POLS303033 Environment, Human Security, and Conflict

WATER AND CONFLICT
Lecture notes for week 7, 2022

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Overture music

Bob Dylan. "A Hard Rain's A-Gonna Fall." 1963. *The Freewheelin' Bob Dylan*. https://youtu.be/T5al0HmR4to

The Standells. 1966. "Dirty Water." *Dirty Water.* https://youtu.be/eBEFWg1Tu6w

Fela Kuti. 1975. "Water No Get Enemy." *Expensive S**t*. https://youtu.be/kisTH3SFegc

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Video 1: Why should we care about water and conflict?

Today's motivating question:

In what ways can **water affect conflict**?

- Where it is,
- How it comes and goes,
- How it is treated, and
- Who uses it.

Water is something I have often taken for granted.

- **David Foster Wallace again.** "The most obvious, ubiquitous, important **realities** are often the ones that are the **hardest to see and talk about**." -David Foster Wallace

Examples of water and conflict

"Are India and Pakistan on the Verge of a Water War?"

> Source: Johnson, Keith. 2019. "Are India and Pakistan on the Verge of a Water War?" Foreign Policy. 25 Feb. 2019.

"The Struggle Over Water in India and China."

Source: *The Economist*. 5 Jan. 2019.

Reuters. 2022. "Russian Troops Destroy Ukrainian Dam That Blocked Water to Crimea."
It is Not Only About Drought

Levels and change

Photo of Mt. Kailash, Tibet

- Source of four of Asia's great rivers: The Indus, Sutlej, Brahmaputra, and Karnali (which becomes the Ganges).

Source: me.

Map of Mt. Kailash

Map of Asia river basins

Source: Santosh Nepal, Wolfgang-Albert Flügel & Arun Bhakta Shrestha. 2014. "Upstream-downstream linkages of hydrological processes in the Himalayan region." *Ecological Processes*.

"Kailash pilgrims perform hawan near Mansarovar Lake."

Photo of Glacier National Park

Photo of the snows of Mt. Kilimanjaro

"Snows of Kilimanjaro 'to disappear in 20 years."

Satellite photos of Okjokull Glacier, Iceland

Photo on left taken in 1986, right in 2019.

Source: NASA via *The New York Times* (https://www.nytimes.com/2019/08/19/world/europe/iceland-glacier-funeral.html)

"Iceland's Okjokull glacier commemorated with plaque."

Source: BBC News

"Tiny pieces of plastic found in Arctic snow."

"'Punch in the gut' as scientists find micro plastic in Artic Ice."

"It is Raining Plastic."

"Synthetic Polymer Contamination in Bottled Water"

Forbes 2018 article: "Study finds microplastics in 93% of Bottled Water"

> Source: Forbes (https://www.forbes.com/sites/niallmccarthy/2018/03/16/study-finds-microplastics-in-93-percent-of-bottled-water-infographic/#1868330173fa)

ABC news articles about drought in Australia

Examples

- These are a few examples of the importance of water systems and how they can change.
- Some of which are related to your literature review topics.

LECTURE QUESTION #1: Have you ever thought about *where* the water you drink comes from and its *quality*? If so, why? If not, why not?

> For more info about Canberra's water supplies: http://www.bom.gov.au/water/nwa/2017/canberra/regiondescription/geographicinformation.shtml

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Random videos about water

> Buzzfeed 2019 video of people tasting water. https://youtu.be/RtCiuZtOttw.
>
> If you want to explore even more high-level waters, see this video about the top 10 most expensive bottled water that makes me question my life choices. https://youtu.be/4dIzxejto-E.

Video 2: Why water matters

Water and development

Access to clean drinking water is a crucial development goal.

Millennium Development Goal 7C: "Halve, by 2015, the proportion of the population without sustainable safe drinking water and basic sanitation."

- Target met in 2010.
- Between 1990 and 2015, 2.6 billion people gained access to improved drinking water sources—from 76% to 91%.
- 663 million people are still without access.

Sustainable Development Goal # 6: Ensure access to water and sanitation for all.

Source: http://www.un.org/millenniumgoals/environ.shtml.

There are still clear problems. (I)

- "By 2050, at least one in four people is likely to live in a country affected by chronic or recurring shortages of fresh water."
- Water scarcity affects more than 40% of the global population.
- Over 1.7 billion people are currently living in river basins where water use exceeds recharge.
- At least 1.8 billion people use a source of drinking water that is fecally contaminated.
- 2.4 billion people lack access to basic sanitation services, such as toilets or latrines.
- >80% of wastewater resulting from human activities is discharged into rivers or seas without any pollution removal.

Sources: http://www.un.org/sustainabledevelopment/water-and-sanitation/ http://www.un.org/sustainabledevelopment/wp-content/uploads/2016/08/6_Why-it-Matters_Sanitation_2p.pdf

There are still clear problems. (II)

- Daily nearly **1,000 children** die due to preventable water and sanitation-related diarrheal diseases.
- Worldwide, more than **2 million people** die every year from diarrheal diseases.
- **Hydropower** is the most widely-used renewable source of energy (in 2011 it was 16% of electricity production).
- ~70% of all water taken from rivers, lakes and aquifers is used for **irrigation**.
- Floods and other water-related disasters account for 70% of all deaths related to **natural disasters**.
- The economic impact of not investing in water and sanitation costs **4.3%** of **sub-Saharan African** GDP.
- 6.4% of **India's** GDP is lost due to adverse economic impacts and costs of inadequate sanitation.

Sources: http://www.un.org/sustainabledevelopment/water-and-sanitation/ http://www.un.org/sustainabledevelopment/wp-content/uploads/2016/08/6_Why-it-Matters_Sanitation_2p.pdf

This is not a new problem

Painting of Noah's arc

Map of water conflict chronology over time

Chronology table going back to 3000BCE

California Water Wars Wikipedia page

Google Map of Owen's Lake

Map of LA aqueduct

Movie poster for Chinatown

Owens Valley Aqueduct 1924, photo

St. Francis Dam, 1926, photo

St. Francis Dam, 1928, burst

LA Times front page after dam burst

"California's Water Wars Flare Up as SoCal Makes a Land Grab."

Video 3: Water and conflict

Guerra en el Pacífico game

The War of the Pacific, 1879-1883 painting

Image source:
https://commons.wikimedia.org/wiki/File:Battle_of_Arica_(1880),_Juan_Lepiani.jpg

Map of Bolivian Territorial Losses, 1867-1938

Statue in Bolivia

What one day was ours, our again will be! Copacabana

Water and subnational conflict-- Possible causal processes

- Accentuate societal divides
- Human suffering and the grievances it can cause lead to motivations for violence.
- Lowers opportunity costs to joining rebel movement
- Risks highest where scarcity overlaps with political and economic marginalisation (Theisen, Holtermann, & Buhaug (2011-2)

Existing large water resources infrastructure facilities in the Nile Basin and the Grand Renaissance Dam

Source: D.Whittington et al. (https://www.internationalrivers.org/blogs/732/5-myths-surround-the-grand-ethiopian-renaissance-dam-gerd)

Sic utter tuo ut alienum non laedas

- "Use your property in a way not to injure others." (Gleick 1993: 107)

Map of African precipitation from Thsen et al. 2011

Relative risk measures from Theisen et al. 2011.

Value of drought moving from 10th percentile to 90th percentile

Source: Gleditsch et al. 2006: 378.

Water and international conflict—possible causal processes

- Rivers can lead to fuzzy boundaries and conflicts over territory. (Gleditsch et al. 2006)
- Water scarcity can lead to conflict over access or equitable distribution.
- This risk is higher in areas of changing patterns of rainfall or political governance.
- As with civil conflict, levels of development also matter.

Homer-Dixon path diagram

- Water access shapes all three sources of environmental scarcity.

Front page of Gleditsch et al. 2006

Probability of dispute by shared basin and dyadic development

Factors shaping the probability that water is a source for rivalry

- Degree of **scarcity**
- The extent to which water is **shared** by more than one state or region
- The **relative power** of the states involved
- Ease of **alternatives** to fresh water sources
- Source: Gleick (1993: 84-85)

LECTURE QUESTION #2: Linking these factors to the graph in the last slide from Gleditsch et al. (2016), do you think the relationship between the degree of scarcity and water conflict is linear (i.e., the relationship can be plotted as a straight line) or non-linear (i.e., the relationship looks like a U or an upside-down U? Why?

Videos: Central Asian background videos

Tajikistan, Water with borders, part 1. 2009. TVEAPfilms. https://youtu.be/RrNsxMs5zbk (7:05)

Tajikistan, Water with borders, part 2. TVEAPfilms. https://youtu.be/o6R3IaYO4Xw. (5:32)

Al Jazeera English. 2019. "Will a Central Asian border dispute be resolved soon?" https://youtu.be/OZyqVTuaEAI.

"I drink your milkshake!" From the 2007 film *There Will be Blood*. https://youtu.be/mKLR8sNCq-M?t=138.

Red Bull. 2021. "Why Kilimanjaro's Glaciers are Melting" https://www.youtube.com/watch?v=Vcl9pQijM_k

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Video 4: Water and conflict in Central Asia

LECTURE QUESTION #3: After watching the videos about the Tajikistan/Kyrgyz border villages, do you think the Kyrgyz wells would be more likely to be maintained by increasing institutional spending and support (a top-down approach) or by spending on public information campaigns describing who the water belongs to (a bottom-up approach) ? Why?

"Nowhere in the world is the potential for conflict over the use of natural resources as strong as in Central Asia."

Smith 1995, quoted in Bernauer and Siegfried (2012)

Map of Amu Darya river basin

Another map of the Amu Darya river basin

Map of the same area during Soviet times

A bit of background

1917-1930s—Stalin divides Central Asia.
1991—15 Soviet republics declare independence from the USSR.
1992—Inter-State Commission for Water Coordination (ICWC) is created.
Kyrgyzstan wants to store water in spring to autumn and release this water in winter to spring for hydropower production when demand for electricity is highest.
Uzbekistan and Kazakhstan, by far the largest consumers of irrigation water in the basin, are interested in enough water during the growing season from April to September.
1998—Kazakhstan, Krygzstan, and Uzbekistan signed an agreement setting monthly water release targets from Toktogul reservoir.
1999—Tajikistan joined agreement.

Toktogul reservoir, Kyrgzstan photo

Google map of Toktogul reservoir

Plots of weekly runoff into area reservoirs

> Source: Bernauer and Siegfried. 2012. "Climate change and international water conflict in Central Asia" Journal of Peace Research.

May-June 2010—South Kyrgyzstan ethnic clashes

- June 1990 violence over **land**—an Uzbek collective farm.
- Clashes between ethnic Kyrgyz and Uzbeks entering on **Osh** and **Jalal-Abad** in aftermath of former President Kurmabek Bakiyev fled office on 7 April 2010.
- **Killed** about 420 people (276 Uzbeks and 105 Kyrgyz) and 80,000 **displaced** Uzbekistan sent **troops** over the border and opened border to Uzbek refugees.

Map of region

Figure of world's largest cotton producers, 2018-2019.

Photo of people with mound of cotton

Map including Aral Sea

> "Poisonous dust storms kicked up by strong winds across the dried and polluted seabed give rise to a multitude of chronic and acute illnesses among the few residents who have chosen to remain."

Photo of Moynaq

Photo of fishing boats on sand with cows

The top 9 most inhospitable places in the world

1. Vozrozhdeniya Island, Kazakhstan/Ubekistan

Vozrozhdeniya Island

- a.k.a. "Anthrax Island "
- What's so bad about it? It was the site of Soviet biowarfare experiments. The whole area is contaminated with anthrax, smallpox and bubonic plague.
- Local rodents are thought to have picked up some super-resilient strains of these diseases.
- The laboratory was established in 1948. At its height, the facility housed 1,500 people.
- It is currently uninhabited. The site was completely abandoned in 1992.

Arch of Neutrality, Ashkebat, Turkmenistan

Photo of 12m tall statue of Saparmurat Niyazov (Turkmenbashi, 1940-2006)

- Turkmenistan is more known for oil than cotton, but it is the 9th largest source of cotton.
- This production is made possible by Turkmenistan's 36% allocation of the Amu Darya's runoff.

Today's motivating question-- In what ways can water affect conflict?

- Where it is
- How it comes and goes,
- How it is treated
- Who uses it

Conclusions

- Water scarcity creates challenges both to intrastate as well as interstate stability.
- Most empirical studies find limited historical evidence for systematic direct effects.
- More evidence for interactive effects with political and economic development & stability

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Exeunt music

Led Zeppelin. "When the Levee Breaks." 1971. *Led Zeppelin IV*.
https://youtu.be/uwiTs60VoTM

Salatiel, Pharrell Williams, Beyoncé. 2019. "Water." *The Lion King: The Gift*.
https://youtu.be/essike_sirI

Carrie Underwood. 2014. "Something in the Water." *Greatest Hits: Decade #1*.
https://youtu.be/mH9kYn4L8TI