HYDRO-HEGEMONY OF THE INTERNATIONAL FUND FOR SAVING THE ARAL SEA (IFAS) IN CENTRAL ASIA

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ABSTRACT

HYDRO-HEGEMONY OF THE INTERNATIONAL FUND FOR SAVING THE ARAL SEA (IFAS) IN CENTRAL ASIA

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After the collapse of the Soviet Union, it was predicted that conflicts over water resources would be inevitable in Central Asia. However, very shortly after independence Central Asian states have mobilized and established institutional arrangements including the river basin organization - the International Fund for Saving the Aral Sea (IFAS). While this has certainly been a big step forward, international community often interpreted it as a cooperative arrangement and saw it as one of the core reasons why violent conflicts have not occurred here. It was hoped that IFAS would turn into a regional platform where riparians could come together to solve urgent issues. This also led to the further overemphasis of the role of IFAS as a sign of successful and cooperative solutions for transboundary water conflicts, which fails to look into the role of asymmetric power relations.

While the value and potential virtues of RBOs and IFAS are recognized and appreciated, it is also important to be mindful of the role of power and politics in transboundary water management. In the quest for "who gets how much water and how", more powerful states often utilize different sources of power to sustain more favorable conditions in their control over shared water. Previous studies have demonstrated how institutional arrangements may contribute to structural inequality and result in more inefficient water management, which upon accumulation may further contribute to the escalation of a conflict.

Recognizing the relation of power and hegemony, this research utilizes the hydro-hegemony concept developed by a group of scholars from the London Water Research Group (LWRG). This framework will be used to analyze the work IFAS. This paper will test the ongoing controversy around the IFAS, according to which upstream Central Asian states see it as a biased tool that serves the interests of downstream hegemons. The main goal is to answer the question of how IFAS has been hegemonized and utilized in the interests of stronger downstream riparians of Central Asia and thereby contributed to the water crisis.

The thesis will conduct a qualitative case study based on document analysis, which will look into official documents related to the work of the IFAS including information published on the official website of the IFAS, minutes of meetings, press releases, project reports as well as publications related to the IFAS on the scientific website CA WATER INFO.

Keywords: Hydro-hegemony, Central Asia, IFAS, water problems

ÖZ

ULUSLARARSI ARAL GÖLÜ'NÜ KURTARMA FONU'N ORTA ASYA'DAKİ HİDRO-HEGEMONYASI

Zhanalieva, Samagan
Yüksek Lisans, Siyasi Bilimler ve Uluslararası İlişkiler
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Sovyetler Birliği'nin yıkılmasından sonra, Orta Asya'da su kaynakları üzerinde anlaşmazlık kaçınılmaz olarak öngörülmekteydi. Ancak, Orta Asya ülkeleri, bağımsızlığından kısa bir süre sonra harakete geçtiler ve Aral Göl'ü havzası kıyıdaş organizayonun - Uluslararası Aral Göl'ü Kurtarma Fonu (IFAS), kapsadığı kurumsal ayarlamaları oluşturdu. Bu ileriye yönelik önemli adım olagelmişken, uluslararası topluluk genelde bunu işbirlikçi aranjman olarak yorumlayarak ve anlaşmazlık olmamamsının ana nedeni olarak görmüştür. IFAS bölgesel (havza) tarafların bir araya gelip acil sorunları çözebileceği bölgesel platform dönüşüleceği ümidi oluşmuştur. Asimetrik güçlerin rolünu hesaba katmada basarısız olmasına rağmen, bu aynı zamanda sınırlar arası su anlaşmazlıklarının başarılı ve katılımcı çözümlerin işareti olarak IFAS'ın rolünun aşırı vurgulanmasına/abartılmasına neden olmuştur.

Nehir havza organizasyonlar (RBO) ve IFAS'ın değer ve potansiyel tesirlerinin kabullenmiş ve değeri anlaşılmışken, gücün ve politikanın sınıraşan su yönetimindeki rolünü kabullenmek akıllıcadır. "Kime ne kadar su ve nasıl?" sorusunu araştırmada daha güçlü devletler sıklıkla, paylaşılmış su için daha fazla kendi lehinde güç oluşturmak için farklı güç kaynaklarını kullanmıştır. Önceki araştırmalar kurumsal ayarlamalar/oluşumlar yapısal eşitsizliklere ve etkisiz su yonetimi ile sonuçlanmasına hatta anlaşmasızlıkların daha da kötü duruma düşebileceğine katkı yaptığını göz önüne koymuştur.

Güç ve hegemonya ilişkilerini dikkate alarak, bu çalışma Londra Su Araştırma Grubu tarafindan oluşturulan hidro-hegemonya konsepti kullanmıştır. Bu çerçeve IFAS çalışmasını analiz etmek için kullanılacaktır. Bu çalışma, IFAS etrafında oluşan, yukarı akım Orta Asya devletlerinin alt akım hegemonların çıkarlarına çalışan araç olarak gören Orta Asya devletlerinin ihtilaflarını tartışacaktır. Asıl amaç, IFAS'ın nasıl hegemonize edildiği ve daha güçlü alt akım Orta Asya devletlerin çıkarlarına kullanıldığı ve su krizine katkı sağladiği sorusuna cevap aramaktır.

Bu tez, CA WATER INFO bilimsel web sayfasındaki IFAS ile ilgili yayınlar ile birlikte, IFAS'ın resmi web sitesinde yayınlanan resmi dokumanlar dahil olmak üzere IFAS çalışmaları ile resmi toplantı tutanakları, basın bültenleri, proje raporları ve yayınları da dahil olmak üzere IFAS'ın çalışmasıyla ilgili resmi belgelere bakacak belge analizine dayanan nitel bir vaka calışması gerçekleştirecektir.

Anahtar kelimeler: hidro-hegemonya, Orta Asya, IFAS, su problemleri

To My Mom,

Who brought me up happy

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LIST OF ABBREVIATIONS

ABBREVIATIONS

AD	Anno Domini
ADB	Asian Development Institutions
AFG	Afghanistan
AQUASTAT	FAO's information system on water and agriculture
Aral GEF	Global Environmental Facility Aral Sea
ASB	Aral Sea Basin
ASBP	Aral Sea Basin Program
BC	Before Christ
BWO	Basin Water Organization
CA	Central Asia
CAPS	Central Asian Power System
CARs	Central Asian Republics
CASA-1000	Central Asia- South Asia Power Transmission Project
CIS	Commonwealth of Independent States
EBRD	European Bank for Reconstruction and Development
EC IFAS	Executive Committee of the International Fund for Saving the Aral Sea
EU	European Union
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GWh	Gigawatt hours
HH	Hydro-Hegemony
FHH	Framework of the Hydro-Hegemony
HPP	Hydro Power Plant
ICAS	Interstate Council for the Aral Sea

ICSD	Interstate Commission on Sustainable Development for Central Asia
ICWC	Interstate Commission for Water Coordination of Central Asia
IFAS	International Fund for Saving the Aral Sea
IFC	International Finance Corporation
IFIs	International Financial Institutions
IsDB	Islamic Development Bank
JWC	Joint Water Cooperation
KG	Kyrgyzstan
KZ	Kazakhstan
LWRG	London Water Research Group
MW	Mega Watt
O&M	Operation and Maintenance
RBO	River Basin Organization
SIC	Scientific Information Centre
SIWI	Stockholm International Water Institute
SSRs	Socialist Soviet Republics
TAJ	Tajikistan
TUR	Turkmenistan
UN WWAP	United Nations World Water Assessment Programme
UN	United Nations
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USSR	Union of Soviet Socialist Republics
UZ	Uzbekistan

CHAPTER 1

INTRODUCTION

On May 20, 2016 Kyrgyzstan, one of the upstream water rich countries of Central Asia, froze its membership in the biggest regional basin organization in Central Asia - the International Fund for Saving the Aral Sea (IFAS). During the 2018 IFAS Summit, the president of Kyrgyzstan, Sooronbai Zheenbekov said that 'in its current state the Fund [IFAS] does not consider interests and demands of our country [Kyrgyzstan]' (Orlova, 2018). Calling for reform, Zheenbekov also reminded that IFAS has initially been formed as a source for financing and investing into projects in the Aral Sea basin with consideration of all members states' interests. However, since inception the IFAS has not supported any of the energy related projects of Kyrgyzstan (AKIPress, 2016).

Present research is based on the assumption that downstream Uzbekistan, Kazakhstan and Turkmenistan have not only historically been able to develop their irrigation agriculture and are fossil fuel rich, but are also the regional hydro hegemons. This has effect on the sharing of water resources. Since the Soviet dissolution these three downstream states have used different sources of their power to protect their existing water uses by overlooking the development interests of upstream Kyrgyzstan and Tajikistan.

IFAS was considered as a platform of cooperation of all five countries over problems of the Aral Sea and benefit-sharing solutions. However, the practice shows cooperative initiatives of IFAS could not follow established principles of equitable water sharing. Worse, it became a tool in the hands of hydro-hegemons.

1.1 RESEARCH QUESTION

The goal of this research is to analyze the main regional basin organization of Central Asia – IFAS. This analysis based on the hydro-hegemony (HH) theory and framework

developed by the group of scholars at the London Water Research Group (LWRG), mainly Zeitoun, Cascao, Warner, Mirumachi, Allan, Menga, and others.

Previous studies have all in one voice recognized the importance of river basin organizations as a necessary attribute of transboundary water management (Giordano & Wolf , 2003; Blumstein & Schmeier, 2017) since 'RBOs (River Basin Organizations) play an important role in adapting to changes as they manage adaptation efforts across state boundaries and different sectors' (Schulze & Schmeier, 2012, p. 229). In Central Asia, following the dissolution of the Soviet Union, new independent states have as a first step signed a regional water treaty (APPENDIX 2) and established an Aral Sea basin organization – the Interstate Council of the Aral Sea (ICAS), which has in the later years been reformed and transferred to the International Fund for Saving the Aral Sea (IFAS).

Recognizing the importance of RBOs in transboundary water management, the goal will be to find out how IFAS has been hegemonized and utilized in the interests of stronger downstream riparians of Central Asia and thereby contributed to the water crisis.

This work is based on three main points related and recognized by the hydro-hegemony theory. First, the author admits that the Framework of the Hydro-Hegemony (FHH) promotes workable insights to understand the relations of Aral Sea basin riparian states through the lens of power dimensions. Secondly, power relations play an important role in transboundary water, and different forms of power are interconnected, but not equal and static. And third, 'not all cooperation is pretty' and in some cases 'veiled cooperation' may only end up exacerbating and strengthening the conflict (Zeitoun & Mirumachi, 2008).

This thesis is inspired by the work of Selby (2013) who analyses the Joint Water Cooperation (JWC) formed between Israel and Palestine in 1985, concludes that water coordination and cooperation structures in the form of river basin organizations do not always fall under the mainstream definition of 'cooperation'. On the contrary, in some levels of power asymmetry, the role of such water structures goes further than merely establishing hegemony. In situations of extreme asymmetry, the river basin organization may end up going further and 'can distort policy priorities, and obscure and legitimize

injustices and inequities' as well as become a tool of ideological domination in the hands of hegemons (Selby, 2013, p. 21).

Sojamo (2008) claims that previous research has mainly concentrated on cooperation and conflict as two opposite dimensions have taken a rather techno-managerial approach. As the result of this approach the significance of asymmetric power is often neglected while treaties and institutions are considered as signs of cooperation. By advising to concentrate more on political interaction, author agrees with Zeitoun and Mirumachi (2008) who claim that 'not all cooperation is good, nor all conflicts are bad for successful water management' (Sojamo, 2008, p. 77).

The goal of this study is to show that while treaties, institutions and funded projects play an important role in water governance of the Aral Sea basin, yet it is important to be aware that hydropolitics in this region are dominated by hegemonic and counter-hegemonic actions. So, this study supports the importance of politics in water management.

1.2 METHODOLOGY AND OVERVIEW

The thesis will conduct a qualitative case study based on document analysis with consideration of guidance by Bowen (2009). This will mainly include official documents related to the work of the IFAS including information published on the official website of the IFAS, minutes of meetings, press releases, project reports as well as publications related to the IFAS on the scientific website CA WATER INFO. The documents will be selected based on direct relevance to the work of IFAS and will be analyzed from a hydro-hegemony perspective. The time period will include the establishment of the IFAS until 2018. The goal will be to question ideas that each analyzed document promotes in order to reveal if they carry any hidden hegemonic interests. This official information related to the meetings of the IFAS will then be compared and cross-referenced with projects that the IFAS has carried out.

Lack of integrated information regarding the IFAS itself and relevant covering institutions, limited access to analytical sources about projects and reports, a gap in academic examination of this institute from different perspectives created certain

challenges in this work. However, Kyrgyzstan's withdrawal from IFAS membership can revive the scholars' interests that, probably, will elaborate more discussion over it.

Present thesis consists of seven chapters. Chapter 2 will make a theoretical introduction to the power theory and hydro-hegemony concept as well as provide a detailed study of different dimensions of hydro-hegemony. Chapter 3 will describe the history of water problems in the Aral Sea basin in order to shed light on the origin of the current problems. In Chapter 4 this study will make a theoretical summary on the hydro-hegemony framework. Chapter 5 will explore the history of establishment of IFAS. Chapter 6 will make an analytical discussion of the role of IFAS from the perspective of hydro-hegemony concept, after which conclusion will be presented in Chapter 7.

CHAPTER 2

THEORETICAL APPROACH

Hydro-hegemony is an analytical framework that is used to describe the effect of power and hegemony on control over water in transboundary water management. Recognizing that power and politics is key to the studies on transboundary water conflicts, this framework provides a more explicit explanation of 'who gets how much water and how' through the lens of power asymmetry. In other words, more powerful states can utilize their covert and overt power to reach more favorable conditions in their control over shared water. Special emphasis is made on so-much praised cooperative transboundary water arrangements, as they are not always a sign of peaceful and effective interaction between states as they try to look but 'may be forced rather than voluntary' (Warner, Mirumachi, Farnum, Grandi, Menga, & Zeitoun, 2017, p. 2). Selby (2013) for example identifies the transboundary water arrangement in the Jordan Basin as one of 'domination dressed up as cooperation' because such arrangements enhance and justify Israel's hegemonic and inequitable standing. This chapter will try to explore and explain the theoretical foundation of hydro-hegemony theory and framework to further incorporate it to the case of basin organization in the Aral Sea basin – the IFAS.

2.1 POWER

There is no universal definition of power. The first works that try to give power a definition include the works of Machiavelli and Hobbes. Machiavelli advised his Prince to reign like a centaur (a creature from Greek mythology with the upper body of a human and the lower body and legs of a horse). This meant using the strength of a horse and the mind of a human being, which according to Machiavelli would help his Prince to win approval and sympathy of the population (Zeitoun & Warner, 2006). According to this definition power was based on fear rather than love, and included military force, violence and cunning, in which 'power is not […] a means to an end but […] the end itself' (Menga , 2018, p. 25).

On the other hand, the definition of power in Hobbes is based on sovereignty, consent and agreement with people who in their self-interest 'voluntarily confer their power on a man or assembly of men who will act in their interest, guaranteeing peace and stability' (Menga , 2018, p. 25).

In a transboundary context, power is a prime determinant that ensures the beneficial implementation of water management strategies (Zeitoun & Warner, 2006). In other words, the more powerful actor gains less powerful actor's compliance 'to do what he would otherwise not do' (Dahl quoted in (Zeitoun & Warner, 2006, p. 442)) by also exercising the 'power over him by influencing, shaping or determining his very wants' (Lukes quoted in (Menga, 2016, p. 403). However, as Cascao and Zeitoun (2010a) claim, power is not static, and its changeable nature where even a slight increase of weaker actor's position can challenge the status quo.

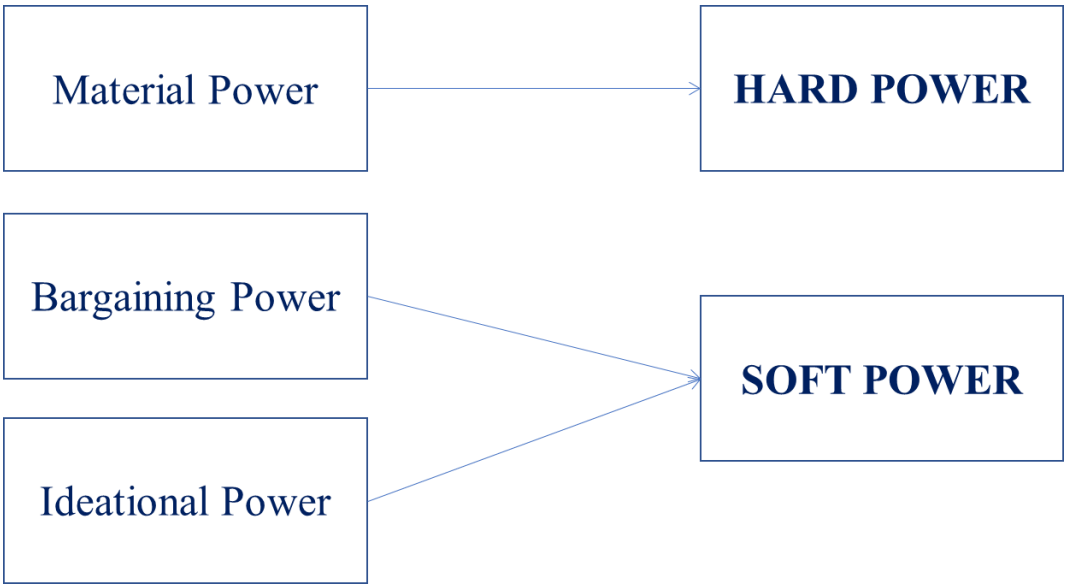

Figure 1. Three dimensions of Power and their classifications

Source: (Zeitoun & Warner, 2006; Menga, 2016)

The FHH draws on theoretical framework of Lukes (Figure 1) about three dimensions of power.

According to Lukes, the most visible form of power refers to the military and economic superiority of the state. The second dimension of Lukes' power lies with the ability to 'control the rules of the game' that means to control the decisions taken within the political agenda and negotiations between riparian states of the basin (Zeitoun &

Warner, 2006, p. 442). The so-called bargaining face of power is less visible, but as the first form of 'soft power' it can promote a leading position in counter-hegemonic configurations (Cascao & Zeitoun, 2010a). The third and most effective, in accordance to Lukes, dimension can be defined as power of 'compliance by controlling others thoughts and desires' (Menga, 2016, p. 403) . This power over others ideas or ideational power draws on the Gramscian notion of hegemony that helps to clarify how the hegemon guarantees the compliance of those they dominate (Menga, 2016).

Like power itself, there is no universal definition for hegemony, but in general it refers to domination of powerful actors both through application of hard and soft power. The most widely accepted interpretation of the theory of hegemony is the one developed by Gramsci. In his work Gramsci describes interaction between classes, state and civil society. He describes the process of how a dominating party tries to reach the ideological and cultural consent of the majority by disseminating their ideology in order to gain influence and power. Gramsci calls it hegemony when the dominant party succeeds to make sure that other classes and most of the population accepts the views and ideology of the dominant class as common sense. By criticizing the Italian Fascist state Gramsci claims that in hegemony both coercion and consent should be present, otherwise the system will be a dictatorship (Menga , 2018).

However, it should be kept in mind that not all powers are equal, and they have different levels of advantages (Cascao & Zeitoun, 2010a). While material power practices less influence over water control, the rest other two soft powers such as bargaining and ideational play a leading role in shaping the discourses in transboundary watershed. Regardless of the position of basin states, wealthier and weaker states are in position to use both hard and soft powers which will strength the position of the former and promote the counter-hegemonic abilities of the latter.

So, in brief, power is the prime determinant of transboundary water relations. Three dimensions of power categorized as hard and soft, and are always changing that may eventually challenge the status quo maintained by the hegemon. Power asymmetry regulates not only the quality of the power, but also the form and nature of the interactions between basin riparians, and consequently, the form of the hydro-hegemony that will be studied in the following part.

2.2 HYDRO-HEGEMONY

Warner, Williams and Daoudy are the pioneers in the application of the concept of hegemony in water studies (Zeitoun & Allan, 2008; Zeitoun & Warner, 2006; Zinzani & Menga, 2017). However, Zeitoun and Warner (2006) made a more structured contribution to the field of hydropolitics in 2006 when they introduced the Hydro-Hegemony (HH) concept. This concept explains hegemony over water resources as something 'achieved through water control strategies that are enabled by the exploitation of existing power asymmetries' (Zeitoun & Warner, 2006, p. 435). The hydro-hegemon of the basin settles his game through one of three water resources control strategies: resource capture, integration or containment, which is implemented through a set of hidden tactics. Therefore, applied strategy establishes hegemony either in a form of positive leadership or negative domination.

The positive HH can provide the effect of international order of stability and cooperation. However, the beneficial effects of cooperation can also hide the negative effects of power asymmetry (Mirumachi, 2007). Selby calls it 'domination dressed up as cooperation' and in situations of extreme asymmetry institutional structures may be used to 'distort policy priorities, and obscure and legitimize injustices and inequities' as well as become a tool of ideological domination in the hands of hegemons (Selby, 2013, p. 21). Other scholars denote that over-concentration on cooperation may omit the consequences of power asymmetries and bring to negative consequences instead of public good. Cooperation may also contribute to structural inequality and result in more inefficient water management, which upon accumulation may further contribute to escalation of conflict (Weinthal, 2006; Zeitoun & Warner, 2006; Zeitoun & Mirumachi, 2008).

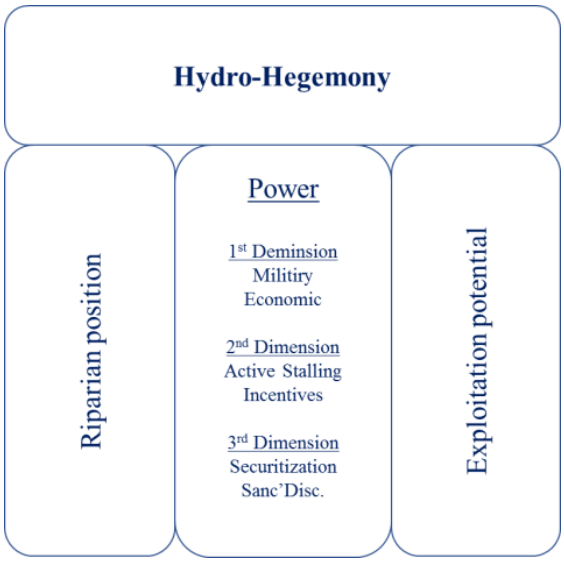

Figure 2. FHH by Zeitoun and Warner

Source: (Zeitoun & Warner, 2006)

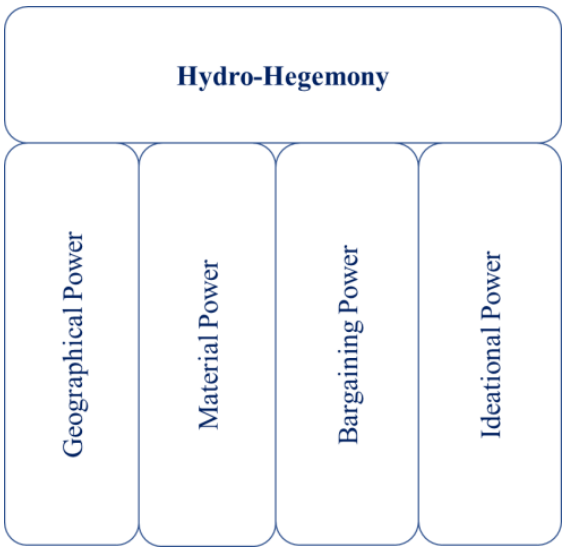

Figure 3. FHH by Cascao and Zeitoun

Source: (Cascao & Zeitoun, 2010a)

A powerful riparian is one who determines the form of hydro-hegemony - the nature of the interaction over transboundary water resources and 'to what extent the benefits derived from the flows will extend to the weaker co-riparians' (Zeitoun & Warner, 2006, p. 452). However, the power is not static and 'the status quo doesn't last forever' (Cascao & Zeitoun, 2010a, p. 30). The following analysis and the behavior of Kyrgyzstan in 2016 will demonstrate that the 'powerless' riparian can change the

hegemonic configuration in the basin through increased use of counter-hegemonic strategy.

The initial three HH pillars of Zeitoun and Warner (2006) were revised by Cascao and Zeitoun (2010a), as the result the three pillars of the former, which included the riparian position, combination of power, and exploitation potential (Figure 2), have been extended to four pillars - geographical, material, bargaining and ideational powers (Figure 3).

The following part will analyze the dimensions of power and the influence of it on the four HH pillars of transboundary water relations.

2.3 FOUR PILLARS OF HYDRO-HEGEMONY

As the previous part of the chapter demonstrated how Zeitoun and Warner (2006) from the LWRG have elaborated the hegemony theory into the Framework of Hydro-Hegemony, to which they incorporated previously discussed Lukes' three dimensions of power. Later this concept has been revised by Cascao and Zeitoun in 2010 (Cascao & Zeitoun, 2010a), where three-pillar framework (Figure 2) was extended to four pillars, which now includes: (1) geography; (2) material power; (3) bargaining power; and (4) ideational power (Figure 3).

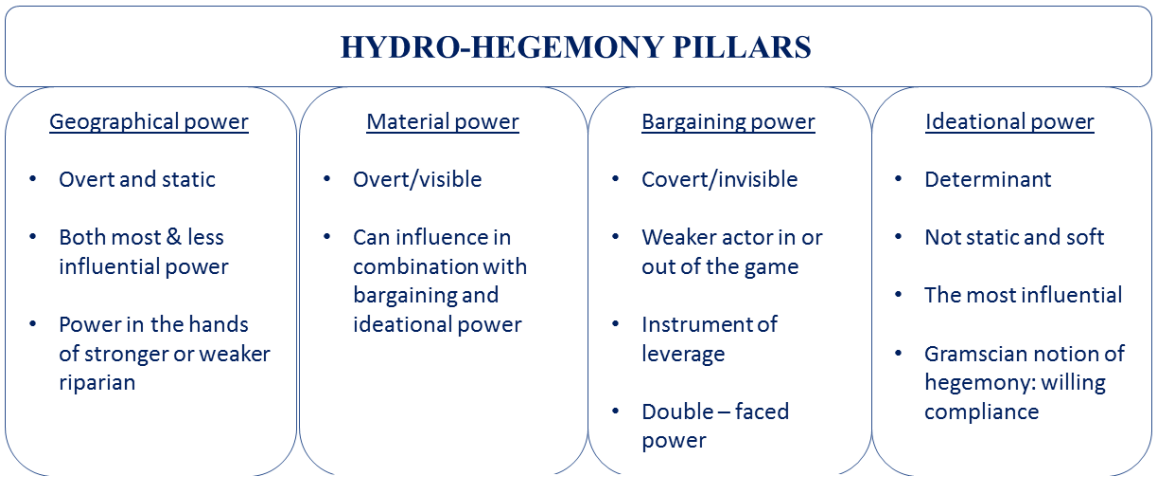

Figure 4. Main features of Hydro-Hegemony Powers

Source: Summarized by the Author based on the FHH of (Cascao & Zeitoun, 2010a)

2.3.1 Geographical power.

Geographical power (Figure 4) is the first pillar of the FHH and defines the topographic position of the riparian. The position of the state almost never changes, that makes this power stable and outside of the struggle to get better position in it (Zeitoun & Warner, 2006, p. 450). Depending on the position of the state, this power provides both the most and less influence (Cascao & Zeitoun, 2010a, p. 31). For example, advantageous position of Tajikistan and Kyrgyzstan perpetuates them as Zeitoun and Warner define the static form of coercive resource and the longest plot of the Geography Pillar (Cascao & Zeitoun, 2010a).

2.3.2 Material Power

The second pillar, *material* (Figure 4) is also visible but unlike geographic may change over time. It includes military, finances, technology, international financial and political support, as well as access to knowledge (Cascao & Zeitoun, 2010a). This power can be influential in water disputes in combination with bargaining and ideational powers. For example, the economic and military strength of Uzbekistan, as well as access to hydrological knowledge of Kazakhstan and general support of external donors make downstream countries more advantageous in transboundary water discourses of the Aral Sea basin.

2.3.3 Bargaining Power

Bargaining and ideational dimensions shape the soft power of the water management where the former seeks to achieve that needs to influence agendas and negotiations, while the latter answers to how and who makes claims questions.

So, the third pillar, *bargaining* power (Figure 4) allows both hegemons and non-hegemons to use information and knowledge to affect the negotiations, to bargain and set political agenda (Cascao & Zeitoun, 2010a). However, the definition of Lukes is less optimistic as the weaker riparian, he argues, is generally stripped from the ability to choose between 'compliance or non-compliance with the stronger party's commands' (Lukes quoted in (Zeitoun & Warner, 2006, p. 442). The Almaty Agreement signed in 1992 (APPENDIX 2) is proper a robust example to justify the argument of Lukes, since

the collapse of the USSR and international weakness of Kyrgyzstan and Tajikistan forced them to agree on inequitable water allocations with what they were not satisfied even during the times of the Soviet Union.

Moreover, this example clearly demonstrates how signed negotiations between strong downstream and weak upstream countries became ‘an instrument of leverage for the stronger side’ (Zeitoun & Warner, 2006, p. 447). The Soviet legacy of water allocation has been included to the agreement until development of a new one. However, it never happened and fixed quotas continue to be the principles of Aral Sea basin water regulation mechanism.

Bargaining power is a double-faced power resource through which the strong side will increase its power, while it will help the ‘powerless’ to get more influential positions in transboundary discourses, and by so, to change a maintained status quo (Zeitoun & Warner, 2006). By withdrawing its membership, Kyrgyzstan did not deprive the IFAS of its regional activeness but drew attention by spoiling its image of a successful cooperative tool, which has been promoted for a very long time.

2.3.4 Ideational Power

According to Lukes, the last pillar- *ideational* power (Figure 4), despite being often invisible has the most power among the four (Menga, 2016). Lukes’ famous question is - ‘is it not the supreme exercise of power to get another or others to have the desires you want them to have- that is, to secure their compliance by controlling their thoughts and desires?’ (Lukes quoted in (Menga, 2016, p. 403). This is also very similar to Gramsci’s description of powerful elite that ‘secures the willing compliance of those they dominate’ and ‘achieve intellectual and moral leadership in a way that other classes accept as common sense’ (Lukes quoted in (Menga, 2016, p. 403). Ideational power penetrates people’s beliefs and values, as the result of which ideas are legitimized and imposed as right. Uzbekistan as the vocal opponent to the development of hydraulic infrastructures of upstream states, continuously disseminates its worries related to the Rogun and Kambarata dams’ construction. Uzbekistan’s actions are mostly guided by this existential threat to its well-being of. That in some part negatively affected Tajik-

Russian negotiations and withdrawal of Russian investments from the Rogun dam construction.

CHAPTER 3

HYDROLOGICAL CHARACTERISTICS

3.1 THE ARAL SEA BASIN

The Aral Sea Basin (ASB) is a transboundary river basin that before 1960's used to be home to the world's fourth largest inland sea after the Caspian Sea, the Great Lakes in North America and Lake Chad (FAO-AQUASTAT, 2012). ASB includes almost all Central Asian Republics (CARs) (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan,

Table 1. Population and country areas in the Aral Sea Basin

	KZ	KG	TAJ	TUR	UZ	AFG	Total
Population in million	3.5[1]	3.1[2]	6.1	5.4	24.3	8[3]	49.5
Area in km^2	344 400	124 900	143 100	488 100	448 840	360 000	1 585 340
% of total area of the basin	19.9	6.8	8.1	26.6	24.5	14.2	100
% of total area of the country	12.7	59.2	99.0	94.6	95.0	37.7	n/a

Source: The table is compiled by the author based on the data from (Dukhovny & Sokolov, 2003; FAO-AQUASTAT, 2012; FAO Kabul: Klemm & Shobair, 2010; O'Hara, 2003); www.nauka.kz; www.stat.kg

[1] Data only for the two southern provinces: Kyzyl-Orda and South-Kazakhstan provinces, 2016 (www.nauka.kz). NOTE: the author specifically chose the year of 2016, the year when KYRGYZSTAN froze his IFAS membership.
[2] Data for four south provinces of Kyrgyzstan, 2016 (www.stat.kg). NOTE: the author specifically chose the year of 2016, the year when KYRGYZSTAN froze his IFAS membership.
[3] (FAO Kabul: Klemm & Shobair, 2010)

Figure 5. The Aral Sea Basin

Source: (FAO-AQUASTAT, 2012)

Table 2. Surface water resources of the Aral Sea Basin (annual runoff) in km^3 and %

Country	River basins						Aral Sea Basin			
	Amudarya (AD)		Syrdarya (SD)		Other Rivers[4]		5 CARs in ASB		TOTAL	
	km^3	%	km^3	%	km^3	%	km^3	%	km^3	%
Kazakhstan	-	-	3.3	9.02	-	-	3.3	3.18	3.3	2.79
Kyrgyzstan	1.93	2.46	27.42	75	-	-	29.35	28.32	29.35	24.78
Tajikistan	56.36	71.82	1.01	2.76	3.09	91.15	60.46	58.34	60.46	51.05
Turkmenistan	0.68	0.87	-	-	0.3	8.85	0.98	0.95	0.98	0.83
Uzbekistan	4.7	6.0	4.84	13.23	-	-	9.54	9.2	9.54	8.05
Afghanistan	14.8	18.86	-	-	-	-	-	-	14.8	12.5
Basin Total	78.47	100	36.57	100	3.39	100	103.63	100	118.43	100

Source: This table is compiled by the Author based on the data from (FAO-AQUASTAT, 2012; O'Hara S. , 2003)

[4] Murghab and Tedzhen Rivers

Uzbekistan and Afghanistan (Figure 5) with the total area of 1.58 million km^2 and population of approximately 50 million (Table 1). While Tajikistan, Turkmenistan and Uzbekistan lie nearly entirely within the basin, only two south provinces of Kazakhstan and all four south provinces of Kyrgyzstan are part of this basin region.

Kyrgyzstan and Tajikistan form the smallest part of the region that does not exceed the 15% in total. However, these two upstream countries form the main flow-generation zone by accounting about 76% of all available water of the ASB where Tajikistan generates about 60% of the total water, and Kyrgyzstan forms other 25%, consequently (Table 2). In contrast, Turkmenistan covers the largest part of the ASB (Table 1) and, therefore, becomes one of the biggest water consumer, but has the least water capacity that makes it almost entirely dependent on the water resources of upstream neighbors (Table 2) (O'Hara S. , 2000).

Geographically, the region of the Aral Sea Basin is divided in two main zones: the mountainous upstream zone and dominated by the Turan plain zone of the downstream. Therefore, continental climate of the Central Asia with hot summers and cool moist winters is experienced differently in accordance to the zone. While annual precipitation in the lowlands is between 80 and 200 mm and this arid region suffers from moisture deficit due to the high evaporation index (over 250 mm), the regions around the high Pamir and Tien Shan mountains have the rains and snows between 800 and 1600 mm and are less vulnerable to the evaporation (less than 500 mm) as there is a surplus of moisture (FAO-AQUASTAT, 2012; O'Hara, 2003).

There are a lot of rivers in Central Asia shared both within the Aral Sea basin and with neighbors from outside like China and Russia. But the Aral Sea is mainly fed by two major transboundary rivers, on which CARs depend for water supply: Amudarya on the south and Syrdarya on the north (Figure 5). Because of significance of these two rivers, historically Central Asia was referred as Transoxania, which means a land between two rivers (Amudarya and Syrdarya) (Dukhovny & Schutter, 2011).

Amudarya and Syrdarya generate 85% of annual water flows (Table 2). Other 15% of 118.4 km^2 are derived from Afghanistan and region's smaller rivers such as Murghab and Tedzhen. Another small river that used to take a part in ASB, Zeravshan, was

excluded due to its evaporation in the Kyzylkum desert near the city of Bukhara in Uzbekistan (Figure 6) (FAO-AQUASTAT, 2012).

3.2 AMUDARYA RIVER

Legend:
1 – Origins of the Amudarya River, The River Pyanj, The Pamir/Tajikistan
2 – Origins of the Amudarya River, The River Pyanj, The Bakhandarya/Afghanistan
3 – The point where the Pyanj River forms the proper Amudarya River.

Figure 6. The Amudarya River

Source: www.cawater-info.net

The Amudarya is one of the important veins of the Aral Sea Basin (Figure 6). The glaciers of Tajikistan, Afghanistan and Kyrgyzstan form the river Pyanj (Pyandzh) which after joining with the Vakhsh (TAJ), Kafirnigan (TAJ), Kokcha (AFG), Kunduz (AFG), Surhandarya (TAJ) and Sherabad (UZ) rivers shapes the proper Amudarya River in Termez (Tajikistan) (Figure 6). However, according to the research done by

Ahmad and Wasiq and the report of the Amudarya Basin Organization (Wegerich, 2008), the Kokcha river is mainly used locally and does not reach the Amudarya.

Starting from the glaciers, the Amudarya River flows 2540 km by crossing upstream countries Kyrgyzstan, Tajikistan and Afghanistan, through downstream Uzbekistan and Turkmenistan and back into Uzbekistan before finally discharging into the south part of the Aral Sea (Wegerich, 2008).

The general annum flow of Amudarya changes between 46.9 and 108.4 km^3 with an average of 79 km^3 (Table 2; (O'Hara S. , 2000)). Tajikistan produces the great weigh of Amudarya's water capacity that is equal to 56.36 km^3 and representing the 88.52% in total. Moreover, the existence of 13 multipurpose facilities with high water storage capacity in Tajikistan benefits this upstream state as a controller of almost 60% of total Amudarya basin (FAO-AQUASTAT, 2012; O'Hara S. , 2000).

3.3 SYRDARYA RIVER

The second most valuable river of the ASB is the Syrdarya River (Figure 7). The Syrdarya originates in Tyan-Shyan Mountain which feeds the Naryn River. Another main source of the Syrdarya is also formed in Kyrgyzstan, but in the Ferghana Valley through the river Karadarya. The proper Syrdarya River is shaped after the confluence of Naryn and Karadarya rivers in eastern Uzbekistan. Then the river flows into Tajikistan, re-enters Uzbekistan and gets Kazakhstan before discharging in the northern Aral Sea (FAO-AQUASTAT, 2012; O'Hara S. , 2003; CAWater-Info).

Although the Syrdarya is the longest river of the ASB (3019 km), it produces half that of the Amudarya river's volume. As Amudarya, Syrdarya's discharge depends on annual precipitations too and may vary from 21.4 and 54.1 km^3. So, the approximate annual run-off of Syrdarya is 37 km^3, the 27.42 km^3 of which is shaped in Kyrgyzstan. Kyrgyzstan forms the biggest pie of water contribution to the Syrdarya Basin, but 22.33 km^3 of it transits to Uzbekistan who allocates 10.53 km^3. Almost equal situation is experienced with water flow by Kazakhstan. Only Tajikistan allocates as much as produced (FAO-AQUASTAT, 2012; O'Hara, 2003).

Similar to Tajikistan, Kyrgyzstan is also the water-surplus upstream state. Moreover, the facilities built by the Soviet administration extend Kyrgyzstan's capacity to use and store the water to fill the gap on national needs. Nine water reservoirs, including three major dams (> 0.1 km^3), allow to storage about 22.3 km^3 (FAO-AQUASTAT, 2012).

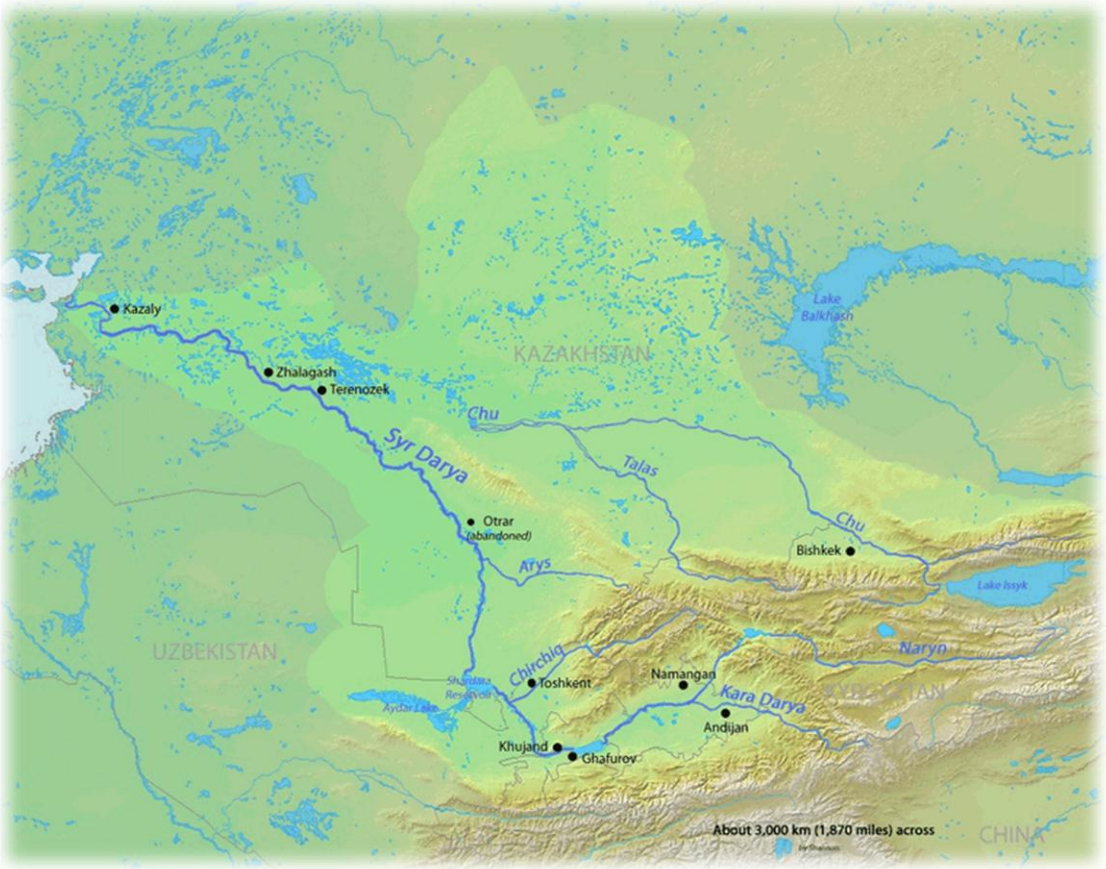

Figure 7. The Syrdarya River

Source: www.cawater-info.net

CHAPTER 4

HISTORY OF WATER PROBLEMS IN THE ARAL SEA BASIN

> It is a sad settlement – Muynak. It once lay in the spot where the beautiful, life-giving Amu Darya flowed into the Aral Sea, an extraordinary sea in the heart of a great desert. Today, there is neither river nor sea. In the town the vegetation has withered; the dogs have died. Half the residents have left, and those who stayed have nowhere to go. They do not work, for they are fishermen, and there are no fish… If there is no strong wind, people sit on little benches, leaning against the shabby and crumbling walls of their decrepit houses. It is impossible to ascertain how they make a living… They are Karakalpaks.
>
> (Kapuscinski, 1994:261-262)[5]

4.1 WATER MANAGEMENT IN ANCIENT CENTRAL ASIA (ANCIENT CENTRAL ASIA – 1860)

Often availability of natural resources plays an important role in historical development. Therefore, water is a gift of nature, which has given birth to and has become the center of progress. This relationship between water and life often has given rise to various civilizations and states. Similarly, the history of Central Asia, which dates back to 200 000 years, was born in the areas where main rivers of the Aral Sea basin originate. This includes the northern territories in the valleys of Syrdarya river in Kyrgyzstan and the valleys of the Vakh river in Tajikistan. The traces to existence of primordial people in these territories are a proof to this (Dukhovny & Schutter, 2011).

There is limited data regarding detailed trajectory of historical events in this region, however, according to investigations, geology and climate of the Aral Sea basin have always been very dynamic that in turn affected the Aral Sea and its main rivers: Amudarya and Syrdarya (Ashyrbekov, 2003; Gulyamov, 1957; Dukhovny & Schutter, 2011).

[5] The memories of Polish journalist in Weinthal, E. (2002:2). *State Making and Environmental Cooperation: Linking Domestic and International Politics in Central Asia*. London, England: The MIT Press)

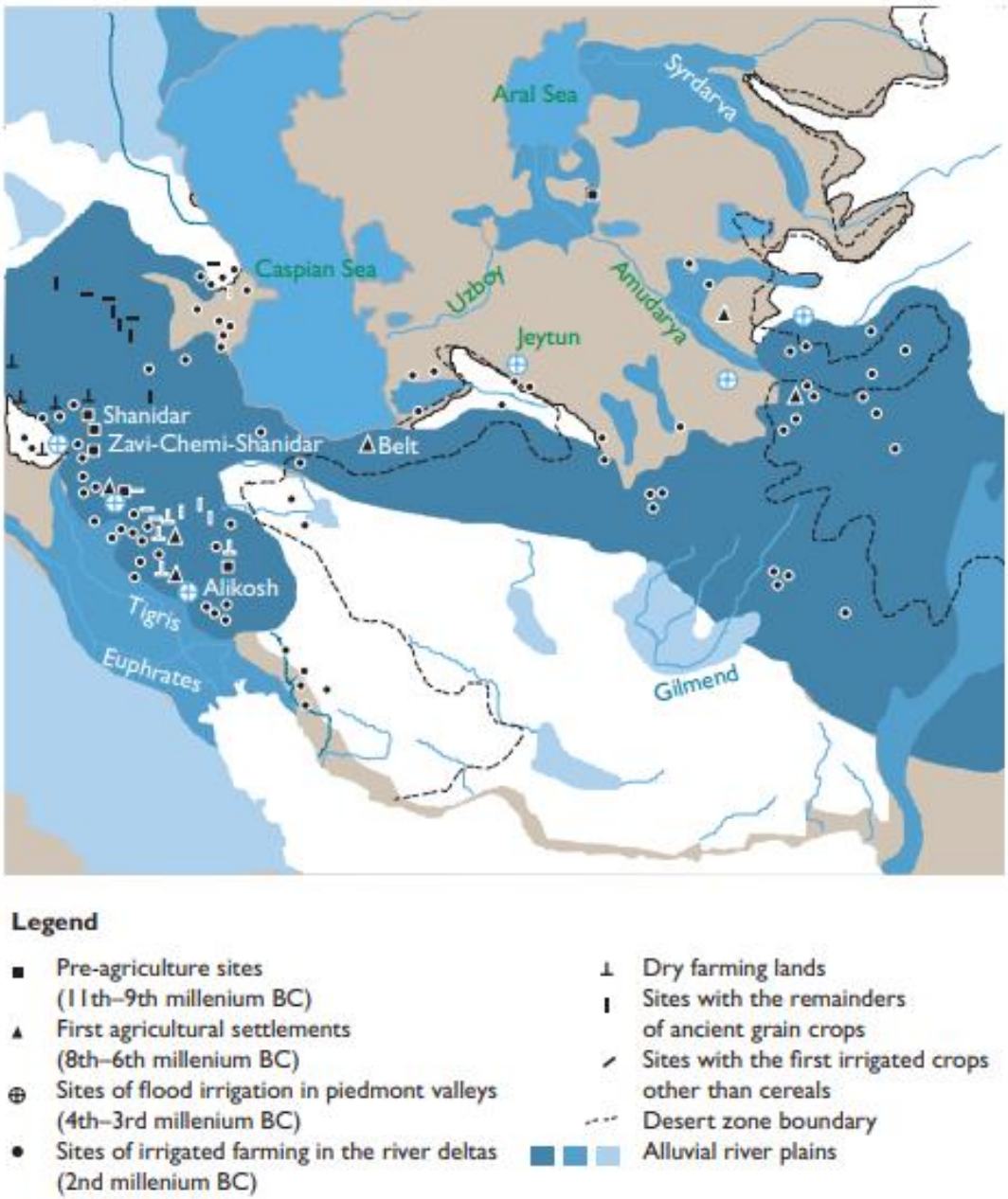

Figure 8. Map of ancient agricultural centers in Central Asia and Asia Minor according to Vavilov (1967)

Source: (Dukhovny & Schutter, 2011)

At the period when the Aral Sea was part of the Caspian Sea, the first settlements and first traces of primeval agriculture were found near mountains and mountain hills with favourable conditions dating back to 10-8 centuries BC (Dukhovny & Schutter, 2011).

Later when the two seas separated and the Aral Sea level decreased from 72-73 m to 63-64 m, new settlements have formed who had primitive irrigation system (based on mountain brook) in the period between 8-6 centuries BC (Ashyrbekov, 2003; O'Hara S. , 2003). However, the shift of mountain brook irrigation to flood irrigation led to active use of irrigation system towards the end of 4th century of BC (Figure 8). The remnants of granaries of ancient houses in the South of current Uzbekistan are evidence of this (Dukhovny & Schutter, 2011).

In the second half of the second century BC people gradually switched to sedentary lifestyle and settled in the territory of current southern Uzbekistan and Turkmenistan. Sedentary lifestyle contributed to improvement in irrigation system. For example, in the territories downstream of Amu Darya in the ancient Khorezm the length of canals reached 2,5 km and was 2-3 m wide (Table 3).

Main developments of irrigation system started during the iron era. Farmers have learnt how to build irrigation water-storage pools and to manage main riverbeds (Table 3). However, the peak of irrigation development took place between 4th century BC and 18th century AD with the birth of cities and states. The first dams were built in Khorezm, Zaravshan and Surkhandarya, which allowed for construction of irrigation canals with the length up to 100 km and width of up to 30 m (Dukhovny & Schutter, 2011).

State played an important role in the development of irrigation system because the main characteristics of a strong and civilized state in Transoxiana were fertile land and a strong army. During Zoroastrianism water was regarded as holy by the state, and since water was considered as a living thing, it could not be owned by anyone. Water was perceived as a common resource, which could be used equally by everyone yet limited to use for drinking and irrigation. And only magicians could become vigilant protectors of water who managed proper water use (Dukhovny & Schutter, 2011).

Table 3. Chronology of irrigation development in Central Asia

Period	Canal	Location of water intake structure	Type of irrigation	Dimensions of canals	Idle section of canal	Remarks
Old Stone Age, 6000 to 8000 BC	Jeytun (Turkmenistan) Tutkaul (Tajikistan)	On small rivers in piedmont valleys	Mountain creek type of irrigation (primitive forms of basin irrigation)	0.2 km long and 0.5 m wide	No	
Old Stone Age, 5000 to 3000 BC Bronze Age 3000 to 2000 BC	Geoksur, Annau (Turkmenistan) Dahistan (Turkmenistan) Chust, Dalverzin (Ferghana) Murgab (Turkmenistan)	On small rivers in piedmont valleys Distributary channels in deltas	Seasonal liman flooding	1 km long and 0.5 m wide	Only near a river	Riverbed flanked by levees
Early archaic irrigation systmes	Amirabad (Khorezm) Murgab (Turkmenistan) Katadian (Tajikistan) Otrar (Kazakhstan)	On tributaries Appearance of karezs	Seasonal liman (basin) irrigation	Up to 20 km long and 20 m wide	Available	Construciton of small dams or karez

Kangay period: second half of the first millennium BC	Chermen-Yab (Khorezm) Varahsha (Bukhara) Merv (Turkmenistan)	In deltas of large rivers (with dams, multihead water intake structures in deltas)	Seasonal liman (basin) irrigation with use of water-storage basins in former riverbeds; controlled former riverbeds	Up to 60 km long (20 km on average) and 10-30 m wide	Available	
Kushana period: the first half of the first millennium AD	Gavhore (Khorezm) Zang (Surkhandarya) Dargom (Zarafshan)	Multihead water intake structures in deltas of large rivers. One water intake structure in the upper and lower reaches of rivers	Regular basin irrigation with water delivery by gravity canals	Up to 100 km long and 20-30 m wide	A deep idle section at the beginning	Construction of dams
Second half of the first millennium AD	Kyrgyz (lower reach of Amudarya) Otrar (lower reach of Syrdarya) Sultan Bent (Merv) Sokh (Ferghana)		Regular basin irrigation with use of regulator on distributors	Branched systems	Available	Intensive development of irrigation science, dams on the Daryalyk, canals were lined with stone

	Dargom (Zarafshan)					
From the first half of the ninth century until the fourteenth century	Shamurad (Khorezm) Nurata (Uzbekistan)	Construction of large barrages with water intake facilities (Han bandy)	Regular basin irrigation with use of diversion weirs	Branched systems with distributor	Available	Interbasin canals (Eskitya Tartar Eskiangor and others)
From the fifteenth century until the eighteenth century	Palvan-Ata Hanka-Arka (Khorezm)	Multihead systems ‘saka’ on large rivers	Wide use of chigirs on distributor; regulators		Available	Construction of drainage canals

Source: (Dukhovny & Schutter, 2011, pp. 78-79)

Understanding of water use has changed with the arrival of Arabs to Central Asia in the 7th century AD. Rules within Zoroastrianism have gradually integrated with the principles of Islam, which also related water to a divine attribute, however the idea of water owner has emerged. In accordance with the glorious Quran earth belongs to Allah and a state (in the face of sultan) is a shadow that acts on behalf of Allah, so it is the only owner of land and water (Dukhovny & Schutter, 2011). So, the state played the role of the main mirab (manager of water) and the sultan controlled water use and decided on matters related to irrigation water distribution. As the result the state of Transoxiana was the only authorized body that was in charge of water supply, regulation, construction and protection of irrigation facilities, protection of water resources as well as mobilization of population for community water works (Dukhovny & Schutter, 2011; Gulyamov, 1957; O'Hara S. , 2003).

In addition, the state had a strict system of water regulation, so people's lives depended on the amount of allocated water. At that time already water has become a tool of dominating the poor and manipulation (Gulyamov, 1957). Places with low or absent water allocation due to political or other reasons did not develop and grow into cities, which resulted in gradual abandoning. For example, Khanabad that was a flourishing city has turned into a desert in the beginning of the 19th century after khan (translated from Turkic language as leader) Sayid Mehammed became dissatisfied with rebellious Turkmens from Khorezm and stopped water flow to this city. Every disobedience of Turkmens was punished by blocking of water flow, which resulted in drying up of the crops (Agekhi quoted in (Gulyamov, 1957)).

Yet water has not always been subject to conflict- there are cases in history when water has united states instead of dividing them. Transoxiana was divided into small independent domains, however in economic activities they acted as a whole. Regardless of priorities in activities, every city took a vigilant care of irrigation systems and water in general (Dukhovny & Schutter, 2011). There was a common control system, in which every actor had an important role, which was under control of people and the state itself. As it was mentioned earlier, the head of state acted as the main distributor of water- *the chief mirab*. His decisions and orders defined the route of canals, regimes of water releases as well as construction of canals and dams. All the water plans have been discussed with mirab engineers who were also called 'engineers of the khan' among people. Khan appointed mirab engineers whose wages were paid from the treasury. These

were well-educated and experienced specialists, experts in mathematical calculations. Their main task was to guide and consult construction of big canals and ‘kazu’ (kazu in Turkic language means to dig) (Figure 9) (Dukhovny & Schutter, 2011; Gulyamov, 1957).

Senior mirab also had an important position in the khanate. Similar to mirab engineers, senior mirab was appointed by khan and paid from the treasury. He was responsible for regulation and control of the state’s main canals. The activities of mirab engineers and senior mirabs were different from ordinary mirabs who were responsible for regulating water at the local level. Local mirabs were elected by people and upon recommendations of senior mirab. They were not paid from the treasury but were compensated by people based on quality of their work. This compensation came in the form of part of collected crops known as Kipsen or Mirabon, the amount of which depended on the quality of mirab’s work (Dukhovny & Schutter, 2011; Gulyamov, 1957; Middendorf, 1882; O'Hara S. , 2003). In the essays of Middendorf about the Ferghana valley local mirabs (also called mirab-bashy and kok-bashy, in which ‘bashy’ is translated as the head) were described as honorable and respected people whose work was founded on honesty (1882). However, Gulyamov presents a different side of mirabs, which contradicts with the former opinion of Middendorf (1957). According to Gylyamov (1957) people living in ancient Khorezm hated mirabs for their greed, bribery and racketeering. Water was often source of people’s welfare and its absence or limited availability had negative effect on agriculture. Because of this, by all means people tried to please mirabs to sustain water flow. The following saying describes attitude of people towards mirabs - ‘praying at the riverbank is forbidden because mirab stepped on it and his feet made this place dirty’ (Gulyamov, 1957).

To a lesser extent, the water management responsibilities also had been carried out by Ariq amin, the responsible person for secondary or tertiary canals (Note of the author: ariq means small water canal that lies inside the community). Similar to senior local mirabs, Ariq amin was elected and paid by peasant farmers. The following members of the water management system had been appointed for canal construction and maintenance works.

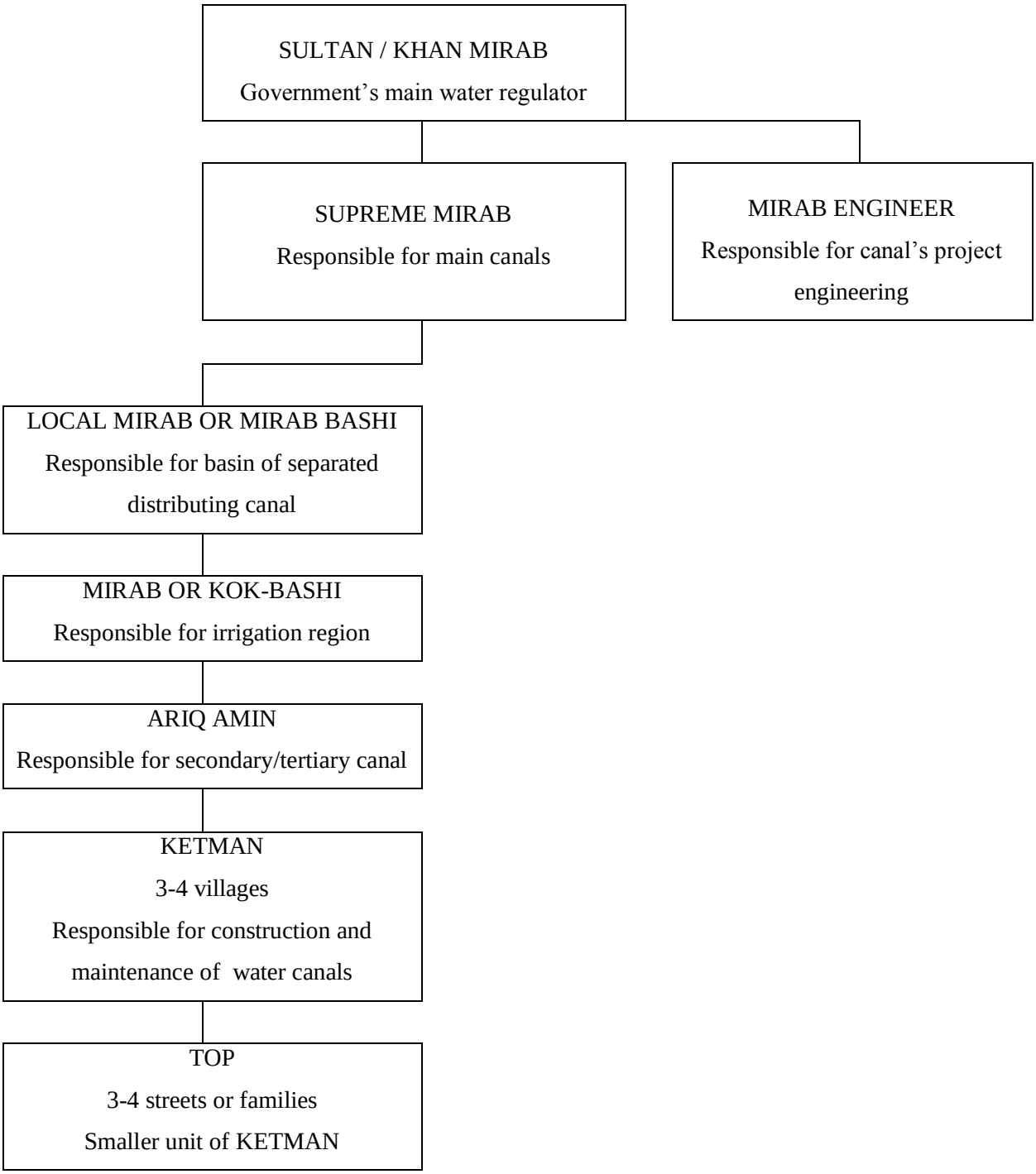

Figure 9. The Water Management Structure in old Central Asia between IX and XIX Centuries

Source: The table is done by the author based on the data taken from (Dukhovny & Schutter, 2011; Gulyamov, 1957; Middendorf, 1882; O'Hara, 2003)

Ketman, an association of water users of three or four villages, and Top, smaller units of three or four streets or families, had been the main man power in Khoshar or Hashar, so-

called method of people's construction. Khoshar is a form of voluntary public work that mostly was used for construction, maintenance and annual cleaning of water infrastructure (Dukhovny & Schutter, 2011; O'Hara, 2003).

Arrival of Arabs in Central Asia has not only contributed to the spreading of Islam but also played an important role in the birth of science and culture, and in particular to the development of irrigation culture. Different irrigation systems existed here before 7th century AD, which were based on traditions and customs. However, the system of regulating land and water relation was absent. While the population followed the customs, absence of a legal base led to conflictual relations over water disputes. After studying the area, Arabs have developed the first water code in the middle of the 9th century AD called the 'Book of canals'. Water was God's gift so subject to common use on equal basis. Irrigation water quantity has been modified from equal share in the middle of 9th century AD to a proportional distribution towards the 10th century AD. The order of users was established based on a draw. Unauthorized increase in water quantity was a crime, which led to the status of thief Suv ovri (water thief), which had lifelong effect not only for the thief but for the whole family and descendants (Dukhovny & Schutter, 2011).

The main rules and practices recognized fair and mutual rights on precious resource: water was released via irrigation canals for a certain time. During seasons of high-water rules related to water release were not as strict because it was in abundance (Dukhovny & Schutter, 2011).

The water code the 'Book of Canals' became the first book on proper water use, the principles of which were in line with laws of sharia. This code has been lost but the works of Arab water scientists have been recorded by the Arabic historians and geographers such as Mukaddasi, Al-Biruni and Yakut (O'Hara S. , 2000).

The system of legal water distribution developed by Arab scientists that was successfully applied in ancient Central Asia was later adopted by the Soviet administration in matters of water and land use (Dukhovny & Schutter, 2011).

To sum up, water has been an important part of life from time immemorial. However, for inhabitants of Khorezm, Transoxiana and Turkestan it was important not only for existence but also as part of moral values. Water was worshiped as well as protected and yet it was available to all on equal basis. Because water was the main sources of state

development and prosperity its rational use was under centralized control. The state leader played the role of the chief mirab and was the main person in charge of this God's gift. However, historical evidence shows that this gift was also used for punishment and manipulation. Often political disputes between states and regions were solved by destruction or damming of canals. Traditional water management system successfully used before the middle of the 20th century was replaced by the Soviet management, which will be discussed in detail in the following chapter.

4.2 WATER MANAGEMENT DURING TSARIST RUSSIA (1860-1917)

Water and its richness were the vocal reason why Russia turned its attention to the Central Asian lands (Dukhovny & Schutter, 2011). Despite first failures, Tsarist Russia succeeded to expand its dominance in what was called Turkistan, Khokand and Khvia Khanats, as well as in Bukhara Emirates of Central Asia between 1860 and 1881s (Dukhovny & Schutter, 2011; Spoor, 2007).

Water and irrigation system were the essential attributes to cotton production, a so-called 'white gold' that Russia was looking for. Cotton was one of the crops already cultivated and exported to Russia from Central Asian region in 19th century before it was recognized by the Russian Empire (Spoor, 2007; Wegerich, 2008). However, as Spoor (2007) stressed, cotton production before Russian Empire's presence was carried out in environment friendly manner, in which balance within grain and fruit production system.

Changes brought in by the Tsarist Russian conquest didn't happen overnight. Traditional water management, studied in previous chapter, was hardly affected and mirab system continued to be implemented (O'Neil, 2003). Nonetheless, factors such as the civil war of US between 1861 and 1865, population growth, the development of textile industry, and especially the extreme 1891drought in Russia forced the Russian Empire to re-examine its Oriental politics (Dukhovny & Schutter, 2011; Wegerich, 2003). By increasing its self-sufficiency in cotton production Tsarist Russia was determined to free itself from American cotton dependence (Abdullaev & Rakhmatullaev, 2013).

The large-scale cotton production was reached by following four main stages. First, this includes the water-land reforms that were announced by Alexander II in 1886, according

to which 90% of land plots belonged to the Tsarist Russia and leased to peasants. On the one hand, this weakened the land aristocracy, which was the main potential enemy; on the other hand, the rent of newly gained lands was paid to the royal family. Water also became the property of the Empire, but because it has continued 'in accordance with the established local customs', there were no sufficient changes in use (Dukhovny & Schutter, 2011, p. 103). Thus, historical division of land and water became the tool of centralized coordination.

Second, in order to fulfil the 'cotton first' politics, food crops were replaced by cotton crops (Wegerich, 2003). Due to the limited funds (Abdullaev & Rakhmatullaev, 2013) the Tsarist Empire was not focused on increasing the cotton production through enlarging of new irrigated plots, but has planned to achieve it through utilization of available soils. Therefore, more than 50 per cent of cultivated area has shifted for cotton production (Wegerich, 2003). Spoor substantiates Wegerich's statement by pointing out that 'before October Revolution […] production of cotton in Central Asia was reasonably balanced with grain and fruit production system' (Spoor, 2007, p. 56). Solely, better lands with consequently developed irrigated system were reserved for 'white gold', while marginal soil was used for rain fed grain production (Spoor, 2007). However, this caused the total vanishing of summer grain cultivation. As the result, the decrease of plants of food crops decreased the food sufficiency of Central Asia and made it totally dependent on Russia (O'Neil, 2003). Moscow's ambitions are clearly traced in the speech of Krivoschein done in 1912:

'The present development of cotton plantation can and should be intensified still further by means of further reduction in the quantity of grain crops plated on irrigation land. .. Every extra pood of Turkestan wheat means extra competition for Siberian and Kuban wheat; every pood of Turkestan cotton means competition for American cotton. Therefore, it is better to give the territory imported wheat – even at extra cost – but to make irrigated land available for cotton growing' (Wegerich, 2003, p. 249).

Third, Russian Empire has introduced a system of cheap credits to cotton production to make it more attractive and favourable for farmers (Wegerich, 2003). Fourth, the last strategy of Russia was to increase the price for imported cotton in order to enforce people to grow more cotton (O'Neil, 2003).

So, in the five decades Central Asia became Russia's major cotton producer by generating 246 000 tons of cotton (Baffes, 2007) that contributed Russia's total cotton industry by almost 50 per cent in 1910 (O'Neil, 2003). Although, the Tsarist Empire still depended on 'cotton belt', it has 'successfully' colonized Central Asia as a cotton producing area and turned it into a so-called 'cotton basket'.

4.3 WATER MANAGEMENT DURING USSR (1917-1991)

The emergence of Soviet Union, which overthrew the Tsarist Empire in 1917, has fundamentally changed colonized Central Asia. Transformation of every aspect of the traditional life had controversial results. On the one side, the Soviet regime brought a new level of life to local communities. However, on the other side, the 'deserts bloom' strategy of the Soviet Russia became the environmental disaster of XXI century.

The Trojan horse has been camouflaged by 'good' intentions such as the development of electrification, centralized irrigation systems and improvement of the labour conditions. Gulyamov, by supporting the politics of the Soviets, argues that Lenin's 'Decree on the Allocation of 50 Million Rubles for Irrigation Works in Turkestan and the Organization of such Works' was very important document that reflected how the Soviet administration understood the needs of Central Asia (Gulyamov, 1957, pp. 269-270). Therefore, the intensive soft 'conquest' of the territory laid around Amudarya and Syrdarya rivers started with the construction of hydrotechnical facilities and new large irrigation canals whose operation and maintenance (O&M) was carried out by the Soviet government (Dukhovny & Schutter, 2011).

The 1922 water-land reforms ceased the traditional water management and made the water and land the common resources for 'the benefit of all' (O'Hara, 2000; O'Neil, 2003). Although, all resources were open to access, they were politically and economically 'subordinated to the Central Authority in Moscow and to the greater interest of the Soviet Union' (Wegerich, 2004). Moreover, all water governmental bodies within Soviet Central Asia were mainly developed to fulfill the plans (Wegerich, 2004) and rules of the Center (Renger quoted in (Wegerich, 2004)). Center is used to refer to the headquarters of Soviet government, which was in Moscow. For example, water and melioration associations established between 1919 and 1920 years were responsible for

O&M of existent irrigation canals, while field development, engineering and construction of new large-scale irrigation canals were under the duty of the Center (Dukhovny & Schutter, 2011). As Renger claims, the similar system of management also applied to the high-ranking water officer. As an 'extension' of the Soviet Ministry of Land Reclamation and Water Management', the role of ministers of CARs was limited to the data provision, but excluded decision-making (Wegerich, 2004). This was done to make sure that all decisions regarding natural resources were taken by Moscow only (O'Hara, 2000) with concentration on the increase of cotton production (Abdullaev, Giordano, & Rasulov, 2007).

Cotton production reached its peak under the Khrushchev's 'virgin land' project and the beginning of the 'hydraulic mission' (Wegerich, 2003; 2004; Abdullaev & Rakhmatullaev, 2013). Khrushchev has promoted the increase of cotton growth in the colonized Central Asia by building of multifunctional water dams and reservoirs (Table 5) and other hydraulic structures 'with the strong support from Moscow in terms of technical resources and expertise' (Abdullaev & Rakhmatullaev, 2013, p. 8). The

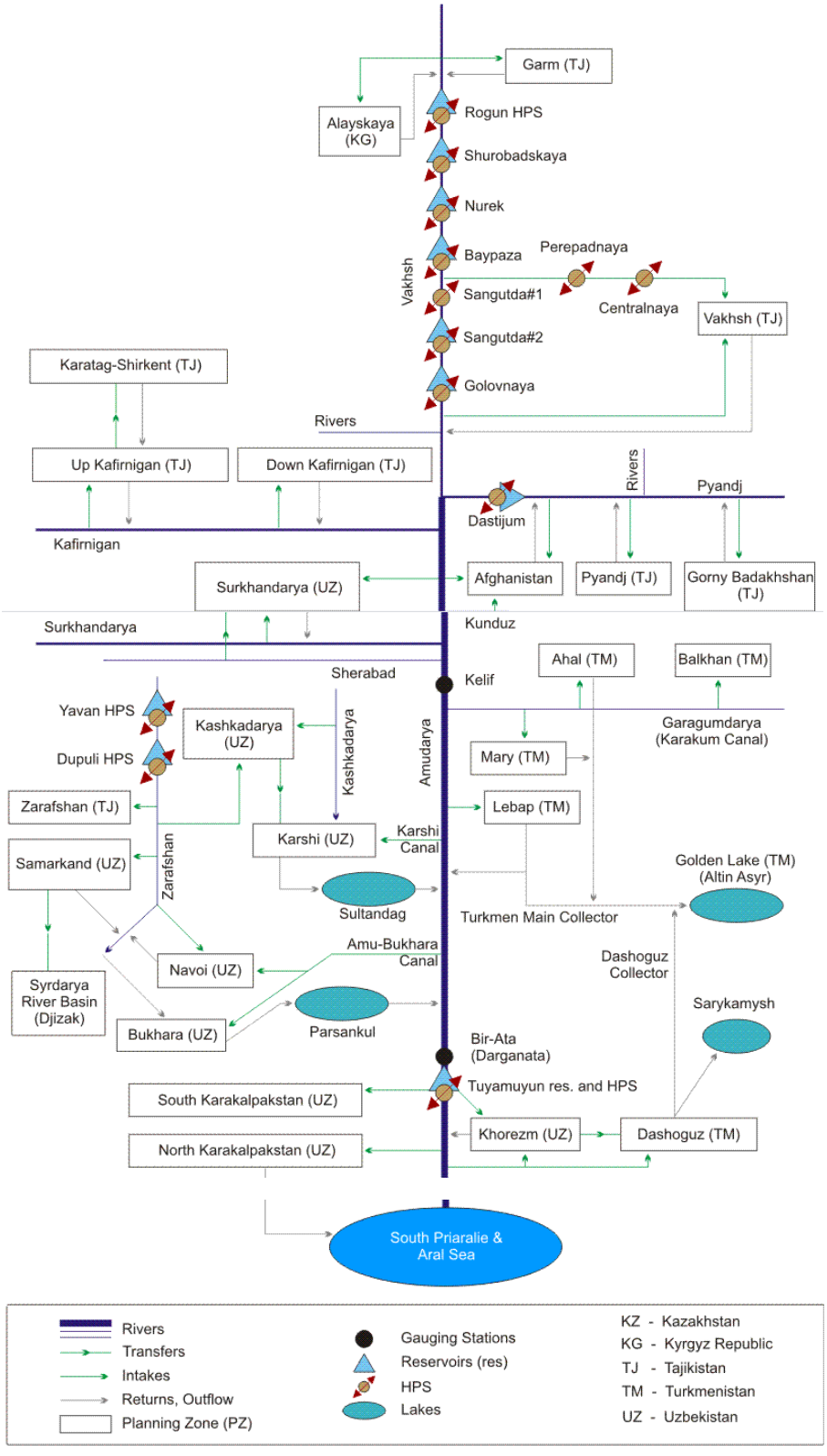

Figure 10. Amudarya's Linear Scheme

Source: (ICWC)

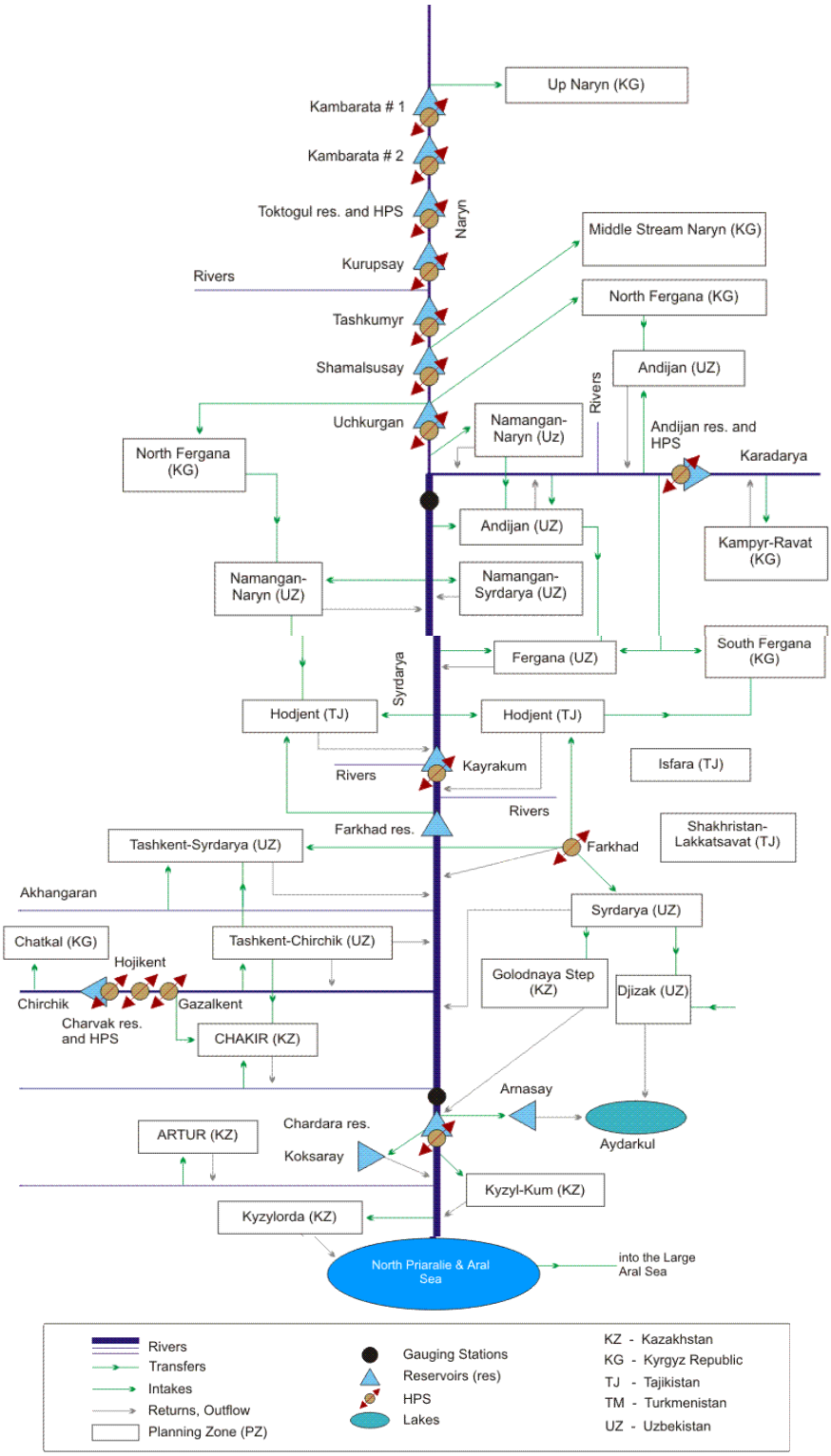

Figure 11. Syrdarya's Linear Scheme

Source: (ICWC)

completion of gigantic irrigation systems on the Aral Sea Basin's main tributaries (Figure 10 and Figure 11) contributed to the plans of Soviet administration by reaching approximately 7 000 000 ha of irrigated area (Wegerich, 2008) and producing about 5 000 000 tons of cotton between 1980 and 1990, which is ten times more than the amount produced in 1913 (Spoor, 2007).

However, the side effects of cotton 'success' began to appear long before the dissolution of USSR. Intensive use of already irrigated lands and development of 'virgin' land plots, mainly deserts, rapidly increased the withdrawal of water resources from Amudarya and Syrdarya rivers that caused the desiccation of the Aral Sea by 75% (UN WWAP, 2006). The water flow to the Aral Sea started to dramatically decrease after 1970s and reached almost zero in 1986 (Figure 12). Moreover, the shrinking of the sea altered the environment, climate, biosphere, and people's life in the whole Central Asia. For example, Soviets' main 'cotton baskets', Uzbekistan and Turkmenistan, 'have the highest environmental burden' where the land salinization reached 50 and 37 per cent respectively (Wegerich, 2003, p. 254).

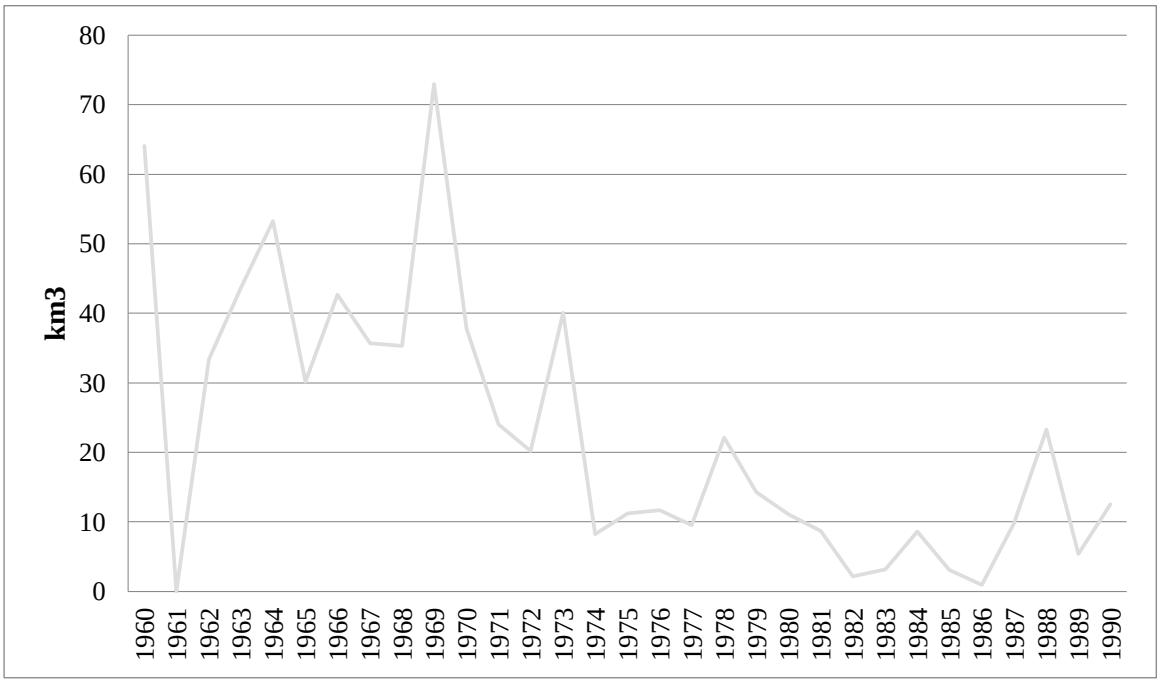

Figure 12. Water Flow to Aral Sea between 1960 and 1990

Source: (Ashyrbekov, 2003)

More and more severely this region faces weather anomaly, with very hot summers and longer and colder winters. The sea has an important role in regulating the climate by cooling hot summers, especially in the desert, and softening winters and providing rainfall (Pearce, 2006). Decline in rainfall increases dust storms.

Nearly 77 million tons of dust travels in this region annually, which is dangerous for people's health and agricultural land because of contamination from chemicals that were drained to the sea in the past decades from agricultural fields (Pearce, 2006). Wind-scattered dust has increased respiratory illnesses of local people. Anemia is a common thing among women and children; especially pregnant women and newborns suffer from it (Pearce, 2006). In addition to health problems, people in this area suffer from malnutrition, water shortage and poverty.

Fishing industry, biodiversity and wildlife habitat of the region has also suffered a lot. In 1959 almost 50,000 tons of fish was caught in the sea, this number dropped significantly in 1994 down to 5,000 tons (UN WWAP, 2006). This affected local fishermen who had to migrate after losing their main source of sustenance.

The issue of ecological and sanitary-epidemiological situation in the Aral Sea started to be emphasized in the 1970s, when leading scientists of the Central Asian Soviet republics began to criticize the current situation in the lower Aral Sea. One of the solutions, in accordance to the well-known Russian water professors, was in the further large-scale diversion of the Northern rivers in Russia, like Ob and Irtysh towards the Central Asian region. However, these promises have never been implemented due to the high prices of the project. The second attempt was taken in 1988[6]. The minister office of USSR limited the water use up to 25 per cent. Moreover, it was decided to decrease the irrigated land area by 160-170 thousand hectare and to stop construction of large-scale irrigation systems in the ASB. However, these plans have never been implemented because of USSR's dissolution. (Sehring & Diebold, 2012).

[6] The Statement of the Councils of Ministers of the USSR dated 19.09.1988 #1110 "On measures to radically improve the environmental and sanitary situation in the Aral Sea region, increase the efficiency of use and strengthen the protection of water and land resources in its basin"

Table 4. Major Dams (>0.1 km3) in the Aral Sea Basin

Country	Name	Nearest city	River (Major basin)	Year	Height	Capacity (million m^3)	Main Use
Kazakhstan	Chardarya	Chardarya	Syrdarya (SD)	1968	27	5 200	I[7], H, W, F
Kyrgyzstan	Toktogul	Tash Kumur	Naryn (SD)	1974	215	19 500	I, H
	Kurpsay	Tash Kumur	Naryn (SD)	1981	110	370	I, H
	Papan	Osh	Ak-Bura (SD)	1981	120	260	I, H
Tajikistan	Rogun[8]	Rogun	Vakhsh (AD)	not finished	-	13 300	I, H, F
	Nurek	Nurek	Vakhsh (AD)	1980	300	10 500	I, H, W, F
	Kayrakkum	Khujand	Syrdarya (SD)	1959	32	4 160	I, H
	Farkhad	Khujand	Syrdarya (SD)	1948	24	350	I, H, W, F
	Boygozi	Nurek	Vakhsh (AD)	1989	54	125	I, F, H
Turkmenistan	Zeid	Turkmenabat	Karakum Canal (AD)	1986	12	2 200	I, W

[7] I – Irrigation; H – Hydropower; W – Water Supply; F – Flood Protection
[8] Under construction

	Oguzkhan	Mary	Karakum Canal (AD)	1975	N/A	875	I, W
Turkmenistan	Sary-Yazy	Tagtabazar	Murghab (AD)	1984	25.5	660	I, W, F
	Kopetdag	Geoktepe	Karakum Canal (AD)	1987	N/A	550	I, W
	Tedzhen-1	Tedzhen	Tedzhen (AD)	1950	N/A	190	I, W, F
	Tedzhen-2	Tedzhen	Tedzhen (AD)	1960	20.5	184	I, W, F
	Yolotan	Yolotan	Murghab (AD)	1910	N/A	120	I, W, F
Uzbekistan	Tuaymuyun	Pitnak	Amudarya (AD)	N/A	N/A	7 800	N/A
	Charvak	Tashkent	Chirciq (SD)	1977	168	1 990	I, H
	Andijan	Andijan	Karadarya (SD)	1980	121	1 900	I
	Pachkamar	N/A	Guzar (AD)	1961	71	1 525	I
	Talimarjan	Jangi-Nishon	Karshi Canal (AD)	1985	635	1 525	I
	Tudakul	Navoji	Tudakulskaya Natural Depression (AD)	1983	12	1 200	I
	Kattakurgan	N/A	Zeravshan (AD)	1953	31	900	I
	Yuzhnosusrkhan	Shurchi	Surkhandarya (AD)	1967	30	800	I
	Chimkurgan	Chirakchi	Kashkadarya (AD)	1963	33	500	I

	Tupalang	Shargun	Tupalang (AD)	2002	180	500	I
	Shorkul	Navoji	Zeravshan (AD)	1984	15	394	I
Uzbekistan	Farkhad	N/A	Syrdarya (SD)	1948	24	350	I, H, W, F
	Kuyumazar	Navoji	Zeravshan (AD)	1958	24	310	I
	Tashkent	N/A	Chirchiq (SD)	N/A	37	250	I
	Karkidon	Kuba	Isfayramsay along the Kuvasay channel (SD)	1967	70	218	I
	Akhangaran	Angren	Akhangaran (SD)	1989	100	198	I
	Gissar	N/A	Asku (AD)	1990	139	170	I
	Kasansai	N/A	Kasansai (SD)	1968	64	165	I
	Uchkyzyl	N/A	Zang Canal, Termiz Canal, Surkhandarya river (AD)	1957	12	160	I
	Aktepin	N/A	Surkandarya (AD)	N/A	14	120	I
	Akdarin	N/A	Akdarya (AD)	N/A	20	112	I
	Jizzakh	Jizzakh	Gully of Djailmasay (SD)	1973	20	100	I

Source: (FAO-AQUASTAT, 2012)

It is noteworthy that historically geology and climate changes of the region, discharging of Amudarya and Syrdarya rivers from the Aral Sea Basin, and population growth were impacting the Aral Sea and the water level could reach the critical grade (Ashyrbekov, 2003; Dukhovny & Schutter, 2011). However, natural environmental transformations have never provoked the almost entire desiccation of the Aral Sea. O'Hara (2000) explains that the type of used irrigation system directly causes the dynamics of the Aral Sea. She argues that there is no evidence of soil salinization at Merv oasis in southern Turkmenistan, where water irrigation system existed for many hundreds of years. But modern water infrastructure of Soviets caused widespread of 'salinization and waterlogging within 20 years of their introduction' (O'Hara, 2000, p. 429).

Apart from ecological problems, the Soviet system became the source of political and economic disputes between Soviet Central Asian riparian states. Multifunctional 45 dams, about 80 reservoirs and 20 000 miles of irrigation canals (Howard, 2014) were designed for a unified Soviets' cotton production purposes and located 'where it made sense geologically' (Lange quoted in (Wegerich, 2004, p. 337). So, the administrative boundaries of CARs were not the subject to considerations.

Moreover, the system and water management facilities were constructed to enhance the cotton cultivation in the downstream region: Kyrgyz and Tajik SSR's biggest multifunctional dams (Table 4) were mainly used to store the water in winter and supply it in summer to Kazak, Turkmen and Uzbek SSRs for agricultural production (FAO-AQUASTAT, 2012). Under Protocol No.413 of 1984 of the Soviet government, 75% of stored water should be released in April-September period, and the remaining 25% in October-March months. Surplus electricity generated in summer was fed into the Central Asian Power System (Figure 16) for use by Uzbek and south Kazakh regions (The World Bank, 2004). At the same time, upstream republics, poor in any significant resources of fossil fuels, but rich in a huge hydropower potential, needed the energy for heating purposes in winter. However, as Moscow was pursuing the increase of cotton production, it was not attracted in developing the hydro energy in Central Asia. That is why the energy needs of water producer countries have been compensated by Moscow and downstream neighbors through Integrated National System 'with just enough subsidies to keep the operation going' (O'Hara, 2000, p. 430).

The Soviets were not interested in hydroelectric power, but as O'Hara (2000) noted, was interested in the disagreements between Central Asian states. Competition for water reducing the possibility of cooperation of water-surplus and water-deficit states, and on the other hand, disputes among republics guaranteed the leading role of Moscow, as a center of the system (O'Hara, 2000).

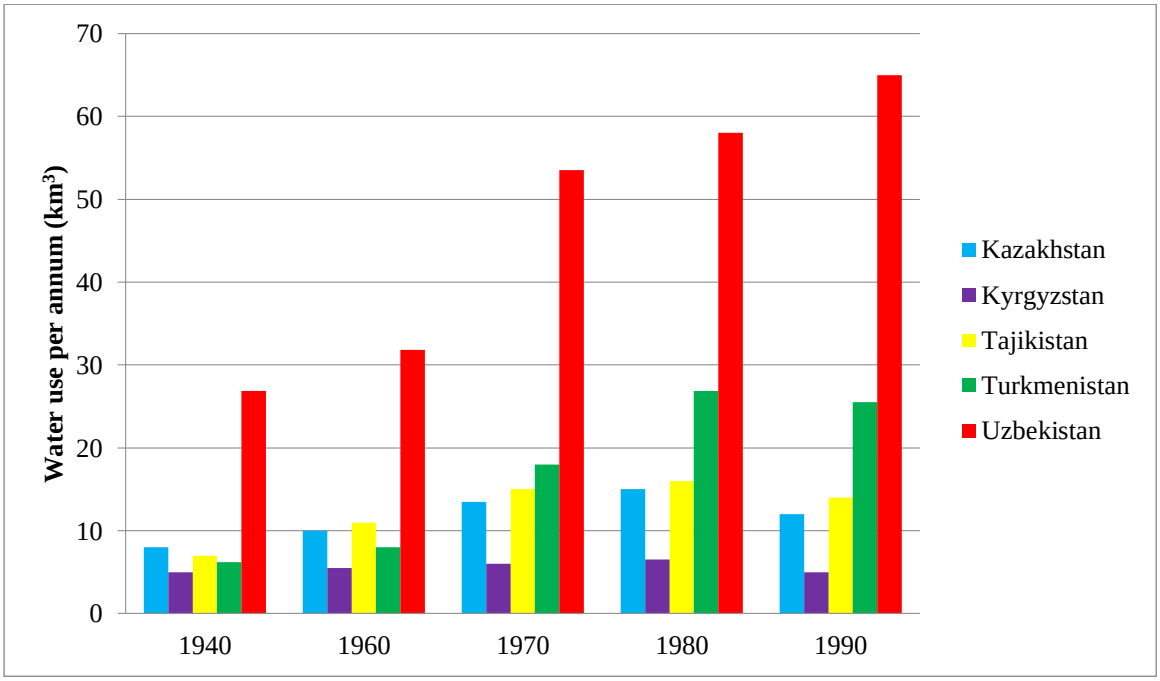

Figure 13. Water consumption of the Central Asian countries between 1940 and 1990 years

Source: (O'Hara S. , 2000)

Along with water release, Central Asian downstream regions have also benefited from an unequal water distribution. The lion's share of the Aral Sea Basin water was consumed by Uzbek, Turkmen and Southern Kazakh SSRs (Figure 13). Uzbek SSR, through the whole period of Soviets rule, was taking the leading position in water utilization, followed by Turkmen and Kazakh Republics. While water consumption of Uzbek and Kazakh Republic doubled in this time period, the allocation of water to the Turkmen Republic rose six-fold. Overall, these three downstream states altogether had an access to approximately 86 per cent of the flows of the ASB.

In contrast to water deficit states, water producers of the regions had not been benefiting from the water surplus conditions. Kyrgyz SSR had access to only 2.8 per cent of produced 25 per cent of flows per year (Figure 14). From the first glance, it seems that second upstream state was receiving sufficient amount of water resources which was similar to the water amount obtained by South Kazakh SSR (water consume). However, Tajik SSR, as the main water contributor of the ASB, was using only 20 per cent in total (Figure 13). This is because Tajik SSR was, to a lesser extent, also a cotton producing country (Spoor, 2007). However, while other riparians have increased their water use in accordance to the demand, Kyrgyz republic continued to use almost the same quantity of water during the half of the century (Figure 13).

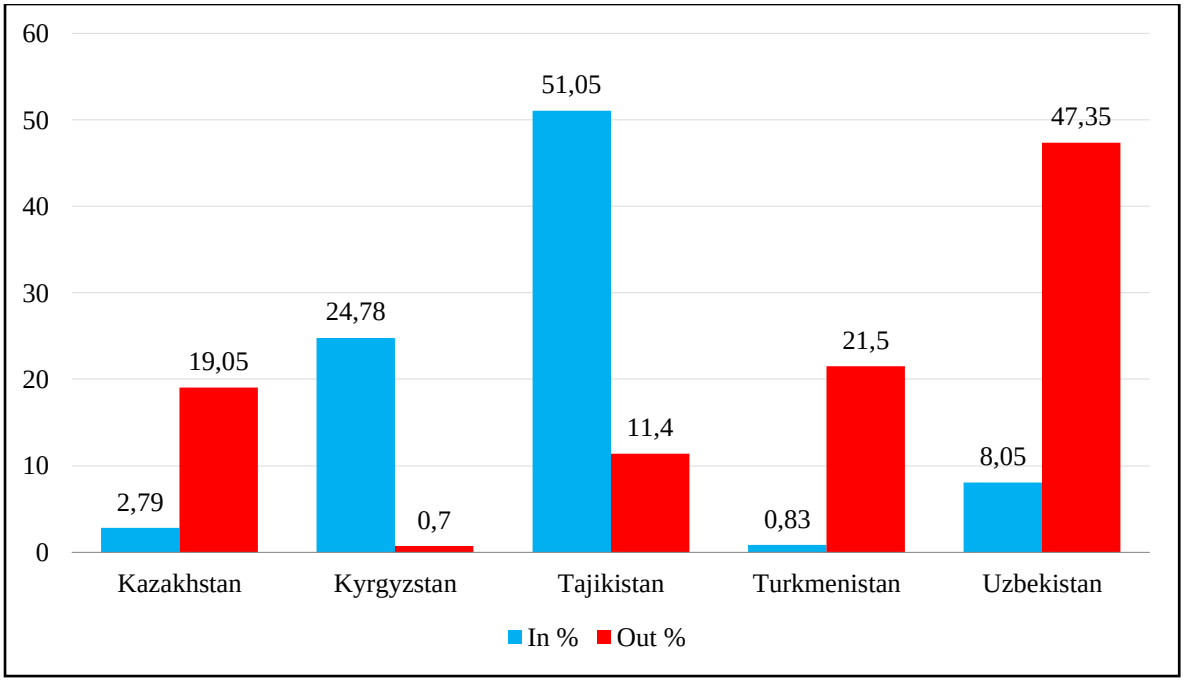

Figure 14. Water flow generation versus abstraction in % per year in the Aral Sea Basin

Source: Data for the run-off from (O'Hara, 2003), for water flow from each state from (FAO-AQUASTAT, 2012). Note: Afghanistan is not included in this figure. For explanation, see (Sehring & Diebold, 2012, pp. 32-33)

Additionally, water shortage in the conditions of water abundance has jeopardized the upstream states' food self-sufficiency. Energy, water and food had been provided by Moscow (O'Hara S. , 2000) and all Central Asian SSRs benefited from it through the regional approach, in which utilities were treated as a common pool resource (Wegerich, 2008, p. 77).

4.4 POST-SOVIET WATER MANAGEMENT (1991-2016)AND ARAL SEA CRISIS

Despite water abundance Central Asian states have experienced water use tensions even under the Soviet rule but these have been suppressed centrally (Bransten quoted in (O'Hara S. , 2000)). With Soviet dissolution and emergence of independent states the water disputes have intensified and became worse. Various studies agree that these disputes are mainly related to water mismanagement and weak water allocation system (Allouche, 2007; Sakal, 2015), others think that the clash between national interests of downstream and upstream states is to blame (Wegerich, 2004; Spoor, 2000; 2007). Central Asian water issue is a mix of everything. Water mismanagement that has been established during Soviet times and continues up to today is one of the problems (Allan and Turton&Ohlsson quoted in (Wegerich, 2003)). It is not a crisis of quantity, but of distribution and unequal water allocation (Allouche, 2007). On the other hand, clash of political, economic and social interests is intertwined with highly asymmetric power relations (Granit, et al., 2010). So, in order to understand the water problem in Central Asia it is essential to realize the importance of hydropolitics and the effect of dysfunctions caused by geopolitical power play and asymmetric power relations (Allouche, 2007). Moreover, this all is exacerbated by rapid population growth, environmental degradation and climate change.

The goal of this chapter is to briefly explain the system of water management that has emerged after the Soviet collapse and to shed light on the main consequences of such system change. Mainly problems around water mismanagement, political, economic, social and environmental factors will be discussed.

4.4.1 Water management

Philip Micklin (1988) describes Central Asia as ‘water management disaster’. This refers to inefficient and over consumptive use supported by unwise policies that have brought to the situation, in which water abundant region suffers from water scarcity. Even the most populated and arid Afghanistan and Uzbekistan have annual per capita water availability of above 1500 m3 while Kazakhstan, Turkmenistan and Kyrgyzstan which are the most

water abundant have annual per capita water availability of 5955 m3, 4302 m3 and 3907 m3 respectively (Table 5).

Table 5. Total renewable water resources per capita in m^3/inhabitant/year

Afghanistan	1 839
Kazakhstan	5 955
Kyrgyzstan	3 907
Tajikistan	2 456
Turkmenistan	4 302
Uzbekistan	1 531

Source: AQUASTAT, 2017

By signing the 1992 Almaty Agreement, Central Asian states have agreed to maintain the Soviet status quo (O'Hara S. , 2003), according to which the water allocation continued to favor irrigation oriented downstream states while water interests of upper stream states have been overlooked (Table 6). It was agreed that this disbalanced water allocation would be compensated by continuation of the barter system, according to which upstream states would be compensated by downstream states with coal and gas during winter season. However, this agreement has not worked out as downstream Kazakhstan, Uzbekistan and Turkmenistan saw it more profitable to sell the fossil fuels on international market rather than provide it for free to Kyrgyzstan and Tajikistan.

Table 6. Country quota for the water run-off set by the USSR

Country	Amudarya, %	Syrdarya, %
Kazakhstan	-	38.1
Kyrgyzstan	0.4	1
Tajikistan	13.6	9.2
Turkmenistan	43	-

Uzbekistan	43	51.7
Total	100	100

Source: O'Hara (2003:23)

As the result, fossil fuel poor Kyrgyzstan and Tajikistan in order to sustain themselves with electricity during winters had to switch the hydropower plants from irrigation to hydropower mode, which resulted in flooding of downstream Uzbekistan and Kazakhstan. This also means that every year there is less water to release during the harvesting season for downstream states. While downstream states are not willing to supply fossil fuels for free as initially agreed, but want to sell them at market prices, they

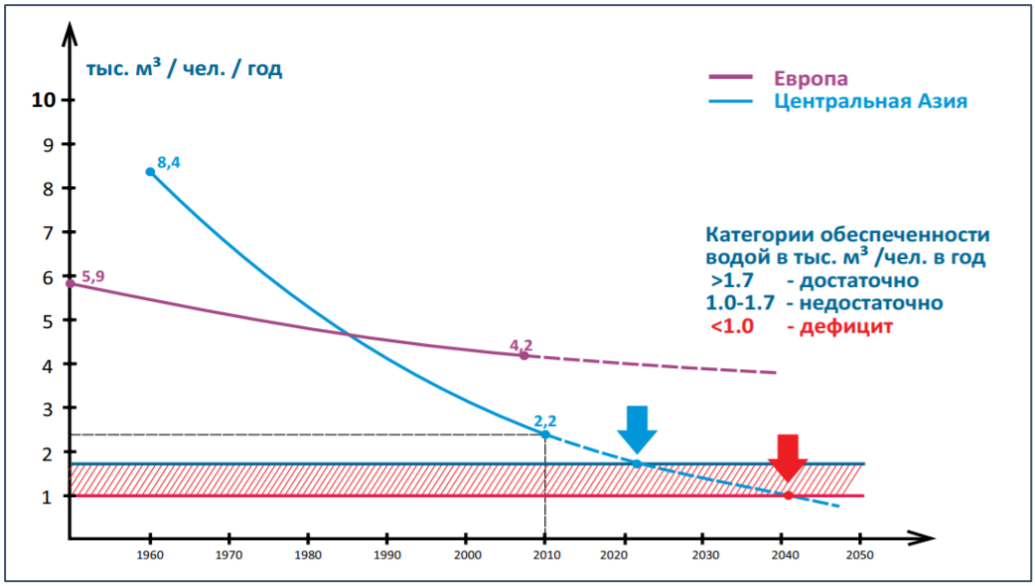

Figure 15. Dynamics in annual water availability per capital in Central Asia and Europe (thousand m3/person/year)

Source: (EC-IFAS 2012, p. 9)

grow rather discontent with water usage for hydroelectricity production (Allouche, 2007). The growing tension and conflicts between states have been exacerbated by the maintenance costs of dams, which became mainly the responsibility of upstream.

Kyrgyzstan and Tajikistan are not happy about it (Glantz, 2005). Kyrgyzstan for example annually spends $25 million for the maintenance of the Toktogul dam[9], which both functions to produce hydroelectricity but also stores water that downstream states utilize during harvesting season.

Overall result of such mismanagement is that despite water abundance the annual water availability in the whole Central Asian region is decreasing exponentially compared to other regions like Europe (Figure 15).

4.4.2 Collapse of Integrated Central Asian Power System

Figure 16. The Central Asian Power System

Source: Global Energy Network Institute 'Central Asian Grid' (2015)

During Soviet times, electricity of Central Asian states has been connected via Central Asian Power System (CAPS). It is a network of power plants and electricity transmission lines constructed in 1970 and 1980s that connected the four CARs and the south of Kazakhstan together (Sakal, 2015) (Figure 16). In this system Uzbekistan plays an

[9] Open letter sent by a famous Kyrgyz politician T. Usubaliyev to the ex-president of Kazakhstan Nazarbayev on Sep. 15, 2001 (Open Letter 2001) https://usubaliev.files.wordpress.com/2017/10/d0bed182d0bad180d18bd182d0bed0b5-d0bfd0b8d181d18cd0bcd0be-d0bfd180d0b5d0b7d0b8d0b4d0b5d0bdd182d183-d0bd-d0bdd0b0d0b7d0b0d180d0b1d0b0.pdf.

important part of the system: it is the biggest contributor and greatest consumer in Uzbekistan (52%) (Sakal, 2015), and the CAPS headquarters are located in the capital of this country.

Following the USSR collapse almost all downstream countries withdrew from the system. Because Uzbekistan is the main part of the system, it caused obstacles for upstream countries in selling potential hydro energy. Moreover, it was frightened Tajikistan by arguing that it will struggle in distributing the energy got from potential electricity.

Tajikistan and Kyrgyzstan own two biggest reservoirs of the Central Asian region with a control of 60% of ASB capacity of water storage. Nonetheless, these countries, as Allouche (2007) claims, have a little bargaining power over water.

4.4.3 Political and Economic Factors

Upstream and downstream could not agree on the water quotas because they had different water-interests: water for energy production by upstream states versus water for irrigated agriculture by downstream (Table 7) (Allouche, 2007)

Table 7. Water utilization for agriculture and electricity by country

	KZ	KG	TAJ	TURK	UZB
Agricultural water use (% of total water withdrawal, 2007)	82	94	92	98	93
Electricity production from hydroelectric sources (% of total, 2008)	9	90	98	0	23

Source: (Sehring & Diebold, 2012, p. 31)

Before the dissolution of USSR, fossil fuel poor upstream states were benefiting from Integrated National System which provided their fuel needs in winter in exchange for water storage throughout the year and release in summer without right for withdrawal. However, after the collapse the USSR downstream countries have demanded compensation for fossil fuels at market prices. As the result, Kyrgyzstan and Tajikistan have switched their HPPs from irrigation to electricity generation mode. Downstream

neighbors did not like this because this limited their water intake for irrigation. (Allouche, 2007). To make things worse upstream states realizing their grandiose hydropower potential have plans to increase their benefit from it by building additional HPPs: Kambarata 1 and 2 in Kyrgyzstan and Rogun HPP in Tajikistan (Figure 17).

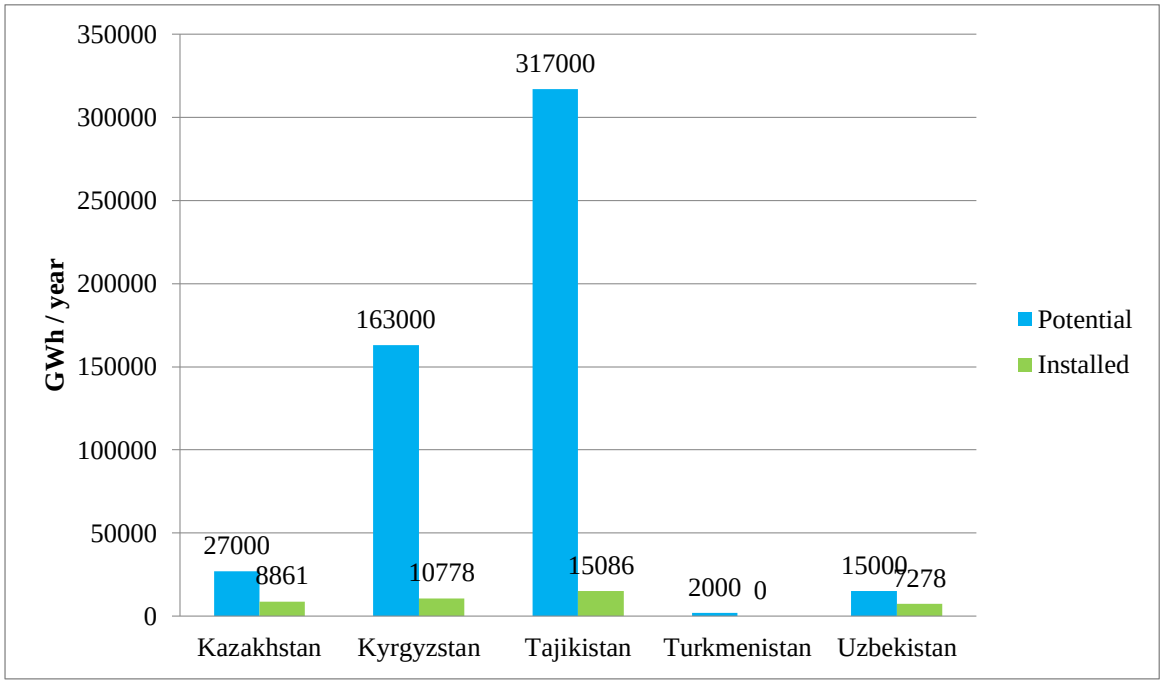

Figure 17. Hydroelectricity potential v installed

Source: (Granit, et al., 2010, p. 21)

As the result of such conflict of interests, the water management facilities have also been politicized. The main tension regarding biggest two HPP located in Kyrgyzstan and Tajikistan were around reluctancy of downstream states to compensate for the O&M costs. In addition, other smaller facilities have also been under dispute. For example, the Andijan Reservoir that belongs to Uzbekistan is located within Kyrgyz borders. Uzbekistan has been leasing that territory from Kyrgyzstan from a very long time and yet no compensation has been paid (Granit, et al., 2010). Similarly, another important Tuyamuyun reservoir of Uzbekistan is also located within Turkmen borders. However, Turkmenistan has successfully used its political power and made Uzbekistan compensate for rent and O&M costs. Moreover, Turkmenistan uses this reservoir as part of its bargaining power to influence political decisions over Uzbekistan (Wegerich, 2008).

The conflict of interests is also related to the seasonality of water demand: Kyrgyzstan and Tajikistan have no natural fuel resources that force them to use stored water to release in winter to produce electricity. By the time winter finishes and harvesting period starts in spring, the dams have insufficient water for irrigating farms.

There is also a clash between national water policy priorities. For example, the aim of Tajikistan is to use its water resources to enlarge its hydroelectricity production. To carry out these plans it plans to build additional HPP, one of which is the Rogun dam, which will be the biggest HPP in the region once finished. In addition, it plans to increase its irrigation lands to reach food self-sufficiency (Wegerich, 2008). Kyrgyzstan pursues similar objectives. Turkmenistan emphasizes on enlarging its irrigated land by reclaiming the desert areas, which turn out to be very water consumptive. In addition it has grandiose plans of constructing the Altyn Asir Lake (The Golden Era Lake) in the middle of Kara-Kum desert (Allouche, 2007) with volume capacity of 132 km^3 (Stanchin and Lerman quoted in (Kostianoy, Lebedev, & Solovyov, 2011). Uzbekistan on the other hand is working hard towards maintaining its cotton industry as it is a key source of its hard currency. Cotton is not only the motor of Uzbekistan's economy, but also many vested interests depend on 'white gold' (Spoor, 2007). Moreover, it plans to increase its food crop production for export purposes. Kazakhstan on the other hand depends on the ASB water to sustain its most populated south provinces. Mainly water is used for irrigation. (Allouche, 2007).

After the independence, Kyrgyzstan has proposed several large dam projects, including the disputed Kambarata 1 and 2 projects. The construction of Kambarata-2 is completed, but here, the HPP will operate in full capacity after the completion of the huge Kambarata-1 project, which was initially proposed during the Soviet era but postponed because of the collapse of the Soviet Union. It is still under construction and depends on foreign financing, primarily from Russia, up to 3 billion US dollars in total. Upon finishing, Kambarata-1 HPP is planned to be the prevalent electricity producer in the Basin with a capacity of 1,900 MW. The Kambarata 1 and 2 are not the only dams that can be built on the Naryn Basin. Kyrgyzstan has a massive yet underexploited hydropower potential. According to Jefferson Institute, on the Naryn River, it is possible to build 33 additional hydroelectric stations with a total of 6,450 MW electricity capacity. Such upstream hydropower ambitions trigger the dispute as Uzbekistan has for a long

time opposed such HPP projects on all occasions (Sakal, 2015). Menga (2018) claims that by forestalling the hydroelectric projects of upstream states, Uzbekistan for a long time has been able to secure its water-intensive cotton industry, which is the primary source of profit for its political elite.

4.4.4 Social factors

It is important to remember that Central Asian states have a recent history of violent small-scale ethnic and border related conflicts experienced both under Soviet rule and after. Based on this, there have been speculations that changes in water availability may trigger further bloody clashes between Central Asian states in the first years of independence (Homer-Dixon, 1994). Luckily no full-scale wars over water or any other resource took place in this region during the first two decades after the USSR dissolution. Yet, it is important to stay vigilant to such triggers and to realize their potential threat.

4.4.5 Environmental Factors

Another legacy of the Soviet system is total disregard of environmental factors in favor of short-term economic gains. One of the most vivid results of such attitude is the environmental disaster in the face of desiccation of the Aral Sea, which has shrunk by 90% since 1960s (Figure 18) (Micklin, 2007).

Even before the Soviet Union has dissolved, the well-known Russian water professors have predicted that the diversion of rivers in the Aral Sea basin would bring to massive environmental degradation causing millions to migrate away from the sea. The only solution they saw was in the further large-scale diversion of the Northern rivers in Russia like Ob and Yrtysh through Volga river towards the Central Asian region. However, these promises have never been implemented after the dissolution of the Soviet Union. The predictions have proven true and Central Asia did face environmental degradation, and as the result of shrinking Aral Sea, people leaving in the proximity with the sea had to migrate to avoid water scarcity, poverty and health issues caused by dust storms blowing chemical residues from the desiccated sea bottom ((Varis & Rahaman, 2008). Such

environmental factors are often exacerbated by the rapid population growth and climatic conditions.

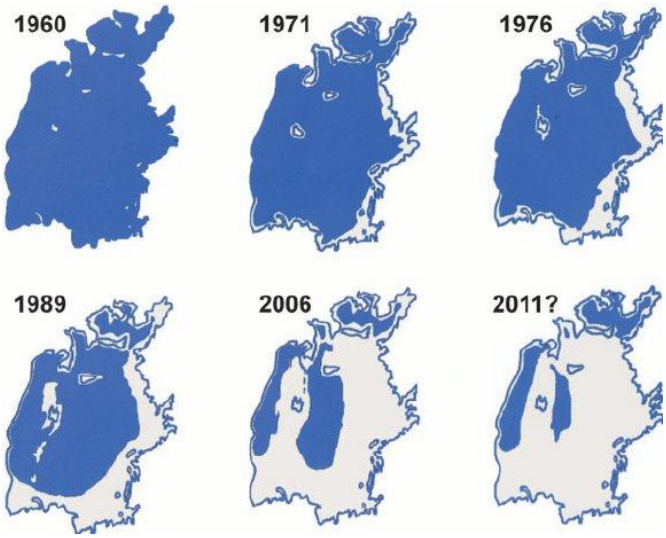

Figure 18. The shrinking of the Aral Sea 1960-2011

Source: (Micklin, 2007, p. 50)

CHAPTER 5

IFAS AND ITS DEVELOPMENT

After nearly a century under the Russian rule, first as part of Tsarist Russia and then of Soviet Union, Central Asian states have finally declared independence following 1991. Overnight centralized government has vanished leaving behind political, economic and environmental matters that had to be dealt at international level. Under such circumstances newly independent Central Asian states (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) have started building new cooperation platforms in accordance with rules of international world. As water played an important role for all five states, it had to be regulated separately.

As the first important step, ministers of the Central Asian states have gathered in the capital city of Kazakhstan, Almaty on February 1992 to sign the 'Cooperation in joint management, use and protection of Transboundary water resources', also called 1992 Almaty Agreement. The main effect of the 1992 Almaty Agreement is that it maintained the water allocation scheme that was established by the USSR in 1984 in the Protocol No. 413 for Syrdarya river and in 1987 in the Protocol No. 566 for Amudarya river (Wegerich, 2008). Moreover, based on the 1992 Almaty Agreement, the first river basin organization (RBO) - Interstate Commission for Water Coordination (ICWC) was established, the main responsibilities of which included water allocations and schedules of operation of reservoirs (CAWater-Info). This was an important and promising step as 'RBOs play an important role in adapting to changes as they manage adaptation efforts across state boundaries and different sectors' (Schultze & Schmeier, 2012). In the first years ICWC has coordinated several organizations under its structure, such as:

a. The Interstate Council for the Aral Sea (ICAS) in Uzbekistan, whose main task was to lead overall program coordination;
b. The International Fund for Saving the Aral Sea (IFAS), which was responsible for receiving and managing funds, with branches in all member states and;
c. The Commission on Sustainable Development (CSD) in Turkmenistan, which focused on the regional environment issues (The World Bank, 1998).

Following 1997, upon World Bank's recommendation (1998) the institutional RBO structure has changed (Figure 19). At a summit in Almaty, Kazakhstan, on February 28, 1997 ICAS was dissolved and its functions transferred to the IFAS. Like the Sustainable Development Commission, the ICWC was also subsumed under the leadership of IFAS, which became the main regional RBO. ICWC was from then on responsible for solving annual water management issues, disseminating information, and exchanging knowledge (Wienthal, 2001; The World Bank, 1998). Executive Committee of the IFAS became its coordinating body and headquarters of IFAS moved to the capital city of Uzbekistan. The reforms have also included the decrease in the annual fees paid the RBO's budget by member states (Wienthal, 2001).

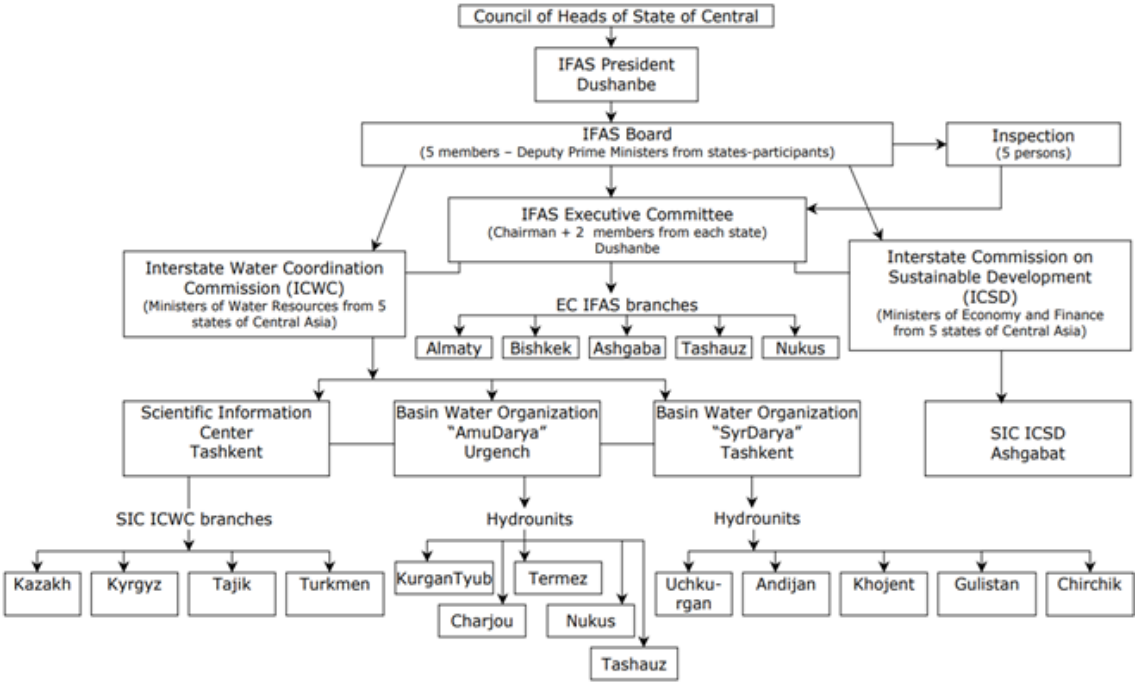

Figure 19. Structure of the International Fund for Saving the Aral Sea

Source: (Dukhovny & Sokolov, 2003, p. 17)

With the new reforms it was agreed that the president of IFAS will be rotated on a two-year term basis among member state presidents. Figure 20 enlists the heads of states that have served as IFAS presidents. Noteworthy is that Kyrgyzstan is the only state whose president was not elected. All the other members' presidents held this position at least two times.

2019-2022 – Rakhmon, Tajikistan (www.gazeta.uz)

2017-2019 – Berdymukhammedov, Turkmenistan (www.gazeta.uz)

2013-2016 – Karimov, Uzbekistan (www.aral.uz)

2008-2012 – Nazarbayev, Kazakhstan (www.aral.uz)

2002-2008 – Rakhmon, Tajikistan (www.aral.uz)

1999-2001 – Niyazov, Turkmenistan (www.aral.uz)

1997-1999 – Karimov, Uzbekistan (www.aral.uz)

1993-1996 – Nazarbayev, Kazakhstan (www.aral.uz)

Figure 20. IFAS Presidents

Sources: (CAWater-Info)

There were additional changes made to the IFAS budget state contributions: the amounts due were decreased to 0.3% of GDP for downstream states and to 0.1% of GDP for two upstream states. Thereby the IFAS has turned into an important regional platform where five Central Asian states could come together to solve urgent issues. But more importantly the goal of this RBO was to launch regional projects and programs aimed at improving environmental, social and economic wellbeing in the ASB.

The initial goal of IFAS was to plan and implement the Aral Sea Basin Program (ASBP), which is the program that carries out environmental, social and economic projects that mainly depend on funding from international donors. Following the 1997 reforms, despite IFAS becoming the main regional RBO it continued to function as the main hub for ASBP projects. The ASBP was approved by the international donor community during meeting in Paris in 1994. It initially comprised of 8 programs and 19 projects, with a planned preparation phase of 18 months with long-term ambitions to develop into a large-scale investment program of many hundreds of millions of dollars. Long-term objectivities included: (a) stabilizing the environment of the Aral Sea basin, (b) rehabilitating the disaster zone around the Sea, (c) improving the management of the international waters of the Basin, and (d) building the capacity of the regional institutions (The World Bank, 1998).

ASBP has undergone three main phases. The first phase lasted between 1993 and 2003 and included $280 million in credit and $48 million in grants (Sehring & Diebold, 2012). The ASBP–1 was finalized in 1997, and included seven main thematic programs focused on (a) developing a regional water resources management strategy; (b) hydrometeorological services; (c) water quality management; (d) wetland restoration and

environmental studies; (e) clean water, sanitation, and health; (f) integrated land and water management in the upper watersheds; and (g) automated controls of the two basin wide agencies for water allocation (Wienthal, 2001).

The second phases took place between 2003 and 2010 and coasted more than $1 billion (Sehring & Diebold, 2012). ASBP-2 became the key instrument defining the main priorities in improving the environmental and socio-economic situation in the region for the period of 2003-2009. It was developed based on multilateral partnership and proposals received from all the stakeholders in the Central Asian States. One of the important projects carried out during this phase was the construction of the Kok-Aral dam under World Bank funding, which has stopped water flow from Syr Darya river to southern Aral and was completed in 2005. This project helped to improve the irrigation system, build new hydropower dams and increase the water surface in the Northern Aral by 18%, which also increase the water depth by 2 meters (Sehring & Diebold, 2012).

It is not known how much has been spent during the third phase of ASBP, which lasted between 2011 and 2015. About 335 projects have been submitted within the third phase of ASBP, out of which 47 have been selected. It is important to note that none of the projects proposed by Kyrgyzstan, which were mainly oriented for energy development, have been included to the list of selected ones (Sehring & Diebold, 2012).

5.1 CRITICISM OF IFAS

Sievers (2002) has analyzed one of the projects carried out by the IFAS under the financing from the World Bank called the Global Environmental Facility Aral Sea project (AralGEF). AralGEF was initially proclaimed as a project that will benefit all Central Asian states through IFAS, however as it turned out ‘almost entirely an Uzbekistan project’ and ‘even the World Bank had acknowledged that the project was compromised by its Uzbekocentrism’ (Sievers, 2002, p. 393).

Although establishment of an RBO by independent Central Asia states was an important step towards cooperative water management system, time has shown that IFAS encounters certain challenges. Often instead of contributing to cooperative and equitable water sharing, IFAS on the contrary is used by the regional hegemons in their selfish political and economic interest. Although official documents of IFAS carry rather

democratic and cooperative language, in practice activities of IFAS have collided with national interests of Central Asian states. Moreover, the work of IFAS is often ‘not perceived as fair and legitimate by all riparian countries’ and it is criticized for its lack of impartiality (Sehring J. , 2020, p. 2).

IFAS is also criticized as a product of international agencies like the World Bank. Because states have been reluctant to cooperate many commitments and agreements signed by member states are not honored. On the other hand, despite the vast amount of money spent on projects within the ASBP 1, 2 and 3, because there is lack of coordination between development agencies projects are developed at different levels. More importantly energy development projects proposed by the upstream states have been completely ignored within all phases of ASBPs (Wienthal, 2001). As the result the development of projects have turned out to be subjective towards the interests of downstream states and have proved the diminishing role of the IFAS.

This chapter has demonstrated how hydro-hegemony concept explains the position of IFAS in Central Asia and gives a clear explanation to ‘who gets how much water, how and why’. Four pillars within FHH are not independent from each other, instead material pillar increases or decreases ideational and bargaining capacities. IFAS doesn’t directly regulate or affect geographic or material powers within hydro-hegemonic concept. However, both geographic and material differences between upstream and downstream Central Asian states affect their capacity to maneuver within bargaining and ideational pillars.

The counter-hegemonic strategy can be maintained where the ‘weaker’ state is materially or to a lesser extent geographically strong. It will give him the more field to move and therefore, increase the ideational and bargaining power. Moreover, external factors such as international donors they promote the development of the FHH of IFAS through financing the powerful riparians and strengthen their positions as region’s hegemons instead of offering balanced solutions.

CHAPTER 6.

IFAS AS A TOOL OF HYDRO-HEGEMONY IN CENTRAL ASIA

This chapter will scrutinize the Central Asian river basin organization IFAS through the lens of hydro-hegemony framework. In doing so the main assumption is that IFAS has become a hegemonizing tool in the hands of stronger downstream states. In other words, as 'a nexus of material and ideological instruments' (Hawkes, 2003, p. 114) IFAS has become an invisible platform through which the water poor countries display their 'domination dressed up as 'cooperation'' over water-rich neighbors (Selby, 2013, p. 1).

Famous water experts in the region – Dukhovny and Sokolov claim that cooperation between Central Asian states is 'progressing in spite of complexities and differences in the social, political, and environmental conditions in the different states and their different levels of development' (2003, p. 1). This is part of a mainstream tendency, which promotes a focus on 'cooperation'. For example, UNDP argues that 'cooperation of any sort' is a better to balance transboundary water politics (UNDP quoted in (Selby, 2013, p. 2)). However, Zeitoun and Warner warn that overconcentration on cooperation can hinder the negative consequences of power asymmetry and provoke more intensive conflict (2006).

The level of conflict within transboundary cooperation depends on power relations between hydro-hegemons and hegemonised (Selby, 2013) because the power is the main determinant of 'the degree of control over water resources that each riparian attains' (Zeitoun & Warner, 2006, p. 436). Moreover, power is not equal and changes depending on economic, political and military strength. In addition, power is affected by the capacity to determine the terms of negotiations and agreements through the ability to influence, shape and control 'his very wants' (Lukes quoted in (Menga, 2016, p. 403) as well as the ability to 'impose and legitimize particular ideas and narratives' (Cascao & Zeitoun, 2010a, p. 32).

This chapter will also demonstrate that IFAS not only had a diminishing role in the water cooperation between Central Asian states but was also was used as a hegemonizing tool by the more powerful states in the region. 'Each state is exploiting

water at the expense of its neighbors while paying lip service to cooperation', which Allouche condemns as unsustainable (Allouche, 2007, p. 53). In this section the goal is to analyze the role of IFAS from the perspective of four pillars within the hydro-hegemony theory: geographical, material, bargaining and ideational pillars. This is done to show how IFAS has been used to promote 'the spontaneous' consent and coercive power of downstream states, which 'legally' enforced discipline of non-'consent' upstream riparians.

The Figure 21 demonstrates the 'power ratio' of ASB's upstream and downstream countries which were exercised through IFAS between 1991 and 2016 years. Four pillars are used, which are identified as G, M, B and I. G stands for geographic position, M for material power, B for bargaining power and I for ideational power. The length of pillars demonstrates states' advantageous position in relation to each other. From the quick glance, it is understandable that strong riparian neighbor is usually strong in almost all power dimensions. However, as all powers, except geography, are not static and change their dynamics, non-hegemon can develop its weak position and 'counterbalance its weaknesses in other fields of power' that will change the status-quo of hydropolitics of the region (Cascao & Zeitoun, 2010b, p. 189; Cascao & Zeitoun, 2010a). The analysis of Figure 21 will be provided below.

6.1 HYDRO-HEGEMONIC POWER DIMENSIONS BEFORE THE WITHDRAWAL OF KYRGYZSTAN

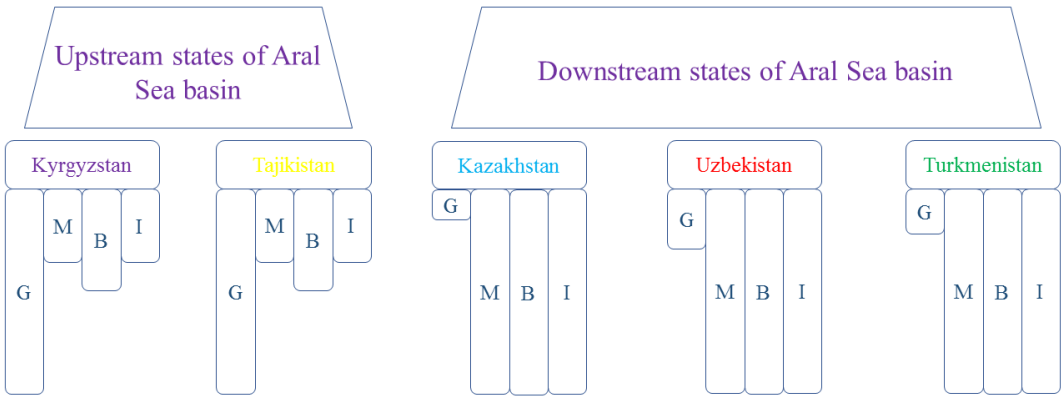

Figure 21. Power dimensions of ASB riparians before 2016

Source: Developed by author based on Hydro-Hegemony Framework elaborated by (Cascao & Zeitoun, 2010a)

6.1.1 Geographic power of riparian states

Kyrgyzstan and Tajikistan have an important strategic power thanks to its upstream position on the Amudarya and Syrdarya rivers. Geographical position of upstream states has historically given them the status of the biggest water contributors of the region with producing the three quarters of all available waters of the ASB (Figure 13). However, due to the small bargaining power, upstream countries have benefited little despite being water abundant (Allouche, 2007). 'Forced cotton cultivation' policy of Soviets and breakdown of Integrated National System put them in continuing vulnerable position (Abdullaev, Giordano, & Rasulov, 2007; Spoor, 2007).

While Kyrgyzstan and Tajikistan's geographical force is the result of topographic and historical characteristics, Uzbekistan and Turkmenistan also, although to a lesser extent, hold latent geographic power. This power comes from the location of important offices related to the functioning of IFAS in these two downstream states. Once the irrigation system has been extended on the territory of Soviet Central Asia, there was a lack of basin-wide organization that needed to manage the rivers in accordance with the rules and schedules of Moscow. So, 'Amudarya' and 'Syrdarya' Basin Water Organizations (BWO) were established in 1987 both of which were located in two cities of Uzbekistan: Urgench and Tashkent. Moreover, 'all headworks with water discharge of more than $10m^3/s$ on Syrdarya and Amudarya rivers' were transferred under the responsibilities of these bodies. (Dukhovny & Sokolov, 2003, pp. 12-13) With

foundation of IFAS, BWO's became the executive bodies of ICWC (Figure 19). Additionally, the location of the Scientific Information Centres (SIC) for water management in Uzbekistan and Turkmenistan strengthened the geographical power of downstream countries.

Realizing the effect of BWO's location to the transparency of data collection in water allocations of Amudarya and Syrdarya rivers, the governments of upstream countries believe that these basin organizations mainly support Uzbekistan and Turkmenistan's interests and as the result, try to get more control over upstream water resources (O'Hara quoted in (Wegerich, 2004)).

The construction of Golden Century Lake (Turkmen Lake) in Turkmenistan is another example of hegemony over data. The estimated capacity of lake is about 132 km^3 (Kostianoy, Lebedev, & Solovyov, 2011). Turkmenistan states that Turkmen Lake will be fed only by drainage water and will not affect the flows of Amudarya River. However, the investigation by Wegerich adds controversial information to this issue. Taking into consideration that Turkmenistan controls the data at the point of diversion of the Kara-Kum canal and comparing the official and non-official data that elaborated by Amudarya BWO related to water extraction, Wegerich assumes that a real volume of water allocated to Turkmenistan does be not appear in any documents (Wegerich, 2008).

So, distorted data under the rules of zero-sum game negatively affects not only the mutual trust of riparian countries, but also the fragmentation of mutual belief to save the Aral Sea.

6.1.2 Material power

For the last century downstream countries (Kazakhstan has joined in around 1980s (Wegerich, 2008)) have benefited from the 90 percent of all flows of ASB mainly used for irrigation purposes (Granit, et al., 2010). It was possible because of the water quota

set in late 1980s and ‘successful’ adoption by the Almaty Agreement in 1992 (O'Hara S. , 2003).

Cotton is a key hard currency of Uzbekistan and Turkmenistan and consequently it remains crucial to derive economic and political power not only regionally, but also universally (Spoor, 2007). The extension of irrigated land, after the collapse of the Soviet Union, promoted Uzbekistan to become the fifth cotton producer and the second largest cotton exporter in the world by selling more than 800,000 metric tons per year (Eschment, 2011). Moreover, cotton specialization of downstream riparians helped to be slightly replaced by ‘food-sufficiency’ strategy that guaranteed the smooth pass the period of transition from a command to a market economy (Spoor, 2000). By enlarging the area of irrigation and shifting the cotton crops with grain and wheat, Turkmenistan ensured the food security that increased the production of wheat and grain on 25.4 and on 45 percent respectively (Spoor, 2000). More enduring outcomes were achieved by Uzbekistan and Kazakhstan. Along with the food self-sufficiency, these Amudarya’s lowest riparians became the grain exporters. While Uzbekistan could export 500 000 tons of grain, Kazakhstan was already among first-eight grain producers of the world by exporting 15 million of tons in 2008 (Granit, et al., 2010).

Upstream states, in contrast, became the net food importers with dissolution of common pool of water, food and energy nexus (Granit, et al., 2010). The restricted farming irrigation of Tajikistan in the past and a small ‘wriggle agricultural room’ of Kyrgyzstan did not give a space to maneuver as practiced by downstream neighbors (Wegerich, 2008). UNDP argued that one third of Tajikistan’s population starved due to the lack of sufficient amount of food in 2008 (Granit, et al., 2010).

Nevertheless, the construction of the largest reservoirs of the region in Kyrgyzstan and Tajikistan held these countries up well (Table 4). Upstream multifunctional water storage facilities produce the lion’s share of installed capacity of hydropower of the region (Figure 17). It is noteworthy that despite the water management problems, Tajikistan figured out to double the production of hydro energy in two decades after getting independence. Over the same time period Kyrgyzstan increased the development of energy four-fold under the conditions where only 8 percent of whole potential power have been exploited (Granit, et al., 2010).

Downstream states have developed a more sophisticated irrigation system compared to upstream states. While this gives the advantage of existing irrigation facilities, more important is the expertise and knowledge that these states have acquired over decades. While this expertise and knowledge is not directly a source of material power, instead the material power in the form of thriving irrigation system exerts these intangible sources of influence, which then become part of bargaining pillar. With the expertise and knowledge at hand, states like Uzbekistan were more successful in project management activities and in attracting attention of donor organizations in their own favor. As the result the IFAS has turned into a platform where downstream water development ambitions have been carried out.

Upstream states similarly hold material power in the form of dams. Yet they lack knowledge and skills of attracting decent attention of international organizations to develop this material strength within the IFAS.

Undeveloped potential hydro power was suppressed by the Soviets, as Moscow's cotton-centered policy was not interested in improving it (Wegerich, 2004). The similar policy has been beneficially adopted by strong downstream neighbors and legitimized through the IFAS Agreements (APPENDIX 2). However, the commission of the first phase of Rogun Dam slightly increased the material power of Tajikistan (Allouche, 2007). In return, the concerns about changed 'level of the playing field' were covered by 'sanctioning the discourses' tactics of Uzbekistan (Cascao & Zeitoun, 2010a; Wegerich, 2008). Uzbekistan, as a vocal opponent of developing of large hydropower plants, on the one hand, calls the United Nations (UN) to assess the 'impartial expertise' the seismicity of hydro-power stations Rogun in Tajikistan and Kambarata in Kyrgyzstan in order to save the life of Central Asian people, that can be destroyed with a construction of these two largest stations (Norov, 2009). On the other hand, Uzbekistan highlights that filling of these two dams will negatively impact the watershed of the ASB (Menga, 2016).

Another attempt to maintain the status quo in the Central Asian region was the utilization of the covert type of military force. Allouche argues that Uzbekistan periodically was threatening the upstream countries to use a military force to destroy both the Toktogul and Syrdarya dams in Kyrgyzstan, if Kyrgyzstan would alter the existing water distribution policy approved in Almaty Agreement in 1992 (Allouche,

2007). The absence of open wars on water between five Central Asian states does not mean the absence of the conflict. ‘A significant factor preventing war over water is that the actions of non-hegemonic states usually comply with the order preferred by the hegemon, whose superior power position effectively discourages any violent resistance against the order’ (Zeitoun & Warner, 2006, p. 437).

So, politically and economically powerful downstream countries continue to control the attitudes of upstream states’ in order to keep the status quo unchangeable.

6.1.3 Bargaining power

Bargaining pillar represents the power of states to impose a sanctioned discourse or ideology (Menga, 2016), the power to lead the rules of the game and to decide which topics will be discussed or not on the table. Lukes claims that ‘A may exercise power over B by getting him to do what he does not want to do but he also exercises power over him by influencing, shaping or determining his very wants’ (Lukes quoted in (Menga, 2016, p. 403)).

Along with knowledge and expertise related to decades of well-functioning irrigation system, the main bargaining power within IFAS remains in the structure of water management institutions. First, headquarters of organizations within IFAS structure are located in downstream states. As the result, major conferences and meetings take place in these offices. Moreover, employees of IFAS and its subordinate organizations are mainly citizens of downstream states. Kyrgyzstan is the only country that never hosted IFAS Committee chairmanship. So, although it is never openly proclaimed, the institutional system of IFAS is shaped in the way that is very much biased towards downstream interests.

In addition to IFAS, the legal framework, which supports the irrigation-oriented water allocation, and which has established the continuation of the Soviet water management supports the subjective work of IFAS. The first challenge that was brought with the dissolution of the USSR became the transformation of mutually used rivers to transboundary with ‘unknown system of management’ (Sehring J. , 2020). For this, the CARs took a new management approach by adopting the Soviet water allocation

principles and management structures (APPENDIX 2; (Eschment, 2011)). Upstream countries signed the interstate Almaty Agreement in 1992, because they had little alternatives other than to follow the patterns prepared by the basin hegemon. However, even if it did not meet upstream states' essential water demands, it seemed acceptable until the elaboration of workable agreements in accordance with country's interests and international water conventions ((Eschment, 2011; Sehring & Diebold, 2012).

However, IFAS's three basic agreements set the foundation of interstate water relations between CARs and have never been changed (APPENDIX 1; APPENDIX 2; APPENDIX 3). In the following years, it became apparent that the lion's share of agreements, done in the frame of the basin organization, benefited unilateral interests of wealthier states and neglected the concerns of poorer ones. Agriculture focused policy of Uzbekistan, Turkmenistan and Kazakhstan detached the energy sector from the water sector which is a core instrument of economic growth and stability of Kyrgyzstan and Tajikistan (Wegerich, 2004). Allouche interprets it in a different way. He states that the hydrological interests of upstream countries were not taken into the consideration in order to make sure that agriculture and cotton industry were not threatened during and after the transition time from the Soviet system to newly independent states (Allouche, 2007).

Weinthal (2006) recognizes important role of international donor organizations in stimulating bargaining power of downstream states. This bargaining power allows downstream states to emphasize the topics related to their development interests when it comes to the share of funds at the table with international organizations. This is how Kazakhstan was able to get World Bank financing approval for a rather expensive Kok-Aral dam construction to increase the level of Northern Aral. By supporting the IFAS and legal instruments signed, donors have supported the legal arrangements and project proposals, which prioritized interests of downstream states and discriminated water interests of upstream states. This has created asymmetry of interests and capabilities between riparian states. Author recognizes that RBOs function in the interests of Uzbek water elites while different interests of riparian states are underrepresented and discriminated.

Strong bargaining power of downstream riparians guaranteed the interrupted finance flow through the programs developed by IFAS. Not surprisingly, the priorities of all

three Aral Sea Basin Programs (ASBP) were mainly focused on environmental and socio-economic situations of the region for the period of 1994-2015 (Wienthal, 2001) by excluding the hydro-energy related projects submitted by Kyrgyzstan and Tajikistan (ICWC, 2012). The third program of ASBP had received 335 projects, and only 47 have been accepted where the projects of Kyrgyzstan were rejected because national interests of Kyrgyzstan were not matching the ASBP criteria (Sehring & Diebold, 2012). For example, the GEF is the main donor for the ASBP-1 projects, and in biodiversity-related projects along as seen in the Figure 22, Kazakhstan has received the most funding.

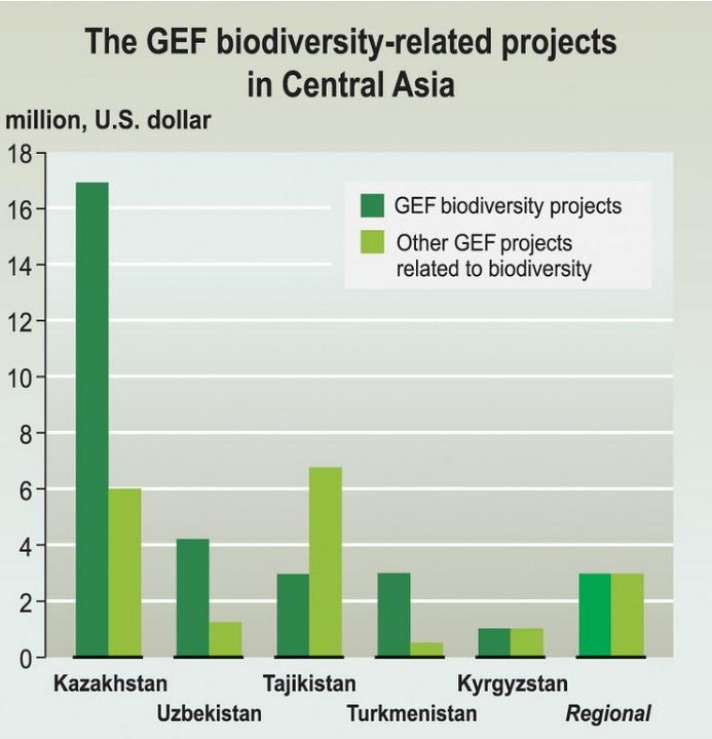

Figure 22. The GEF biodiversity-related projects in Central Asia

Source: (Zoi Environment Network, 2012, p. 74)

Upstream interests were disregarded not only by IFAS agreements, but also through projects funded by international donors. Sievers (2002) has analyzed one of the projects carried out by the IFAS under the financing from the World Bank called the Global Environmental Facility Aral Sea project (AralGEF). AralGEF was initially proclaimed as a project that would benefit all Central Asian states through IFAS, however as it turned out ‘almost entirely an Uzbekistan project’ and ‘even the World Bank had

acknowledged that the project was compromised by its Uzbekocentrism' (Sievers, 2002, p. 393).

However hydro-hegemony is not static and one sided. Weaker states also can affect decisions through counter-hegemony. For example, Kyrgyzstan drew out of the IFAS although it has not yet ceased its membership entirely. Although this has been first met with criticism, after numerous accusations by Kyrgyzstan in the biased and inefficient work of IFAS, this has also drawn attention of the international public. Kyrgyzstan's withdrawal from IFAS has raised concerns of international donors in the real effectiveness of this RBO. As the result downstream states have tried to draw Kyrgyzstan's attention and persuade it to join this RBO again.

6.1.4 Ideational Power

'Conflicts in water management and operation, and water allocation between the countries of the region have been avoided [...] the volume of water used in the region has been reduced' claims the Director of the Scientific Information Centre (SIC) located in Uzbekistan of the Interstate Coordination Water Commission (ICWC) (Dukhovny & Sokolov, 2003, p. 31). Despite the presence of the interstate water-energy conflicts in Central Asia, Uzbekistan succeeds to continually reject that tensions exist while the hegemonized riparians feel 'victimized or unjustly treated' (Kemelova&Zhalkubaev quoted in (Wegerich, 2008, p. 81)).

Kai Wegerich (2008) has conducted research on how control over data, ongoing discourse development as well as water infrastructure may affect the position of hydro-hegemons in the case of Amu Darya river basin, with emphasis on Uzbekistan as the potential hydro-hegemon of the region. Author acknowledges that military strong Uzbekistan with the biggest share of irrigated area in the Aral Sea basin as well as the biggest total population often appears as the strong hydro-hegemon. Menga (2018) is very confident about the position of Uzbekistan as the main hydro-hegemon of the region. Menga claims that Uzbekistan's water hegemony is the result of Soviet government as well as success of Uzbek government to sustain the status-quo unchanged. How Uzbekistan was able to achieve this is not always possible to see at

first. It is often through hidden discourses and promotion of certain ideology that certain even rather unjust systems remain in place.

Wegerich (2008) provides unofficial data that demonstrates that water use has in fact increased despite that official data shows the opposite. Wegerich demonstrates how Uzbekistan uses both contradictory data as well as discourse developed by its key experts to insert influence and to increase its ideational power. So, author also underlines the 'unique and powerful position [of Uzbekistan] to deny any conflicts' (Wegerich, 2008, p. 81).

Another hegemonic tool used by hegemons is advancing the discourse of 'cooperation'. Because there is a regional agreement and RBO, then it has been for a long time promoted that Central Asian states have made a long way forward towards 'cooperation'. However, as Zeitoun and Warner (2006) suggest one should be more careful and study cooperation by asking 'who gets how much water, how and why' within this cooperative structure. Because by emphasizing the cooperative arrangements richer downstream riparians were able to practice the control over water resources and to keep the advantage from legacy of Soviet water allocation.

So, along with promoting 'cooperation' in Central Asia, downstream states like Uzbekistan have also been condemning the upstream hydropower dam projects. By promoting this discourse, the goal was to discourage international donor organizations from supporting hydroelectric projects. For example, as Beate Eschment claims Uzbekistan's negative attitude towards construction of Rogun plan became one of the triggers that caused Russia to terminate Rogun Plan Russia-Tajikistan Agreement that was under the construction (Eschment, 2011, p. 12; Granit, et al., 2010). Menga (2018) claims that by forestalling the hydroelectric projects of upstream states, Uzbekistan has been able to secure its water-intensive cotton industry, which is the primary source of profit for its political elite. Moreover, Uzbekistan has utilized its powers through five ways: (1) international support; (2) knowledge construction; (3) recourse to international law; (4) active stalling; and (5) resource capture (Figure 23), which will be described below.

Figure 23. Wielding Power: the five tactics forming the Uzbek hegemonic strategy
Source: (Menga , 2018, p. 151)

In terms of the first *international support* mechanism, Uzbekistan has carried out anti-dam discourse in order to curb financing from international donor organizations and to discourage states like Russia and Kazakhstan from supporting hydroelectric projects (Granit, et al., 2010). Therefore, Kyrgyzstan and Tajikistan countries struggle to gain the confidence of international fund and organizations for development of Kambarata and Rogun hydropower plants (Wegerich, 2008). These kinds of discourses are supported by different reasoning including reference to international law and emphasizing the seismicity of the area as dangerous for downstream states and environment (Menga, 2016; Norov, 2009). The second tactic is *knowledge construction*, which Menga identifies more as 'knowledge destruction' or 'discrediting knowledge' (2018, p. 156). Because this power's main objective is to confront the counter view and portrayal it as incompetent and fundamentally biased. Moreover, science-based knowledge is a powerful hegemonic strategy where counter-hegemonic one is impossible (Menga , 2018). In relation to the third mechanism related to *recourse to international law*, Menga thinks that Uzbekistan prefers to adopt 'a one-way (if not contradictory) understanding of the matter, since it does not respect the same principles for which it advocates' (2018, p. 159). As the fourth mechanism, Uzbekistan utilizes open *threats* and active blocking of roads and disconnecting gas supply to Tajikistan. And as the last fifth mechanism, despite blaming and blocking hydroelectricity

infrastructure development in the upstream states, Uzbekistan itself has already built several reservoirs to store winter water flowing from Kyrgyzstan in order to increase its self-sufficiency in water.

Turkmenistan and Kazakhstan, to a lesser extent, take a side of Uzbekistan and successfully develop the similar patterns of hegemonic strategies. For example, bilateral Chu-Talas Agreement signed between Kazakhstan and Kyrgyzstan in 2000 became a role model of cooperation of riparian states (CAWater-Info). Partial compensation of O&M costs by Kazakhstan in return to water release by Kyrgyzstan created beneficial conditions for both sides (Granit, et al., 2010). However, Zinzani and Menga criticize the 'depth and sustainability' of cooperation (Sehring J. , 2020). Kazakhstan became the Syrdarya Basin's hydro hegemon by influencing the agendas imposed on Kyrgyzstan (Zinzani & Menga, 2017).

Almaty Agreement on Cooperation in Joint Management, Use and Protection of Interstate Sources of Water Resources signed in 1992 became the tool of exploitation in terms of water management and its control. This agreement was criticized by Weinthal (2001), O'Hara (2003) and Menga (2016) for the incapability of the contract to meet the sectoral demands (the water, energy and agricultural) of the states and deal with interstate water tensions. However, Rahaman (2012), who analyzed the Almaty Agreement and the 2008 Statute of ICWC through the lens of 'internationally recognized transboundary water resources management principles', defines the positive development of the agreements. Thus, the inclusion of equitable and reasonable utilization, obligation not to cause significant harm, principles of cooperation, information exchange, notification, and peaceful settlement of disputes wisely covered the real intentions of the hegemons and made the agreement untouchable in itself. Findings obtained during the research can explain the passive attention of international fund and donors towards questionable Almaty Agreement.

6.2 THE COUNTER-HEGEMONIC STRATEGY OF POORER UPSTREAM STATES

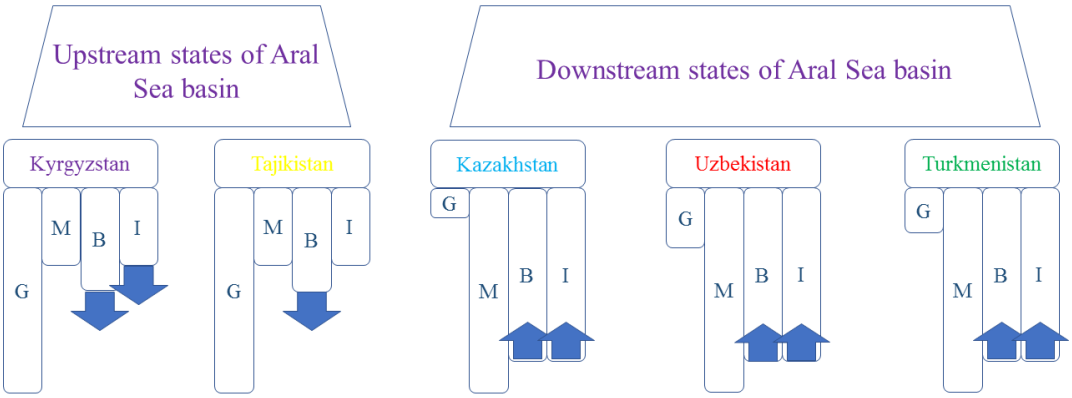

Figure 24. Changed power dimensions of ASB riparians after 2016

Source: Developed by author based on Hydro-Hegemony Framework elaborated by (Cascao & Zeitoun, Power, Hegemony and Critical Hydropolitics, 2010a)

Final and most important part of the work will scrutinize the counter-hegemonic dimensions of the non-hegemons and their impact on the hegemonic discourses of the hegemons.

As it was mentioned in previous chapters, upstream countries of the Central Asia historically used to be the weakest part of the region. However, the tipping point has been achieved with officially launched of Central Asia South Asia Power Transmission Project (CASA-1000) on 11 May, 2016 initiated by the World Bank and funded by International Financial Institutions (IFIs), comprising the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the International Finance Corporation (IFC), the Islamic Development Bank (IsDB) and the World Bank in amount of $1.7 billion (The World Bank, 2015).

This project pursues the development of electricity trade of 1 300 megawatts (MW) by producing the energy from already installed capacity. Once the project will be finished, it will allow Tajikistan and Kyrgyzstan to get profit from unused electricity produced in summer that was problematic to sell to downstream Central Asian states (Figure 25).

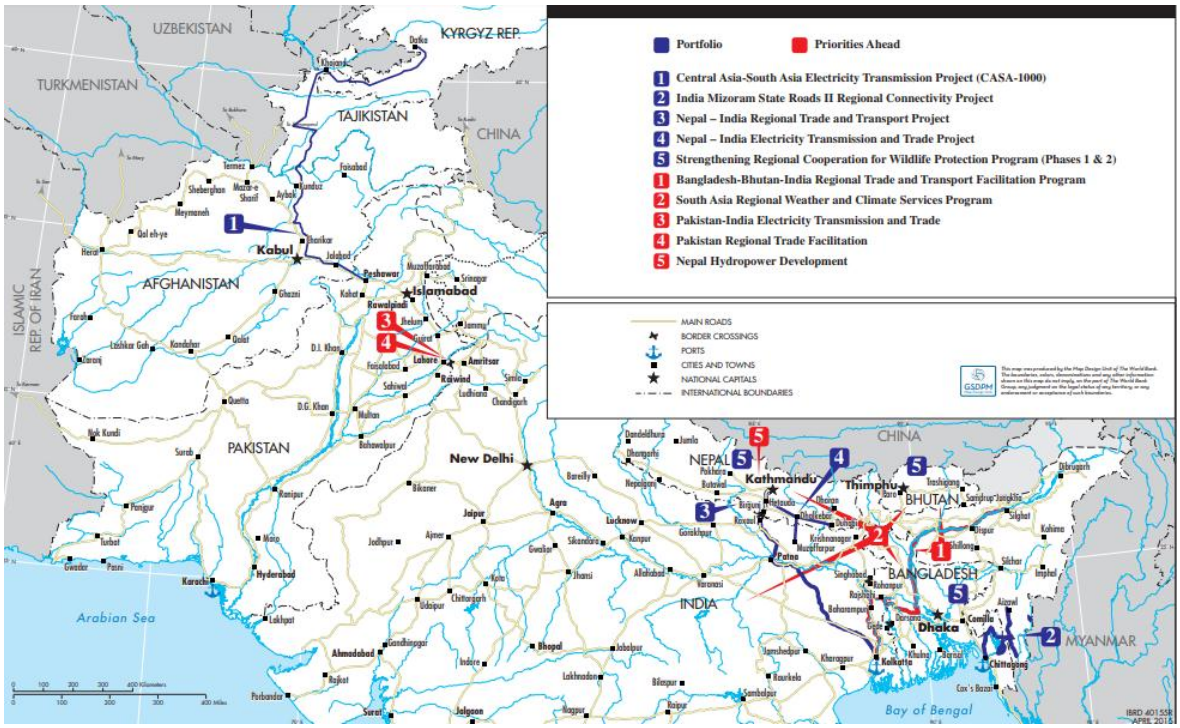

Figure 25. South Asia Regional Integration Lending

Source: (The World Bank, 2015)

This project remarkably changed the general attitude and behavior of upstream countries who were struggling to strengthen their positions among rich downstream states.

IFAS was practicing zero-sum game for last 25 year without taking into consideration the interests of water distributing, but poor countries. As Weinthal noted, IFAS was not suitable organization for dealing with multisectoral conflicts at the interstate level because it was mainly focused on water and agricultural issues. (Wienthal, 2001). So, CASA-1000 project became a good opportunity to realize countries potentials through international funds.

During the similar time period, Kyrgyzstan announced its membership withdrawal from IFAS organization. It was argued that IFAS did not consider Kyrgyzstan's interests and was limited from the participation to ASBP projects. But it was obvious, as ASBP was largely focused on development of agricultural projects and programs (Wienthal, 2001).

It is still very early to make any assumptions about the effectiveness of the CASA-1000 Project, but it can become a good solution for regional water-energy disputes. As purchased energy will be produced during the summer, it, on the one hand, will be not

water consumptive utilization, and on the other hand, it will allow keeping water of the dams for summer irrigation purposes. The export of surplus energy will generate foreign exchange revenues that can be used for fossil fuels purchase for heating purposes in winter. So, if the negotiations will go on, it will balance asymmetrical hegemonic discourses and establish new rules for win-win game.

Increased bargaining power of upstream countries changed the power dimensions of stakeholders where pills of ideational, along with pillars of bargaining power of Kyrgyzstan and Tajikistan noticeably enhanced. So, even small 'wriggle room' of material power and advantageous position of these countries promoted the growth of other two pillars in positive way. The Figure 24 shows how power dimensions of downstream states were impacted due to the transformations of pillars. Thus, the counter-hegemonic attitudes of 'weakers' affect the asymmetry of powers where strong riparians became aware of the power of non-hegemons.

CHAPTER 7.

CONCLUSION

In the last decade there has been an overemphasis of the role of institutional arrangements (like river basin organizations- RBO) as successful and cooperative solutions for transboundary water conflicts. Contrary to the predictions of emergence of violent water conflicts in the beginning of 1990s (Homer-Dixon, 1994; Gleick, 1994), following the Soviet collapse Central Asian states have been able to establish the International Fund for Saving the Aral Sea (IFAS). While this has certainly been a big step forward, international community often interpreted it as a cooperative arrangement and one of the core reasons why violent conflicts have not occurred here. It was hoped that IFAS would turn into a regional platform where riparians could come together to solve urgent issues.

While the value and potential virtues of RBOs and IFAS is recognized and appreciated, it is also advisable to be mindful of the role of power and politics in transboundary water management. In the quest for "who gets how much water and how", more powerful states often utilize different sources of power to sustain more favorable conditions in their control over shared water. Previous studies have demonstrated how institutional arrangements may contribute to structural inequality and result in more inefficient water management, which upon accumulation may further contribute to the escalation of a conflict (Selby, 2013).

In order to reflect on the role of politics and power in the functioning of RBOs in particular, author turns to Lukes' power theory and Gramsci's hegemony theory, which have been studied by different water scholars from the LWRG who further came up with the hydro-hegemony concept (Cascao & Zeitoun, 2010a; Menga , 2018; Mirumachi, 2007; Wegerich, 2008). By utilizing the hydro-hegemony concept author attempts to answer the question of how IFAS has been hegemonized and used in the interests of stronger downstream riparians in Central Asia. To accomplish this, present study incorporates a theoretical introduction to hydro-hegemony concept, explains the history of water problems in Central Asia, reflects of the process of IFAS establishment

and most importantly analyzes IFAS using the hydro-hegemony concept. Using the four pillars of hydro-hegemony concept (geographic, material, bargaining and ideational) has helped to shed light on the work of IFAS that contradicts its promoted image of cooperative institution. While geographic and material pillars are visible and known, more important are bargaining and ideational pillars of power, which are used by hegemons in covert form.

Analysis of bargaining pillar has demonstrated that IFAS has institutionalized priority of water use for downstream states through legal agreements that prioritize irrigation and agriculture sector as well as through establishing the continuation of the Soviet water allocation and management. Moreover, presence of headquarters of both IFAS and other water institutions mainly in downstream states increases their bargaining power as conferences and meetings take place there, and in which mainly citizens of these hegemon states work. This adds up to the already existing advantage in terms of expertise, which is the result of many decades of well-functioning irrigation sector in downstream states. Moreover, this pillar also has helped to emphasize on the important role of international donor organizations, which also contribute to the power asymmetry by giving priority to downstream states in funding their water projects, which also exclude projects related to hydro-energy.

Ideational pillar has also demonstrated how different discourses are promoted by downstream states in their quest for water. One of such discourses is – cooperation. Despite existing inequality and tension over water allocation, IFAS is continuously promoted as part of cooperative and exemplary water interaction. As it turns out, it is merely a 'domination dressed up as cooperation', which result in misleading impressions that advocates policies that legitimize injustices and inequities. In this case, while cooperation discourse is used to promote hegemonic ideas as right, it hides negative effects of power asymmetry. Another discourse used in this region by downstream hegemons is against dam construction, in which reference is made to international law and environmental consequences of dams.

Another important contribution made by the hydro-hegemony is that power asymmetry is not static, even within IFAS. For example, by withdrawing from the IFAS Kyrgyzstan, despite all the criticism, has been able to draw attention of the international organizations, which now question the real success behind this RBO. At the same time,

this gave Kyrgyzstan more leverage in affecting downstream states to be more responsive to its proposals. Moreover, infrastructure development- like construction of Rogun dam in Tajikistan and Kambarata dams in Kyrgyzstan- have also affected the counter-hegemonizing potential of upperstream states.

The results of this study conform with the claims of Weinthal that IFAS is not suitable organization for dealing with multisectoral conflicts on the transboundary level as it prioritizes sectors well developed in downstream states. This study also agrees with the remarks of Kyrgyzstan's president, Sooronbay Zheenbekov that important reforms need to be carried out within IFAS. Otherwise, while adopted policies further obscure and legitimize injustice and inequities in water allocation, this may contribute to the escalation of a conflict. It is advised that future studies look at how IFAS can be reformed to be more inclusive, independent and objective. It is also advised that such studies refrain from purely technocratic perspective, but take into consideration the role of power and politics.

APPENDICES

APPENDIX 1

Statement

of

heads of water economy organizations

of

Central Asian Republics and Kazakhstan

adopted on October 10-12, 1991

Tashkent, Uzbekistan

We, heads of water-economy organizations of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan as a professionals, assessing inevitability of complicated situation connected with rising water deficit and ecological stress strengthening in the Aral sea basin, grounding on historical community equal rights and responsibilities for region water resources rational use reckon necessary:

recognize exclusive peculiarity of limited water basin which is the Aral sea basin, and necessity to take measures to avoid negative consequences connected with the Aral sea desiccation;

recognize indissoluble interdependence and relationship of all region peoples interests in common water resources use as a unified whole on the common principles and their consumption equitable regulation with regard to the all peoples interests;

reckon as reasonable under conditions of former economic relations interruption to unit existing and potential systems power for their common use, to continue study of opportunities for long-term co-operation, prospective development programs elaboration and joint institutional structures creation for activity coordination;

implement interstate water intake limits elaboration and correction, water consumption over the years and sources with due regard to guaranteed water supply to the Aral sea and Aral side;

reckon that priority task is relative equilibrium preservation, water supply provision in low reaches of Amudarya and Syrdarya due to establishing of the definite share for each republic;

provide full information exchange about water resources use, water consumption infrastructure, legal and other documents, determining the status of water as a resource and order of its use in the republics;

do not undertake any actions which can cause negative consequences for neighbors;

solve all disputes with participation of interested organizations' heads and independent sides representative.

Only unity and mutual coordination of our actions may lead to efficient solution of water related problems in the region under conditions of raising ecological stress.

State Committee for Water Resources of Kazakhstan	Minister of Land Reclamation and Water Resources Management of Kyrgyzstan	Minister of Land Reclamation and Water Resources Management of Tajikistan	Minister of Land Reclamation and Water Resources Management of Uzbekistan	First Deputy of Minister of Land Reclamation and Water Resources Management of Turkmenistan
N.Kipshakbayev	V.Melnichenko	A.Nurov	R.Giniyatullin	A.Avezov

APPENDIX 2

Agreement

Between the Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan and Turkmenistan

On

Cooperation in the Field of Joint Management on Utilization and Protection of Water Resources from Interstate Sources

Adopted on February 18, 1992

Almaty, Kazakhstan

The Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan and Turkmenistan, hereinafter referred to as 'the Parties',

- Guided by the need for coordinated and organized solution of issues related to joint management of interstate water resources and for further pursuing coordinated policy in the interests of economic growth and rising living standards;
- Based on the historical community of peoples living in the republics, their equal rights and responsibility for ensuring rational use and protection of water resources;
- Recognizing interdependence and interconnection of interests of all the republics in dealing with joint use of water resources according to the principles common for the entire region and equitable regulation of their use;
- Considering that only integration and joint coordination of actions will enable favourable conditions to deal with socio-economic problems, mitigate and stabilize ecological stress, which originated as a consequence of water resources exhaustion, as well as taking into account that there is imbalance in irrigated land availability per capita in the Republic of Tajikistan, and recognizing potential increase of water supply for irrigated agriculture;
- Respecting established structure and principles of water allocation and relying on regulatory documents on allocation of water resources from interstate sources currently in force;
- Have agreed upon the following:

Article 1

While recognizing community and integrity of water resources in the region, the Parties shall equal rights to water use and responsibility to ensure rational use and protection of water.

Article 2

The Parties shall ensure that the agreed procedure and established rules for water use and protection are strictly observed.

Article 3

Each Party of the Agreement shall refrain from actions on their respective territories that might affect interests of other contracting Parties and cause them harm, lead to deviation from agreed volumes of water discharges and pollution of water sources.

Article 4

The Parties shall work together to address environmental problems resulted from drying up of the Aral Sea and set amounts of sanitary water releases for every given year in view of water content in interstate sources.

In case of extremely dry years, a special separate decision shall be made to supply water for areas experiencing severe water scarcity.

Article 5

The Parties will facilitate wide information exchange on scientific and technological advances in the field of water management, integrated use and protection of water resources [as well as promote] joint research to provide scientific and technological inputs and expert appraisals of project plans of water management facilities and economic assets.

Article 6

The Parties agree on joint use of productive potential of the republics' water economy.

Article 7

The Parties decided to establish on parity basis Interstate Commission for Water Coordination to deal with the issues related to regulation, rational use and protection of water resources from interstate sources, which would be comprised of the heads of water agencies to meet quarterly and as the occasion requires – on the Parties' initiative.

The Commission's meetings are held by turns under the chairmanship of the host country's representative in the capital of this country.

Article 8

The Interstate Commission for Water Coordination is authorized to:

- determine water policy in the region, elaborate its key directions taking into account all economic branches' needs, integrated and rational use of water resources, and long-term regional water supply program and measures for its implementation;
- elaborate and approve annually water consumption quotas for each republic and the region as a whole, schedules for reservoir operation regimes, their correction according to revised forecasts, depending on actual flow probability and water-economic situation.

Article 9

The executive and interministerial control bodies of the Interstate Commission for Water Coordination are Basin Water Organizations "Syrdarya" and "Amudarya", which must function under conditions that all structures along the rivers and water sources operated by these organizations are the property of the republics and provisionally transferred [to BWOs] without the right of disposal and redemption as of 1.01.1992.

The Basin Water Organizations are financed through allocation of national water agencies on parity and shared basis.

Article 10

The Commission and its executive bodies shall ensure that:

- water release regime and water use quotas are strictly observed;
- measures for rational water use and conservation, sanitary water releases along the river channels and through irrigation systems (where appropriate), and guaranteed water supply to river deltas and the Aral Sea with a view of environmental enhancement and water quality maintenance, according to achieved agreements, are implemented.

Article 11

Decisions taken by the Interstate Commission for Water Coordination regarding compliance with established water withdrawal quotas, rational water use and protection are mandatory for all water consumers and users.

Article 12

The Parties agreed to elaborate within 1992 a mechanism of economic and other liability for violation of the agreed water use regime and quotas.

Article 13

All disputes shall be settled by the heads of national water agencies, with involvement of third party, if necessary.

Article 14

This Agreement can be amended or supplemented only through collective discussion by all the Parties to the Agreement.

Article 15

This Agreement shall become effective on the date of signing.

The Agreement is signed in Alma-Ata on the 18th of February 1992.

For the Republic of Kazakhstan	N. Kipshakbayev
For the Kyrgyz Republic	M.Zulpuyev
For the Republic of Tajikistan	A.Nurov
For Turkmenistan	A.Ilamanov
For the Republic of Uzbekistan	R.Giniyatullin

APPENDIX 3

Agreement

Between the Republic of Kazakhstan, Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan, and Republic of Uzbekistan

On

Joint activities in addressing the Aral Sea and the zone around the Sea crisis, improving the environment, and enduring the social and economic development of the Aral Sea region

Adopted on March 26, 1993

Kzyl-Orda, Kazakhstan

Republic of Kazakhstan, Republic of Kyrgyz tan, Republic of Tajikistan, Turkmenistan, and Republic of Uzbekistan, hereinafter referred to as states-participants:

- Taking into account the global character of the Aral Sea designation and the associated deterioration of the environment in the zone close to the Sea, as well as the overall ecological crisis resulting from the deficit of water resources in the basin;
- Realizing the danger of the process taking place to the health and well-being of the people in the region, and its negative impact on the environment in other regions, the air basin balance, the economic development and basic functioning of the Aral region, and its negative impact on the environment in other regions, the economic development and basic functioning of the Aral region countries;
- Recognizing the necessity and urgency of uniting material and financial resources in order to overcome the crisis an environmental safety system in the region, primarily in the zone around the Sea;
- Confirming their commitment to the international water law principles, respecting the mutual interests of each of the sovereign states-participants of this Agreement in the matters of usage and protection of water resources in the basin, proceeding from the necessity of preserving the Sea;

Agreed upon the following:

Article 1

States-participants recognize as common objectives:

- ensuring rational usage of the limited land and water resources of the Aral Sea basin in order to ensure the necessary social and economic development and well-being of their people;
- maintaining the required water quality in the rivers, reservoirs, and springs, due to an, in future, preventing the release into these bodies of industrial and urban waste waters, and polluted and mineralized collector and drainage waters;
- ensuring the water inflows to the Aral Sea required for sustaining its lowered but stable, ecologically acceptable, levels and by this means preserving the Sea as an object of nature;
- restoring the balance of the destroyed ecosystems in the region, primarily in the Amu Darya and Syr Darya Deltas and on the exposed seabed areas, creating manmade stable landscapes there;
- regulating the system and enhancing the discipline of water usage in the basin, and working out the required interstate legal and regulatory acts that will provide for the application, for the region, of unified principles of indemnifying for damages;
- improving the sanitary and medico-biological living conditions, especially for the sea zone residents, and addressing the urgent problem of a clean drinking water supply for the region;
- working out and implementing the coordinated social and economic development strategy that would meet the requirements of environmental safety for the people in the region;
- carrying out the measures for the protection of migrating animals, including those inhabiting the areas that border on the states-participants, and for creating the nature reserve zones;

- on the basis of the new mutually acceptable terms that have been worked out, resuming the work on having additional water resources flow into the Aral Sea Basin;

- fostering, to the maximum extent, scientific research, projects, and other kinds of activities aimed at the resolution of the listed tasks;

- creating most favored nation treatment conditions, and granting privileges and protection measures to the investors that put their funds into the programs and works aimed at environmental sanitation and social and economic development of the region.

Article 2

States-participants consider it necessary:

- to establish, on a parity basis, the Interstate Council on the Problems of the Aral Sea Basin, and under it:

    - Standing Tashkent-based Executive Committee;

    - Commission for Social and Economic Development and Cooperation in Scientific, Technical, and Ecological Spheres;

    - Interstate Commission for Water Coordination, acting in conformity with the Agreement signed on February 18, 1992 in Almaty.

The statute on Interstate Agreement is approved by the Heads of the states-participants

States-participants agreed to draft a joint conception of addressing the Aral Sea crisis and rehabilitating the environment in the area around the Sea, and to draw up a coordinated program on the scientific research and activities, and also to create a common information system of monitoring the environment and to organize issuance of the "Information Review" on the Aral Sea Basin problems.

Article 3

The Russian Federation participates in the Interstate Council work as an observer in addressing the Aral Sea crisis and the rehabilitation of the disaster zone. It also provides

the required financial and technical assistance in water treatment, creating the domestic and drinking water supply system in the region and fighting desertification.

The Russian Federation also cooperates in the scientific and technical spheres, in designing projects of regional significance, in creating the environment monitoring system, and renders expert services and also assists in the training of specialists.

Article 4

The present Agreement is open for joining to any state interested in addressing the tasks and objectives determined within it.

This Agreement is concluded for a ten-year period and is being considered for extension for a similar time period, provided none of the states-participants rejects it.

A state-participant can withdraw from this Agreement having informed the Depository and other states-participants of its intent at least six months in advance.

Article 5

The present Agreement comes into force upon signature.

Executed in Kzyl-Orda on March 26, 1993 in one original copy in Russian. The original copy is kept in the Archives of the Government of the Republic of Kazakhstan, and the latter will forward the certified copy to the states that have signed this Agreement.

For the Republic of Kazakhstan	N. Nazarbayev
For the Kyrgyz Republic	A.Akayev
For the Republic of Tajikistan	E.Rakhmonov
For Turkmenistan	S. Niyazov
For the Republic of Uzbekistan	I. Karimov

APPENDIX 4

Official Documents

1	The Agreement about the status of IFAS and its organizations (Ashgabat, April 1999)	- Approval on all six bodies of the IFAS - Privileges and immunities of personnel - Changes can be made under consent of all parties.
2	The Regulation of IFAS (April 1999)	- Sets the main purpose of IFAS as: the financing and crediting of joint practical actions and perspective programs and projects for the Aral sea saving, ecological rehabilitation of Pryaralye and of the Aral Sea Basin as a whole with account of the interests of all the states of the region - IFAS President approves the location of the created regional projects and agencies financed by the states upon the agreement with the founding Heads of states - Financing of the IFAS will be based on the contributions of the states-founders and participants based on their budget revenues in the amount of: Kazakhstan- 0.3% Uzbekistan- 0.3% Turkmenistan- 0.3% Kyrgyzstan- 0.1% Tajikistan- 0.1% - The main objective of IFAS: a. joint interstate ecological and scientific-practical programs and projects aimed at the Aral sea saving and the recovery of the ecological situation in the districts subjected to the Aral sea disaster, and also the solution of the general socio-ecological problems of the region b. participation in realization of international

		programs and projects on the Aral Sea saving and the Aral Sea basin ecological recovery - president of the IFAS is elected by the Heads of states- members
3	Documents of anniversary meeting of IFAS Executive Committee- 28 August 2003	During the official speech of the vice prime-minister of Kazakhstan: - the importance of the IFAS role was underlined as 20 projects under it have already been implemented - the projects that have been implemented were mentioned: among them- the World Bank (WB) 64,5 million USD project on maintaining and preserving multiple dams and the Aral Sea,.77% of the expenses came from the WB loan and the rest from Kazakhstan - condemning 'some' Central Asian members states (in reference to Turkmenistan and Uzbekistan) for not following the procedural rules of the IFAS - Condemning the fact that regional organization of IFAS for the Syr Darya and Amu Darya river are located in Uzbekistan, as the result of which the workers in these organizations are mainly Uzbeks, which increases bias and support of Uzbek interests within IFAS. During the official speech of the vice prime-minister of Kyrgyzstan: - Claimed that oncluding on the work of the IFAS in the last 10 years, it became clear that important reforms are needed - Criticizes the work of implementing international organizations- so proposes as one of important steps in these reforms to include- stopping costly conferences and roundtables that international organizations continuously carry out to present

		reports that were initially prepared by the member states themselves. During the official speech of the vice minister of Water resources department of Turkmenistan: - Plans about constructing the Golden Lake are announced. The goal will be to collect 145 km^3 at the cost of 4,5-5 bln USD. The official speech of the vice minister of Water resources and agriculture department of Uzbekistan The official speech of the vice prime-minister of Tajikistan
4	Resolution of the UN General Assembly A/RES/63/133 'Observer status for the International Fund for Saving the Aral Sea in the General Assembly' (2008)	Allows IFAS to participate in the sessions and the work of the General Assembly in the capacity of observer
5	Summit of Central Asian presidents-founding members of IFAS (2018)	While presidents of Kazakhstan, Uzbekistan, Turkmenistan have praised the work of the IFAS and called for continuation of such effort, president of Kyrgyzstan has made important recommendations regarding reforms: 1. IFAS should go back to its initial primary goal as a center for accumulating finances and investments for carrying out urgent projects in water use aimed at socio-economic and sustainable development of all Central Asian states. 2. Exclude the ICSD and ICWC from administrative positions within the IFAS. And instead establish joint organizations that recognize water and energy demands of Central Asian states with consideration of hydropower interests of upstream states.

		3. Replace the IFAS representative centers in member states, establish member representation within the EC-IFAS. 4. Conduct independent audit of IFAS financial activity 5. Change the member states financial contribution to the IFAS budget based on the interests and demands of the member states, and remove the compulsory condition and make it on voluntary basis 6. Reform the legal and institutional arrangements of the IFAS with consideration of the abovementioned remarks.

APPENDIX 5

ASBP-1 Projects (1994-1997)

1994- Water Resources Management and Agricultural Production in the Central Asian Republics (WARMAP) Initiated by: European Union, Technical Assistance for the Commonwealth of Independent States (EU-TACIS)	Actors: Central Asian states, the World Bank, and other donor organizations Goal: - primarily emphasized increasing water efficiency rates at the farm level - support the executive committee of ICAS and related institutional bodies - capacity building - the development of water resources management strategies - the creation of a management information system for ICAS and - improvements in irrigated crop production system Results: - conclusion of a Water Resources Management Strategy
Water and Environment Management Project (WEMP)	The largest regional project was the GEF-funded Water and Environment Management Project (WEMP), funded by the governments of the Netherlands and Sweden. The total project budget comprised USD 21.5 million, including USD 9.3 million from the GEF, USD 4.1 million from the five Central Asian States, USD 2.8 million from the Government of the Netherlands, USD 1.4 million from the EU/TACIS, USD 1 million from the Swedish International Development Agency. The project consisted of six components: Component A: National and Regional Water and Soil Salt Management. Component B: Public Awareness.

	Component C: Dam Safety and Reservoir Management. Component D: Transboundary Water Flow Monitoring. Component E: Wetlands Restoration (focused on a lake Sudochye in Uzbekistan)
Ensuring the stability of dams and reservoirs	Funded by Switzerland and partially by the Central Asian States this project completed assessment of safety and stability of 10 dams, two in each of the five countries in the region and developed appropriate investment plans.
National Hydrometeorological Services (NMHS)	Under supervision of Swiss experts, it was proposed to equip 25 transboundary waters monitoring stations with hydrological equipment to process and transfer data to the NMHS. The Swiss government funded equipment of experimental meteorological and hydrological stations in Uzbekistan and Tajikistan. The UK and U.S. governments funded the purchase of equipment for the NMHS in Uzbekistan to receive and process satellite data.
Regional Environmental Information System	A series of activities was implemented under the guidance of the TACIS-WARMAP experts. The project established two regional and five national centers hosting databases on the environment and water resources. This resulted in online publishing of the five updated reports reflecting the current environmental situation.
Water quality management	Numerous detailed reports were produced on the use of water resources, their quality assessment and management practices, development of pilot projects, proposals for improving the legal framework, standards and regulations, options and issues in strategic planning, pollution prevention, water quality management. The research was funded mainly by the Government of the Kingdom of the Netherlands.
Drainage system in Uzbekistan	Irrigation and Drainage Sector Development Strategy and supervised preparation of the feasibility report and the feasibility study of this project.
Restoration of wetlands	In close cooperation with local experts, international

	consultants undertook a series of preliminary studies, the results of which laid grounds to prepare a coherent strategy for restoration of biological diversity, and contained an assessment of prospects of the Pilot Project to restore the biological diversity of the Lake Sudochye worth USD 3.9 million. The project was included in the GEF-funded WEMP project, and its implementation was successfully completed in mid-2002.
Restoration of the Northern Aral Sea	The work started with identification and assessment efforts under the project 'Regulation of the Syr Darya River flow and the water level in the northern part of the Aral Sea' (Stage I), which had an overall budget of USD 65 million. This project was the first major investment project within the general Program for the economic development in the Kazakhstan part of the Syr Darya River Basin, devised in accordance with the main lines of action of the ASBP. The Project provided for six components: restoration of the Northern Aral Sea, improvement of hydrological monitoring of Syr Darya River, restoration of Shardara Dam, restoration of aquatic biological resources; monitoring and evaluation; institutional development. The main objectives of the project were to: (I) develop the agriculture (including livestock industry) and fisheries in the Kazakhstan part of the Syr Darya Basin; (II) preserve the Northern Aral Sea and improve the environment in the delta of Syr Darya and in the Aral Sea Region.
Environmental studies in the Aral Sea Basin	With the financial support from international donors, the Program undertook several environmental studies on the Aral Sea shrinkage impact.
Syr Darya River Flow Regulation and Delta Development Project	The project was implemented as a component of the umbrella Project on Regulation of the Syr Darya River Flow and Preservation of the Northern Aral Sea. Preliminary stages

	were funded by the Government of Italy.
Clean water supply, sanitation and health – Uzbekistan	Funding was provided by the World Bank (USD 75 million), the Government of Germany (USD 9.4 million), and the Kuwait Fund (USD 19.8 million). The main components of the project included: (I) improvements in water supply; (II) improvements in sanitation, health and hygiene; (III) provision of technical assistance; (IV) project management, design and supervision.
Clean water supply, sanitation and health – Turkmenistan	The overall cost of the project was USD 30.3 million.
Clean water supply, sanitation and health – Kazakhstan	funded by the World Bank (USD 7.7 million) in 1998 and the follow-up project funded by the Government of Germany (USD 7.7 million) and the Kuwait Fund (USD 11.5 million).
Operational management of water resources	The purchase and installation of equipment and training of local staff was financed by the Government of Canada and the US government.
Capacity Development	The Government of the Netherlands funded the equipment of the ICAS and IFAS offices. The funding from the UNDP was used for the capacity development project in regional organizations. The main objective of the project was to build the capacity of ICAS and its institutions (ICSD and ICWC).

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