

WATER & CONFLICT

THE GROWING CHALLENGE

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As water becomes scarce, and the demand for water increases with the global population growing, there are signs of existing water treaties between states being broken and weak responses by regional bodies in facing the challenge. Crucially, the areas most affected are those with the fastest growing and most poverty-stricken populations. Forced migration caused by lack of water and resources increases urban populations and with it the demand for sanitation and electricity which in some of the areas most affected by water shortages and inter-state water disputes is the product of hydro-generation.

Some areas of high risk of water conflict:

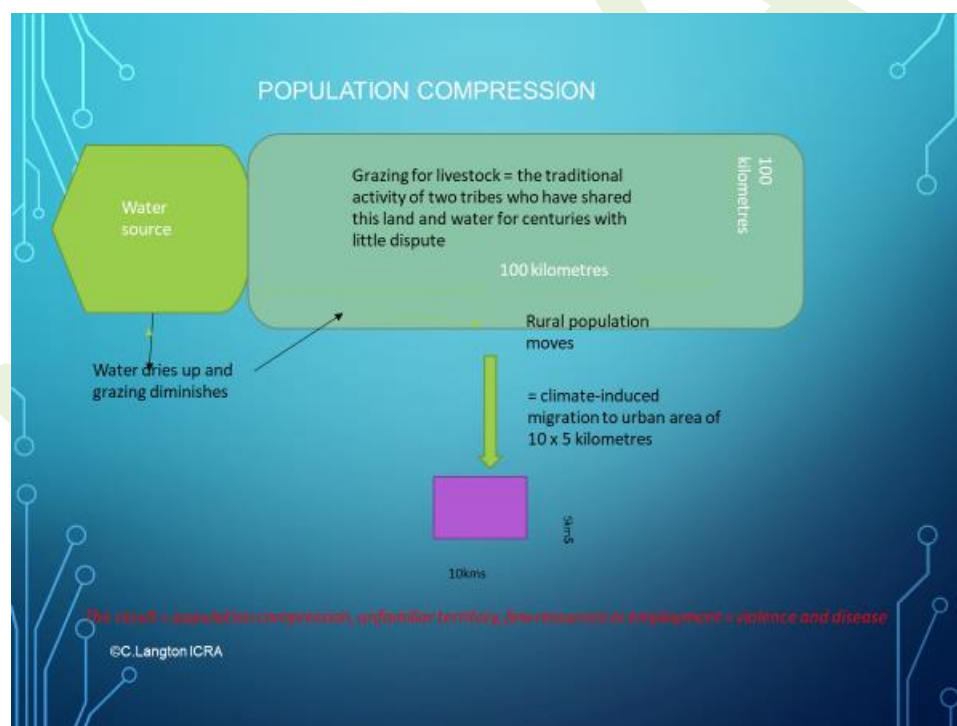
- The River Nile water system
- The Tigris-Euphrates water system
- The Amu Darya and Syr Darya water systems
 - South Himalayan water systems
 - Afghanistan: The Helmand River system

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INTRODUCTION

Over the last sixty years at least forty percent of all intrastate conflicts have been connected to natural resources¹. Their exploitation has fuelled at least eighteen violent conflicts since 1990. Civil wars in Africa such as those in Angola, Sierra Leone, Liberia and the Democratic Republic of Congo are linked to resources like timber, diamonds, gold, minerals and oil. Other conflicts, including those in Darfur (Sudan) and the Middle East, initiated from the control of scarce resources such as fertile land and water.

Conflicts over natural resources are bound to increase in the coming years as the demand grows. Climate change and its potential consequences such as population displacement and compression need to be considered when assessing resource availability, such as water.



WHAT IS A WATER CONFLICT?

The potential link between water availability and conflict is not a new concept. The UN has highlighted the lack of access to clean water as a significant health problem for 1 billion people². For the last three decades, it has also brought attention to freshwater scarcity as a security issue. Three

¹ Land and Conflict. UN Interagency Framework Team for Preventive Action.

http://www.un.org/en/events/environmentconflictday/pdf/GN_Land_Consultation.pdf

² General Assembly declares access to clean water and sanitation is a human right. July 28, 2010.

http://www.un.org/apps/news/story.asp?NewsID=35456#.VqpHu_L2aUk

former UN Secretary-Generals spoke of potential water conflict. In 1985, Boutros Boutros-Ghali said “The next war in the Middle East will be fought over water, not politics”. In 2001, Kofi Annan said that “fierce competition for fresh water may well become a source of conflict and wars in the future”. And in 2007, Ban Ki Moon said “Water scarcity threatens economic and social gains and is a potent fuel for wars and conflict”.

Water scarcity occurs when its collective use has a direct impact on the supply or quality of water available. Since 1950, water supply per person has decreased by almost 60 per cent as the world population has increased to 6 billion. It is estimated that the number of water-scarce countries could increase to 29 by 2025³.

Although it has been argued that shared water has so far most often been a source of cooperation rather than conflict⁴, recent research has been consistent in linking a growing water scarcity to an increased risk of conflicts, not only between states but also between communities. It is believed that the water supply needed for 3 billion people in 48 countries may run scarce in 10 years⁵. According to a UN University report⁶, “The outcome points unerringly in the direction of intra-community and inter-sector competition over water which could lead to conflict”, and an effective management of water resources is essential for sustainable development. One common denominator of many disputes over shared basins is the unilateral decision by a regional power to build a dam or river diversion without signing an agreement with neighbouring countries⁷.

Water Scarcity and Climate Change

An increased risk of conflict in regions where water is scarce has been linked to climate change. In the Levant region - Syria, Lebanon, Israel, Jordan, and the occupied Palestinian territory (oPt) - the

³ The emerging global water crisis: managing scarcity and conflict between water users. W. A. Jury and H. J. Vaux, Jr. p. 27. 2007. http://inweh.unu.edu/wp-content/uploads/2013/05/WaterSecurity_The-Global-Water-Crisis.pdf

⁴ Water Security & the Global Water Agenda. UN University. P. vii. October 2013. http://www.unwater.org/fileadmin/user_upload/unwater_new/docs/analytical_brief_oct2013_web.pdf

⁵ How can we avoid conflicts over water? WEF February 25, 2015.

<http://www.weforum.org/agenda/2015/02/how-can-we-avoid-conflicts-over-water/>

⁶ Water in the world we want. United Nations University. 2015. <http://inweh.unu.edu/wp-content/uploads/2015/02/Water-in-the-World-We-Want.pdf> p.25

⁷ Dehydrating conflict. Sandra L. Postel and Aaron T. Wolf. September 18, 2001. <https://www.globalpolicy.org/component/content/article/198/40343.html>

increase in temperature and a decrease in rainfall may lead to the Euphrates River to shrink by 30 per cent and the Jordan River by 80 per cent by the end of this century, according to a report prepared by the Canadian International Institute for sustainable Development (IISD)⁸.

Persistent droughts like the one in the Horn of Africa (Somalia, Ethiopia, Eritrea, Djibouti and Sudan) in 2011 have highlighted unpredictable weather patterns that are the direct consequence of climate change⁹. Floods, wetland destruction and deforestation aggravate the risk of downstream flooding, which can be an additional reason for conflict.

CASE STUDIES

THE MIDDLE EAST

Iraq, Syria and Turkey

The Rivers

The **Tigris** and **Euphrates** flow across the “Fertile Crescent”, and they were the first rivers used for extensive irrigation. They both originate in Turkey. The Euphrates-Tigris River Basin is a transboundary basin that covers Iraq (46 per cent), Turkey (22 per cent), Iran (19 per cent), Syria (11 per cent), Saudi Arabia (1.9 per cent), and Jordan (0.03 per cent):

- The Euphrates flows out of Turkey into Syria and Iraq, out the Persian Gulf.
- The Tigris flows out of Turkey in the east through territory that is controlled by the Kurdish army in Iraq.

The Climate

The rainfall in the region has been below average for almost ten years now. Climate change with a below average rainfall and several water diversions from the region’s dams have caused a reduction of the flow of both the Tigris and Euphrates by more than 40 per cent in recent years, according to

⁸ Rising temperatures, rising tensions. Oli Brown and Alec Crawford. IISD. 2009.

http://www.iisd.org/pdf/2009/rising_temps_middle_east.pdf

⁹ Water in the water we want. Schuster Wallace C. J., Sandford R. UN University. 2015.

<http://inweh.unu.edu/wp-content/uploads/2015/02/Water-in-the-World-We-Want.pdf>

some¹⁰. In 2008, it was predicted that the drought would likely be permanent with the Euphrates' flow decreasing by over 70 per cent^{11,12}. The droughts that have hit Iraq and Syria in the winter 2013-2014.

The Concern

Syria and Iraq are opposed to any water development project planned by Turkey on the Euphrates and Tigris claiming they reduce the quantity of water flowing to their countries. The Euphrates has had a 40-45 per cent reduction in downstream water flow since the early 1970s as result of the construction of 32 dams¹³.

Additional issues:

- The Kurdish population living in the south eastern part of Turkey has been fighting to gain their independence from Turkey. Under the post-WWI Treaty of Sèvres in 1920, the Kurds were entitled to local autonomy, but Kemal Ataturk introduced a legislation that prohibited cultural independence for any minority. The ban was lifted in 2001, but issues remain.
- Syria's support for Kurdish separatists and Turkey's military support for Israel increased tensions between Syria and Turkey.

Timeline of tensions and agreements between Turkey, Syria and Iraq

Meetings between the countries involved have been taking place since the mid-1960s. Multilateral cooperation, especially between Syria and Turkey, has been helpful in the resolution process, although no final agreement has been reached as of today. The lack of a basin-wide international

¹⁰ Management of water resources in Iraq: perspectives and prognoses. Nadhir A. Al-Ansari. August 2013. <http://www.scirp.org/journal/PaperInformation.aspx?PaperID=35541>

¹¹ First super-high-resolution model projection that the ancient "Fertile Crescent" will disappear in this century. Akio Kitoh, Akiyo Yatagai and Pinhas Alpert. Hydrological Research Letters 2, 1-4 (2008). https://www.jstage.jst.go.jp/article/hrl/2/0/2_0_1/pdf

¹² Fertile Crescent 'will disappear this century'. July 29, 2009. <https://www.newscientist.com/article/mg20327194.200-fertile-crescent-will-disappear-this-century/>

¹³ The Euphrates in crisis. Channels of cooperation for a threatened river. M. Nouar Shamout with Glada Lahn. April 2015. https://www.chathamhouse.org/sites/files/chathamhouse/field/field_document/20150413Euphrates_0.pdf

agreement has hindered any durable management of the region's water supplies. Also, the absence of a water monitoring network prevents an accurate assessment of the water quality available¹⁴.

- In the 1930s, Turkey under Kemal Ataturk aimed to integrate eastern Anatolia through the construction of irrigation projects by using the Tigris and Euphrates.
- In the 1960s and 1970s, the Keban and the Karakay dams were built despite Syria and Iraq's concern over potential damage to their water supplies.
- The 1975 agreement between Syria and Iraq was reached after increasing tension between the two countries was defused thanks to Saudi Arabia's mediation. The agreement called for Syria to keep 42 per cent of the flow of the Euphrates within its borders, with Iraq keeping the remaining.
- In 1980, Turkey and Iraq established a Protocol of the Joint Economic Committee that allowed Joint Technical Committee meetings related to water issues. In 1983, Syria joined in.
- In the early 1980s, Turkey launched the **Southeastern Anatolian Development Project (GAP)**, an energy and agricultural development that includes 22 dams and 19 hydroelectric plants on both the Tigris and Euphrates. The completion of the project could reduce downstream water flow with 28 per cent of Turkey's water being potentially affected. The Ilisu Dam, the third biggest project of the GAP, was planned on the Tigris River near the border with Syria and represents the most controversial of the dams currently under construction¹⁵. Once completed, it is expected to generate about 25 per cent of the country's energy needs.

Issues derived from the dam¹⁶:

- ✓ Downstream **Syria and Iraq** said they had not been consulted on the risks that the project means for their food security and water supplies.
- ✓ The GAP project is located in **Kurdish areas** (90 per cent Kurds). Works were delayed following attack by the Kurdistan Workers' Party (PKK)¹⁷. Most recently in early

¹⁴ Euphrates-Tigris Basin. FAO. 2009. <http://www.fao.org/nr/water/aquastat/basins/euphrates-tigris/index.stm>

¹⁵ South-East Anatolian Project (GAP). <http://www.medea.be/en/themes/geopolitics/south-east-anatolian-project-gap/>

¹⁶ Ilisu Dam project, Turkey. Lucie Greyl. October 26, 2015. <https://ejatlas.org/conflict/ilisu-dam-project-turkey>

2015, the PKK destroyed machines and a pipe from the construction site. The Ilisu Dam is likely to force Kurds to move to the cities, and may cause water shortages for irrigation in the Iraqi valleys. Also, Hasankeyf is a 12,000-year-old town that is at risk of being submerged by the artificial lake of the Ilisu dam.

- ✓ Local communities are against the dam and have been actively protesting. Turkey responded with a **militarization of the site**.
 - ✓ European companies and international organisations have been funding the project through various consortia, but many have withdrawn following local campaigns against the project.
 - ✓ Turkey proposed the so called “Peace pipeline” that was never implemented as it lacked any positive response from the parties involved. The pipeline would tap water of the two rivers and divert it to the south – one pipeline would cross Syria and flow water to eastern Saudi Arabia and the Gulf states (Bahrain, Qatar and the United Arab Emirates); the second pipeline would go through Syria and Jordan along the coast to the Red Sea in Saudi Arabia.
 - ✓ Despite the controversy, Turkey is going ahead with the GAP project, and construction is underway on the last six dams.
- In 1987, Turkey signed an informal agreement with Syria that guaranteed Syria a minimum flow every year. A later agreement between Syria and Iraq was meant to guarantee Syria 42 per cent of the Euphrates water and Iraq 58 per cent.
 - In the 1990s, the three countries met to try resolve the water dispute. In 1998, Syria also banned the PKK from Syria with the Adana Agreement to decrease tensions with Turkey¹⁸.
 - Turkey wanted to divide water by cultivated land
 - Syria wanted to divide the water equally as claimed that the Tigris and Euphrates were “shared resources”.
 - After Iraqi President Saddam Hussein was ousted in 2003, the new Iraqi government declared its intentions to reach an agreement with Turkey and Syria.

¹⁷ The PKK was founded in 1978 and started the insurgency against the Turkish government in 1984

¹⁸ Adana agreement paves legal path for Turkish intervention in Syria. April 9, 2012.

http://www.todayszaman.com/diplomacy_adana-agreement-paves-legal-path-for-turkish-intervention-in-syria_276894.html

- Several bilateral agreements are signed before a trilateral decision was made in 2008 to create a water institute that would work to solve water-related issues occurring between the three countries.
- The emergence of the Islamic State (IS) in Iraq and Syria has increased the likelihood of conflicts over water as they attempt to take control of the infrastructures already in place, or deliberately try to cut water off¹⁹.

Islamic State (IS) and the Dams in Iraq

Iraq and the Islamic State (IS) have both said that Turkey should release more water to refill the Euphrates River that was affected by the drought in the region. Its water levels dropped more than half in 2014, according to Iraqi officials. Turkey says that the low water levels are to be blamed on poor management²⁰. IS accuses Turkey to reduce water supplies to maintain control.

- ✓ IS also seized and closed down the Fallujah Dam downstream close to Baghdad, Iraq, which diverted water for irrigation. Karbala and Najaf were left without water, and large area of farmland in the east was flooded. As the dam was reopened, water flooded downstream. Many believe that the flooding eastward was caused purposely to prevent Iraq from retaking the dam²¹. Iraq has eventually succeeded in retaking the dam.
- ✓ The Haditha Dam upstream on the Euphrates. It provides a third of Iraq's electricity. IS has launched several attacks on the dam.
- ✓ The Mosul Dam is at risk of collapsing as its foundations are built on porous gypsum that is being dissolved by water in the reservoir. A collapse might cause Mosul City flooding.

¹⁹ Islamic State jihadists are using water as a weapon in Iraq. Erin Cunningham. October 7, 2014. https://www.washingtonpost.com/world/middle_east/islamic-state-jihadists-are-using-water-as-a-weapon-in-iraq/2014/10/06/aead6792-79ec-4c7c-8f2f-fd7b95765d09_story.html

²⁰ Water shortages unite Iraq, Islamic State against Turkey. Zaid Sabah, Selcan Hacaoglu and Jack Fairweather. July 2, 2015. <http://www.bloomberg.com/news/articles/2015-07-01/water-shortages-unite-iraq-islamic-state-against-turkey>

²¹ UN concerned at 'deliberate flooding' in Abu Ghraib. John Lee. May 15, 2014. <http://www.iraq-businessnews.com/2014/05/15/un-concerned-at-deliberate-flooding-in-abu-ghraib/>

Islamic State (IS) and the Dams in Syria

- ✓ In early 2013, the IS seized the Russian-built Tagba Dam in northern Syria. Turkey was blamed for the drying out of Lake Assad, which is the reservoir behind the dam. IS has since tried to refill the reservoir by rationing electricity, which has resulted in several blackouts for up to 20 hours a day in Aleppo.



Source: Wikimedia Commons/Yale Environment 360



<http://mrs-map.blogspot.com/2012/08/map-of-turkey-region-and-city.html>

Ethiopia – Sudan - Egypt

The Dam

Ethiopia is building the Grand Ethiopian Renaissance Dam on the Blue Nile²² in northern Ethiopia's Benishangul-Gumuz region near the border with Sudan. It is expected to be completed in 2017 at a cost of \$4.7 billion, and will have a 6,000 megawatt capacity, which is equivalent to at least six nuclear power plants. As of March 2014, the dam was about 30 per cent complete²³. The dam is funded mainly with Ethiopian bonds.

The Countries involved:

Egypt: downstream, it opposes the dam

Ethiopia: upstream. The dam would double its electricity capacity

Sudan: downstream, it supports the dam

The Concerns

- Egypt is concerned that the dam will reduce the water supply to 40 million farmers in an agricultural region – the northern Nile Delta - where rainfall is limited. In 2013, Egypt's President Mohamed Morsi said he did not want war²⁴. Both Egypt and Ethiopia have agreed to continue the talks to evaluate the effects of the dam.
- In May 2013, Ethiopia slightly diverted a short section of the Blue Nile by a few metres before it was allowed to flow on its natural course again to allow the construction of the dam where the river bed lied²⁵.

²² The Blue Nile is one of two major tributaries of the Nile. It originates in Ethiopia's Lake Tana.

²³ Will Ethiopia's Grand Renaissance Dam dry the Nile in Egypt? March 22, 2014.

<https://www.google.com/#q=grand+ethiopian+renaissance+dam+conflict>

²⁴ Egypt and Ethiopia vow to defuse Blue Nile dam row. June 18, 2013.

<http://www.bbc.com/news/world-africa-22951276>

²⁵ Ethiopia diverts Blue Nile for controversial dam build. May 28, 2013.

<http://www.bbc.com/news/world-africa-22696623>

The Agreements

- In 2013, Ethiopia ratified a treaty that replaced the **1959 Nile Waters** agreement that gave Egypt and Sudan the biggest share of the Nile's water (Egypt had 90 per cent) and veto power over projects that involved the Nile²⁶. In 2010, Ethiopia, Kenya, Uganda, Rwanda, and Tanzania (that were among the upstream nations excluded from the agreement, and, with the exception of Ethiopia, the nations along the White Nile, the Nile second major tributary) signed the Entebbe agreement that called for the redistribution of the waters²⁷. The agreement was rejected by Egypt and Sudan (at the time a single country). The 2013 treaty was also signed by Rwanda, Tanzania, Uganda, Kenya and Burundi.
- In November 2014, Egypt and South Sudan signed an agreement to develop water resources in South Sudan by completing the digging of a 260-kilometre canal to bypass the Sudd swamp in South Sudan and divert the White Nile to preserve the water that would otherwise evaporate.
- In March 2015, Egypt, Ethiopia, and Sudan signed an agreement on the principles for a treaty that would manage the dam.

²⁶ Ibid. BBC News. June 18, 2013

²⁷ On the River Nile, a move to avert a conflict over water. Fred Pearce. March 12, 2015.

http://e360.yale.edu/feature/on_the_river_nile_a_move_to_avert_a_conflict_over_water/2855/



<http://e360.yale.edu/>

Source: BBC News Online

HIMALAYAN REGION

India – Bangladesh – Nepal

A Partial Success Story

The countries:

Until 1971, the countries involved were India and Pakistan, at first; afterwards, India, Bangladesh and Nepal. The seasonal variations in rainfall in the Indian subcontinent are significant and affect the way the water resources are managed.

The River:

The Ganges. Its source lies in the Himalayas and is fed mainly by glacial melt from April to June. Droughts occur during the dry season when the river flows into Bangladesh – January to May

Treaties:

The Ganges water-sharing treaty²⁸ was signed in 1996 and is the only agreement between the two countries. According to the 30-year treaty, Bangladesh receives a minimum flow from January to May.

History:

- In 1975, India completed the Farraka Dam along the Ganges a few kilometres from the India-Bangladesh border without an agreement with downstream Bangladesh
- In 1996, the Ganges water-sharing treaty was signed. It will expire in 2026.
- In 2011, the two countries signed a Framework agreement on Cooperation for Development aimed at basin management of common rivers
- According to estimates, 25 per cent of the time during the past four years Bangladesh failed to receive the amount of water that was expected. Upstream control of the water flow through dams and diversion projects on various tributaries of the river (Ramganga, Yamuna, Tons and Son are the ones from India) is being blamed for the decline in water flow in the Ganges River at the Farraka Dam²⁹.

²⁸ The Ganges Water-Sharing Treaty.

<http://www.mtholyoke.edu/~ahmad20m/politics/treaty96text.html>

²⁹ Success and failure of the Ganges water-sharing treaty. Dr. MD. Khalequzzaman. November 2, 2012. <http://wreforum.org/khaleq/blog/5689>

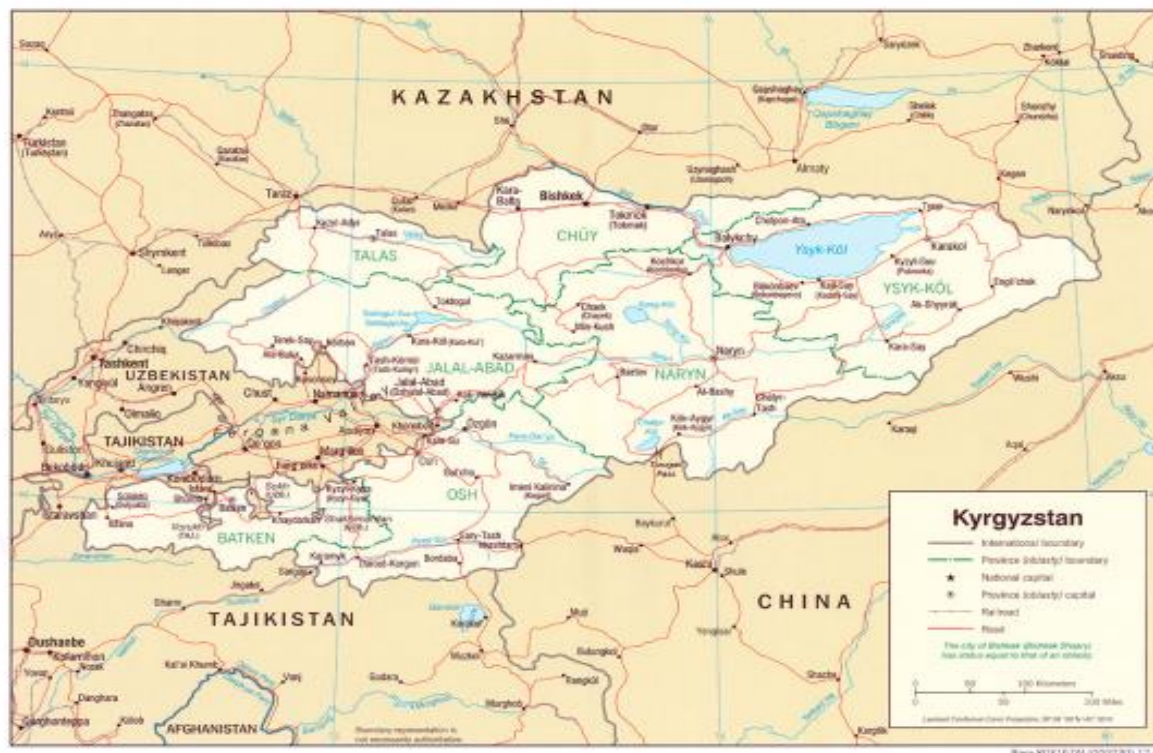


Map of the Ganges- Brahmaputra-Megna basin (TFDD, 2007).

CENTRAL ASIA

Kyrgyzstan - Uzbekistan

A gradual awakening amid deep tensions between poverty-stricken, and weak, upstream countries 'own' the water of the more economically and militarily powerful downstream countries



Many say that conflict over natural resources rather than ethnic differences are fueling much of the conflict situations between Kyrgyzstan and Uzbekistan. In Central Asia water mismanagement has caused degradation of the environment of the Syr Darya Basin States. Unilateral measures rather than bilateral agreements between the States have produced competition in place of cooperation. The pursuit of national interests has easily brought to political disagreement at both interstate and domestic levels.

Lack of agreement on the development and use of water resources has resulted in economic damage for all parties involved and has contributed to environmental degradation of the Aral Sea and the Syr Darya Basin. It has also aggravated political tensions between Kyrgyzstan and Uzbekistan and undermined regional security in the Central Asia area.

Climate change and its effects on water resources have become a growing concern in the Central Asian region, and both Kyrgyzstan and Uzbekistan have been active in searching for solutions.

Kyrgyzstan is rich in water resources such as rivers and glaciers, but needs to rely on neighbouring countries, including Uzbekistan, for oil and natural gas. Under the current agreements, downstream countries (Uzbekistan) risk inadequate water summer releases and excessive water winter releases, while the upstream countries (Kyrgyzstan) risk shortage of electricity due to insufficient gas supply. The glaciers in the western Himalayas bordering Kyrgyzstan and China are decreasing in size by 15-20m annually and all of the country's glaciers could melt by 2100. Excess water supplies coming from the melting glaciers are leading to flooding; but water shortages will increase as glaciers disappear.

Kyrgyzstan is also rich in gold with an estimated 2,500 tons of gold. It relies on foreign investment and know-how to exploit the resource. Recent violence at Kyrgyz gold mine sites might drive foreign investors away from the country on safety grounds³⁰. Fifteen mining companies are registered with the International Business Council, but two emerge as vital for the Kyrgyz economy, the Talas Copper Gold Fields and the Kumtor gold mine. And water is an important part of the process of gold mining that demands reservoirs to wash the ore containing the mineral.

In October 2015, Uzbekistan's president, Islam Karimov, warned of a full-scale war in Central Asia if Kyrgyzstan did not stop building new water-power plants with Russian support. Karimov said **there should be a common agreement on new hydroelectric plants along the rivers that pass through Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan**³¹. **Uzbekistan emphasized the need for cooperation in using transboundary water resources during a ministerial conference in Berlin.** Germany's participation in several projects that are being implemented jointly with international partners as part of the third phase of the "Water initiative for Central Asia" is being considered³². The State Committee for Nature Protection of Uzbekistan has also highlighted the role of regional institutions, including the International Fund for Saving the Aral Sea (IFAS), and the need to develop the automated water monitoring system, to reconstruct the water meters and equipment along the Transboundary Rivers in the region, and to introduce modern water saving irrigation technologies³³.

³⁰ Kyrgyzstan: mining riot rattles foreign investors, Deirdre Tynan. March 22, 2011.

<http://www.eurasianet.org/node/63128>

³¹ Uzbek leader warns of war on waters. October 15, 2015.

<http://www.worldbulletin.net/todaysnews/165294/uzbek-leader-warns-of-war-on-waters>

³² Uzbekistan has reduced the water intake by more than 20 per cent in the last 24 years.

³³ Uzbekistan respects cooperation in using transboundary water resources. Demir Azizov. September 10, 2015. <http://en.trend.az/casia/uzbekistan/2431772.html>

Uzbekistan has announced it will spend over \$292 million to modernize its power sector existing facilities, including twenty-two major substations in Tashkent and ten in other parts of the country³⁴. As scarcity of water resources in Central Asia is increasingly becoming a topic of discussion in the region, Uzbekistan has also announced it will spend about \$4.3 billion on developing hydropower over the next ten years³⁵. 18 new hydropower plants (HPP) are expected to be built, and 14 are to be modernized by 2021.

Ethnic disputes

Energy and water affect national security, regional stability and economic growth. **Disagreements over natural resources and border demarcation are likely to put strain on already tense relations among ethnic groups.**

- Kyrgyzstan is home to more than eighty ethnic groups. The Kyrgyz ethnic group is the country's largest, accounting for sixty-nine percent of the population, according to a 2007 estimate. About fourteen percent (about 800,000 people) of the population is ethnic Uzbek, the majority of which lives in the south of the country. Thirty percent of the Kyrgyz southern provinces are non-Kyrgyz³⁶. Between 1991 and 2002, more than 600,000 people emigrated from Kyrgyzstan and the country saw a decline in ethnic minority population from forty-seven to thirty-three percent³⁷. In 2004, the government began implementing an ethnic tolerance programme in schools and broader educational programmes aimed at promoting a multi-cultural Kyrgyzstan³⁸.
- Clashes between Kyrgyz and Uzbeks in Southern Kyrgyzstan have occurred since the collapse of the Soviet Union. The hostilities seem to reoccur in Osh, Jalalabad and surrounding areas in southern Kyrgyzstan, in the fertile area of the Ferghana Valley. The violence in the region has not entirely ceased since last summer, when hundreds of people were killed and hundreds of thousands fled triggering a refugee emergency on the border with Uzbekistan. The instability remains and

³⁴ Uzbekistan set to modernize power system. Kamila Aliyeva. September 25, 2017.

<https://www.azernews.az/region/119485.html>

³⁵ Hydropower a hot topic in Central Asia, and not just from the usual suspects. Bruce Pannier. June 19, 2017. <https://www.rferl.org/a/central-asia-hydropower-uzbekistan-roghun-nurek-/28564134.html>

³⁶ International Religious Freedom Report 2010. November 17, 2010.

<http://www.state.gov/g/drl/rls/irf/2010/148795.htm>

³⁷ Kyrgyzstan: economic disparities driving inter-ethnic conflict, February 15, 2006.

<http://www.irinnews.org/report.aspx?reportid=33728>

³⁸ Irin news, February 15, 2006

poses a risk for a regional war. The closest international actors involved in a potential internal conflict are Russia, China and the US.

- Uzbekistan would be keen to defend the Uzbek population and regain part of the Ferghana Valley. Uzbekistan considered military intervention in southern Kyrgyzstan during the clashes in June 2010³⁹.
- Russia declined a request to send in a peacekeeping force to control the clashes.
- China, on the eastern border, would be worried about militant Islamists entering the country illegally.

Socio-economic problems

- According to the World Bank, sixty-five percent of the country's rural population lives below the national poverty line. Youth poverty is likely to be linked to the poor labour market situation⁴⁰.
- Unofficial reports set the unemployment rate in the Batken province in Kyrgyzstan between fifty and eighty percent with the rate being higher among ethnic Uzbeks than Kyrgyz residents. Unemployment, especially among young people, is expected to lead to criminal and violent activities⁴¹.

³⁹ Ibid. Russia's focus on Southern Kyrgyzstan. March 25, 2011.

⁴⁰ The Kyrgyz Republic poverty assessment and strategy. Mar 30, 1995

http://www.wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1995/05/30/000009265_3961008022858/Rendered/PDF/multi0page.pdf

⁴¹ Central Asia: The Ferghana Valley: in the midst of a host of crises. Randa M. Slim. 2002

<http://www.conflict-prevention.net/page.php?id=40&formid=73&action=show&surveyid=30>

The Helmand River system & Afghanistan – Iran – Pakistan

Conflict – driven migration and urbanization, water shortages, and resource competition between external actors



Water from the Helmand River system (Hirmand River in Iran) is shared between Iran, Afghanistan and Pakistan. However, a treaty was signed in 1973 only between two countries – Iran and Afghanistan, and it is still a source of conflict and dispute.

The River System

Three out of five of Afghanistan's main river basins flow beyond its borders (figure 2), thus resulting in tension with its neighboring states (Dehgan, Palmer-Moloney and Mirzaee 2014, 307-308). The Helmand River is Afghanistan's longest, measuring 1,300 kilometers, it starts in the Paghman mountains approximately 90 kilometers to the west of Kabul and weaves its way down 4,400 meters through southwest Afghanistan (Najafi and Vatanfada 2011, 19). It forms 55 kilometers of the Afghan-Iranian border, before draining the southern half of Afghanistan into an array of lakes (hamouns) in the Sistan marshes and Lake Hamoun in Iran's Sistan-Baluchistan province on the border between the two states. It has a total area of 400,000 kilometers square spanning the south

of Afghanistan (81.4 percent of the basin, 40 percent of Afghanistan's surface water area), Pakistan (3.6 percent) and Iran (15 percent) (Ramachandran 2017) (Goes, et al. 2016, 4). The Hari River is a second river that flows into Iran (Aman 2016), making it the only neighbor that receives large amounts of water from two sources. It only contributes 10 percent of the Afghanistan's total water resources, from that some 97 percent is used on agriculture in Afghanistan and 80 percent in Iran. However, the proportion of fertile land in the Helmand River Basin is restrained due to the lack of effective dams and reservoirs to control water flow during the dryer and wetter years (Hanasz 2012). Of the 75 billion cubic meters of water volume that Afghanistan holds, two-thirds of that is surface water and the state only has the ability to make use of 25 to 30 percent of the river water flow.

History

Disagreements over water between Afghanistan and Iran date back to the 19th century, specifically in 1872, when the British had control of Afghanistan and Goldsmid Arbitral Award assigned 'equal parts' of the Helmand drawing the border that would cause subsequent future tensions between the two states. After the Helmand River redirected its flow and the severe drought in 1896 and 1902 respectively, the two states endeavored to negotiate their way into a settlement in 1905 and in 1938, however both efforts failed. On the 7th September 1950, Iran and Afghanistan assembled and signed for the Helmand River Delta Commission, which aimed at using technical methods to divide the river flow fairly between the two nations. Three specialists from impartial states would provide their input and advice towards this. However, at the Washington Conference in 1956, Iran and Afghanistan dismissed the 1951 report of the commission, and the friction over water resources was prolonged, especially with the unpredictability of water flow, seasonal impact and political anxieties (Aman 2016, 6) (Dehgan, Palmer-Moloney and Mirzaee 2014, 312-313) (Aman 2016).

Finally, in 1972, Iranian Prime Minister Amir Abbas Hoveida and Afghan Prime Minister Mohammad Musa Shafiq signed a document that would be based on Iran receiving 26 cubic meters of water per second (or 850 million cubic meters annually), with the option to buy an extra 4 cubic meters per second in 'regular' water years. This agreement has never been fully enforced due to extenuating, war-related circumstances, for both nations. Occurrences such as Afghanistan's coup d'état in 1973 and 1978; Iran's revolution in 1979; the 1998 Soviet invasion of Afghanistan; the hostility between the Shia government in Tehran and Afghanistan's Wahhabist Taliban government; and the then Taliban government of Afghanistan blockading the Kajaki Dam, restricting all flow of the Helmand river to Iran's Sistan-Baluchistan province until 2002, which was also coupled with one of the most

worst droughts in the region. All of these events had a crippling effect on both countries sustainability and development, hampering ecological security and resulting in mass population migration in effected areas (Dehgan, Palmer-Moloney and Mirzaee 2014, 313-314) (Aman 2016) (Aman 2013).

Politics

There are many elements that emerge when discussing the concerns of non-cooperation and tension between Iran and Afghanistan over the Helmand River, one being political differences. Before 1973, the river was not regulated by any legitimate measure and it was only historical claim and hydrography that guided their steps, however with a strong foundation now in place the agreement provided an equal and bilateral approach to the challenge of sharing water resources, encouraging the two states to seek a solution through mediation and negotiation along with a neutral third state. However Afghani officials were skeptical of the motives of their Iranian counterparts and enactment of the treaty has been stagnant (Hanasz 2012, 3).

Officials based in the natural resource sectors of Iran and Helmand have placed blame on Afghanistan for the majority of its problems, publicly outing them for providing them with an unbalanced share of the water and purposely diverting the river flow of the Helmand with the construction of multiple dams, thus making it unlikely for water to reach the Sistan. Hosseinali Shahriari, who is part of the Parliament's health committee, has substantiated this claim with satellite photo proof. Iran has also outwardly objected to the building of the Kamal Khan dam project - that started in 1996, was paused due to conflict, and restarted again in 2011 - stating that it would greatly decrease the water flow to Sistan-Baluchistan. The disputes have gone insofar that Afghanistan have accused Iran on multiple occasions (firstly in 2012) of plotting to disrupt the project by backing local insurgencies and supplying weapons to the Taliban to attack government infrastructure, and of course Iran denied these allegations (Aman 2016) (Zahid 2017). Furthermore, there have also been accusations that Afghanistan is using the river as a political instrument. It is known that Afghani refugees and migrants reside in Iran, and there is speculation that the Iranians are using them to coerce the Afghanis, however the Afghanis could counteract this by using water to force Iran to better its treatments towards their refugees (Aman 2016, 6).

On average, Afghanistan receives approximately 70 billion cubic meters of water resources per year, however 80 percent of these waters flow to Iran, Pakistan and other neighboring countries in Central Asia (Jhanmal 2017), due to shortfall in technical and knowledge of water management, the region

has suffered as a result and development on strategy towards transboundary water basins is limited. While there have been some water infrastructure projects on both sides of the border, many are still in the planning stages (King and Sturtewagen 2010, 1). Afghanistan has not only promised to finish the Kamal Khan dam, but to continue to complete two others as well. These projects could irrigate 175,000 hectares of land, which would have a significant impact on the country's sustainability and substantially improve its economy, although this comes at a risk of provoking Iran and risking national security (Rasmussen 2017). Iranian President Hassan Rouhani has condemned their dam projects, he reiterated that: "We cannot remain indifferent to the issue [water dams] which is apparently damaging our environment," he said. "Construction of several dams in Afghanistan, such as Kajaki, Kamal Khan, Salma and others in the north and south of Afghanistan, affect our Khorasan and Sistan-Baluchistan provinces" (Zahid 2017). It is clear that both countries have varying agendas on the issue of environmental stability and ecological development. While the Afghans want to build 21 more dams across the state, the Iranians have realized that more dams have only made matters worse, and instead the Director General of Sistan-Baluchistan province for Environmental Protection Saeid Mahmoudi wants to take down the dams across the border shared with Afghanistan, and instead of negotiating for more water it should deliberate on how to protect the ecosystem and ensuring that the Hamoun is nurtured and kept alive (Aman 2016, 5).

Climate Change

Iran's climate is dry to semi-dry along its Eastern side and in the Centre, and along the north it has a subtropical climate, that is almost 85 percent of the country that suffers from arid to extreme arid conditions. Moreover, the state has reduced accessibility to water sources and there is an unfair allocation of the resource. Approximately one percent of the world's population lives in Iran and it only gets around a third of the world average rainfalls, which is around 250 mm per year. It uses 74 percent of its renewable fresh water resources, and of this 93 percent is used in the agricultural sector, with water efficiency being between 30 and 37 percent. Additionally, wastewater treatment facilities are sparse, with only a minimal percentage of Iranians even in the urban areas having the privilege to such provisions (Ettehad 2010, 21-22).

Afghanistan is a particular case, as it is completely enclosed by land and has reduced water resources. It also impaired by dry to semi-dry climatic conditions, with rainfall of 1170 mm per year in the highlands and 75 mm on the flatlands. It has one of the lowest accesses to safe drinking water,

with around 1.5 percent of the total water consumption is used for drinking purposes. Its agriculture sector consumes most of the underground and surface water resources, and its efficiency rate is around 25 percent. Because of the war, violence and chaos Afghanistan has experienced over the last few decades, there are no functioning manufacturers, and thus only 0.5 percent of fresh water is used in the industrial sector. While non-governmental organizations (NGOs) and UN sectors are working to progress the country in its post-war state, it is still struggling to perform becoming highly dependent on external aid supplies, such as food. Moreover, Afghanistan faces other challenges such as pollution of water sources, both under and over ground; deforestation and dry periods, which results in floods and uneven groundwater utilization. The country suffers at the hands of a weak and incoherent institutional body that is meant to be managing its river basins and upholding its national security (Ettehad 2010, 23).

Migration

The region's climate is altering; however predicting the effects of these changes is difficult and it has put forward an array of uncertainties to the matter (Dehgan, Palmer-Moloney and Mirzaee 2014, 315). What can be characterized from dryer climatology are great variations in temperatures throughout the year; higher radiation evaporation rates; and low levels of humidity (around 30 percent). Additionally, evolving sandstorm activity and extended drought periods can deteriorate the quality of wetland fresh water and salinization of water. A lot of Sistan population reside by the Hamouns and have occupations in industries such as agriculture, fishery, handicrafts and more, however with the rising temperatures of the global atmosphere these kinds of jobs are becoming less relevant, and while the Iranian government have attempted to put measures into place such as supplying food and flour, medicine and health services, and jobs to prevent the immigration of people, the degradation of resources has gone too far and the economy had plummeted far too deep already. The drying of the wetlands can also be the root cause of various sicknesses and diseases, including respiratory, heart, vision and intestinal, thus not only reducing quality of life but also another grounds for basis on immigration (Najafi and Vatanfada 2011, 20-21). The chairman of a Hamoon revitalization committee and a member of the Iranian parliament's national security commission stated that the neglect of the Hamoun situation has caused emigration of 130,000 people, which he called a "national security threat" (Aman 2013).

As mentioned before the Hamouns are wetlands on the border of Iran and Afghanistan and fed by the Helmand River, and it is comprised of three lakes: Hamoun-e Helmand (which is all in Iran), Hamoun-e Sabari (lying on the border), and Hamoun-e Puzak (basically all in Afghanistan). These

lakes have provided important water-based resources and opportunities for a population of over 7 million (King and Sturtewagen 2010, 8), and they also hold precious history to it, showing evidence of ancient civilizations residing on its banks. Moreover, it has also been an important source for wildlife, being a natural habitat for a vast array of animal and plant species, however the lack of rainfall and water redirection for irrigation has starved the Hamouns of any water, seriously impacting its bird and fish populations (Aman 2016, 2), and as a result affecting people's livelihoods and having a negative economic and social impact on the population. Recurrent and extreme droughts have forced the migration of the Sistan population from the region to more urban areas for a chance for survival (Ettehad 2010, 24). While this may seem like the better option, the region is under-developed, the economy is deteriorating and cities will only become over-crowded, sustainability will be poorer than it already is and unemployment will only increase. Consequently, this may even correlate to higher rates in drug trafficking and drug use, which will only have detrimental effects on both the Iranian and Afghani societies (Aman 2016, 4).

What Can Be Done to Manage/Prevent the Possibilities of Conflict?

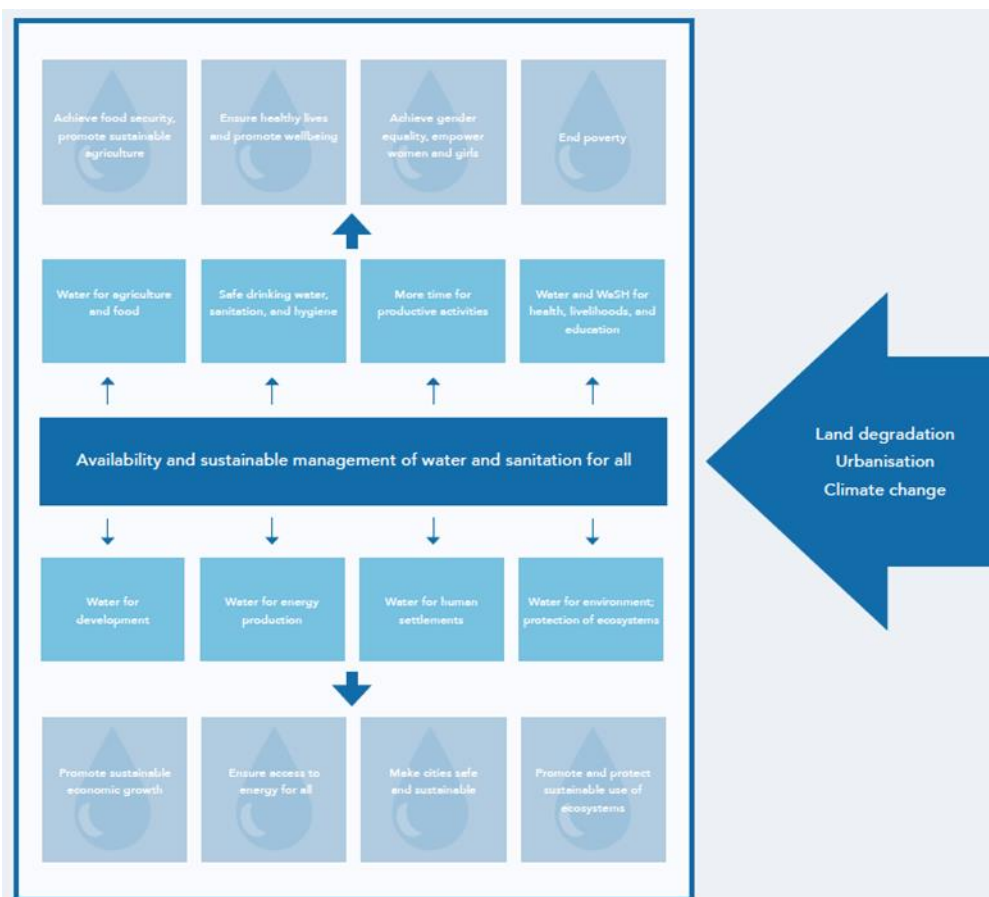
It seems that Iran and Afghanistan have reached a point of crisis where in the last two decades, once fertile wetlands have now dried up; climate change has come in correlation with increased drought and warming temperatures; and years of inefficient traditional irrigation systems and water storage and management has derailed any possibility of economic growth and the security situation has also deteriorated as a result. The urgency of the situation has been illuminated to relevant officials in both Iran and Afghanistan, and there seems to be more of a willingness to cooperate in the last year or so. An Iran-Afghanistan memorandum in January 2016 called for the complete implementation of the 1973 treaty and frequent meetings between Helmand water commissioners (Aman 2016).

More dams do not need to be built, Iran realized that without conducting certain impact analyses examinations, they could actually decrease land efficiency and deprive societies of any access to water. Drilling is only exhausting the natural resources available in the ground by drying it out at a faster rate. It needs to reign in the over-construction, as human security is at serious risk now. There is clearly an inadequate knowledge bank equipped to handle the environmental situation in Iran or the transboundary water management of the Helmand River. Iran and Afghanistan need to turn to external sources and international institutions (e.g. United Nations Environment Program, the United Nations Development Program, and the Global Environment Facility) for guidance on policies and efficient, affordable solutions.

Additionally, both countries need to reconsider their agricultural strategies and perhaps opt for crops that require less amounts of water to cultivate: “water-heavy agricultural crops such as rice and corn use 90 percent of Iran’s water but yield only 15 percent of the nation’s GDP” (Aman 2016, 7). Afghanistan and Iran should cooperate to run research, develop scientifically intelligent frameworks and technological models so that they can unearth a jointly acceptable resolution within the bounds of the 1973 treaty. Both sides must realize that the only way towards a sustainable solution is by recognizing each other’s interests and not battling for their own. Self-centered policy making on both sides makes cooperation and implementing the treaty virtually impossible, and as a result, not only does the environment and ecosystem suffer, but also so does the economy, the population, the quality of life and regional security. The situation must be depoliticized and the focus should be on uniting efforts with the aim of a rational solution.

THE BOTTOM LINE

In many states across the globe, military security has often been equated with the attainment of national security. However, the world is coming to realize that this is only one aspect of the human security dilemma and that natural resources (water in particular) are central in conflict today, whether it be national, international or transboundary (Bigas, et al. 2012, 3). While water is a globally “shared” resource, it cannot simply be narrowed down to just that; it is the foundation of all life processes and thus part of a larger cycle, for example: nurturing food production and agriculture; being vital for human survival; contributes towards regional stability; feeding the economy and ensuring its development; effecting population growth and migration; and it also plays a role on the impact and effects of climate change (Mission 2017 n.d.). Figure 1 highlights just how much of an impact water has on a lot of aspects in life:



Almost 50 percent of the Earth's surface is water, "some 276 river basins cross the political boundaries of two or more countries, and about 40 per cent of the world's population lives in river and lake basins that cross international borders. Globally 2 billion people depend on groundwater, which includes well over 300 transboundary aquifer systems," (Jägerskog 2013, 49) (UN-Water 2008) illustrating the complexities that the international community faces in managing this interdependence and therefore illuminating the imperative need for cooperation, especially in vulnerable areas where there is a need to adapt to climate change and water resources become scarce (United Nations n.d.). However, it seems that this framework for transboundary cooperation is missing, and it is important that this is there to foster relationships so that these riparian states can reap the benefits rather than focus on the challenges; so that trust can develop between all the different groups involved and constructive partnerships are built, which can then result in fair and productive settlements between all. Additionally, maintainable and effective national, regional and international frameworks will improve national security and deter possible conflicts (SIWI & ICWC n.d.).

It seems that water distribution is laid on the basis of hydrography and history, i.e. that countries will lay claim to water resources because they had access to it in the past. Water arrangements that turn to historical and/or hydrographical rights do not advocate peace between states as it neglects the water demands of the relevant states. Thus, international law shifts away from rights-based debates and turns to needs-based debates (Mission 2017 n.d.).

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