Security Perspectives of Water Treaties and Water Resources Under Certain Climate Change Scenarios

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The views expressed do not necessarily reflect the views of the Department of Defense or the United States Government.

Overview

- Water Security Defined
- NIE and Government Efforts
- Academic intersections
- Other Insights

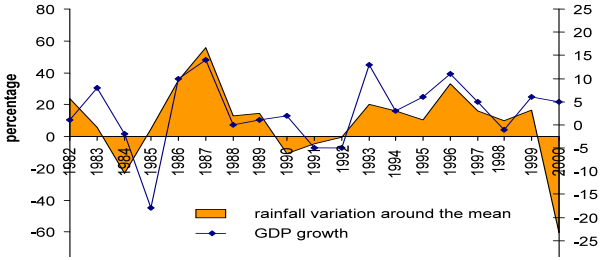
Water security is the availability of water in the right amounts at the right times as it impacts **human *security*, national *Security*, and economic growth.**

The potential for wars fought over water is just one aspect of the national security side of water.

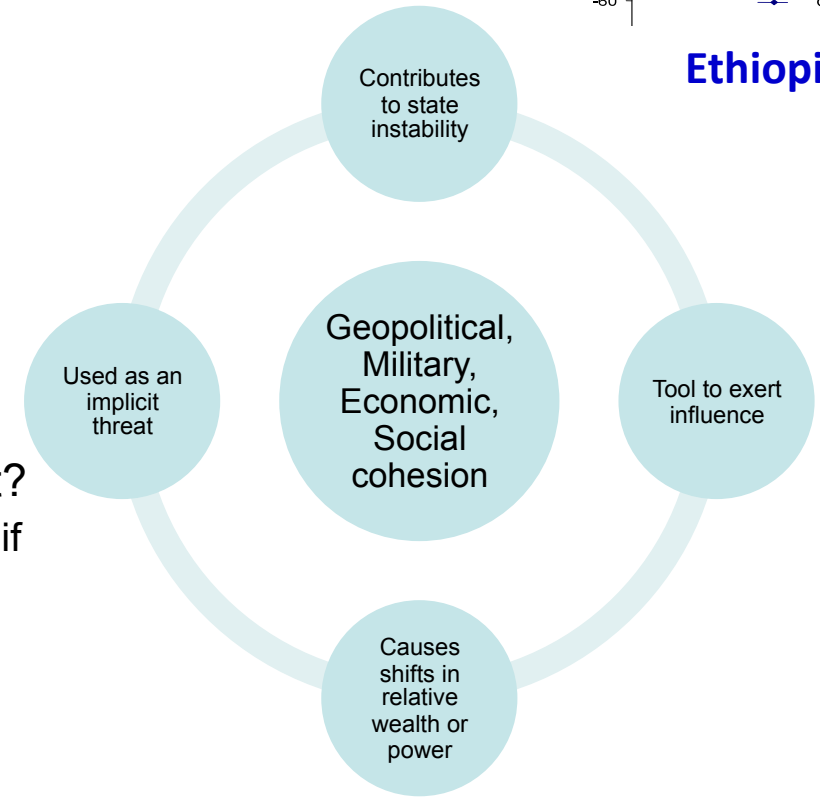
Water also shapes political behavior and regional security dynamics.

Water Wars are overblown;
'Cold' Water Wars are not…

- What impacts are significant?
  - Causes a noticeable, even if temporary, degradation in one of the elements of national power



Ethiopia 1982-2000



Water NIE: Context and Process
Climate Change National Intelligence Assessment (NIA)

- Four principle paths for GCC to impact national security
  - Changes in water availability – people move
  - Changes in agriculture productivity – people move
  - Damages to economically significant infrastructure from extreme weather events
  - Changes in disease patterns (human, plant, animal)

Movements themselves may or may not be significant to state stability -- will depend upon local circumstances.

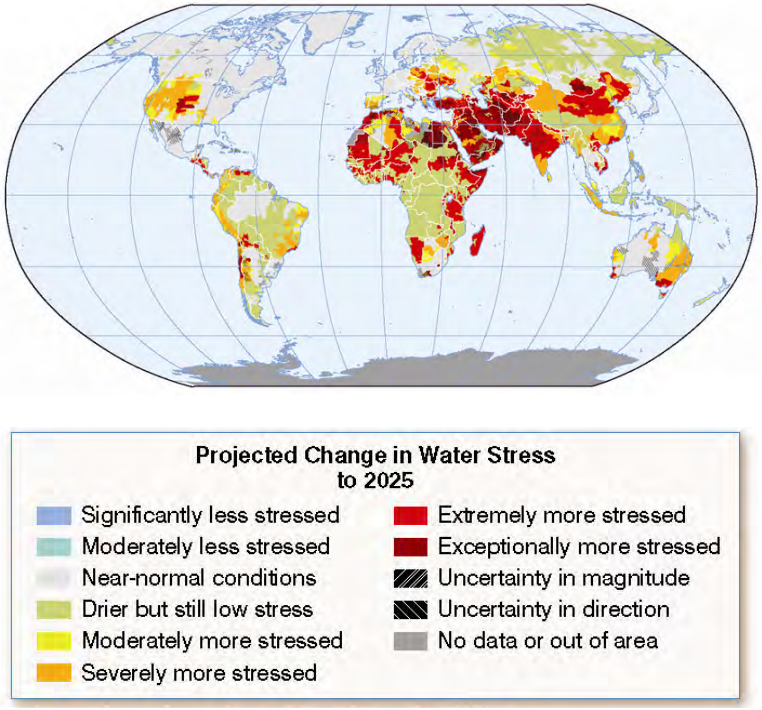
NIE Background

- **Requested by:** Department of State, First NIE on Water Security
- **Purpose**: Assess how water problems might impact US national security interests. The paper provides a discussion of the global water picture, but focuses on a finite number of states and basins.
- **Time Frame:** Selected 30 years (2040) to consider three long term drivers:
  - Population Increases
  - Economic Development
  - Climate Change
- **Lead Drafters**: DIA
- (U//FOUO) **NIE Versions**:
  - US Only
  - Full NIE at S//REL FVEY
  - Unclassified ICA (February 2012)

Research Efforts

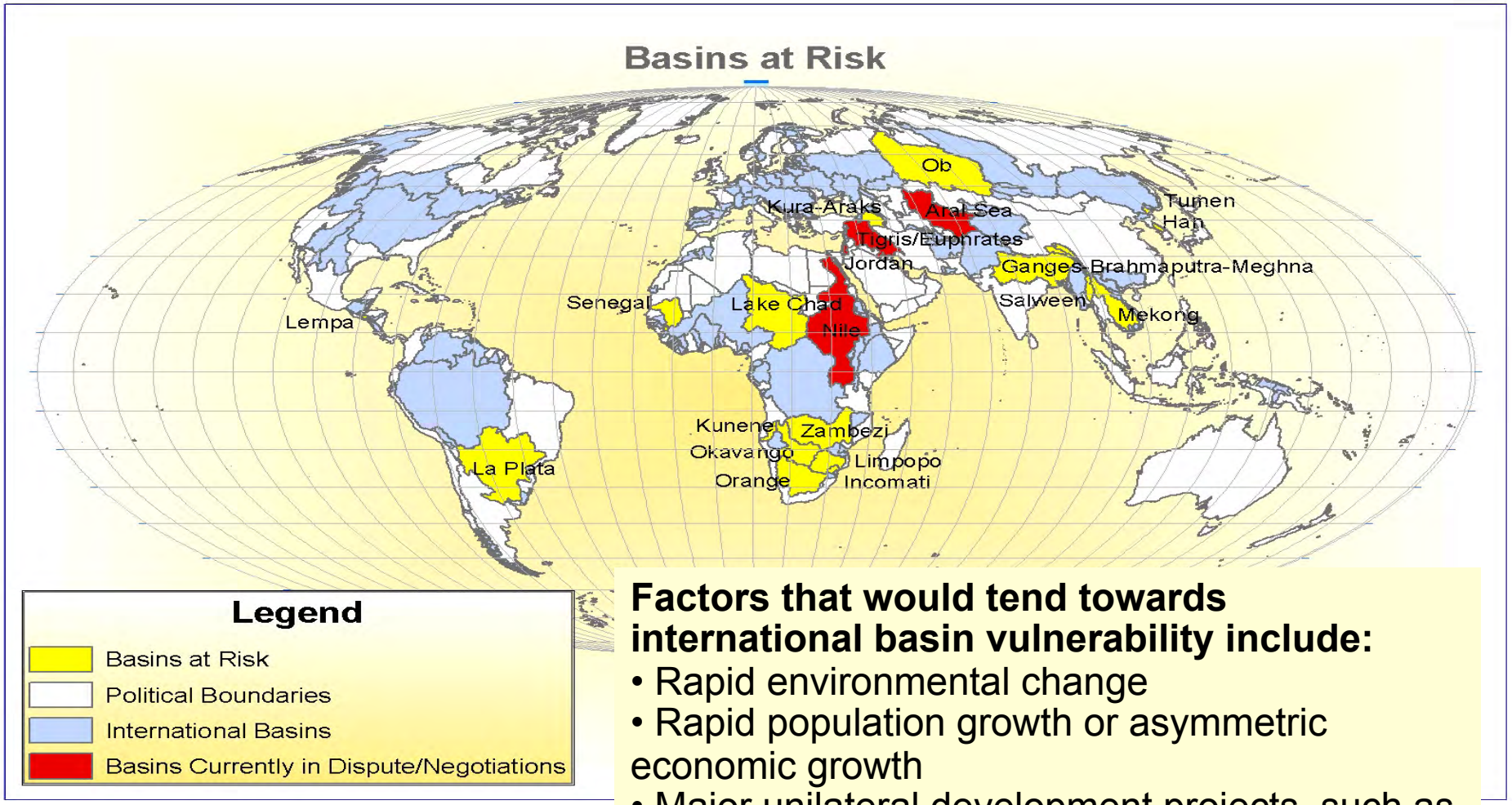
- Contracted Studies on Water as a National Security Issue
- NIC Sponsored Conferences on Water Issues (China and India)
- Contracted Study on Water Technology
  - Conferences had over 50 experts from outside the IC
  - Product reviewed by well over 100 IC personnel
  - Resulted in over 160 drafts.

NIE Bottom Line



During the next 10 years, many countries important to the United States will experience water problems—shortages, poor water quality, or floods—that will risk instability and state failure, increase regional tensions, and distract them from working with the United States on important US policy objectives. Between now and 2040, fresh water availability will not keep up with demand absent more effective management of water resources. Water problems will hinder the ability of key countries to produce food and generate energy, posing a risk to global food markets and hobbling economic growth.

Academic Research



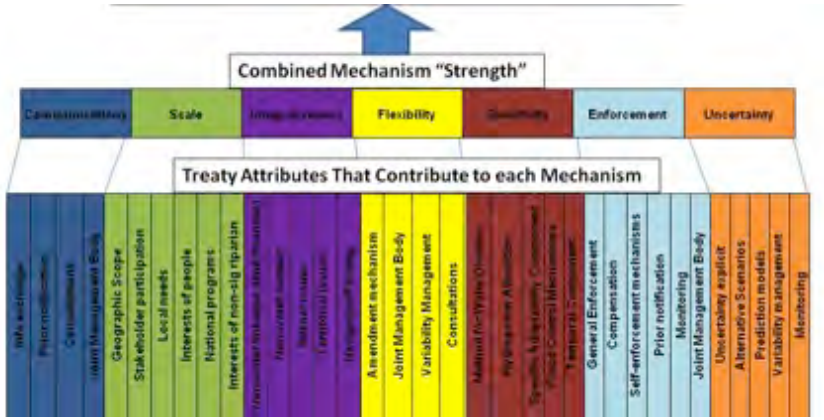
Factors that would tend towards international basin vulnerability include:

- Rapid environmental change
- Rapid population growth or asymmetric economic growth
- Major unilateral development projects, such as dams
- “Internationalization” of a basin

Mechanism	Purpose	Practical Application/ Components	Number of times mentioned in literature	Ranking of relative importance
Communications	Increase the contact and data sharing between parties to increase compliance and cooperation	Information exchange	25	1
		Establish meetings schedule/protocol		
		Data validation		
Flexibility	Manage changes in the water flow/ availability or in the existing political framework.	Treaty amendment mechanisms that can be applied in times of rapid change	20	2
		Managerial tools to recognize and plan for variability		
		Communications mechanisms for observing and relaying change		
Specificity	Provide precise rules and procedures to structure the participant's actions	Guidance for implementation of the treaty; Crisis response to and mitigation of drought/ flood	13	3
		Confirm locations and measurement methods for increased data accuracy		
		Illustrates benefits/requirements outside of water (hydropower, etc)		
Integrativeness	Increase the cross-scale and cross-topic cooperation the treaty addresses	Non-water exchanges or concessions linked to water issues	12	4
		Integrated view of total environmental sphere		
		Requirements of larger political issues		
Enforcement	Provide leverage and protocols to influence adherence to the treaty	Resolution mechanism and procedures for disputes	12	4
		Communication requirements for alterations to basin		
		Equitable joint management bodies that can exert influence. Provides commissioners with guidance during tension.		
Scale	Provide policy direction for regional, national, and local management	Enhance public participation	11	6
		Include needs of all stakeholders/non-signatory riparians		
		Incorporate national programs		
Uncertainty	Recognize and plan for the possibility that available data may not accurately reflect current conditions or that the future may be very different from the current environment	Alternative scenarios to increase preparedness	4	7
		Application of prediction models		
		Variability management for periods of flood/ drought		

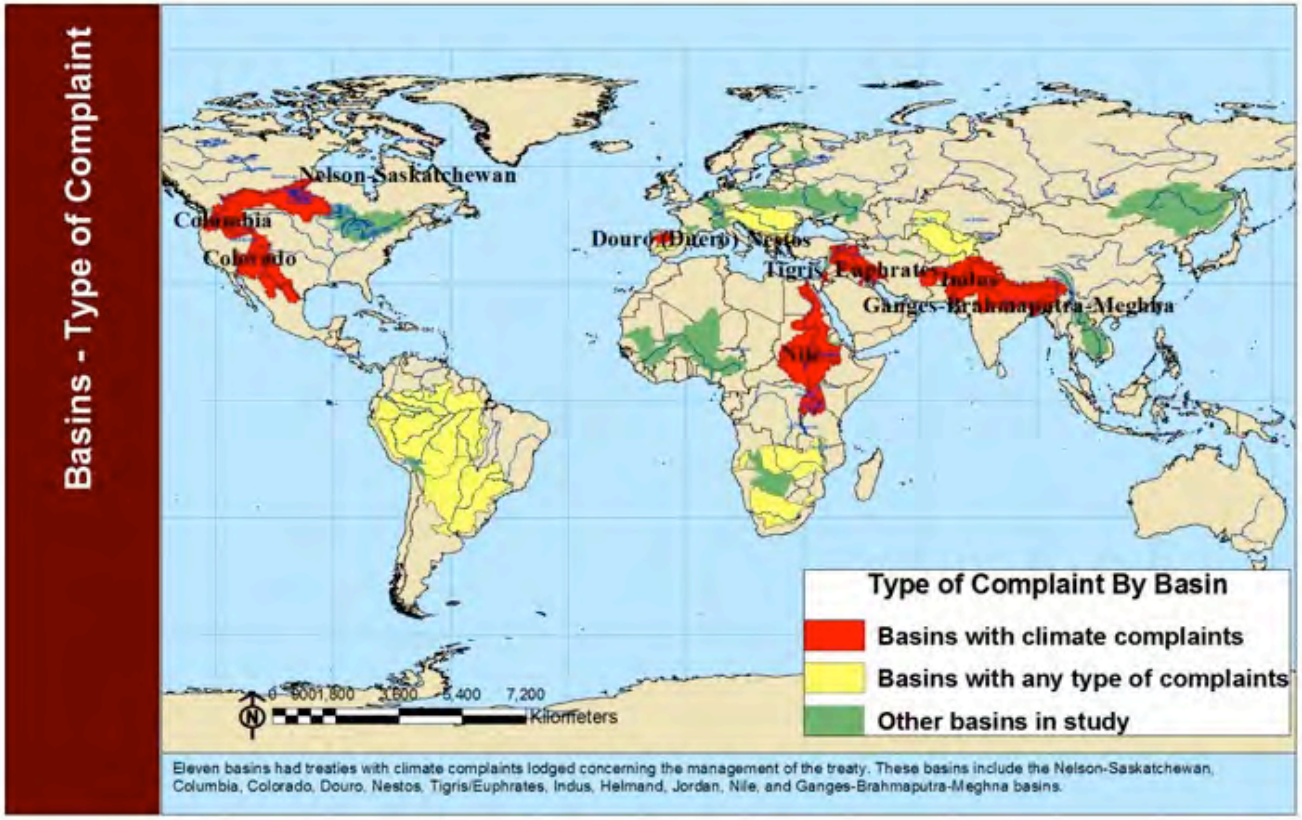
Resiliency of water treaties likely to be tested

Measuring/observing treaty parameters



146 treaties → 100 categories → 35 components → 7 mechanisms

- A total of **388** complaints were then evaluated to determine if it originated from flow variability/changes. A total of **85** events were classified as ‘climate complaints’. Conflict events other than those that originated from flow variability or climate were classified as ‘any type of complaint’.
- 5 of the 11 basins with climate related complaints were chosen for further analysis as case studies: Nile, Tigris/ Euphrates, Indus, Helmand, and Jordan with a total of seven treaties with climate complaints.



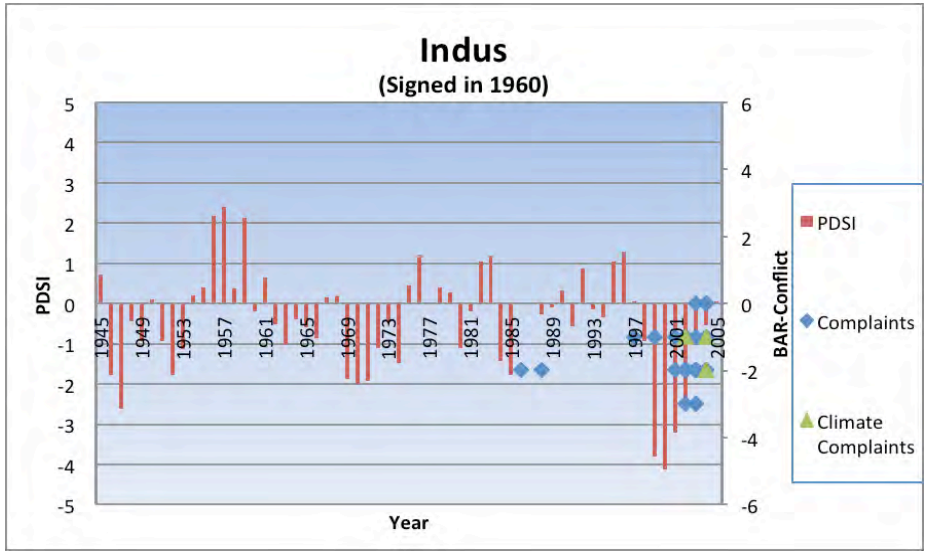
Indus Water Treaty (1960)

- Indus water critical to Pakistani agriculture, EP, employment, income
- Unique application in dividing rivers

Stresses

- Variable rainfall
- Rapid population expansion
- Receding glaciers
- Soil salination
- Groundwater overpumping
- Increased development
- Afghanistan development (not party ;12% contribution via Kabul River)

Complaints and Current Issues



The treaty has weathered at least 109 water-related complaints, only four of which were pertaining to changes in climate.

Sub-national issues

- Lack of trust between provinces
- Kalabagh dam on the Indus River in Sindh province

Trans-national Issues:

- Accusations of Indian flow manipulation
- Afghanistan and Indian development projects
- Water tied to land/Kashmir: Escalating disputes over development since 1999 threatens peace
- Public opinion on both sides hardening

Baglihar, Neelum-Jhelum, and Kishenganga Dams

- Baglihar first time to use neutral expert in 2008
- Pakistan initiated the formal arbitration process regarding India's Kishanganga Dam hydroelectric and diversion project along the Kishanganga River
- Court of Arbitration for Kishenganga; highest level, never before used clause of IWT.

BagliharDam

- US $1 billion, 450MW Baglihar Dam on the Chenab
- Proposed in 1992
- Pakistan formally requests neutral expert in 2005
- Dr. Raymond Lafitte, was appointed as the Neutral Expert in May 2005 and provided his ruling in February 2007
- India finished first phase in Aug 2008; functionally complete
- Reservoir filled
  - *"Baglihar Dam cleared by neutral expert*, and stating that the overall design of the Baglihar dam being built by India on the Chenab as a run-of-river plant 'has been upheld by Prof. Raymond Lafitte, (Embassy of India Washington DC, 2007)
  - "*World Bank validates Pakistan stand on Baglihar Dam',* followed by a pronouncement that Lafitte had 'made it clear in (his) verdict that India has been found guilty of breaching the Indus Water treaty of 1960' "(PakTribune, 2007).

Ability to impound water limited by terrain (700m wide at dam, 400m upstream)

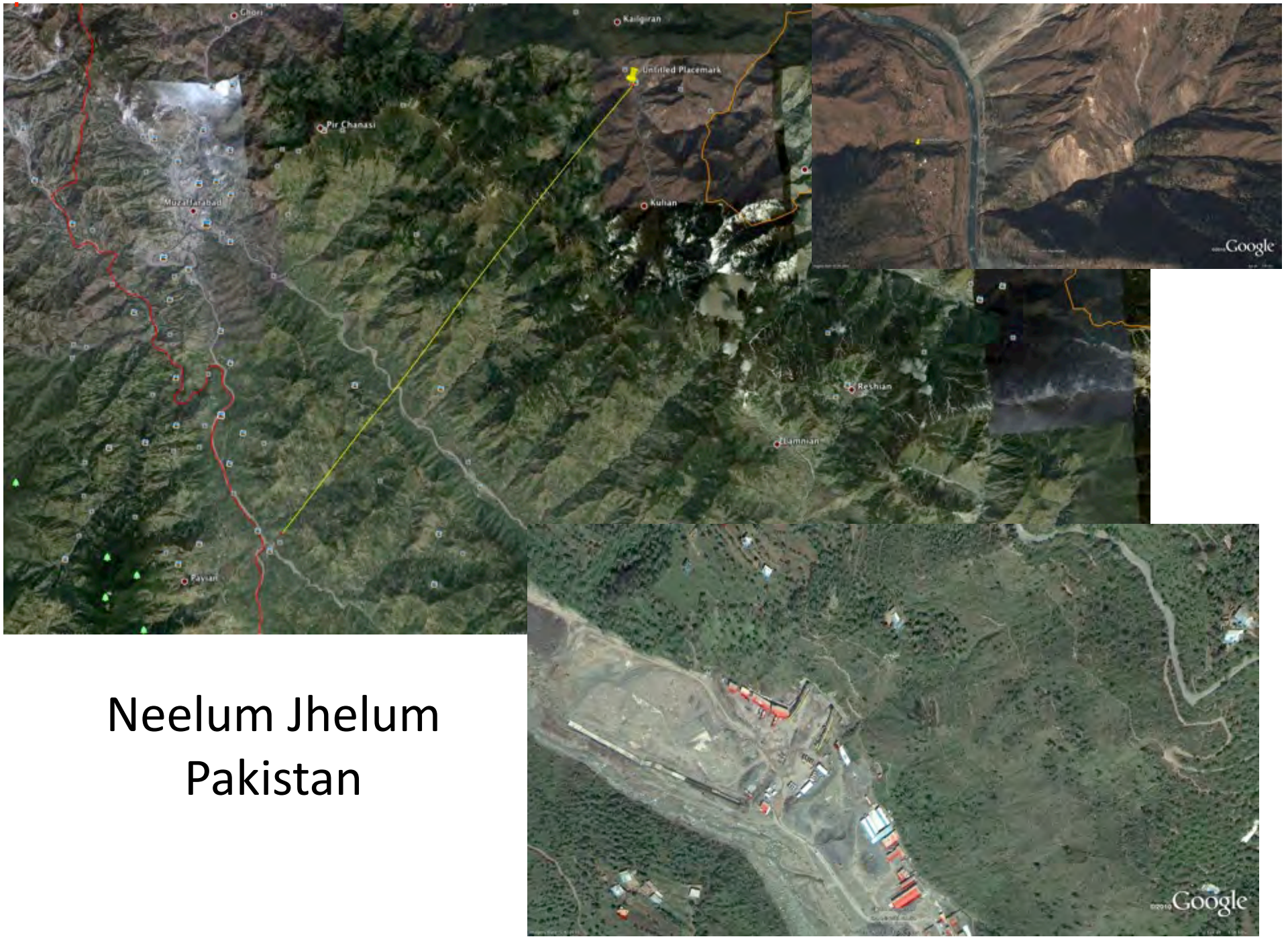
-

Kishenganga-India

- 330 MW project
- Dam intended to divert to Wullar lake via 27 km tunnel before flowing into Jhelum
- Likely to be completed in 2014

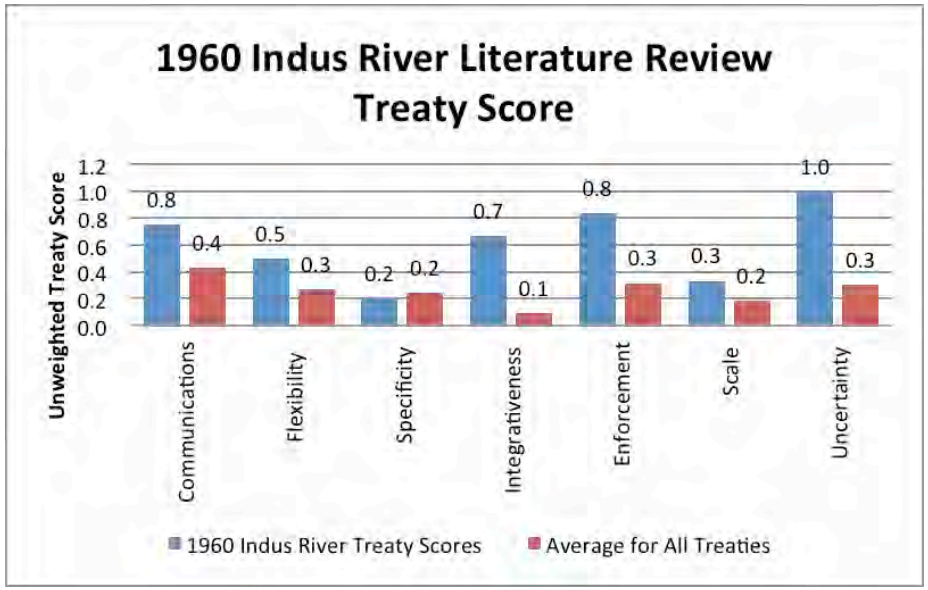
Neelum Jhelum Dam

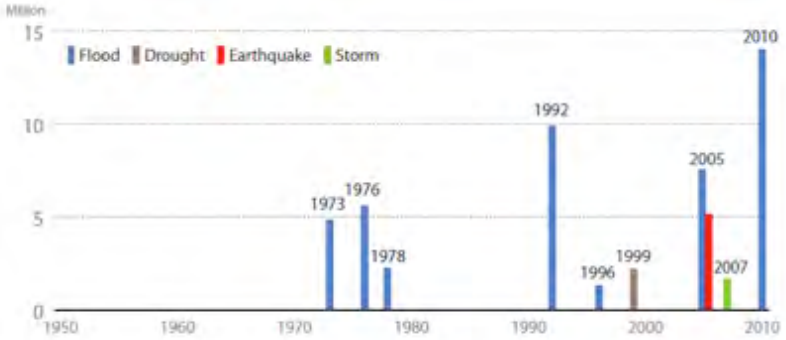
- 969-megawatt (MW) projected to be completed by 2016, but maybe sooner (new drilling technology)
- The total cost of the project is $2 billion
- Early stages of construction
- Head race tunnel is 28.5 Km



Neelum Jhelum
Pakistan

Indus Basin Summary





The IWT is strong and efficient for relations between the India and Pakistan, but may be hampered by the lack of *scale* components that include local stakeholders and other relevant nations.

-Domestic problems exacerbate international problems

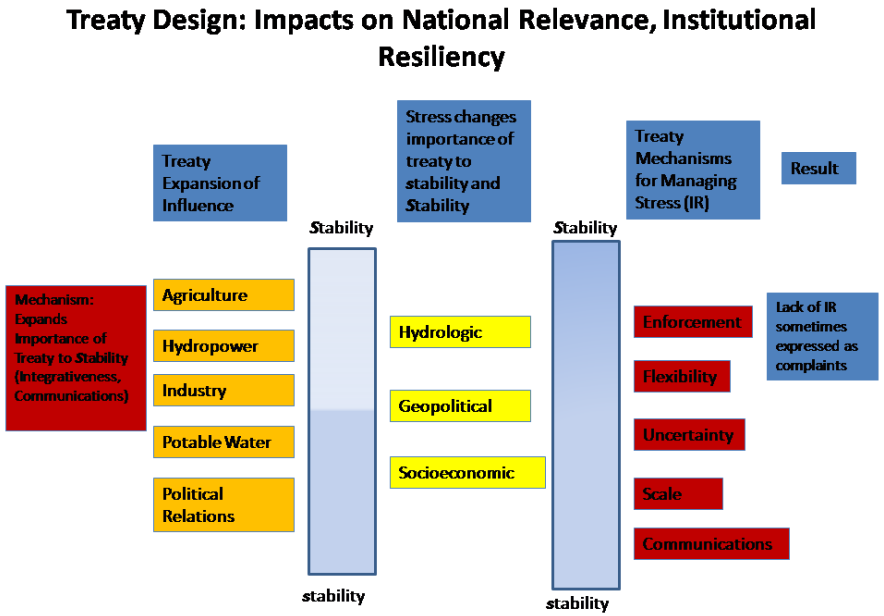
- Perceptions and overall relations drive water issues

-Limited mechanisms for managing flooding

-Generally models indicate precipitation increases, but will be overwhelmed by diminished meltwater from snow and glaciers that will ultimately result in significant flow decreases by the end of this century.

Conclusions

1. Not all conflict is bad and not all cooperation is necessarily good, with cooperation and conflict sometimes coexisting.
2. **Water problems extend beyond just water, both shaped by and shaping political, military, and socio-cultural concerns.**
3. The importance of the treaty to each country is in part shaped by the treaty itself.
4. Solutions are often static; problems are not



Risks and Opportunities

- **Risks:** Engineering solutions to water shortages are becoming increasingly common
  - Threaten to raise tensions between organizations implementing these solutions and those harmed by them
  - Risk creating unintended consequences on the freshwater systems being altered

Other Insights

- From an intelligence perspective:
  - Accurate hydrological models are not available for areas of national security interest
    - Within the US Government technical expertise to construct such models exists
      - Data is often insufficient
      - The impact of future climate change on hydrological systems often is not modeled

Other Insights

- The IC examines state stability as a critical part of determining potential threats to US interests and considers water, food, energy scarcity, and other factors in making such assessments
  - **A structured US "whole-of-government" approach that provided integrated natural resource assessments would be valuable for**:
    - National security assessments
    - Prioritizing development aid to achieve US foreign policy goals

Questions?

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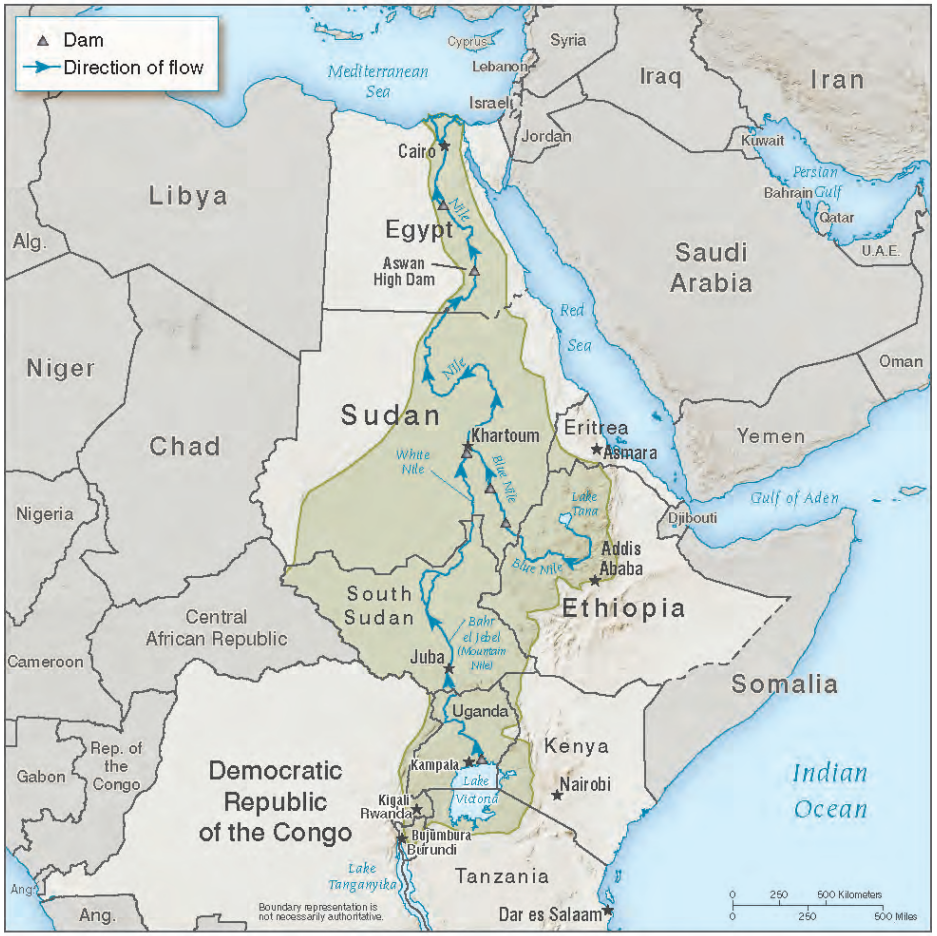
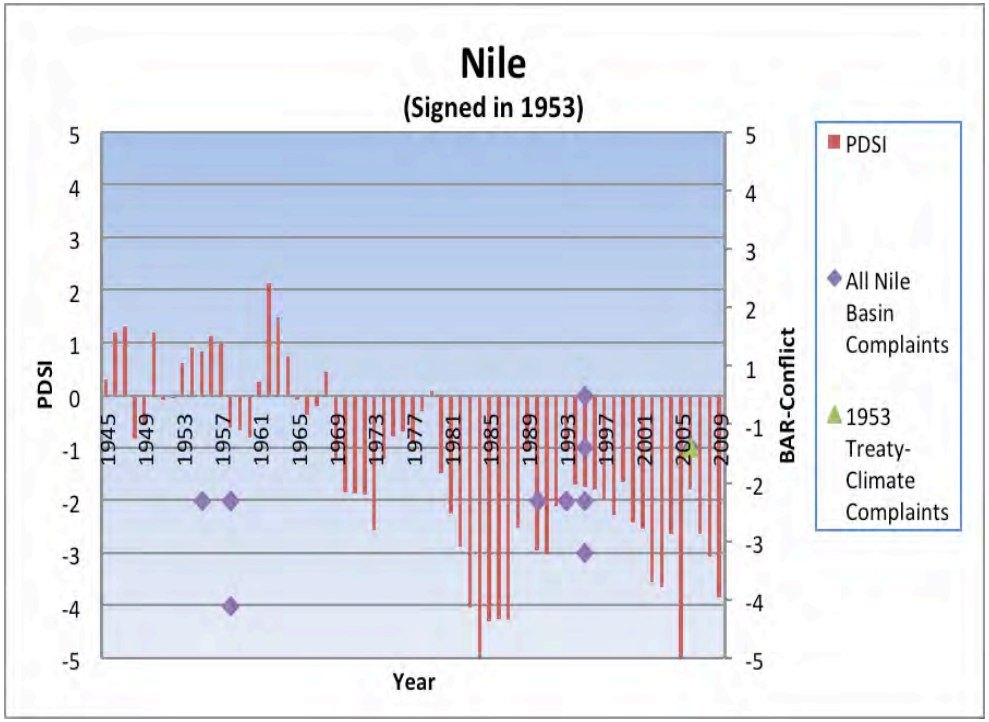
Nile Treaty(1959)

(U) Nile River Basin



- 75 percent of the waters to Egypt (55.5 billion cubic meters (BCM)) and 25 percent to Sudan (18.5 BCM).
- Treaty refers to “full utilization” and “full control of the river”.
- Egypt’s position is that any alteration of the existing treaty must be accomplished through the treaty protocols and with the consent of all parties
- Egypt references its “natural and historic rights” and any efforts to minimize the treaty by its “involuntary signatories” can be considered an attack on “inviolable Egyptian rights”

Complaints and Current Issues



The treaty/basin has had 12 complaints, only one related to climate/flows.

Thomas Homer-Dixon --- 'conflict is most probable when a downstream riparian is highly dependent on river water and is militarily and economically strong in comparison to upstream riparians.'

No provisions for non-signatory nations to exploit Nile waters without Cairo's permission…

In 1999, nine riparians (with Eritrea in observer status) created the Nile Basin Initiative (NBI)

Nile Stresses

- Cooperative Framework Agreement
- South Sudan--Jonglei canal (70% finished)
- Food: Global change in food security---2009/2010
  - Ethiopia plans to lease 3 million hectares, an area about the size of Belgium, to private investors over the next 2 ½ years
  - Saudi group plans to invest $2.5 billion by 2020 developing a rice-farming project in Ethiopia.
- Development: Millenium Dam
- Arab Spring, new government/Nile views in Egypt
- Doubling of population from 1995-2025

Cooperative Framework Agreement

- Designed to replace the NBI, could be at odds with 1959 treaty
- Ethiopia, Burundi, Kenya, Rwanda, Tanzania and Uganda signed; could take years to ratify
- CFA does not include volumetric water allocations, but principles of international law; Egypt wants rights explicitly maintained
- CFA could give upstream nations standing and legal justification to gain NGO funding
- All nine NBI countries seem to agree that a peaceful solution would allow international funds for development to be released once a legal framework is in place
- Donor support for the NBI is set to expire in 2012

Border Dam/Project X/Millennium/Renaissance

10th largest dam in world
US$4.8 billion, more than 15% of Ethiopia's GDP
63 BCM reservoir (twice the size of Lake Tana)
5.25 gigawatts, plan to increase electricity supply fivefold by 2015

Nile Treaty Strength Summary

- Lacks a provision for amendment and a mechanism for solving differences
- *Scale* of primary importance in the 1959 Nile Basin Treaty since no riparians other than Egypt and Sudan are explicitly considered
- *Integrativeness*- factors outside of those specific to the scope of the treaty were primary most complaints
- No countries are projected to have an increase in variability by 2030 and only four (Sudan, Uganda, Central African Republic, and Democratic Republic of Congo) are projected to have increased variability by 2050.