharp industrial decline. The situation led to rapid expansion of water consumption in the 1990s. As noted, the CA countries now use 1.5 times more water than recommended by water expertsmhkyy.[55] Moreover, water quotas are frequently exceeded due to inadequate monitoring, leading to shortages at the lower reaches of the Syrdarya and the Amudarya.

Both adverse weather and seasonal use for energy have had a major impact on the amount of water available in rivers. The levels of the Syrdarya and the Amudarya have dropped sharply caused by four years of severe drought.[56] An increase in the production of electricity on the Syrdarya in Kyrgyzstan has also reduced the water available for irrigation in the summer in addition to causing severe flooding in Uzbekistan during the winter. Water quotas, however, have not been adjusted adequately to reflect these alterations. Attempts at fixing water quotas that satisfy all countries in the region have failed so far. Uzbekistan uses 51% and Kazakhstan 37% of the water from the Syrdarya[57]. Most of the Amudarya is consumed by Uzbekistan and Turkmenistan.[58] Uzbekistan and Kazakhstan are politically and economically much more powerful than

[55] ICG interviews with Yusup Kamalov, Chairman of the Union for the Defence of the Aral Sea and the Amudarya, Nukus, 23 January 2002, and Ernazar Makhmudov, Director, Institute of Water Problems of the Uzbek Academy of Sciences, Tashkent, 21 January 2002.
[56] Over the last two years, the amount of water in the Panj river – a major tributary to the Amu Darya – has dropped by 20 per cent as a result of drought. ICG interview with Tursun Abduzhabarov, Deputy Minister of Reclamation and Water Management, Dushanbe, 13 February 2002.
[57] IFAS Executive Committee. *Integrated Land and Water Management in the Upper Watersheds. Regional Report,*. Vol. B. Aral Sea Basin Program 6, 1997, p. 14.
[58] Ibid, p. 13.

Kyrgyzstan and Tajikistan. They also have much more to lose by reducing or putting an upper limit on their water quotas. Downstream countries have shown little understanding of demands by upstream countries to expand their water use.

5.2 BARTER AND PAYMENT SYSTEM

In the Soviet system, the CA countries exchanged water and energy under complex barter deals severely planned and controlled by central authorities. As for the quota and the barter system has brought significant changes in recent years, also began to cause more than any dispute than the other subject of water management. Cases of non-compliance with the barter agreements, gave rise to the problem for a large number of the population. Who became as a victims of temporary floods and droughts in Uzbekistan and Kyrgyzstan, leaving without heat in winter have begun to complaint over the behaviour of the other country.

As reported in Energy Project "Immediately after the collapse of the USSR, Uzbekistan and Kazakhstan introduced world prices for their gas, coal and heavy oil ("mazut"). Kyrgyzstan could hardly afford to buy and, increase electricity production at Toktogul during the winter to compensate for its lack of fuel. The country also saw a surge in demand for power. According to the state utility, Kyrgyzenergo, electricity demand in 2000 was 20% higher than in 1991, mainly because of the decline in gas provision, particularly in the South".[59]

The increased electricity production at Toktogul led to increased tensions for Uzbekistan and Kazakhstan. Kyrgyzstan not only disrupted the flow of water in the

[59] Energy Projects along the Great Silk Road, (Bishkek, 2000), p. 9.

Syrdarya but also reduced the water available to Uzbekistan and Kazakhstan for irrigation during spring and summer. Hence, serious disputes appeared in 1997 when drought further limited summer irrigation water available for downstream countries.

All countries realized the need for a solution, and a framework agreement was settled in 1998. Detailed barter agreements are now being concluded on an annual basis. These provide Kyrgyzstan with gas from Uzbekistan and coal from Kazakhstan for its thermal power stations in Bishkek and Osh, in return for water for irrigation during spring and summer. Kyrgyzstan still has to buy gas for domestic consumption from Uzbekistan.[60]

Iskander Ametov (2002) noted that the barter agreements had a partial success for the following reasons: [61]

- Timing, since they are only ready in the spring when the Uzbek and Kazakh fields are in dire need of water; [62]
- Lack of trust as a result of practical problems that prevent the parties from keeping their commitments in full;
- Lack of control mechanisms and management;

[60] Uzbekistan and Kazakhstan equally share on average 6.5 cubic km of water released from Toktogul. About four cu km are used to generate Kyrgyz domestic summer electricity needs, leaving 2.5 cu km, which generates 1-1.1 billion kWh for each country from Kyrgyzstan from May to August. Uzbekistan pays 3.4 U.S. cents per kWh of electricity, whereas Kazakhstan pays one cent. Payment for the electricity is not made in cash, but by supplying Kyrgyzstan with gas, coal and mazut. In 2001, Uzbekistan provided some one billion cubic metres of gas, whereas Kazakhstan supplied some 500,000 tons of coal from the Karaganda coal field and roughly 10,000 tons of mazut. ICG interview with Iskander Ametov, Chief Dispatcher, "Energy" United Dispatch Center of Central Asia Power Systems, Tashkent, 31 January 2002. Additional information provided by Dr Daene C. McKinney, Associate Professor, Department of Civil Engineering, University of Texas, May 2002.

[61] According to Iskander Ametov, Chief Dispatcher of the "Energy" United Dispatch Center of the Central Asia Power Systems, the barter agreement has only been properly implemented once – in the spring of 2001. ICG interview, Tashkent, 31 January 2002.

[62] If the barter agreements were ready before 1 January, Kyrgyzstan would have an incentive not to produce so much electricity during the winter months. Consequently there would be more water available for irrigation during summer.

- Lack of assistance to Kyrgyzstan with the costs for maintenance and operation of Toktogul hydro electric station;
- Lack of considering diverse economic systems as countries reform at different paces.

5.3 ENERGY AND WATER: THE SYRDARYA

The Syrdarya bonds Kyrgyzstan, Kazakhstan and Uzbekistan in a complex array of barter agreements involving water use and energy provision. Mostly, these have been ignored and not followed, leading to tension among these countries. A reassessment of the agreements, possibly within a new Syrdarya energy consortium, and a determination to make them stick, would significantly reduce issues around the key resources of the river.

5.3.1 Kyrgyzstan-Uzbekistan

Kyrgyzstan and Uzbekistan have had the most controversial history over water and energy. The barter agreement of 1998 has not been followed by both countries.

Uzbekistan's economy is still state controlled, and it has thus had few problems getting energy suppliers to comply with its barter arrangements. Nevertheless, the country still frequently fails to provide Kyrgyzstan with the negotiated amount of gas for other technical and political reasons.

Saparbek Balkibekov (2002) that gas pipelines in Uzbekistan are in urgent need of repair, and, therefore, transfers around the country and to neighbors are often disrupted.

In 2001, problems emerged in the gas line along the route Tashkent-Bishkek-Almaty. As a result, gas supplies to Kyrgyzstan were ceased for one and a half months.[63]

Aleksei Nikolaevich Silantiev (2002) stated that Uzbekistan also produces gas with a water content. During the winter, the water can freeze, clogging the gas pipes. Although Uzbekistan has committed to providing gas to Kyrgyzstan, it actually does not have enough to meet its own domestic demand. A major problem with the barter agreements is that they are usually delayed until the late spring or even early summer, the very time when the downstream countries need water for irrigation. Had the agreements been ready before the turn of the year, Kyrgyzstan would have had an encouragement to produce less electricity. As it happens, Kyrgyzstan is not convinced that enough coal and heavy oil ("mazut") will be provided and so protects itself by producing electricity, in turn triggering the issues.[64]

5.3.2 Kyrgyzstan-Kazakhstan

"A number of problems have emerged between Kyrgyzstan and Kazakhstan caused by the barter deals. Kazakhstan has privatised its coalmines and can no longer order them to provide Kyrgyzstan with free coal. Kazakh officials say this is the major reason why the country has failed to keep its part of the agreement (Saparbek Balkibekov,

[63] Saparbek Balkibekov, Head of Fuel & Energy, Infrastructure and Communications Department, Office of the Prime Minister of the Kyrgyz Republic, Bishkek, 21 February 2002.
[64] ICG interview with Aleksei Nikolaevich Silantiev, Vice President of Barqi Tojik [Tajik Electricity], Dushanbe, 13 February 2002.

2002).[65] Kyrgyzstan is currently exploring the possibility of developing its own existing mines at Jergalan, Akbula and Kara-Keche as well as new coal resources to reduce its dependence on Kazakhstan.

However, the quality of the coal is poor and production costs are high. The two Kazakh provinces that depend on water from Toktogul for irrigation, South Kazakhstan and Kzyl Orda, have to purchase electricity from Kyrgyzstan as part of the barter agreement. As electricity from Ekibastus in Northern Kazakhstan is up to 30-40% cheaper,[66] the two provinces are less motivated to do so. The Kazakh authorities have not been willing to cover the difference in price[67] and businesses forced to purchase the Kyrgyz electricity. To ensure that the Kyrgyz electricity is used, the province authorities provide local enterprises with quotas.[68] The problem is likely to cause further disruptions in 2002 as Kyrgyzstan has noted that it plans to more than triple the price of electricity from one U.S. cent per kWh to 3.36 U.S. cents.

Nesipkul Bertizbaev (2002) noted that the Kazakh side has refused to accept the increase,[69] and the Ministry of Energy has said that Kazakhstan does not need Kyrgyz electricity.[70] Kyrgyz summer electricity is probably more disruptive to the Kazakh grid than valuable, and any future agreement will need to find new markets for summer

[65] In 2001 Kazakhstan provided Kyrgyzstan with 470,000 tons of coal and 10,000 tons of mazut in return for 750 million kWh of electricity. ICG interview with Nesipkul Bertizbaev, Director, Department of Electricity and Solid Fuel. Kazakh Ministry of Energy and Mineral Resources, Astana, 27 February 2002. According to the agreement, however, Kazakhstan was to deliver 618,000 tons of coal that year. KTR, Program 1, Bishkek, 5 October 2002 at 11:00 am

[66] ICG interview with Altynbek M. Meldebekov, Deputy Executive Director, International Aral Sea Rehabilitation Fund Executive Board, Almaty, 25 February 2002.

[67] 20 tin per kWh. Nesipkul Bertizbaev, Director, Department of Electricity and Solid Fuel, Kazakh Ministry of Energy and Mineral Resources, Astana, 27 February 2002.

[68] Ibid

[69] Ibid

[70] Ibid

electricity excess. Kazakhstan has requested that the exchanges shift from barter to normal purchases at market prices.

However, before the introduction of the barter scheme, Kazakhstan purchased Kyrgyz electricity with cash. During this time (1995-97), Kazakhstan ran up a debt of US$17.5 million. Kyrgyzstan is unlikely to agree to switch to cash purchases until this debt has been paid back.

5.4 DIVIDING THE AMU-DARYA

The Amudarya is much less regulated than the Syrdarya, with fewer dams and hydro plants to cause potential problems with downstream flow. So far it has not caused the same tensions either, but there is considerable contentment along the length of the river, as each downstream province or country accuses its upstream neighbour of taking more than a fair share of the water.

5.4.1 Uzbekistan-Tajikistan

Oleg Lyssenko cited (2002) "The average annual flow of the Amudarya is 75 cubic kilometers. According to the 1992 agreement on water quotas, Tajikistan is entitled to nine of these, or 12%[71], a figure that Dushanbe regards as far too low."[72] Agriculture was under-developed during the Soviet period, leaving the country vulnerable to food shortages. It also has one of the highest population growth rates in the region at more than 3 per cent. The country needs to provide for these people and says it intends to

[71] ICG interview with Oleg Grigorevich Lyssenko, head of the Department of the Management of Water Resources, BWA Amu Darya, Urgench, 28 January 2002.
[72] According to the head of the department of water management of the BWA Amu Darya, Oleg Grigorevich Lysenko, Tajikistan has requested that its quota be increased from nine cubic kilometres to eleven to twelve cubic kilometres per year. ICG interview, Urgench, 28 January 2002.

expand agricultural output.[73] Tajikistan's irrigation system is either completely in ruins or in urgent need of repairs. As the country lacks funds and finance to raise irrigation efficiency, the only way to increase output is by using more water. Tajikistan plans to achieve this either by increasing its quota of water from the Amudarya or by diverting the Zarafshan River for irrigation.[74] Although Viktor Boltov said that the latter would allow for irrigation of high-quality soil, it would be very costly.[75] Dr Daene McKinney noted that it could also cause severe disputes with Uzbekistan, which uses 95% of the river flow.[76] If implemented, the supply to the city of Samarkand in Uzbekistan would be seriously impaired. It is unlikely that Tajikistan could raise the required money, as donors are not keen on the project. Deputy Minister of Foreign Affairs Abdunabi Sattorzoda holds the view that this project will not be implemented without Uzbekistan's consent,[77] which is unlikely to be given. Tajikistan cannot afford to ignore Uzbekistan on water issues, as its economy is dependent on its neighbor for many imports. Trade has reduced in size by half in recent years, and Tajikistan is desperate to reverse that trend.[78] IFAS reported (2002) "On the other hand, increasing the water diverted from the Amu Darya is relatively easy and requires only limited investment. As the Amudarya starts its course in Tajikistan, its neighbors can do very little to stop Dushanbe from increasing its water

[73] The problem is all the more urgent as five years of civil war (1992-97) took a heavy toll on the country's infrastructure and industry. A majority of the population is, therefore, engaged in agriculture and self-subsistence farming.
[74] Diverting the Zarafshan would allow Tajikistan to use 100,000 hectares of land for agricultural purposes. So far, Tajikistan has some 720,000 hectares of irrigated land. Another 800,000 hectares or so could be freed for irrigation. To provide its population with normal food supplies, Tajikistan needs to free some 500,000 hectares of land by 2005. ICG interview with Ahad Akhrorov, Chief Hydraulic Engineer, Ministry of Reclamation and Water Management of the Republic of Tajikistan, Dushanbe, 16 February 2002.
[75] ICG interview with Viktor Boltov, First Deputy Minister, Ministry of Economy and Trade of the Republic of Tajikistan, Dushanbe, 19 February 2002.
[76] Personal communication to ICG, Dr Daene McKinney, University of Texas, May 2002.
[77] ICG interview, Dushanbe, 19 February 2002.
[78] ICG interview with Abdurakhim Tuzhuraev, Economic Officer, Embassy of the Republic of Tajikistan in Uzbekistan, Tashkent, 17 January 2002.

quota. The downstream countries complain that Tajikistan already takes more water than it is allowed by the 1992 agreement. Controlling Tajikistan's water consumption is very complex as much of the equipment was either destroyed or fell into disrepair during the civil war. Besides, the staff from the BWA Amudarya lack needed resources to carry out frequent and unannounced inspections. They also have to apply for entry visas. Four years of severe drought has reduced the level of the Amudarya. Even if Tajikistan were to increase its share of the water only modestly, it would have an immediate impact on agriculture of downstream areas. Tajikistan's water resources provide considerable hydropower potential. Currently, the country produces fifteen billion kWh of electricity annually".[79] Some 80% , twelve billion kWh, is produced by the Nurek hydropower station on the Vakhsh River.[80] This is not enough to cover domestic demand,[81] and Tajikistan depends, therefore, on imports of electricity and gas from Uzbekistan in winter. Uzbek gas supplies are unreliable,[82] and problems with the implementation of the Uzbek andTajik electricity swap program have led to power rationing in many parts of Tajikistan. No power grid line connects Northern Tajikistan (Sughd Province) with the central and southern parts of the country, where most of its electricity is produced by the Nurek hydro plant. Uzbekistan provides Sughd Province with electricity, and in return Tajikistan provides power to Uzbekistan's southern provinces. The electricity exchanged

[79] Information provided by IFAS, Tashkent, 21 January 2002.

[80] Approximately five billion kWh are used by the Tursunzade aluminium factory alone. ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik [Tajik Electricity], Dushanbe, 13 February 2002.

[81] The vice-president of Barqi Tojik, Aleksei Nikolaevich Silantiev, told ICG that domestic electricity production during the Soviet period covered 12 per cent of the country's energy needs, whereas currently it covers 38 per cent. People are more dependent on hydropower now than before because many small heating plants have been privatised, dismantled and sold. ICG interview, Dushanbe, 13 February 2002

[82] Uzbekistan has on several occasions cut gas supplies to Tajikistan due to the latter's inability to pay. Supplies have also suffered from low pressure in the pipes used to export the Uzbek gas. The pressure has dropped from five to 0.9-1 atmosphere, which is not enough to facilitate the normal flow. Huge transit taxes levied on Turkmen gas by Uzbekistan has prevented Tajikistan from swapping gas suppliers. ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002.

is insufficient to give consumers electricity 24 hours a day. Tajikistan, therefore, often requests that Uzbekistan switch off electricity supplies to Sughd Province to ensure that imports are kept within the agreed limit. If Tajikistan exceeds its limit, it pays a higher price. Further, the Tajik electricity grid is in a poor state, resulting in frequent accidents during winter. In most districts and villages, electricity is rationed: from six to eight a.m. and from six to nine p.m. According to the deputy director of Barqi Tojik, people understand why gas from Uzbekistan is sometimes cut but they are much less understanding about the shortage of electricity (Aleksei Nikolaevich Silantiev). [83] Silantiev noted (2002) that this decline in power infrastructure not only promotes social dissatisfaction but also is a serious obstacle to the kind of economic growth that Tajikistan requires if it is to improve living standards as needed to promote political and social stability. Tajikistan is keen to develop its hydropower resources to break dependence on Uzbekistan and to export electricity to neighboring countries.[84] Its own energy needs could easily be met by increased hydroelectric generation but this would not only require major investment, it would also have a negative impact on downstream access to seasonal water supplies and so create further potential tensions among the Amudarya countries.

5.4.2 Uzbekistan-Turkmenistan

Iskandar Kalandarovi cited (2002) that some eighteen million people in Uzbekistan and Turkmenistan live off the water of the Amudarya. The two countries signed an agreement

[83] ICG interview with Aleksei Nikolaevich Silantiev, Vice- President. Barqi Tojik, Dushanbe, 13 February 2002.
[84] According to Tajik officials, Tajikistan ranks second in the world after Russia in potential hydropower resources. Only 12 per cent of these resources are being used at the moment. ICG interview with Aleksei Nikolaevich Silantiev, Vice-President, Barqi Tojik, Dushanbe, 13 February 2002.

in 1996 to divide this equally. Officially, Uzbek and Turkmen representatives mentioned that they are satisfied with implementation.[85] The govenrment officials said "However, Uzbek water experts and politicians in Khorezm Province and the autonomous republic of Karakalpakstan complained that Turkmenistan consumes too much. Uzbek experts maintain that it is unfair to divide the water of the Amudarya equally since fourteen million people depend on it in their country compared to four million in Turkmenistan. Besides, Uzbekistan has more land to irrigate, and water has to be transported over longer distances".[86] Oleg Lysenko noted "In their view, demography, total area of irrigated land as well as water losses should be taken into account when settling water quotas. Uzbekistan also claims that the Turkmens are exceeding their quotas. Turkmenistan and Uzbekistan are each entitled to use some 22 cubic kilometers of water".[87] IFAS reported "In practice, however, Turkmenistan is thought to use as much as 30 cubic kilometers".[88]

Stefan Klötzli cited "Its use per capita is about twice Uzbekistan's caused by very poor water administration and management. The Karakum Canal, the main water flow from the Amu-Darya to irrigated Turkmen lands, carries twice as much water as in USSR times but is poorly maintained, gradually silting up and becoming increasingly wasteful in terms of water loss and delivery. This can only be solved in two ways: by implementing expensive rehabilitation work on the canal; or by drawing off growing

[85] ICG interviews with Iskandar Kalandarovi, Chairman of the Committee on Agriculture, Water Management and Food Production, Oliy Majlisi, Tashkent, 22 January 2002, and with Kurban B. Ballyev, Representative of Turkmenistan, Member of the Executive, IFAS, Tashkent, 15 January 2002.
[86] ICG interviews with officials, Chembai, Karakalpakstan, 24 January 2002. Uzbekistan has 4,300,000 ha of irrigated land, whereas Turkmenistan has just over 2,000,000 ha. ICG interviews with Iskandar Kalandarov, Chairman of the Committee on Agriculture, Water Management and Food Products, Oliy Mailisi, Tashkent, 22 January 2002, and with Sirodjidin Aslov, Transboundary Water Monitoring Component Director, GEF Project, IFAS, Tashkent, 21 January 2002.
[87] ICG interview with Oleg Grigorevich Lysenko, Head of the Department of Water Resource Management, BWA Amu Darya, Urgench, 28 January 2002.
[88] ICG interviews, IFAS, Tashkent, January 2002.

amounts from the Amudarya. So far, the latter approach has prevailed. In combination with potential Afghan demands for more Amudarya water and Turkmenistan's future reservoir plans, it seems likely that Uzbek-Turkmen relations over water can only worsen further". [89]

VI. REVIEW OF INTERNATIONAL MODELS OF WATER SHARING COOPERATION

Early civilizations emerged and developed in the basins of major rivers of the world, including the Indus, the Nile, the Tigris, the Euphrates and the Yangtze. The development of the Nile dates back to 3400 BC., water management in China began around 1100 BC. The use of water in ancient times has been limited primarily flood control and irrigation. Later, the importance acquired navigation on the national and international waterways. At the Congress of Vienna in 1815 it has been mentioned rights to navigation on the Rhine and Danube rivers[90]. African river also internationalized in accordance with the agreement at the time.

The first signs of conflict among the riparian states emerged with the development of industry and the simultaneous increase in water use for municipal, agricultural and navigation purposes. Sides to solve the problem of the Oder River applied to The Permanent International Court of Justice[91]. At a resolution of the dispute, which included questions about the interpretation of the agreement on navigation, the Court noted the

[89] Stefan Klötzli. *The Water and Soil Crisis in Central Asia - a Source for Future Conflicts?* ENCOP Occasional Paper No. 11. Center for Security Policy and Conflict Research Zurich/ Swiss Peace Foundation Bern (Zurich/Bern, May 1994).

90 Final Act of the Congress of Vienna, June 9, 1815 pp.108-109, Martens NR427p.

91 The point of the territorial jurisdiction of the International Commission of the Oder (Great Britain, Czechoslovakia, Denmark, France, Germany, Sweden and Poland), PCIJ, Series A. No.23, 1 (1929).

"community of interest" on navigable rivers and thus introduced the concept in general river law. Holland and Belgium were unable to reach an agreement concerning the development of the River Meuse and brought the matter to the Permanent Court[92]. Spain and France are arguing about their rights to use the water resources of the river and lake Lano Carol. Arbitration Court in this case referred to the duty of coastal States to take into account the interests of other countries when planning any work in their area of cross-border rivers. To some extent, the concept of coexisting rights and obligations of international transboundary rivers has been recognized and developed in a number of domestic proceedings, considering the conflicts over water resources.

In the federal states of individual actors are turning to the courts over disputes concerning their transboundary waters. In Germany, Landen Baden Wurttemberg disputed withdrawals from the Danube, in the case Donauversinkung. German Staatsgerichshof used the "general principles of international law concerning the flow of international rivers", deciding that neither Baden Wurttemberg have no court, "the interests of the states under consideration must be compared in an equitable manner. It is necessary to consider not only the absolute injury to a neighboring State, but also the ratio of benefits received by one party to the detriment of the other. " A similar approach has been used previously in Switzerland, where the cantons of Aargau and Zurich contested the use of the river Jona Bundesgericht in 1878[93]. The court decided that "by virtue of its sovereignty, each canton has the right to necessary measures for the wise use

92 Diversion of the Water from the River Meuse (Netherlands v. Belgium), P.C.I.J., Series A/B, No. 70, 4 1937). The PCIJ refused to consider the general principles of law relating to international waterways and restricted its decision to interpretation of the relevant treaty. The Court found that neither side, in developing various works on the Meuse, had violated its obligations under the treaty.

93 Decision of 12 January 1878, Recueil officiel des arrêts du Tribunal Fédéral IV, 34-37.

of public water resources according to their needs, provided that the common use of water is not impossible, but, on the contrary, is open to other cantons" [94].

In the United States it had a number of lawsuits over water resources. It is in this context came the principle of equal fair distribution[95].

In the US, there are two different modes that control the use of water: in the western states is dominated by the doctrine of prior use, while in the eastern states, the law of riparian rights. Federal courts considering disputes between states on water issues, and decided that the rule of equitable distribution is essential. With the current state of the national competition and political suspicion is impossible to hope that can be adopted by a kind of declaration of the human right to benefit from the existing water resources[96].

The above statement was made about forty years ago by Professor Knauth at international meeting on water law, held in New York[97]. This statement could be done, and at the recent meeting of the Sixth Committee of the UN General Assembly to convene, as the Working Group for the development of the Framework Convention on international rivers. This statement remains true. Vice-President of the World Bank Ismail Serageldin predicted that the next international crisis will happen because of the water[98], and this statement is almost like saying of Boutros Boutros-Ghali, former UN Secretary-General on the situation in the Middle East.

Since the beginning of the 1950s international disputes over water have increased in many regions of the world. International scientific organizations such as the Institute of

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[94] Ibid.
[95] L. Caflisch, "The Law of International Waterways and Its Sources," in R. St. J. Macdonald (ed.), Essays in Honour of Wang Tieya 115 (1993).
[96] Comment Prof. Knauth report on the New York meeting of the International Association of Legal Science. See. Report of the Forty-Eighth Conference of the International Law Association held at New York, 1958, 96 (1959).
[97] See C.B. Bourne, "The International Law Association's Contribution to International Water Resources Law," infra.
[98] J. Vidal, "Ready to Fight to the Last Drop," Guardian Weekly, 13 (20 August 1995).

International Law (IDI)[99] and the International Law Association (ILA)[100] began studying law applicable to these disputes. IDI, whose previous work in this area resulted in the decision of the Madrid (1911)[101], Salzburg has developed a solution (1961), as well as the decision of Athens (1977) on the issue of contamination. Each of these solutions was a significant contribution to the development of international water law.

Today, in many parts of the world there are serious conflicts over water resources. Over the past 50 years, it was signed by 150 of the peace agreements. These agreements are vital to the states, as they make international relations in the field of water management more stable and predictable. In the ongoing Middle East peace talks consideration of water issues is an important point of discussion on the agenda. Despite an agreement between Israel and Jordan on the use of resources of the Jordan River basin agreement[102] is unlikely to be recognized by other riparian countries - Lebanon, Syria and the Palestian. Israel, on the basis of existing water is required most of the waters of the Jordan, and this affects the amount of resources available to other basin states. Compared to the limited resources of the Jordan, Tigris-Euphrates system, whose headwaters are in Turkey, much more extensive, but access to water is restricted its creation of large dams for irrigation and hydropower generation in Turkey. Syria and Iraq, downstream, are afraid that their use of water resources of the Tigris-Euphrates, this situation will have an adverse impact.

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[99] International Law Institute (l'Institut de Droit International), founded in 1873. Consists of a limited number of international lawyers who prepare reports and resolutions on various subjects of private and public international law.
[100] The International Law Association
[101] International Regulations regarding the Use of International Watercourses for purposes other than Navigation, adopted by the Institute of International Law at Madrid, 20 April 1911, 24 Annuaire de l'Institut de Droit International 365 (1911).
[102] The peace treaty between Israel and Jordan on October 26, 1994.

In the case of the Nile Basin it is that a state located below all the flow controls the resource. Egypt used the water resources of the Nile from the ancient times and the development of any of the states upstream - Ethiopia, Eritrea, Tanzania, Rwanda, Burundi, Kenya, Uganda, Zaire and Sudan - would create a threat to the existing needs of Egypt. The only agreement on the regulation of the Nile between Egypt and Sudan was signed more than forty years ago, and is not required for the other nine States of the pool[103]. The development of any of these States affects water users downstream, and only the future will show how potential conflicts will be resolved.

The Mekong, which has a long history of cooperation between the four of the six basin states, often referred to as evidence of the "spirit of the Mekong", recently became the subject of an agreement[104]. Unfortunately, the agreement was signed by only four of the basin states, none of which does not control the upper reaches of the river system[105]. Signatories to the Agreement on the Mekong have to develop a system based on this situation, which may affect the viability of the works carried out in the lower reaches. However, at the present time we continue to implement projects in the Mekong mainstream, mainly hydropower projects on the territory of Laos, to be implemented in the near future are also planned other projects. What would happen if China, the territory of which is the longest stretch of the Mekong and sources, will begin work on the development of the river which affect water use downstream in Cambodia, Laos, Thailand and Vietnam?

[103] The agreement between the United Arab Republic and Sudan for the full utilization of water resources of the Nile, signed in Cairo, November 8, 1959.
[104] Agreement on Cooperation for the Sustainable Development of the Mekong River Basin in November 1994. Bangkok.
[105] The agreement was signed by the Mekong Basin, Cambodia, Laos, Thailand and Vietnam. China and Myanmar (Burma) are the countries of the Mekong basin headwaters.

On the North American continent, Canada and the United States, the United States and Mexico signed an agreement on border water resources in 1909[106] on the main waterway, located on their territory. It is an umbrella agreement for the management of the rivers of Canada and the United States, and the Agreement of 1944 between Mexico and the United States on the rivers of Colorado, Tijuana and Rio Grande[107] it covers most of the issues of transboundary water resources between the two countries. This agreement is regularly updated through the mechanism of the International Commission of boundary water resources (established under the Agreement of 1944); it offers concrete solutions to the water problems between the two countries. Thus, a number of specific special agreements contributed to the development of the Agreement of 1944 in response to particular problems associated with the use of the Colorado, Rio Grande and Tijuana. Canada and the United States, often with the help of the International Joint Commission established under the Treaty on border water resources, worked on the development of the Treaty on Border Water 1909 with the help of several agreements on specific rivers, the most important of which is the 1964 agreement on the Columbia River[108]. This agreement helped to solve one of the most serious disputes between the two countries over water resources. However, the period of validity of the profits obtained in the lower reaches will expire soon and the process of solving the problem seemed simple, mired in contradictions and differences.

[106] Agreement between the United States and Britain on the border water resources and surveys arising between the United States and Canada on January 11, 1909.
[107] Agreement between Mexico and the United States regarding the use of water resources of the rivers of Colorado, Tijuana and Rio Grande (Rio Bravo del Norte) from Fort Kitman, Texas, to the Gulf of Mexico on 3 February 1944.
[108] Agreement between Canada and the United States on the joint development of water resources of the Columbia River Basin of 17 January 1961.

In South America, two major rivers - the Amazon, and the system of Rio de la Plata are regulated under multilateral agreements in 1978. Eight countries of the Amazon Basin have concluded an agreement on cooperation in the Amazon basin[109], which provided for the joint development of the resources of the river. However, this obligation does not prevent the basin states to develop regional plans of unilateral development of the Amazon. Brazil plans to develop hydro potential of the Amazon, which could have consequences for the countries downstream. The system of La Plata, including rivers Parana, Paraguay, Uruguay and Rio de la Plata is also the subject of an agreement concluded in 1970 all the basin states - Argentina, Bolivia, Brazil, Paraguay and Uruguay. This agreement calls for the implementation by all States of the pool combined efforts for a harmonious development and integration of the basin, the riparian countries have repeatedly ignored when they were carried out bilateral or regional actions. Thus, in the Amazon, and the system of the Rio de la Plata basin agreements do not control the actions of nations. However, recent agreements have created an environment for the development of cooperation in the region.

In Africa, the restriction to operate an ambitious agreement ZACPLAN[110], and previously by the regime of rivers Niger and Senegal require revision. Most African regimes of rivers play an important role in the functioning of the institutional mechanisms and the Joint Commission established in the framework of most African agreements, continue to be an important component of cooperation in the management of the basin. However, this could not prevent some disputes between basin states, for

[109] Agreement between Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela on cooperation in the Amazon basin of 3 July 1978.
[110] Agreement on the environmentally sound management of shared resources of the Zambezi River, signed in Harare on May 28, 1987.

example, between Senegal and Mauritania, on the rights to some of the resources of the Senegal River. In addition, the problem of the combined management of African rivers have resulted from lack of financial resources and support. This situation could continue to have an impact on the implementation of existing agreements in many areas.

As long as the World Bank did not assist in finding a solution to the problem, the main source of disputes between India and Pakistan has always been the river Indus[111]. The agreement, concluded almost forty years ago, does not include China and Afghanistan, which are also used part of the Indus Basin. Implementation of the Agreement has not passed without controversy. Sometimes, India unilaterally stopped east of the river, which had a negative impact on Pakistan. Another important river system in the region - the Ganges basin. Only recently, India and Bangladesh have replaced the invalidity of the agreement on the dam Farakkskoy[112] new agreement signed December 12, 1996. In accordance with this agreement, Bangladesh have to get some more water than under the Agreement of 1977, though it expressed doubts about whether India to fulfill this obligation. Although the agreement marks the beginning of a new era of peace agreements on the resources of the Ganges between India and Bangladesh, the reality of this agreement will be tested over time. Bangladesh in the past experienced a serious shortage of water resources and will continue to rely on the resources of the Ganges in the future. An additional factor in this context is the fact that Nepal controls the sources of the Ganges, without being a party to the agreement between India and Bangladesh. It seems that the regional development of the Ganges limited bilateral

[111] Agreement on water resources of the Indus, 1960, between India, Pakistan and the International Bank for Reconstruction and Development, signed at Karachi on 19 September 1960.
[112] Agreement between Bangladesh and India on the joint use of water resources of the Ganges in Farakke and increasing its flow 5 November 1977.

negotiations and measures, and this approach can adversely affect each of the basin countries.

Thus, in all regions of the world there is the threat of international disputes over water resources. In 1997 Hungary and the Slovak Republic before the International Court regarding the determination of the Danube, the first aqueous proceedings considered by the Court in the last five decades. Despite several attempts at a peaceful settlement, the parties were unable to find a solution to the problem of building a dam in Gabcikovo-Nagymaros. Hungary refused to continue the project provided by the previously signed bilateral agreement, on the grounds that the operation would harm not defined in the agreement. Slovakia in response to increased water intake from the Danube as a "temporary solution" aimed at compensation for the profit expected from the performance of work on Nagymaros. In its arguments before the International Court of Justice, in addition to the agreement, negotiated issues, each party would hold opposing views on the principles of international law applicable to the development of the Danube. These issues correspond to the central issues of disputes over water: what are the rights and obligations of coastal States on the development, use and management of water resources of transboundary rivers?

This growing shortage of and inequitable distribution of water, cause confusion and even bloodshed, and are a risk factor for many regions. To stop such conflicts, each coastal State should rationally treat the subject. Despite the complexity of the problems, the international legal experience shows that disputes over rights to water resources management can be resolved by negotiation and signing of the peace agreements.

VII CONCLUSION

The situation that is emerging in the region in matters of reconciliation and the search for a balance between water and energy resources leads to the need to assess the potential and prospects of the region, to analyze the possibility of joint actions aimed at increasing the efficiency of regional cooperation in addressing the problems identified. An analysis of the current situation today in the Central Asian region in the context of joint use of water, leads to the following conclusion. At the present stage, the process of water allocation between countries in the region takes place without consideration of the specific objective conditions of farming methods and the importance of water resources to various water users. Hence, the reason for growing water shortages in the region is seen not only in the presence of objective factors, but primarily in the imperfection of water management systems.

At present, the most effective and priority mechanism is the annual contracts on a bilateral basis, which partially solves the problem of the coordination of interests between the two countries, but excludes regional interests. Formation of regional cooperation in addressing these issues is a difficult task, because it is too polar interests of the countries and understanding of the mechanisms to achieve them. Declaring, understanding, and the need for the establishment of unified management of water and energy resources of the region's leaders do not seek to harmonize positions on key issues. Solving problems is not at the expert level and in the framework of the political ambitions of further exacerbating the situation.

In this regard, one of the efficient mechanisms necessary to consider the formation of interstate expert analysis of the working group, whose activities should be based on a holistic view of problems in the region of Central Asia, to offer new forms of communication on the strategic issues of convergence of power and irrigation scheduling water releases, compensatory deliveries of fuel resources use water-saving technologies. The new formation must have real mechanisms of realization of the activity, and thus be in a position to have a supra-national structure and the strength of decisions, which must be followed by all members of the association.

At present, we can assume some variants of the situation:

1. Preservation of the current situation where each country in the region will be in their actions based on national interests within the framework of international agreements. Which will inevitably lead to an aggravation of the situation and inter-state conflicts.

2. As an example the Indus-Waters Treaty shows that third-part mediation can be successful. (the Eurasian Economic Community, the World Bank, SCO) and countries with an interest, access to strategic resources (Russia, China, the USA, Japan, Iran, Pakistan, India, Afghanistan) in resolving issues of rational use of water resources in the region.

3. The search for alternative options for harmonizing national interests of countries that fail to create a new supranational structures.

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