

CENTRAL ASIA'S NEED FOR REGIONAL REFORM OF ITS RESOURCE MANAGEMENT SYSTEM

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I. INTRODUCTION

In every region of the world, disputes arise between nations over the use of transboundary water sources. In order to ensure sustainable and conservative use of those sources, this Note will discuss the role that non-state actors must play to resolve transboundary water conflicts, looking specifically at the resource use conflicts that exist among the Central Asian nations—Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Non-state actors, such as regional and international organizations (IOs), have the credibility (via expertise in a wide range of fields), information, non-political agenda, and passion necessary to ensure adequate resources to resolve transboundary water conflicts. As stated in several environmental treaties, there is a need for greater access to information among the public about environmental concerns, which non-state actors have the resources to provide.

With the help of non-state actors and increased access to information from a variety of entities,¹ the Central Asian nations can resolve their water conflicts by holding a conference to increase information transparency and discuss solutions with experts² from around the world. Ultimately, the hope for this conference is the signing of a treaty by all Central Asian nations, which creates a sustainable integrated resources management system and an implementation task force composed of both regional and international experts. The resource management system must encompass an integrated watershed-based approach to water resource allocation and conservation.

Utilizing the mechanisms of an international conference, a treaty, and a multi-stakeholder task force, Central Asia will be able to resolve their water use conflicts and establish a successful resource management system. In establishing these regional mechanisms, treating water, food, and energy resources in Central Asia as “threatened” or “endangered” commodities will enable the five nations to acknowledge each other’s needs and concerns, realize their shared interests in economic stability and security of resource supply, and establish an infrastructure that respects the interests of each country while enforcing sustainable use practices.

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¹ These entities include the national governments of Central Asia, other concerned government leaders, and international organizations.

² Individual experts include scientists, engineers, economists, urban planners, and agriculturalists.

II. ENVIRONMENTAL PROBLEMS IN CENTRAL ASIA: WATER, FOOD, AND ENERGY INSECURITY



Source of image: Philippe Rekacewicz, UNEP/GRID-Arendal, *Eurasia & Central Asia - Map of the Aral Sea*, WORLD BANK, <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/0,,contentMDK:20634287~pagePK:146736~piPK:146830~theSitePK:258599,00.html> (last visited Feb. 6, 2014).³

a. Climatic and Geographic Impacts

The five Central Asian nations, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, are in the midst of a transnational conflict over distribution of freshwater resources and ensuring equitable and sustainable allocation of those resources among them.⁴ All of the Central Asian countries rely primarily on the same few surface waterbodies for freshwater and as a result, one nation's use of any water resource directly impacts the use of another.⁵ The region's primary sources of freshwater are the Amu and Syr Darya

³ For maps of Central Asia displaying climate change impacts on water resources, land degradation problems, water pollution problems, and areas prone to natural hazards, see ENV'T & SEC. INITIATIVE & UNITED NATIONS ENVIRONMENT PROGRAM, ENVIRONMENT AND SECURITY IN THE AMU DARYA BASIN 27-28, 37-38, 56-57, 67-68 (Harry Forster ed., 2011), <http://www.envsec.org/publications/AmuDarya-EN-Web.pdf>.

⁴ INTERNATIONAL CRISIS GROUP, CENTRAL ASIA: WATER AND CONFLICT 1 (2002), <http://www.crisisgroup.org/~media/Files/asia/central-asia/Central%20Asia%20Water%20and%20Conflict.pdf>.

⁵ *Id.*

rivers, which are sources of major conflict among the nations.⁶ The Darya rivers flow through several countries and ultimately empty into the Aral Sea, which lies in both Kazakhstan and Uzbekistan territory.⁷ The central conflict arising from these rivers and their use revolves around the disproportionate consumption of water by the downstream nations, Kazakhstan, Turkmenistan, and Uzbekistan, compared to their geographical contribution to the Darya rivers' base flow (Table 1).⁸ Based on a 2003 report from the Scientific-Information Center of the Interstate Commission for Water Coordination (SIC ICWC) in Central Asia, Table 1 outlines the estimated annual flow from each country into the Syr Darya, Amu Darya, and Aral Sea Basin.⁹ Although a bit dated, Figure 1 nicely illustrates the discrepancies during 2000 between each nation's water consumption and their flow contribution from natural processes within their borders.

Table 1. Annual Flow and % of Total Basin Flow, by country	Syr Darya		Amu Darya		Aral Sea Basin	
	km ³ /yr.	% of basin flow	km ³ /yr.	% of basin flow	km ³ /yr.	% of basin flow
Kazakhstan	2.43	6.5	-	-	2.43	2.1
Kyrgyz Republic	26.85	72.2	1.6	2	28.45	24.4
Tajikistan	1.01	2.7	55.73	70.3	56.74	48.6
Turkmenistan	-	-	1.53	1.9	1.53	1.3
Uzbekistan	6.17	16.6	5.06	6.4	11.22	9.6
Non-CA countries	0.75	2	15.36	19.4	16.11	14
Total	37.21	100	79.28	100	116.48	100

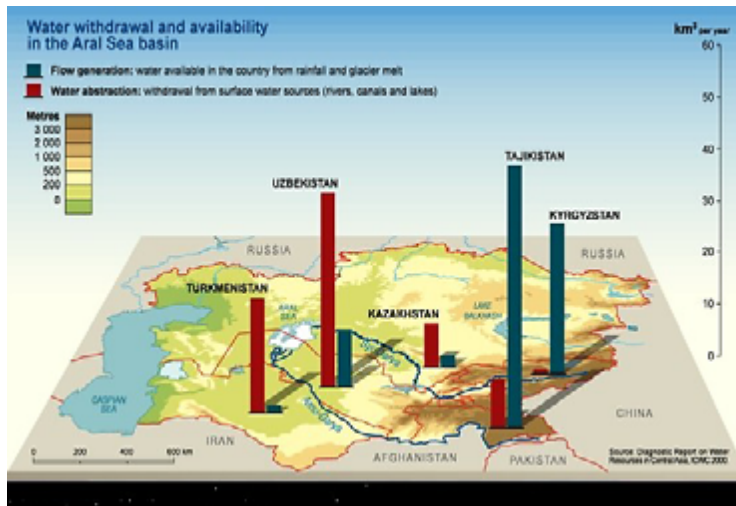
⁶ *Id.*

⁷ *Id.* The Amu Darya begins as the Tajikistan-Afghanistan border and ends in the southern, Uzbekistan portion of the Aral Sea, while Syr Darya begins in northern Kyrgyzstan and ultimately ends in the northern, Kazakhstan portion of the Aral Sea. *Id.* at 1 & n.1.

⁸ JAKOB GRANIT ET AL., UNITED NATIONS DEVELOPMENT PROGRAM, REGIONAL WATER INTELLIGENCE REPORT CENTRAL ASIA 15 (2010), http://www.watergovernance.org/documents/WGF/Reports/Paper-15_RWIR_Aral_Sea.pdf.

⁹ VICTOR DUKHOVNY & VADIM SOKOLOV, SCIENTIFIC-INFORMATION CENTER OF THE INTERSTATE COMMISSION FOR WATER COORDINATION IN CENTRAL ASIA, LESSONS ON COOPERATION BUILDING TO MANAGE WATER CONFLICTS IN THE ARAL SEA BASIN 3 (2003), <http://unesdoc.unesco.org/images/0013/001332/133291e.pdf>.

Figure 1. Water Withdrawal and Availability in the Aral Sea Basin, UNEP-GRID, 2000¹⁰



The flow in Central Asia's primary water sources fluctuates seasonally due to glacial and snow melt in the mountainous part of the region.¹¹ The seasonal variability benefits agriculture production because melting provides greater river flow during the spring months.¹² However, increasing populations and climatic changes in the region have compounded water scarcity and allocation problems. As increased atmospheric temperatures have caused glacial melting and subsequent increased peak flow earlier in the year, there is less water available during the agriculture season. Base flow is significantly higher in both Darya rivers between March and July compared with the rest of the year; Amu Darya and Syr Darya peak at approximately 4200 m³/second in June and 4500 m³/second in May, respectively (Figure 2).¹³ Between August and February, the Amu Darya's flow reduces to less than a quarter of its peak flow.¹⁴ Similarly, between July and February, the Syr Darya's flow

¹⁰ Philippe Rekacewicz, *Water Withdrawal and Availability in Aral Sea Basin*, UNEP/GRID-ARENDAL (Feb. 21, 2012), http://www.grida.no/graphicslib/detail/water-withdrawal-and-availability-in-aral-sea-basin_85d9; see also *Environment and Security: Transforming Risks into Cooperation*, at CENTRAL ASIA - FERGHANA/OSH/KHUJAND AREA 21 (2005), <http://www.grida.no/files/publications/envsec/ferghana-report-eng.pdf> [hereinafter *Transforming Risks into Cooperation*] (displaying Rekacewicz's image).

¹¹ GRANIT ET AL., *supra* note 8, at 6.

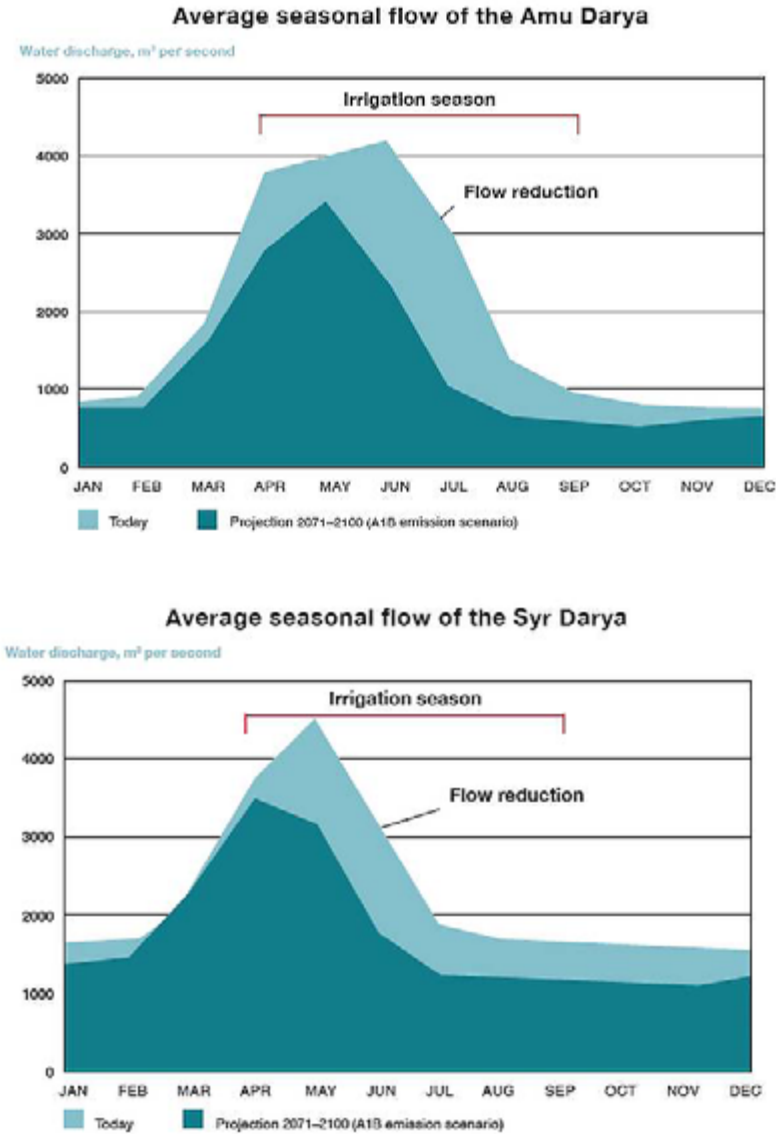
¹² *Id.*

¹³ See TRESCHER VERLAG, EXECUTIVE COMMITTEE OF THE INTERNATIONAL FUND FOR SAVING THE ARAL SEA, FROM THE GLACIERS TO THE ARAL SEA—WATER UNITES 11, 13 (Jennifer Schring & Alfred Diebold eds., 2012), available at <http://www.waterunites-ca.org/book.html>.

¹⁴ *Id.* at 11.

drops to approximately 40% of its peak flow.¹⁵ In addition, the need for water continues to grow with a growing population in Central Asia.¹⁶ As Figure 2 illustrates, flow in both Darya rivers is projected to decrease by an average 500 m³/second between 2071 and 2100.¹⁷

Figure 2. Average Seasonal Flows of the Amu Darya and Syr Darya¹⁸



¹⁵ *Id.* at 13.

¹⁶ See Viktor A. Dukhovny & Stulina Galina, *Water and Food Security in Central Asia*, in WATER AND FOOD SECURITY IN CENTRAL ASIA 1, 4 (Chandra A. Madramootoo & Victor A. Dukhovny eds., 2011) (displaying a table of population growth rate of each Central Asia nation between 1999 and 2006, as a percentage of the previous year’s population).

¹⁷ VERLAG, *supra* note 13, at 11, 13.

¹⁸ *Id.*

*b. The Impacts of Food and Energy Demands on Water
Quantity and Quality*

Stemming from regional water scarcity and inequitable water resource allocation are the issues of food security and energy security.¹⁹ The upstream countries, Tajikistan and Kyrgyzstan, have interests in increasing their water use for hydropower capacity and farming, while the downstream countries, Kazakhstan, Uzbekistan, and Turkmenistan, have interest in increasing their water use for agriculture.²⁰ Because of the semi-arid climate and low fertility of the region's soils,²¹ only fifteen percent of the region's land is arable, seventy percent of which is irrigated.²² Therefore, since only a small portion of the region's land is suitable for crop production, the region's increasing population places great environmental stress on both the land, to produce more crops, and on water resources, which do not regularly replenish due to low precipitation in a semi-arid climate.

Meanwhile, the upstream nations, which have been historically dependent on energy supply from the downstream nations, seek to increase their hydropower capacity.²³ Efforts to increase hydropower capacity have been met with resistance and hostility from downstream nations, which rely on the same water resources for agriculture that the upstream nations want to use for hydropower.²⁴ Under Moscow-developed barter agreements, the Central Asian nations exchanged water

¹⁹ Dukhovny & Galina, *supra* note 16, at 2.

²⁰ See Jeremy Allouche, *The Governance of Central Asian Waters: National Interests Versus Regional Cooperation*, in 4 DISARMAMENT FORUM: CENTRAL ASIA AT THE CROSSROADS, at 45, 49, 50, 51, 52 (2007). Tajikistan seeks to increase irrigated land and increase hydropower capacity (*supra* at 49), Kyrgyzstan seeks to "increase its hydropower capacity" and increase irrigation to be self-sufficient for its food supply (*supra* at 50), Turkmenistan wants to establish food security and expand irrigation on 450,000 ha, "reusing drainage and run-off water" (*supra* at 50), Uzbekistan has food security, but wants to increase irrigated land to be an exporter of food to "neighboring countries" (*supra* at 51), and Kazakhstan wants to secure its water supply for irrigated agriculture from waterbodies shared with Uzbekistan and China and resolve "border issues and water rights" (*see supra* at 51-52).

²¹ See OXANA S. SAVOSKUL ET AL., WATER, CLIMATE, FOOD, AND ENVIRONMENT IN THE SYR DARYA BASIN 3, 16, 17 (O.S. Savoskul ed., 2003) (discussing the Syr Darya basin's low soil fertility and characteristics that make the basin's soil poor for agricultural production without irrigation.)

²² DAVID SEDIK ET AL., REGIONAL OFFICE FOR EUROPE AND CENTRAL ASIA, FOOD AND AGRICULTURE ORGANIZATION, THE STATUS AND CHALLENGES OF FOOD SECURITY IN CENTRAL ASIA 5 (2011). Particularly, in the Syr Darya basin, fifty-five percent of the land is pasture land, eight percent is arable land and eighty percent of the arable land is irrigated. OXANA S. SAVOSKUL, ET AL., *supra* note 16, at 8.

²³ Allouche, *supra* note 20, at 48.

²⁴ *Id.*

resources for energy resources.²⁵ However, after their independence, the downstream nations “introduced world prices” for their fossil fuel resources, leaving the upstream nations with the choice of paying world prices, going without heat, or developing their own energy supply.²⁶ For example, in exchange for coal supply from Kazakhstan, Kyrgyzstan agreed to abstain from increasing its hydropower production in the winter months in order to preserve water for Kazakhstan’s agriculture in the summer months.²⁷ However, Kazakhstan has not always upheld its end of the barter agreement, leaving Kyrgyzstan to freeze during winter months without power.²⁸ To protect itself from further winters without heat, Kyrgyzstan has released water from its Toktogul dam to produce electricity.²⁹ This release of water for hydropower production has caused winter flooding of both Kazakhstan and Uzbekistan and a shortage of water for agriculture in the summer months.³⁰

Of the five Central Asian river basins, Amu Darya is the most vulnerable to depletion and degradation based on governance³¹ as well as economic,³² social,³³ environmental,³⁴ and hazards³⁵ factors. The Syr Darya and Hari Rud basins ranked equally as the most vulnerable for water stress;³⁶ both rank in the “five percent most water-scarce regions

²⁵ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 12.

²⁶ *See id.*

²⁷ *See id.* at 15 (stating that Kazakhstan was expected to provide coal to Kyrgyzstan under a barter agreement with Kyrgyzstan).

²⁸ *Id.* at 14.

²⁹ *Id.* Kazakhstan officials argue the country’s failure to deliver coal to Kyrgyzstan is due to the privatization of its coal mines. *Id.* at 15.

³⁰ Allouche, *supra* note 20, at 50; INTERNATIONAL CRISIS GROUP, *supra* note 4, at 5, 12, 14.

³¹ Olli Varis & Matti Kummu, *The Major Central Asian River Basins: An Assessment of Vulnerability*, 28 *Int. J. WATER RESOURCES DEV.* 433, 438, 439 (2012). The governance vulnerability indicator is based on the each country’s political instability index and scaled from each country’s population. *Supra.*

³² Economic vulnerability was indicated by each nation’s purchasing power parity–adjusted gross national income (GNI PPP). *Id.* at 439.

³³ Social vulnerability was determined by each nation’s “multifaceted poverty index [MPI] ... or [an] approximation” based on “the country closest to [it] in the United Nations Development Programme’s Human Development” ranking when MPI data was not available. *Id.* at 438, 439.

³⁴ “[T]he human footprint indicator ... described by WCS/CIESIN (2002)” was the environment vulnerability indicator. *Id.* at 440.

³⁵ “Hazard” refers to environmental hazard vulnerability and such vulnerability was determined using “the multihazard index of Dilley et al., (2005).” *Id.* at 440. “The index combines the total estimated impacts of the following natural disasters: droughts, floods, volcanoes, storms, earthquakes, and landslides. The total impacts are calculated according to event frequency as spatial information, weighted by hazard-specific mortalities, and then summed up.” *Id.* at 440-41.

³⁶ “Water stress” simply refers to the ratio of the amount of water withdrawn to the amount of water available. *Id.* at 438.

in the world.”³⁷ Therefore, based on the number of people that live in these basins and depend on them for food, water, and energy resources, the nations of Central Asia must collaborate to redefine their resource use policies and establish a regional framework for long-term sustainable use.

c. The Causes and Consequences of the Aral Sea's Desiccation

In addition to the quantity and allocation concerns of the Darya river's water supply for human consumption, the expansion of agriculture since the mid-20th century has turned the Aral Sea into an “ecological disaster.”³⁸ “Over the past 10 millennia, [the Aral Sea] has repeatedly filled and dried, owing both to natural and human forces.”³⁹ Since recording of the Aral Sea's water volume began in 1911, it maintained a relatively constant volume.⁴⁰ Since the expansion of Central Asia's agriculture in the 1960s, the annual withdrawal of water from the Darya rivers has continuously increased to meet growing irrigation demands.⁴¹ This withdrawal has reduced the base flows in both rivers dramatically and in turn has had an insurmountable impact on the Aral Sea.⁴² “The Aral Sea separated into two water bodies in 1987–89: a ‘Small’ Aral Sea in the north and a ‘Large’ Aral Sea in the south.”⁴³ By 2005, the Large Aral Sea further separated into three smaller water bodies (See Figure 3).⁴⁴ Taking the Large and Small Aral Seas together,⁴⁵ a report from 2007 states that since desiccation began,

[the l]ake level has fallen 23 m, area shrunk 74%, volume decreased 90%, and salinity grew from 10 to more than 100g/l, causing negative ecological changes, including decimation of native fish species, initiation of dust/salt storms, degradation of deltaic biotic communities, and climate change around the former shoreline. The population residing around the lake has also been negatively impacted.⁴⁶

³⁷ *Id.* at 441.

³⁸ Allouche, *supra* note 20, at 45.

³⁹ Philip Micklin, *The Aral Sea Disaster* in ANNUAL REVIEW OF EARTH AND PLANETARY SERVICES, 47, 47 (2007).

⁴⁰ *See id.* at 49.

⁴¹ *See id.* at 50.

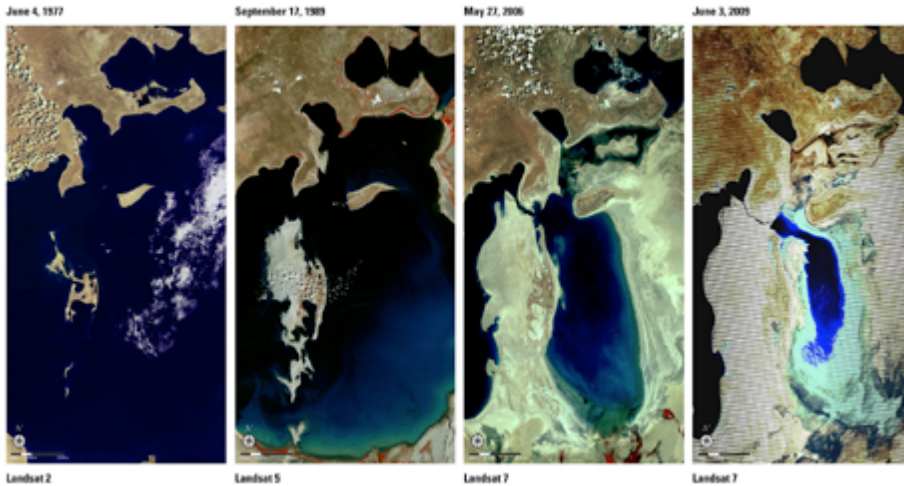
⁴² *See id.* at 47 (stating that the desiccation of the Aral Sea “owes overwhelmingly to the expansion of irrigation that has drained its two tributary rivers.”).

⁴³ *Id.* at 52.

⁴⁴ *Id.* at 53.

⁴⁵ *See id.* at 52-53 (stating that the data for sea level and volume are based on the two smaller seas taken together).

⁴⁶ *Id.* at 47.

Figure 3. Change in Aral Sea Size 1977-2009, USGS Landsat Photographs⁴⁷

As a result of the Aral Sea’s degradation, “[f]our-fifths of all fish species have disappeared and the effects on the health and livelihoods of the local population have been catastrophic.”⁴⁸ In addition, “[t]he drying of the Aral Sea has caused more extreme air temperatures (e.g., hotter summers and colder winters),” reducing the surrounding area’s annual precipitation “from 9.4 km³ in 1960 to 3.2 km³ in 2009.”⁴⁹ The quality of what little water remains is degraded due to agricultural chemical contamination and increased salinity.⁵⁰ Furthermore, the exposed portion of the seabed between the two Aral Seas has created “poisonous dust,”⁵¹ composed of dust and salt.⁵² Strong winds pick up “many thousands of tons of salt and fine dust with impurities of various chemicals and poisons” annually,⁵³ carrying them over “thousands of square kilometers of arable land,”⁵⁴ degrading agricultural productivity, and imperiling human health.⁵⁵ Further, Aral Sea degradation has had socio-economic

⁴⁷ *The Vanishing Sea*, U.S. GEOLOGICAL SURV. (2009), http://landsat.usgs.gov/images/gallery/91_L.jpg.

⁴⁸ Allouche, *supra* note 20, at 45.

⁴⁹ Behzod Gaybullaev et al., *Large-Scale Desiccation of the Aral Sea Due to Over-Exploitation After 1960*, 9 J. MOUNTAIN SCI. 538, 542 (2012).

⁵⁰ See GRANIT ET AL., *supra* note 8, at 15, 16.

⁵¹ *Id.* at 16.

⁵² Gaybullaev et al., *supra* note 49, at 544.

⁵³ L. Spivak et al., *Dynamics of Dust Transfer from the Desiccated Aral Sea Bottom Analysed by Remote Sensing*, in *ARALKUM—A MAN-MADE DESERT: THE DESICCATED FLOOR OF THE ARAL SEA (CENTRAL ASIA)* 97, 97 (S-W. Breckle et al. eds., 2012).

⁵⁴ Gaybullaev et al., *supra* note 41, at 539.

⁵⁵ O.E. Semenov, *Dust Storms and Sandstorms and Aerosol Long-Distance Transport*, in *ARALKUM—A MAN-MADE DESERT: THE DESICCATED FLOOR OF THE ARAL SEA (CENTRAL ASIA)*, 73, 73 (S-W. Breckle et al. eds., 2012).

consequences for the region's people, including "increased health risks, poor nutrition, and unemployment."⁵⁶

It is clear from the current condition of the Darya rivers, their accompanying basins, and the Aral Sea that Central Asia faces complex, long-standing environmental degradation and resource exploitation problems. While sustainable agriculture, soil conservation, and best management practices are beyond the scope of this note, it is nonetheless evident from agriculture's impact on water resources and its dependency on a continued water supply that food and water resource security are inextricably linked.

III. CURRENT EFFORTS TO REMEDIATE REGIONAL PROBLEMS

The nations of Central Asia developed a "relatively comprehensive framework" to address water scarcity and water allocation issues, consisting of political and technical authorities and subcommittees designed to handle various aspects of the regional water management problems.⁵⁷ Unfortunately, differing political and economic interests of the nations have prevented the five nations from reaching any successful multi-lateral agreement.⁵⁸ Monitoring and enforcement failures coupled with lack of trust have made bilateral agreements ineffective as well.⁵⁹

The region's current water management system is based on national water quotas that were established prior to the nations' independence from the Soviet Union in 1991.⁶⁰ In 1992, the nations officially agreed to continue using the water resource allocation established under Soviet governance by signing the Almaty Agreement, allocating larger quotas to the richer, downstream nations.⁶¹ Subsequently, Central Asia established the Interstate Coordinating Water Commission (ICWC) as the governing body to assist them in implementing their water quotas and continues to be in existence today.⁶² In order for ICWC to take action on "key issues," all Central Asian nations must reach a consensus.⁶³ The two executive bodies of ICWC, the Basin Water-Management Association (BWA) Amu Darya and BWA Syr Darya, are responsible for monitoring implementation and are authorized to modify quotas by as much as fifteen percent.⁶⁴

⁵⁶ Gaybullaev et al., *supra* note 49, at 545; *see also* Micklin, *supra* note 39, at 56 (discussing health problems resulting from dust inhalation, exposure to toxic chemical pollution, and dietary consequences as a result of lost Aral fish as a food source).

⁵⁷ *See* Allouche, *supra* note 20, at 48.

⁵⁸ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 9.

⁵⁹ *Id.* at 13.

⁶⁰ *Id.* at 7.

⁶¹ *Id.* at 7, 11.

⁶² *Id.* at 7.

⁶³ *Id.*

⁶⁴ *Id.*

Central Asia's second water management body and "supreme policy organization on water resource management" is the International Fund for Saving the Aral Sea (IFAS).⁶⁵ The current IFAS resulted from the merger of an earlier International Fund to Save the Aral Sea (IFAS) and the Interstate Council for the Aral Sea (ICAB).⁶⁶ The combined structure and purpose of ICWC and IFAS has established "a relatively comprehensive framework" to address the region's water resource conflicts.⁶⁷ "The ICWC is the technical authority, regulating and supervising the allocation of water resources and related infrastructure. The IFAS is the political authority that guides and sanctions the work of the ICWC via principles and policies agreed upon among the member states."⁶⁸

Unfortunately, this framework has been ineffective in overseeing the region's water use for several reasons. "The most important [reason for failure of IFAS-ICWC system] is that these institutions have mainly been created under the impulse of international agencies (in particular the World Bank) and states have been quite reluctant to cooperate."⁶⁹ Failure to cooperate is reflected in the inability for ICWC decisions to move forward as Central Asian nations fail to reach consensus on important decisions. As a result, the lack of cooperation is the most hindering factor to achieving equitable resource management in the region. Further, since almost all IFAS-ICWC programs or governing bodies are stationed in Uzbekistan⁷⁰ and the water quotas have remained essentially the same since Soviet reign and favor Uzbekistan,⁷¹ the remaining nations lack faith in ICWC programs' effectiveness and fairness.⁷² In addition, most of the individuals involved in management of ICWC are Uzbekistan officials, creating further distrust in the system.⁷³

⁶⁵ Allouche, *supra* note 20, at 48.

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *Id.* at 45, 48.

⁷⁰ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 7. The ICWC headquarters, BWA Syr Darya, and Scientific Information Centre (SIC) program under ICWC are all located in Tashkent, Uzbekistan and BWA Amu Darya is in Urgench, Uzbekistan. *Id.* The only ICWC body outside of Uzbekistan is the ICWC Secretariat, which is located in Tajikistan. *Id.* In addition, IFAS headquarters is in Tashkent, Uzbekistan, while "its executive committee rotates around the Central Asian countries." *Id.* at 8.

⁷¹ See Allouche, *supra* note 20, at 45 ("At independence, downstream states withdrew 82% of water (Uzbekistan withdrew 52% Turkmenistan 20%, and Kazakhstan 10%)" and "[a]greements were signed to maintain these allocations."); *Transforming Risks into Cooperation*, *supra* note 10 (displaying a graph of water withdrawal in 2000 and stating Uzbekistan withdraws fifty-two percent of total water withdrawn from the Aral Sea basin).

⁷² INTERNATIONAL CRISIS GROUP, *supra* note 4, at 1.

⁷³ *Id.* at 8 & n. 47.

Many of the officials overseeing regional water structures have been in their positions since Soviet reign and have been resistant to “new ideas or alternative opinion[s].”⁷⁴ In addition, ICWC lacks transparency of information about its efforts.⁷⁵

The upstream nations, Tajikistan and Kyrgyzstan, do not support the ICWC efforts because of the heavy focus placed on agriculture, particularly in downstream nations.⁷⁶ While having first access geographically to the waters of Amu Darya and Syr Darya, under Soviet reign the upstream nations were given significantly smaller water quotas and Moscow restricted their irrigated agriculture in order to favor agriculture in the downstream nations.⁷⁷ Any desire to increase water quotas for the upstream nations has been left unacknowledged since ICWC major decisions required consensus from all five nations.⁷⁸

Believing ICWC does not equally consider the interests of all Central Asian nations, the upstream nations are reluctant to fully support ICWC. These several well-reasoned concerns have prevented ICWC from reaching its full potential, as the nations have failed to join forces and commit politically to funding these projects.⁷⁹ Failure to reduce Uzbekistan's predominance in the IFAS-ICWC framework has been insurmountable in establishing an effective regional water management regime.

IV. SOVIET-ERA IMPACTS ON CENTRAL ASIA'S WATER MANAGEMENT AND POLITICAL SYSTEMS

The reason that the downstream nations lack faith in the system is found in the unfair emphasis on Uzbekistan economic development under Soviet reign, which continues to this day.⁸⁰ The management of the Central Asian countries under Soviet reign caused major discrepancies in economic stability, resource allocation, and political power between the upstream and downstream nations. Moscow managed the region's use of water resources by enforcing fixed water quotas.⁸¹ While Moscow provided effective enforcement of the water use infrastructure in place, the management of natural resources under the Soviet government

⁷⁴ *Id.* at 10.

⁷⁵ Allouche, *supra* note 20, at 48; INTERNATIONAL CRISIS GROUP, *supra* note 4 at 8.

⁷⁶ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 6-7.

⁷⁷ *Id.*

⁷⁸ *See id.* at 9.

⁷⁹ *Id.* at 8. In 2002, only Turkmenistan and Uzbekistan were making the agreed-upon payments to IFAS and ICWC. *Id.* at 8 n.48.

⁸⁰ Allouche, *supra* note 20, at 48.

⁸¹ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 6.

lacked concern for environmental quality.⁸² Further, despite the upstream nations' first access to the Darya rivers, Moscow "favored the downstream [nations]" for their cotton production and, as a result, placed "restrictions ... on irrigated agriculture" in the upstream nations.⁸³ "Moscow covered the costs of operating and maintaining the dams, reservoirs, canals and irrigations pumps" during Soviet management.⁸⁴

In addition to the unfair distribution of resources under Soviet reign, the Central Asian nations came to be five independent nations largely based on the boundaries drawn and corresponding names given to them under Soviet reign. The countries' national borders "were nothing more than boundary markers, and most important economic decisions were taken in Moscow."⁸⁵ According to the International Crisis Group, the Central Asian nations did not anticipate independence from the Soviet Union.⁸⁶ There was no pressure from the individuals in their boundaries to become independent nations nor was there "real history as independent nations within their current borders."⁸⁷ "Not only did none of the Central Asian states have a history of previous statehood, but also their boundaries and even the peoples for whom they were named were, to a great extent, political creations of the Soviet period."⁸⁸

"Prior to the Russian conquest, further sub-divisions, based upon clan, kinship, village or city of residence and language, were most important... . The names by which the various states are now called all existed before the Soviet period, but they did not originally denote nationalities."⁸⁹ Over the course of Soviet reign, the government played upon the existence of these subgroups to forge ethnic identities within each of these constituent republics. However, "evidence suggests that

⁸² *Id.*

⁸³ *Id.* at 6-7.

⁸⁴ *Id.* at 7. As of 1997, most of the Amu Darya's water was being used by Uzbekistan and Turkmenistan. *Id.* at 12. Between these two countries, eighteen million people rely on this water; fourteen million in Uzbekistan and four million in Turkmenistan. *Id.* at 21. Of Syr Darya's water, Uzbekistan used fifty-one percent of it and Kazakhstan used thirty-seven percent of Syr Darya water in 1997. *Id.* at 12. Thus, it is no surprise that there is suspicion over ICWC fairness with the majority of both river's water being used in Uzbekistan. "According to the 1992 agreement on water quotas, Tajikistan is entitled to" twelve percent of Amu's annual flow (nine of the total seventy-five cubic kilometers). *Id.* at 19. During Soviet era, Tajikistan had an underdevelopment of agriculture, and therefore is "vulnerable to food shortages." *Id.*

⁸⁵ *Id.* at 6.

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ MARTHA BRILL OLCOTT, JAMES A. BAKER III INST. FOR PUB. POLICY OF RICE UNIV., CENTRAL ASIA: CONFRONTING INDEPENDENCE 4 (1998), <http://bakerinstitute.org/files/2658/>.

⁸⁹ *Id.* at 5.

most of the eponymous peoples of Central Asia do not define their identities exclusively through these over-arching ethnic markers. Rather ties to clan, kin, and, in some cases, region of residence or birth are often at least as critical and sometimes even more important.”⁹⁰

Nevertheless, “[t]he Soviet- trained presidents” believed the newly declared nations were “the national homelands of the community whose name they bore.”⁹¹ In addition, “[t]hree of the five men, who were sworn in as the first presidents of these new nations ... were originally appointed by Moscow [and] [a] fourth, ... though elected by the local parliament, was tacitly approved by the Soviet leadership. All of [these] leaders were beneficiaries of the Soviet system”⁹² Therefore, these nations did not begin their independence under governing figures who understood their cultural heterogeneity⁹³ or were especially open to ideas different from those of the Soviet Union.⁹⁴

Since there was not a push for nationalism prior to independence, the leaders of the Central Asian nations stressed a sense of nationalism by emphasizing value of their respective nation’s eponymous group’s heritage. However, this stress of one clan or kin’s heritage despite the nation not being its actual homeland has caused conflicts within the nations. Minority groups are sometimes seen as threats to the respective majority group of an eponymous nation,⁹⁵ while in reality, there was never a history of conflict among the pre-Soviet clans since none were concerned with establishing geographic governance. Figure 4 illustrates the presence of at least two pre-Soviet population groups in each Central Asian nation as of 2003.

⁹⁰ *Id.*

⁹¹ *Id.* at 7.

⁹² *Id.* at 4.

⁹³ *Id.* at 8.

⁹⁴ See INTERNATIONAL CRISIS GROUP, *supra* note 4, at 10.

⁹⁵ See *id.* at 5-7 (discussing the clan politics in each Central Asian nation).

Figure 4. Map of Population Groups Distributed Throughout Central Asia, 2006⁹⁶



Central Asia’s pre-Soviet history and ethnic heterogeneity shine light on the fact that its tensions and conflicts over resources originate from poor Soviet governance. These nations face several obstacles as a result of the mess Moscow left them. However, with the appropriate resources and expertise, Central Asia can achieve water, food, and energy security. In order to accomplish these goals, Central Asia will need assistance cleaning up its environmental degradation, updating their mechanisms for water conservation, monitoring and transportation, and facilitating an open discussion involving all nations about the region’s resource needs

⁹⁶ Philippe Rekacewicz, *Population Groups in Central Asia*, (2003) UNEP/GRID-Arendal, http://enrin.grida.no/graphics.cfm?data_id=23288&country=centralasia.

V. MOVING BEYOND IFAS-ICWC FRAMEWORK AND THE ALMATY TREATY

Central Asia has the potential to establish a regional framework to equitably allocate resources. Fortunately, the nations acknowledge their shared regional identity, common ancestors from several pre-Soviet clans in each Central Asian nation, and their geographic interdependence for water and energy resources.⁹⁷ However, several economic and political barriers stand in the way of making sustainable and equitable resource use a reality.

Most importantly, the political and economic tensions stem from the strategized pre-independence boundary lines that necessitate water, food, and energy interdependency.⁹⁸ In addition, the lack of trust in the IFAS-ICWC framework has prevented current efforts from reaching their full potential. Further, Central Asian nations lack the financial, technological, or expert resource bases that are required to effectively implement and enforce a comprehensive framework. However, non-state actors are critical players in achieving sustainable and equitable resource use. Because of their noninvolvement in the region's previous political affairs, non-state actors can propose unbiased solutions that benefit the region as a whole. Non-state actors can also provide the passion and financial and technical resources needed to create a sustainable, equitable resource management system for Central Asia.

To fully understand Central Asia's vulnerability to water, food, and energy insecurity, it is vital to conduct a comprehensive analysis of the socioeconomic, political, geographic, and climatic factors that are at the core of the region's problems, and likewise, establish a comprehensive system to resolve the region's multi-faceted resource problem.⁹⁹ As Varis & Kummu so well stated, "[t]he introduction of such a high level of multidisciplinary is argued to be crucial because the vulnerability of rivers and river basins is in many ways preconditioned by governance situation, economic status, social matters, and hazard occurrence, not only the status and use of water systems as such."¹⁰⁰

VI. CURRENT NON-STATE ACTOR PROJECTS IN CENTRAL ASIA

In recent years, several other agencies and organizations have come into Central Asia to assist in water management efforts. One such organization is the United Nations Economic Commission of Europe

⁹⁷ OLCOTT, *supra* note 88, at 19.

⁹⁸ See INTERNATIONAL CRISIS GROUP, *supra* note 4, at 6.

⁹⁹ See Varis & Kummu, *supra* note 31, at 446.

¹⁰⁰ *Id.*

(UNECE). UNECE has established several programs in Central Asia to provide support in developing integrated water resource management projects, including: “Water quality in Central Asia,”¹⁰¹ “Capacity building for cooperation on dam safety in Central Asia,”¹⁰² “CAREWIB—the Central Asian Regional Water Information Base Project,” and “Strengthening cooperation on hydrology and environment between Afghanistan and Tajikistan in the upper Amu Darya River basin.”¹⁰³

While some of these projects have created regional working bodies, none have resulted in any regional or international legally binding commitment to equitable water resource management by all of the nations. For example, the UNECE Convention on the Protection and Use of Transboundary Water, which has not been ratified, would benefit the Central Asian nations “by providing a common framework for the use of the Amu Darya River.”¹⁰⁴ Likewise, “the UN Convention on the Non-navigational Uses of International Watercourses embodies the first international effort to resolve” continuous transboundary water use conflicts between nations and would be incredibly beneficial for the nations of Central Asia, yet less than half of the number of countries needed for the Convention to enter into force has “ratified, accepted, approved, or acceded to it.”¹⁰⁵ Until a legally enforceable mechanism is

¹⁰¹ Project “Water quality in Central Asia,” THE REGIONAL ENVIRONMENTAL CENTRE FOR CENTRAL ASIA (CAREC), <http://www.carecnet.org/programmes-and-activities/water-initiatives-support/project-water-quality-in-central-asia/?lang=en> (last visited Nov. 5, 2012). UNECE’s Water Quality in Central Asia project was “implemented in cooperation with the Regional Environmental Centre for Central Asia (CAREC)” between March 2009 and September 2012. *Supra*. The project helped to establish national and regional working groups with equal representation of all Central Asian nations. *Supra*. “These working groups include national experts of the ministries of water management, environmental protection, health care, and hydrometeorological services.” *Supra*. The project resulted in “a Diagnostic report and a plan of development cooperation,” two pilot projects for monitoring and information gathering on two Central Asian rivers, three seminars on permitting, monitoring, and water quality assessment, and four national water quality reports. *Supra*. “Capacities of experts and officials in the field of water quality aspects in integrated water resources management were strengthened.” *Supra*.

¹⁰² UNECE, *Projects in Central Asia*, <http://www.unece.org/env/water/centralasia.html> (last visited Feb. 8, 2014) [hereinafter *Projects in Central Asia*]; UNECE, *Dam Safety in Central Asia: Capacity Building for Regional Cooperation (phase II: 2007 - 2011)* (May 31, 2012), <http://www.unece.org/fileadmin/DAM/env/water/damsafety/DamSafetyFinalReport1206rev.pdf> [hereinafter *Dam Safety in Central Asia*].

¹⁰³ *Projects in Central Asia*, *supra* note 102.

¹⁰⁴ ENV’T & SEC. INITIATIVE & UNITED NATIONS ENVIRONMENT PROGRAM, *supra* note 3, at 77.

¹⁰⁵ Shavkat Kasymov, *Water Resources Disputes: Conflict and Cooperation in Drainage Basins*, 28 INT. J. ON WORLD PEACE, Sept. 2011, at 81, 89, 90. Uzbekistan is the only Central Asian to sign onto the Convention. See *Convention on the Law*

in place to ensure responsible water usage, the state of the region's food and energy resources will remain unsecured.

One particularly promising project currently ongoing in the region is CAREC's project entitled "Stakeholders' partnerships in collaborative policymaking: Fostering transboundary cooperation on small watersheds in Central Asia."¹⁰⁶ It acknowledges the nations' "historical, political, economic, and ecological dimensions" as factors that have contributed to the current water management system's ineffectiveness and seeks to build upon the regional working group (RWG) from UNECE's "Water quality in Central Asia" project with the incorporation of experts from several related ministries in the region.¹⁰⁷ Most importantly, this USAID-funded project will develop "small transboundary basin councils in three small watersheds that will include representatives of local authorities, experts, NGOs, private water users; development of joint transboundary action plans; implementation of three local pilot projects."¹⁰⁸

This project's integrated structure involves the right individuals by incorporating local and international experts and the local people who use the resources. In addition, this project properly incorporates the authorities already in place in Central Asia, and experts from the well-funded NGO, who have the will and knowledge needed to see the project through. In addition, the establishment of overseeing bodies at the basin level is the appropriate and necessary scale of management to ensure local problems are adequately attended to as well as keeping all water use in the same geographic confines under the same monitoring and enforcement body.

Nonetheless, these current non-governmental organization (NGO) projects have potential for only limited success, because they have failed to establish a binding agreement between the parties, making the projects vulnerable to political and economic tensions that may cause the cooperative efforts to fall apart. In addition, a regional multi-lateral agreement encompassing the efforts of all these NGO projects would

of the Non-Navigational Uses of International Watercourses, UNITED NATIONS TREATY COLLECTION, (May 21, 1997), available at http://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-12&chapter=27&lang=en#1 (last visited Dec. 5, 2012).

¹⁰⁶ *Stakeholders' Partnerships in Collaborative Policymaking: Fostering Transboundary Cooperation on Small Watersheds in Central Asia*, CAREC, <http://www.carecnet.org/programmes-and-activities/water-initiatives-support/stakeholders'-partnerships-in-collaborative-policymaking-fostering-transboundary-cooperation-on-small-watersheds-in-central-asia/?lang=en> [hereinafter *Stakeholders' Partnerships*] (last visited on Feb. 8, 2014).

¹⁰⁷ *Id.* This project is predominantly funded by United States Agency on International Development (USAID) and began in April 2012. *Id.*

¹⁰⁸ *Id.*

ensure a binding commitment of all Central Asian nations to collaborate and be equally invested in the success of these projects. Further, these international organizations and international programs have worked independently from each other on projects of varying scale and at varying stages of development, rather than integrating their expertise and efforts.¹⁰⁹ As a result, it is likely that the financial resources and man power exhausted in current efforts exceed what would be used if a working body was in place to oversee all projects and ensure their resources are most effectively allocated.

Specifically with respect to the interrelationships of water, energy, and food resources in Central Asia, these projects are focusing on the most important resource—water—but they do not give adequate attention to the related concerns over energy and food production. No project has yet to create an integrative approach to managing all three needs. Efforts to protect water quality and establish equitable water allocation must also take into account the underlying needs of energy and food resources and how the means of acquiring those resources impact Central Asia's water quantity and quality.

Therefore, with the help of an international organization (IO), the five nations of Central Asia need to engage in a multi-stakeholder conference that discusses the region's resource problems and establishes an integrated plan to overcome them. The participation of an IO will facilitate an open forum for all interested parties to express their interests, ideas, and concerns and provide the multidisciplinary expertise and information that Central Asia needs. These stakeholders can include government leaders, ICWC leaders, regional and international experts on subjects related to resource management, and NGOs currently working in the region to facilitate negotiations and transparency of information.

Since non-state actors have an outside perspective on the region's situation and lack a politically-infused agenda in the region, their assistance in creating a new regional management system will alleviate concerns of unfair advantages being given to any one nation or nations. In addition, non-state actors, in particular, international programs supported by the UN, have global support and expertise in a myriad of fields. In addition, IOs are generally comprised of passionate individuals who are genuinely concerned about the purpose of their work, as opposed to a large paycheck or political recognition. IOs are also comprised of multi-field experts who are capable of being creative, innovative and adaptive in developing projects and problem solving. Therefore, a non-state actor such as an IO can provide the multi-field knowledge, expertise, and financial resources needed to properly address Central Asia's multi-faceted resource management problem.

¹⁰⁹ Allouche, *supra* note 20, at 48.

Entering into a regional treaty and establishing subsequent implementation and enforcement mechanisms¹¹⁰ will be the most appropriate tools for the five nations to reach mutual understanding and cooperation. The ideal treaty for Central Asia must address regional water resource issues, acknowledging the interdependence between regional energy and food supply and sustaining a clean water supply. In addition, the nations need to agree to be equal participants in the restructuring process of the region's water management system and work to establish proper mechanisms for implementation and enforcement. Due to the nations' weak political and economic states and their lack of trust in one another, an IO will be crucial in organizing a regional conference, facilitating discussions needed to reach a regional agreement, and subsequently providing financial assistance in the redevelopment phase.

VII. ESTABLISHMENT OF THE INTERNATIONAL ORGANIZATION TASK FORCE

a. IO Task Force Composition

The first step to improve existing resource management in Central Asia is to assemble an international organization task force ("IO task force") of the most skilled and knowledgeable experts on transboundary resource scarcity.¹¹¹ Particularly, individuals with experience working in developing or transitioning nations with limited natural resources due to geographic and climatic factors will be advantageous. In order to cover the wide range of underlying factors, the IO task force should include one or two experts in the following, or similar, fields: engineering, economics, sustainable agriculture, environmental science, land use planning, and soil conservation.

The Environment and Security (ENVSEC) Initiative is the ideal non-state actor to establish the IO task force and collaborate with the leaders and experts of Central Asia. ENVSEC is comprised of six partnering IOs, "UNDP, UNEP, OSCE, NATO, UNECE and REC[,] ... [and] offer countries their combined pool of expertise and resources towards [the] aim" of "[p]eacefully resolving the overriding political, economic and social concerns of our time."¹¹² In addressing these

¹¹⁰ Implementation and enforcement mechanisms would include entities such as a regional court or "agency" to inspect and respond to complaints of noncompliance.

¹¹¹ Other organizations with the necessary expertise and funding needed to restructure Central Asia's regional resource management system include UNDP, UNEP, UNESCAP (in particular UNESCAP's Environment and Development Division), USAID and UNOPS.

¹¹² ENV'T & SECURITY INITIATIVE, <http://www.envsec.org/index.php?lang=en> (last visited Feb. 8, 2014).

issues, ENVSEC partners take “a multifaceted approach, including mechanisms to address the links between the natural environment and human security.”¹¹³ Most importantly, ENVSEC aids “governments and communities to identify common solutions and develop joint projects for achieving them, and facilitates dialogue and collaboration among policy makers, environmental experts, and the civil society across the borders, including national experts ministries and national agencies, as well as NGOs and research institutes.”¹¹⁴ These six IOs are well established, well funded, and apt to assist in long-term intricate efforts across the globe.

b. IO Task Force Engagement with Central Asia

To establish trust in and cooperation with the IO task force, the task force must provide an open forum to meet with ministers and ICWC experts from each nation and communicate what resources it can provide to Central Asia. While the nations have already acknowledged their need for cooperation,¹¹⁵ the IO task force should point out the multifaceted vulnerability that each nation—and the region collectively—faces if they do not collaborate. Next, the IO task force should facilitate a discussion of each nation’s interests and concerns and help the nations’ representatives to recognize their shared values, interests, and concerns. Once this preliminary meeting has occurred, the IO task force, national ministers, and IFAS-ICWC experts should broadly publicize the matters discussed and allow for a comment period. This will facilitate information transparency, increase public knowledge and interest in the regional efforts, and provide citizens with an opportunity to provide feedback and express their individual concerns.

*c. Fostering Acceptance of an Endangered Commodity Approach
Toward Regional Resource Management*

As stated at the beginning of this note, Central Asia would benefit from viewing the resources of water, energy, and food as “endangered” commodities. Because of the region’s low soil fertility and seasonal variability in water supply, the current and future Central Asian populations are dependent on the conservation of existing resources as well as on the development of relationships with more resource-abundant countries.

¹¹³ ENV’T & SECURITY INITIATIVE, *About Us*, http://www.envsec.org/index.php?option=com_content&view=article&id=60&Itemid=60&lang=en (last visited Feb. 8, 2014). “ENVSEC recognizes that the best way to address environmental and security concerns is through prevention, international dialogue and neighbourly cooperation.” *Id.*

¹¹⁴ *Id.*

¹¹⁵ OLCOTT, *supra* note 88, at 19.

In order for Central Asia to accept a resource management approach based on resource “endangerment” and to agree to a legally binding treaty, there are several points the IO task force should discuss with the regional ministers and experts before developing the implementation task force and establishing a treaty.

First, the IO task force should distribute information about the potential environmental and economic consequences from current practices of each nation and the region as a whole. Efficient use and conservation of water resources is imperative to provide regional food security and sustain an energy supply for the upstream nations, Tajikistan and Kyrgyzstan. The IO task must also stress the existing and potential causes of food insecurity and water scarcity in the region.

The IO task force should also discuss the importance of policies that emphasize survival and sustainable resource use over economic gain. Without regional cooperation, food insecurity, water scarcity and energy resource scarcity will only lead to increased tensions between nations. It is also important to stress that if military conflict were to occur, environmental degradation would follow, furthering the threat to the region’s resources and leaving nations worse off than they are currently.

Related to the issues of regional food insecurity and environmental degradation is the downstream nations’ emphasis on cotton production. Particularly in Uzbekistan, cotton is the country’s major crop and an important commodity that Uzbekistan provides in the global market.¹¹⁶ Cotton production has intensive water needs and occupies land that could otherwise be used to produce crops that can feed the region and that demand less water.¹¹⁷ The IO task force should discuss cotton production and its economic benefit compared to the food security and self-sufficiency of growing crops for human consumption. The IO task force should also compare data on the amount of water required to produce cotton to the water needed for food crops. In addition, it should consider whether increased food production is even feasible for Central Asia, given the soil capability, limited rainfall, and the impacts of climate change on water availability in the Darya rivers.

Limits on water availability are stressed because of inefficient transportation and irrigation systems and inadequate monitoring systems.¹¹⁸ “About half of all water used for irrigation [in the region] is lost en route or through filtration and evaporation.”¹¹⁹ Further, “[o]nly [twenty-eight percent] of irrigation canals were lined to stop filtration in

¹¹⁶ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 4.

¹¹⁷ *See id.*

¹¹⁸ *See id.*, at 2, 9.

¹¹⁹ *Id.* at 2.

1994,” which have only degraded since their installation.¹²⁰ The region’s failed infrastructure is arguably the most important factor to stress in favor of a regional agreement because it is the one contributor to resource endangerment that impacts all five nations and can be easily eliminated with use of available technology. Further, infrastructure improvement will have a positive impact on other endangering factors. Improvements in irrigation canals would minimize filtration and evaporation losses, allowing for greater food and energy production without increasing withdrawal from the Darya rivers. Technology to better monitor water withdrawal would establish a strong enforcement mechanism and increased accountability of water users. However, Central Asia likely cannot obtain the financial resources needed improve their current infrastructure without the assistance of an IO. For example, in 2000, one report stated that “[t]he Central Asian countries lack[ed] the funds—up to U.S. 1.6 billion—necessary to moderniz[e] irrigation systems.”¹²¹

While not all nations have the same level of endangerment for all commodities, none of the nations have a self-secured supply of food, water, and energy resources. Since significant threats to long-term resource availability, economic and political stability, and basic human survival exist to some extent in each nation, all nations will benefit from conserving and sustainably managing these three “endangered” resources. The IO task force should also stress that without a regional financial budget to assist in improving these systems, problems will only grow. Lastly, having the financial and technological resources to provide implementation assistance, the IO task force should suggest to the nations of Central Asia that if they agree to negotiate an agreement with each other and with the help of the IO, the IO will provide resources to jump start the new management system.

VIII. CONFERENCE, IMPLEMENTATION TASK FORCE, AND ESTABLISHMENT OF COMMITTEES

Once the IO task force has facilitated discussions of interests and concerns from local, national, regional, and international stakeholders and disseminated expert information to both the region’s multi-field experts and the public, the nations should plan a conference at which time the nations would enter into a regional treaty. Only IO representatives should moderate the conference because of their experience in international negotiations. The IO representatives should also allow

¹²⁰ *Id.*

¹²¹ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 2 (citing PHILIP MICKLIN, ROYAL INSTITUTE OF INTERNATIONAL AFFAIRS, *MANAGING WATER IN CENTRAL ASIA* 1, 29 (2000)).

for citizen participation in the conference to better understand their interests as well as the weaknesses and strengths of current regional water management system.

The regional treaty would establish conservation and proper allocation of water resources, acknowledging the need for sustainable energy supply and food security throughout the entire region. To provide an adequate framework to reach treaty goals, it should establish new sub-committees and programs or restructure those programs already existing. The following five paragraphs lay out a suggested system of sub-committees and programs to be declared under the treaty.

First, the treaty must create a second task force of experts from within and outside Central Asia to implement programs and projects agreed upon during the conference (“implementation task force”). This implementation task force will incorporate some of the individuals from the IO task force to ensure a politically neutral presence in the decision-making process and to provide outside perspective regarding what steps Central Asia should take to produce a long-term sustainable resource management plan. In addition, the implementation task force should strive toward equal representation of and contribution from each nation, but must first seek to obtain the regional experts with the greatest knowledge relevant to the task at hand. The implementation task force should center its efforts around increased information access and transparency between the nations and share knowledge from regional and IO experts to create a well-informed treaty. The Central Asian nations should be legally bound to cooperate in establishing regional, national, and local infrastructures.

The headquarters of committees should be distributed equally across the Central Asian nations. In addition, each committee should be composed of non-governmental experts from each nation to ensure equal participation of each nation and at least one international expert to maintain expertise with an outside perspective, who can help minimize any threat to the committee’s success should any future dispute between nations arise. These restructuring efforts of the current management system will minimize risk of corruption, increase governmental and community faith in the system, and create better monitoring. With program headquarters no longer managed by government officials from the headquarter nation, governments and communities will have less of an incentive to turn a blind eye to non-enforcement because any benefits from non-enforcement for the headquarter nation would be outweighed by the benefits from regional resource security.

The nations should agree to collaborate with citizens of each nation, government leaders or current officials overseeing water structures, and national and international experts in various related fields. They should establish integrated and adaptive management

plans and enforcement mechanisms to minimize anxiety of a long-term commitment to a particular approach or technology in the face of scientific uncertainty. This will allow representatives of each nation to reassess priorities or best management practices with time.

The creation of local grassroots groups to assist with local implementation and monitoring would increase community engagement in the system. Specifically, monitoring sub-committees should be established at the basin or watershed level to track the impacts of different water uses and to engage and educate water users about their impacts on the entire basin.

In the event of unforeseen concerns or difficulties, non-compliance, or new information that will benefit the program's effectiveness, the region should establish an enforcement cooperation program (ECP), possibly with basin-level councils as in CAREC's project entitled "Stakeholders' partnerships in collaborative policymaking: Fostering transboundary cooperation on small watersheds in Central Asia."¹²² The ECP can provide a forum for enforcement as well as for discussion of unforeseen difficulties that may arise about a nation's ability to comply. In addition, the ECP would be a sub-committee body facilitating an open exchange of expertise among nations. The ECP should also produce quarterly reports showing each nation's compliance status with the treaty requirements to provide for accountability and incentive to be a cooperative neighbor under the treaty.

Lastly, the treaty should establish a regional financial committee (RFC) to gather annual financial contributions from each country to revitalize water resources management systems. In order to conserve these resources, all nations must financially contribute to the costs of improving and expanding the existing infrastructure. In particular, maintenance of dams, monitoring equipment and improved devices that reduce evaporation risks in transport are underfunded and outdated.¹²³ The RFC should produce quarterly reports showing each nation's financial contribution and an update on the specific implementation efforts that received funding. The ECP and RFC reports should be made available to the national governments, the IO headquarters aiding in this project, and the public in order to maintain accountability and stakeholder interest in the regional framework's success.

¹²² *Stakeholders' Partnerships*, *supra* note 106.

¹²³ INTERNATIONAL CRISIS GROUP, *supra* note 4, at 2, 9.

IX. TURKEY'S CURRENT ROLE IN CENTRAL ASIA AND ITS POTENTIAL TO MINIMIZE TREATY RESISTANCE AS A POLITICAL ALLY

While the idea of a treaty that involves each country equally in the negotiation process and in the implementation of a new entity to monitor sustainable use of food, water, and energy resources sounds good on paper, there are “real-world” governmental behaviors that must be overcome before the treaty can become a reality. After the Soviet Union fell, the people of Central Asia were not pushing for nationalism. While this relative indifference towards independence may leave the Central Asian people with little objection to a new framework, the individuals in power will be reluctant to hand over some of their sovereign power without a trigger or incentive, despite the IO task force’s best efforts to persuade them otherwise.

It is possible that the national governments of Central Asia will need more than an IO task force to persuade them that a limit on their sovereignty is in each of their best interests. An ally or non-threatening entity that could assure the five nations that the treaty is in each of their best interest would aid in the treaty’s success.

As discussed earlier, the five nations’ boundaries were the result of the Soviet Union’s belief that their boundaries were previously governed by pre-Soviet clans. The clans that are the basis for the Central Asian countries’ names lack historical tensions with one another. In fact, all but Tajikistan share Turkish heritage. “Turks and Central Asia view themselves as distant ethnic kin” and all but Tajiks “speak Turkic languages as their native tongues.”¹²⁴ As a result, Turkey may be the best political ally to persuade the five nations to move forward with a regional treaty. Turkey’s cultural and ethnic ties are likely significant enough for it to be an intermediary between Central Asia and the IO task force and to work with all of the parties to reach treaty acceptance and implement establishment of the new framework.

Turkey already plays a role in Central Asia as both “a major jumping-off point for international air travel” and a provider of educational opportunities for Central Asian students, “many of [whom are] on Turkish government scholarships.”¹²⁵ In addition, Turkish entrepreneurs are largely invested in Central Asia, have created a significant number of jobs in the region, and “Turkish businessmen often play the role of intermediaries for international businesses seeking to set up operations [there].”¹²⁶

¹²⁴ OLCOTT, *supra* note 88, at 28.

¹²⁵ *Id.* at 29.

¹²⁶ *Id.* at 28-29.

Turkey has also taken great strides to unify the Turkic speaking nations politically and economically. In 1992, Turkey established “The Summits of Turkic Speaking Countries’ Heads of States’[] in order to increase solidarity between the Turkic Speaking Countries and create new cooperation opportunities among them.”¹²⁷ The presidents of Turkey, Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkmenistan attended the 1992 Summit and eleven Summits have occurred since.¹²⁸ However, Uzbekistan last participated in the 2001 Summit and Turkmenistan, which was absent from the 2009 Summit, last attended the Summit in 2010.¹²⁹ During the 2009 Summit, Azerbaijan, Kazakhstan, Kyrgyzstan and Turkey signed the Nakhchivan Agreement,¹³⁰ which “institutionalized” “the process of the Summits of the Heads of Turkic Speaking States”¹³¹ as the Cooperation Council of Turkic Speaking States (“the Turkic Council”).¹³²

The member States of the Turkic Council share “the common will ... to adhere to the purposes and principles enshrined in the United Nations Charter and the objective [to] further deepen[] the comprehensive cooperation among Turkic speaking states, as well as mak[e] joint contributions to peace and stability in its region and the world.”¹³³ They also express “commitment to the basic principles of democracy, respect for human rights, rule of law and good governance,” and acknowledge “the particular solidarity stemming from the unity of common history, culture, identity and language of Turkic speaking peoples” as the basis for their cooperation.¹³⁴

Since the institutionalization of the Turkic Council in 2009, President of the Republic of Kazakhstan Nazarbayev hosted the First Summit of the Turkic Council in Almaty, Kazakhstan, and the Summit carried the theme of economic cooperation.¹³⁵ This Summit produced

¹²⁷ *Turkey’s Relations With Central Asian Republics*, REPUBLIC OF TURKEY MINISTRY OF FOREIGN AFFAIRS, http://www.mfa.gov.tr/turkey_s-relations-with-central-asian-republics.en.mfa (last visited Feb. 8, 2014).

¹²⁸ *History of Summits*, COOPERATION COUNCIL OF TURKIC SPEAKING STATES, <http://www.turkkon.org/eng/icerik.php?no=29> (last visited Feb. 8, 2014).

¹²⁹ *Id.*

¹³⁰ Hasan Kanbolat, *Cooperation Council of Turkic Speaking States Summit*, TODAY’S ZAMAN, Oct. 17, 2011.

¹³¹ *The Second Summit of Turkic Council was Held in Bishkek*, REPUBLIC OF TURKEY MINISTRY OF FOREIGN AFFAIRS, <http://www.mfa.gov.tr/the-second-summit-of-turkic-council-was-held-in-bishkek.en.mfa> (last visited Feb. 8, 2014).

¹³² Kanbolat, *supra* note 130.

¹³³ *General Information*, COOPERATION COUNCIL OF TURKIC SPEAKING STATES, <http://www.turkkon.org/eng/icerik.php?no=31> (last visited Nov. 28, 2012).

¹³⁴ *Id.*

¹³⁵ *The Cooperation Council of Turkic Speaking States*, REPUBLIC OF TURKEY MINISTRY OF FOREIGN AFFAIRS, <http://www.mfa.gov.tr/turk-konseyi-en.en.mfa> (last visited Feb. 8, 2014).

the Almaty Declaration, which “aims at strengthening the economic cooperation between Turkic States as well as realizing international projects, settling security issues, exchanging views on social and cultural issues as well as cooperating with IOs.”¹³⁶ The Second Summit of the Turkic Council was held in August 2012 in Bishkek, Kyrgyzstan and centered around the theme of “Education, Science and Cultural Cooperation.”¹³⁷ While only two of the five Central Asian nations are members of the Turkic Council, the willingness of the upstream nation Kyrgyzstan and the downstream nation Kazakhstan to work together on a whole host of economic issues provides hope for regional collaboration in near future.

These two most recent Summits between four of the six Turkic nations, two of which are Central Asian and are on different ends of the Syr Darya, demonstrate how Turkey and its cultural connection with Central Asia have helped to strengthen the region’s economic cooperation. However, Turkish columnist Hasan Kanbolat stated that while “[i]nstitutions that will lead to the development of cooperation between Turkic countries and further trade and commerce [are] essential[,] ... what the Turkic peoples actually need is greater legal integration.”¹³⁸ In addition, Kanbolat points out that Uzbekistan’s absence from the Turkic Summits seems reflective of the nation’s determination “not to join in any organization where Turkic identity is emphasized. This attitude of non-participation is consistent with Uzbekistan’s policy of isolation and alienation under [President] Islam Karimov.”¹³⁹ Thus, it is likely that Turkey would still face resistance if it became involved in a regional treaty process with Central Asia due to Tajiks lacking Turkic ties and the absence of Uzbekistan and Turkmenistan in recent Turkic Summits.

In addition, it can be assumed that in the Turkic Council’s current form, it would never accept Tajikistan as a member State, nor would Tajikistan feel inclined to join an ethnic-based organization with which it does not share ties. Therefore, the Turkic Council likely cannot be the solution for Central Asia’s need for regional management and sharing of its water, food, and energy resources. However, having strong economic ties to both Kyrgyzstan and Kazakhstan by way of the Turkic Council, Turkey likely understands the economic interdependence of all Central

¹³⁶ Kanbolat, *supra* note 130.

¹³⁷ *Report of the Bishkek Summit*, COOPERATION COUNCIL OF TURKIC SPEAKING STATES, <http://www.turkkon.org/eng/icerik.php?no=115> (last visited Feb. 8, 2014). The member States authorities signed several agreements: the Declaration of the Second Summit of the Turkic Council, “the Agreement on the Financial Rules of the Secretariat of the Cooperation Council of Turkic Speaking States, Agreement on the Establishment of the Turkic Academy and Charter of the Turkic Culture and Heritage Foundation.” *Id.*

¹³⁸ Kanbolat, *supra* note 130.

¹³⁹ *Id.*

Asian nations. With an interest in the political and economic well-being of all Turkic states, Turkey may still be the best candidate for a non-threatening entity to try to trigger a regional agreement between the Central Asian nations and could be involved without harming Turkey's efforts with solely Turkic states.

X. AN ALTERNATIVE SOLUTION: THE REFORMATION OF CENTRAL ASIA AS ONE SOVEREIGN STATE

It is important to add that in the alternative to a regional treaty, the nations of Central Asia could very well benefit in a multitude of ways if they consolidated into one nation. Many may view this alternative to a regional treaty as implausible or over-reaching. However, the region's climatic and geographic conditions and its economic and resource instability created by Moscow governance make the five nations incredibly vulnerable. The ability of five nations to agree on how to overcome these obstacles will likely consume large amount of time, resources, man power and enthusiasm before an agreement is reached. This alternative approach does not contradict the regional treaty approach; it merely acknowledges the factors that cause reaching such a complex multi-lateral agreement to be a slow process, while the region's endangered resources will continue to be polluted, exploited, desiccated, and blown away.

It is unlikely that five nations will reach a consensus on the most appropriate methods for tackling their problems before it is too late. As history demonstrates under the 1992 Almaty Agreement, the five governments have never reached consensus on water management decisions and as a result, their water resources have continued to be withdrawn at a rate faster than the region can replenish them. If five governments cannot work together to equitably allocate water, how then can five governments reach an agreement on how to address the subsequent problems of agricultural pollution and increased salinization of water, soil degradation, decreased agricultural productivity, and poisonous dust storms? Further, how can five nations, established based on Soviet Union misperceptions of already-existing governing bodies, reach a consensus on how to improve the quality of the region's endangered water, food, and energy resources if they cannot agree on how to equitably manage them in the first place? It is argued that the Soviet Union intentionally established the nations' boundaries in such a way to make them resource interdependent, while failing to provide them with the proper infrastructure to transfer these resources to one another.¹⁴⁰

¹⁴⁰ See INTERNATIONAL CRISIS GROUP, *supra* note 4, at 6.

Turkey is certainly a crucial political ally in Central Asia and has already made great strides toward regional cooperation in economic, cultural, and educational efforts. IOs and NGOs have also utilized their supply of resources and expertise to assist Central Asia in addressing its water resource crisis. While neither an IO or Turkey can force the nations of Central Asia to agree to a regional treaty, it is likely that the five nations can reach an agreement with the support of non-state actors and political allies in the negotiation and the implementation processes. However, the historical backdrop of Central Asia's current economic and political circumstance illustrates that most, if not all, tensions between the nations arise from factors outside the people's control. Their shared sense of regional identity from their pre-Soviet ethnic ties to regional nomadic clans suggests that they could live in harmony. Moreover, sometimes government leaders act in the name of sovereignty and refuse to enter into international agreements despite citizens' interests and concerns to the contrary.

Taking after the structure of the European Union (EU), if the nations of Central Asia reformed to exist under a larger governing entity, the existing national governments could be retained for some government decision making, while delegating authority to a larger governing body to address, among other things, sustainable management of water, food, and energy resources. This type of government reformation would ease sovereignty concerns while providing resource security, increased exchange of information, and regional support among the five territories. However, further assessment into the needs and shared interests of the citizens rather than the political leaders may suggest that a government structure similar to the EU is not necessary to provide the people of Central Asia with the resource security and economic stability they need.

XI. CONCLUSION

The nations of Central Asia have serious, complex water, food, and energy availability problems that stem from several factors outside the control of the region's people or governments. The political and economic instability arising from Soviet reign did not provide a solid foundation for the nations of Central Asia to establish a successful resource management system. Inequality has existed among the nations since before they were established nations due to Moscow's grant of greater water quotas to downstream nations and its restriction of irrigated agriculture in the upstream nations to favor greater production in the downstream nations. The inequality that has continued since the nations' signing of the Almaty Agreement led to a lack of trust in the water management system and a subsequent lack of funding to enforce the regional IFAS-ICWC framework. Further, the climatic conditions of Central Asia limit crop production ability and freshwater availability.

However, the United Nations and other IOs have the ability to provide the expertise, financial and technical assistance, passion, political-neutrality and man power needed to revise the region's water management system to better reflect what is best for each nation and for the region as a whole. With the establishment of a task force of multi-field experts from within and outside Central Asia, the nations can finally have open discussions about sustainable resource management. In addition, with the assistance of international experts, Central Asia can enter into an international treaty that establishes a long-term, integrated resource management system that recognizes the interests and needs of each nation. In the alternative, international experts could aid in discussions about the merging the five nations under one national government. Further, IO involvement can ensure that information transparency and equal participation continues not only in discussing regional concerns and needs, but also in the development, implementation and enforcement of a regional resource management system. With the assistance of an IO, the nations of Central Asia have a chance to save their remaining water, energy, and food resources.