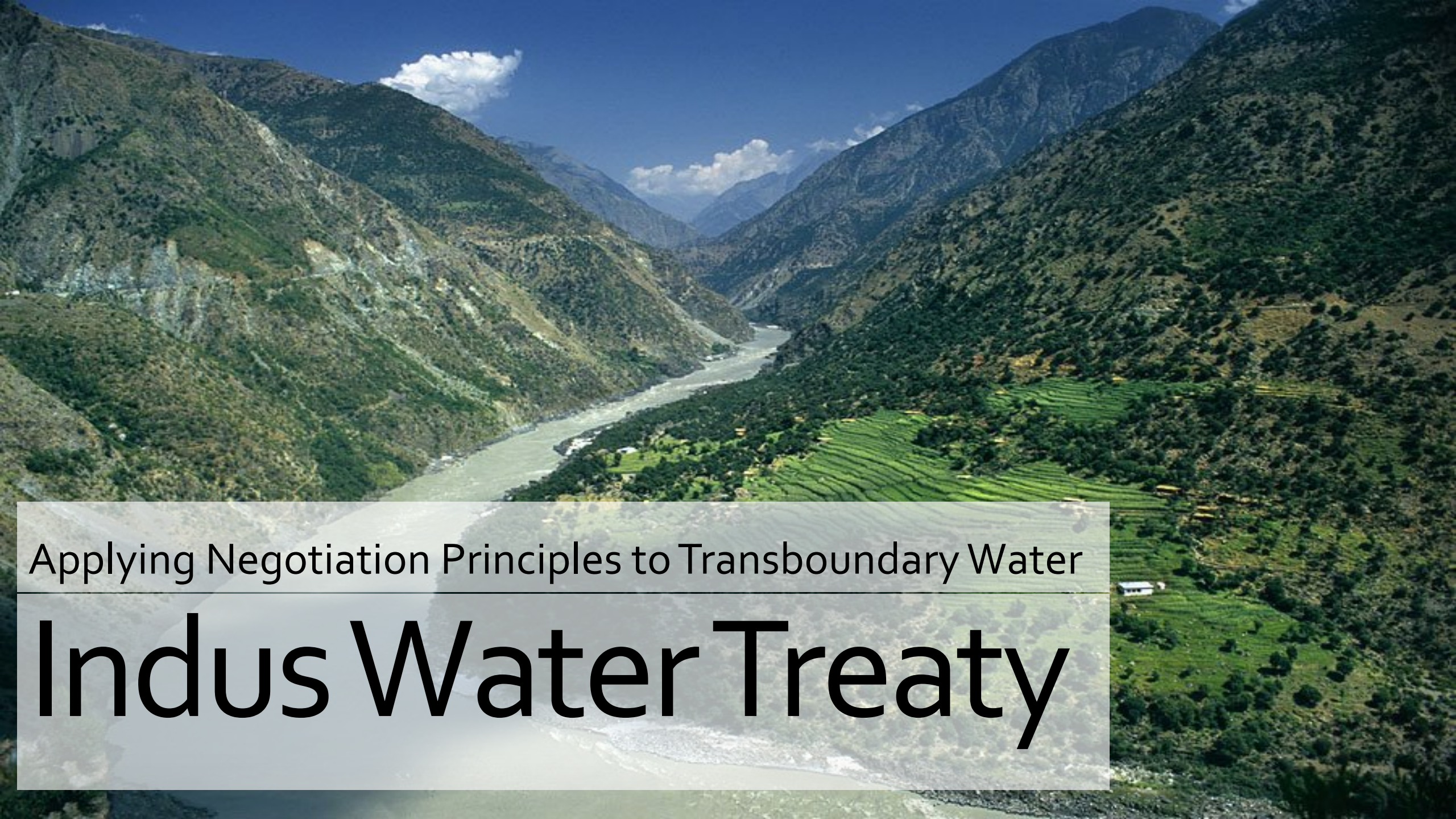
An aerial photograph of a river valley. The river flows from the upper left towards the lower right. On the right bank, there are extensive green terraced fields. The surrounding mountains are steep and covered in green vegetation. The sky is blue with a few white clouds. A semi-transparent white box is overlaid on the upper part of the image, containing the title text.

Learning from Transboundary Water Negotiations

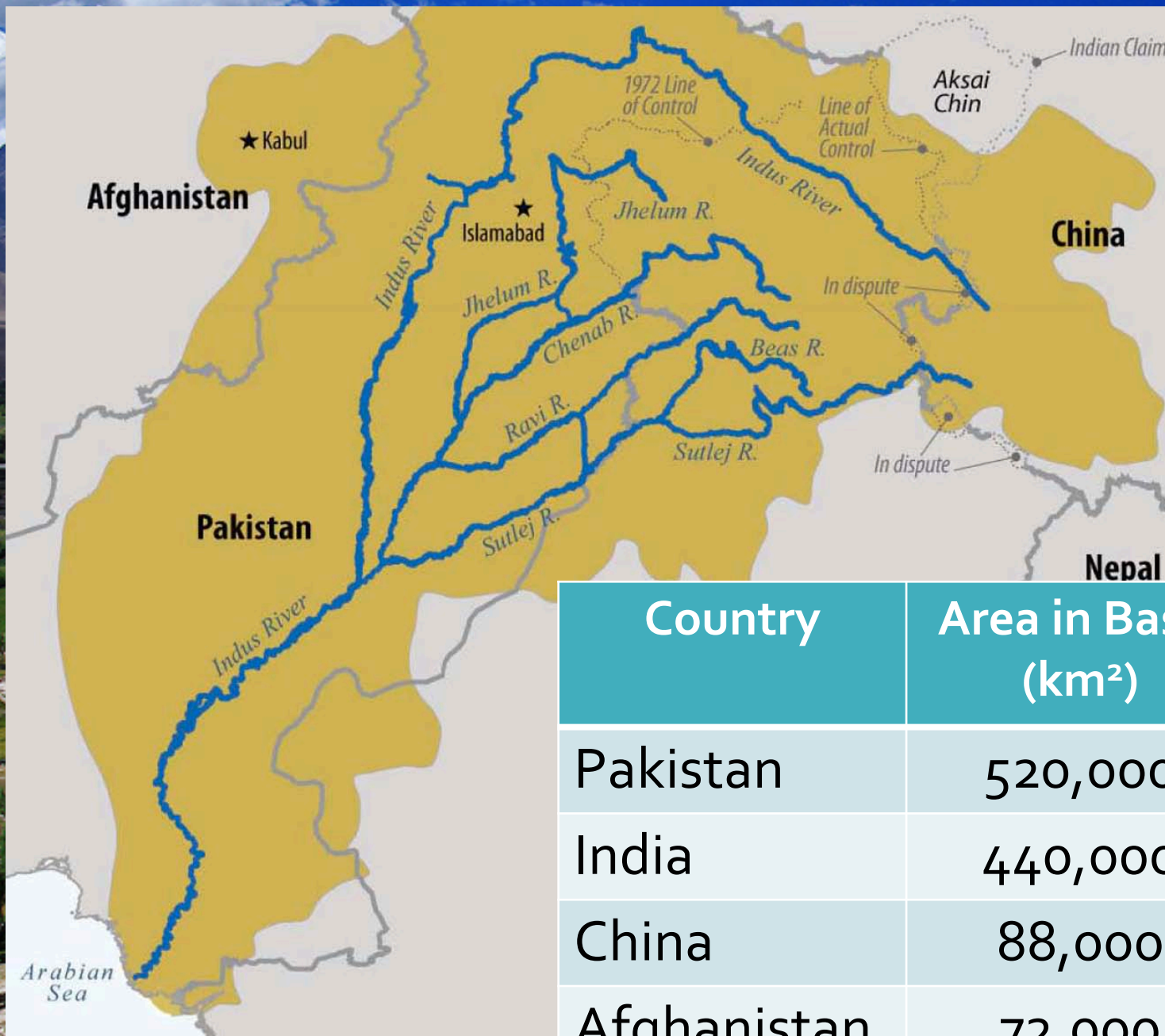
Yasmin Zaerpoor
Workshop on Eastern Nile Cooperation
Thursday, April 26, 2018
Massachusetts Institute of Technology

An aerial photograph of a deep mountain valley. The Indus River flows through the center of the valley, its water appearing milky white. The surrounding mountains are steep and covered in green vegetation, with some rocky patches visible. In the foreground, there are terraced green fields and a few small buildings. The sky is blue with some white clouds.

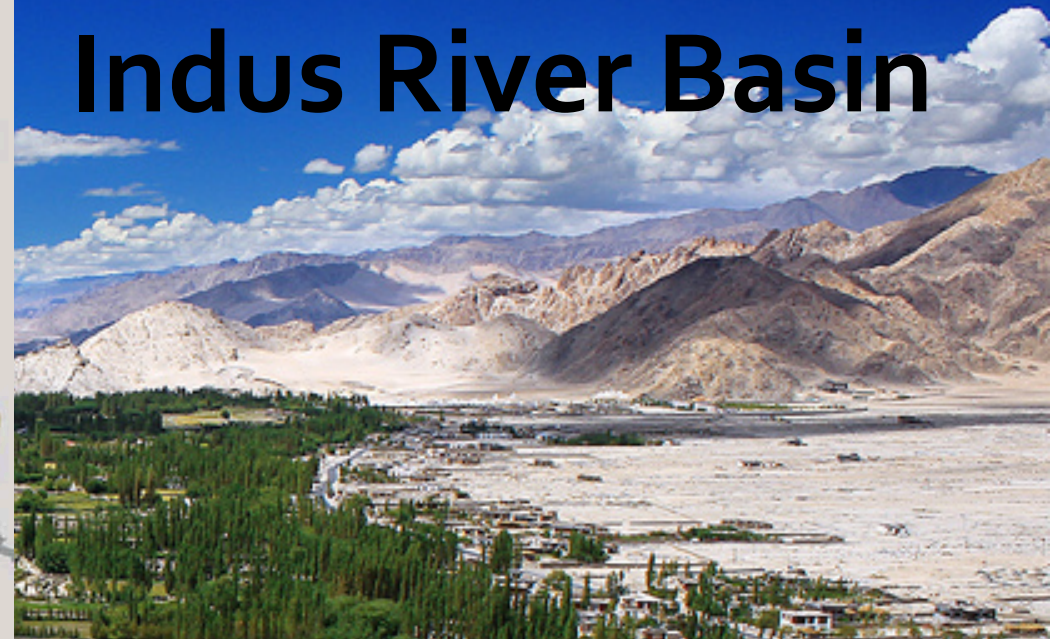
Applying Negotiation Principles to Transboundary Water

Indus Water Treaty





Indus River Basin



Country	Area in Basin (km ²)	% total area of basin	% total area of country
Pakistan	520,000	47	65
India	440,000	39	14
China	88,000	8	1
Afghanistan	72,000	6	11

An aerial photograph of the Indus River Basin. The image shows a wide, braided river channel with multiple sandbars and islands. The surrounding landscape is a mix of green agricultural fields and dry, brownish terrain. In the background, there are large, rugged mountains under a bright blue sky with scattered white clouds. A semi-transparent white box is overlaid on the center of the image, containing text.

Indus River Basin

Riparians: India*, Pakistan*, Afghanistan and China

Conflict: 1947 Partition (India and Pakistan)

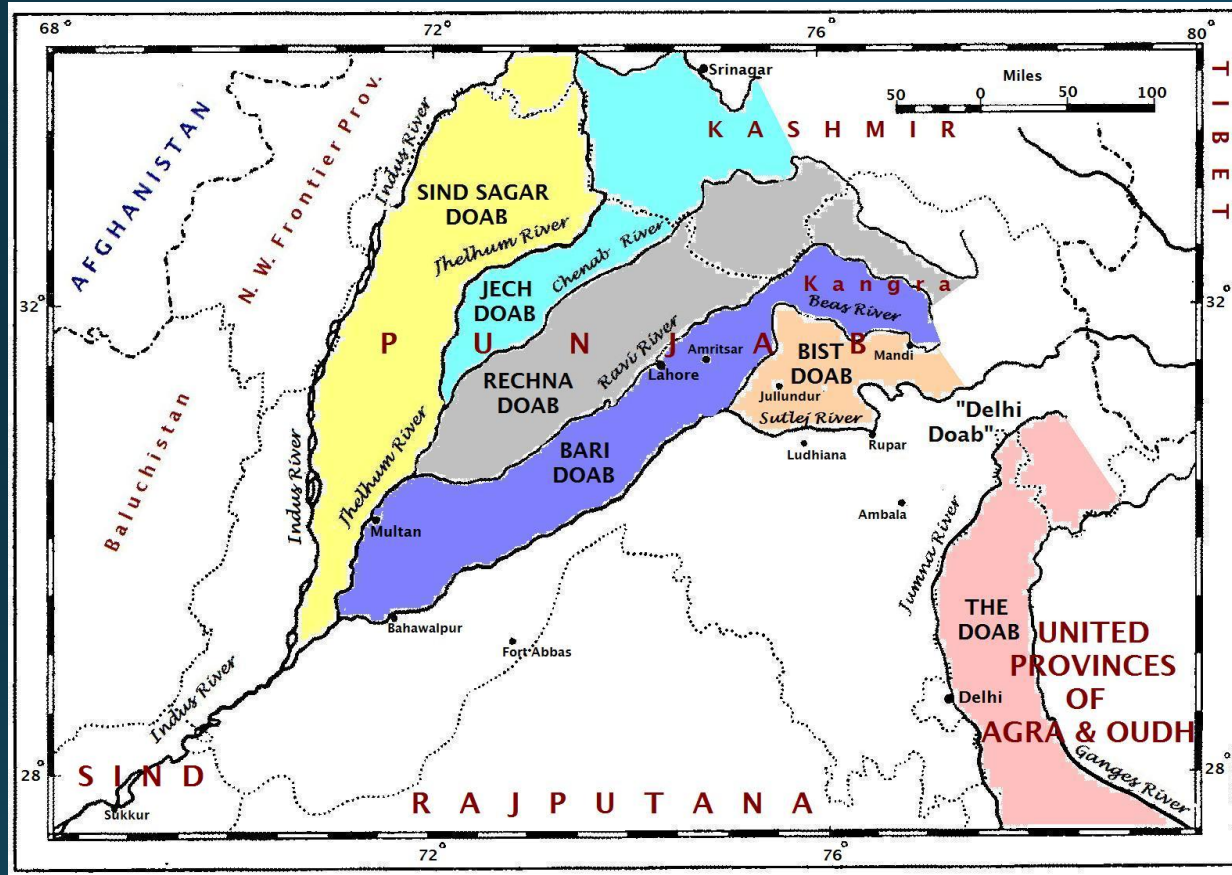
Positions:

- Pakistan: Historical use ('downstream' argument)
- India: Territorial sovereignty ('upstream' argument)

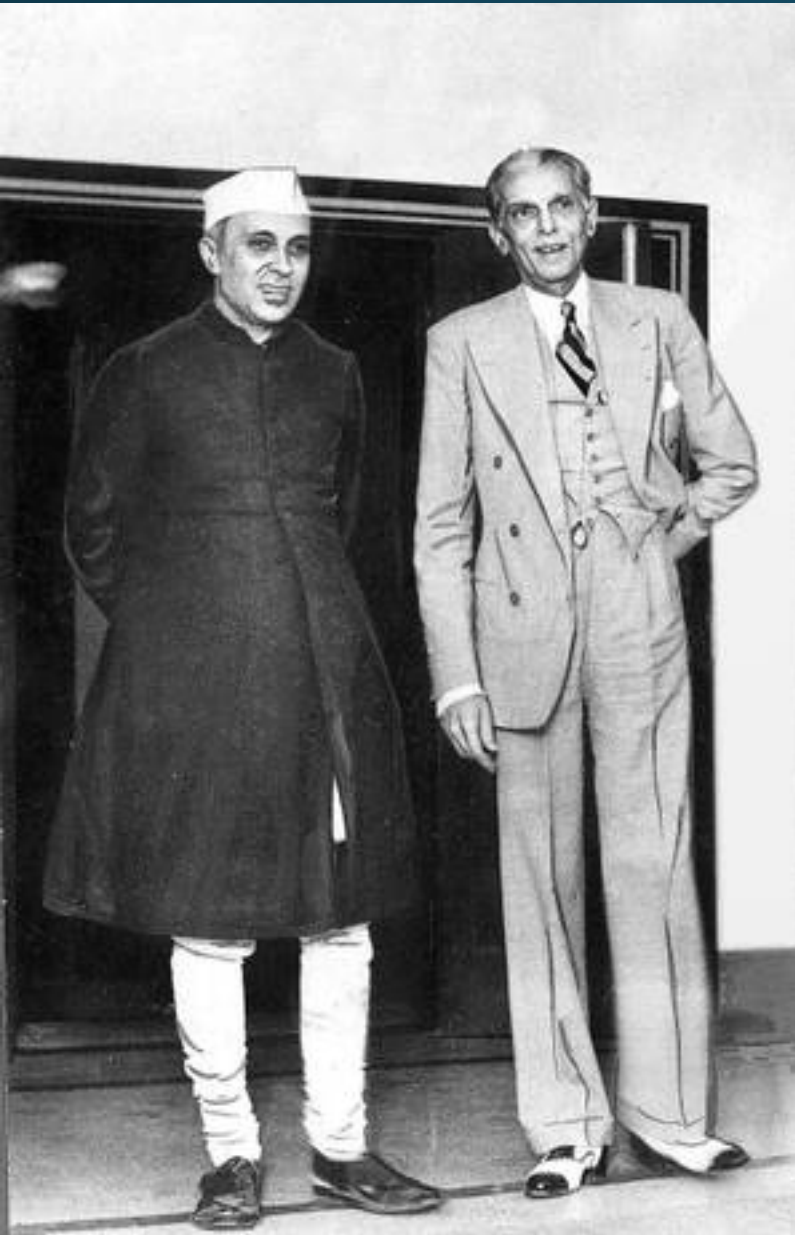
An aerial photograph of a deep, rugged mountain valley. The Indus River flows through the center of the valley, its water appearing milky white due to sediment. The surrounding slopes are steep and covered in dense green vegetation, with some areas showing terraced fields. The sky is a clear, vibrant blue with a few scattered white clouds. The overall scene conveys a sense of a remote, high-altitude environment.

Unpacking the Conflict

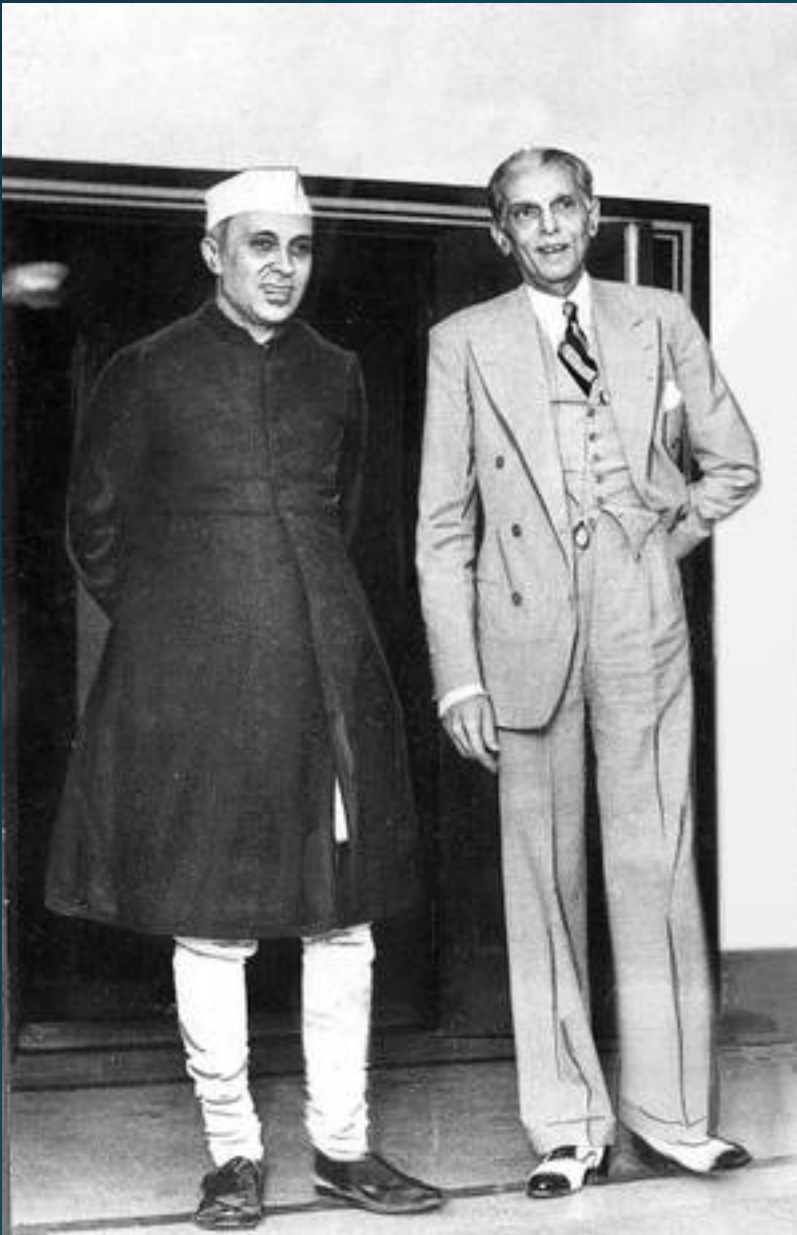
Indus River



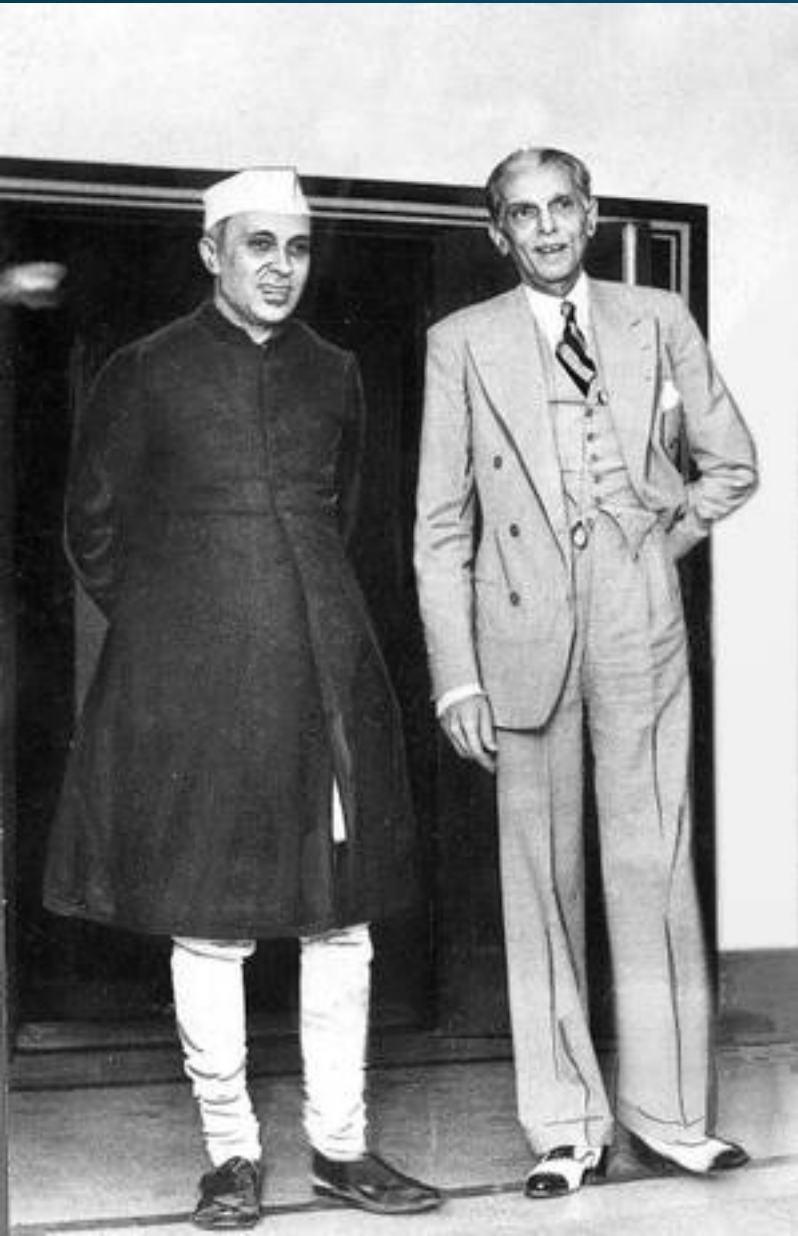
- Irrigation works (e.g. Upper Bari Daob Canal) in the middle of the 19th century increase the irrigated area in Sind.
- 1942-1947: Dispute between Sind and Punjab.
- Aug. 1947: Partition
- Dec. 1947: "Standstill Agreement" (until March 31, 1948)
- April 1, 1948: India 'cuts off' water to UBDC
- April 30, 1948: PM Nehru resumes water supply



- May 4, 1948: Inter-Dominion Agreement in Delhi
 - India will not withhold water from Pakistan without giving it time to develop alternative sources.
 - Pakistan recognizes India's desire to develop water-scarce and underdeveloped areas.



- May 4, 1948: Inter-Dominion Agreement
- June 1949: Pakistan sends a note that the Agreement is 'onerous and unsatisfactory to Pakistan' and that it was 'signed under duress'.
- Asks for 'equitable apportionment of the flow of all waters common to Pakistan and India' ... and requests adjudication by the International Court of Justice.
- India prefers ad hoc tribunal.



- May 4, 1948: Inter-Dominion Agreement
- June 1949: Pakistan suggests intervention by ICJ. India prefers ad hoc tribunal.



Stalemate!

“The starting point should be, then, to set to rest Pakistan’s fears of deprivation and a return to desert. Her present use of water should be confirmed by India, *provided she works with India* (as I believe she would) in a joint use of this truly international river basin... This is not a religious or political problem, but a feasible engineering and business problem... *this objective, however, cannot be reached by the countries working separately*; the river pays no attention to partition.”

David Lilienthal (TVA)
1951



David Lilienthal



WB Pres. Eugene Black

WB involvement

- May 1952: Technical Group meets
- 1953: WB tasks countries with developing own proposals
- 1954: Countries ask WB to develop a proposal. India accepts. Pakistan gives only qualified acceptance.

STALEMATE?

Oct. 6, 1953

	For India (maf)	For Pakistan (maf)	Total (maf)
India	29	90	119
Pakistan	15.5	102.5	118



	Eastern Rivers		Western Rivers	
	For India	For Pakistan	For India	For Pakistan
India	All	0	7%	93%
Pakistan	30%	70%	0	All



Feb. 5, 1953

WB proposal:
India (Eastern Rivers): 22 maf
Pakistan (Western Rivers): 97 maf
5 year transition period

WB involvement

- May 1952: Technical Group meets
- 1953: WB tasks countries with developing own proposals
- 1954: Countries ask WB to develop a proposal. India accepts. Pakistan gives only qualified acceptance.
- 1954-9: Negotiations on WB proposal. WB creates Indus Basin Development Fund.
- 1960: IWT signed
- Jan 1962: IWT ratified

Oct. 6, 1953

	For India (maf)	For Pakistan (maf)	Total (maf)
India	29	90	119
Pakistan	15.5	102.5	118



	Eastern Rivers		Western Rivers	
	For India	For Pakistan	For India	For Pakistan
India	All	0	7%	93%
Pakistan	30%	70%	0	All



Feb. 5, 1953

WB proposal:
India (Eastern Rivers): 22 maf
Pakistan (Western Rivers): 97 maf
5 year transition period

Indus Water Treaty

(1960)

Eastern Rivers (Ravi, Beas, and Sutlej) go to India. Western Rivers (Indus, Jhelum and Chenab) go to Pakistan.

Est. Permanent Indus Commission.

Dispute resolution mechanisms established ('question', 'differences', 'disputes').

World Bank is a signatory.





Indus Water Treaty (1960)

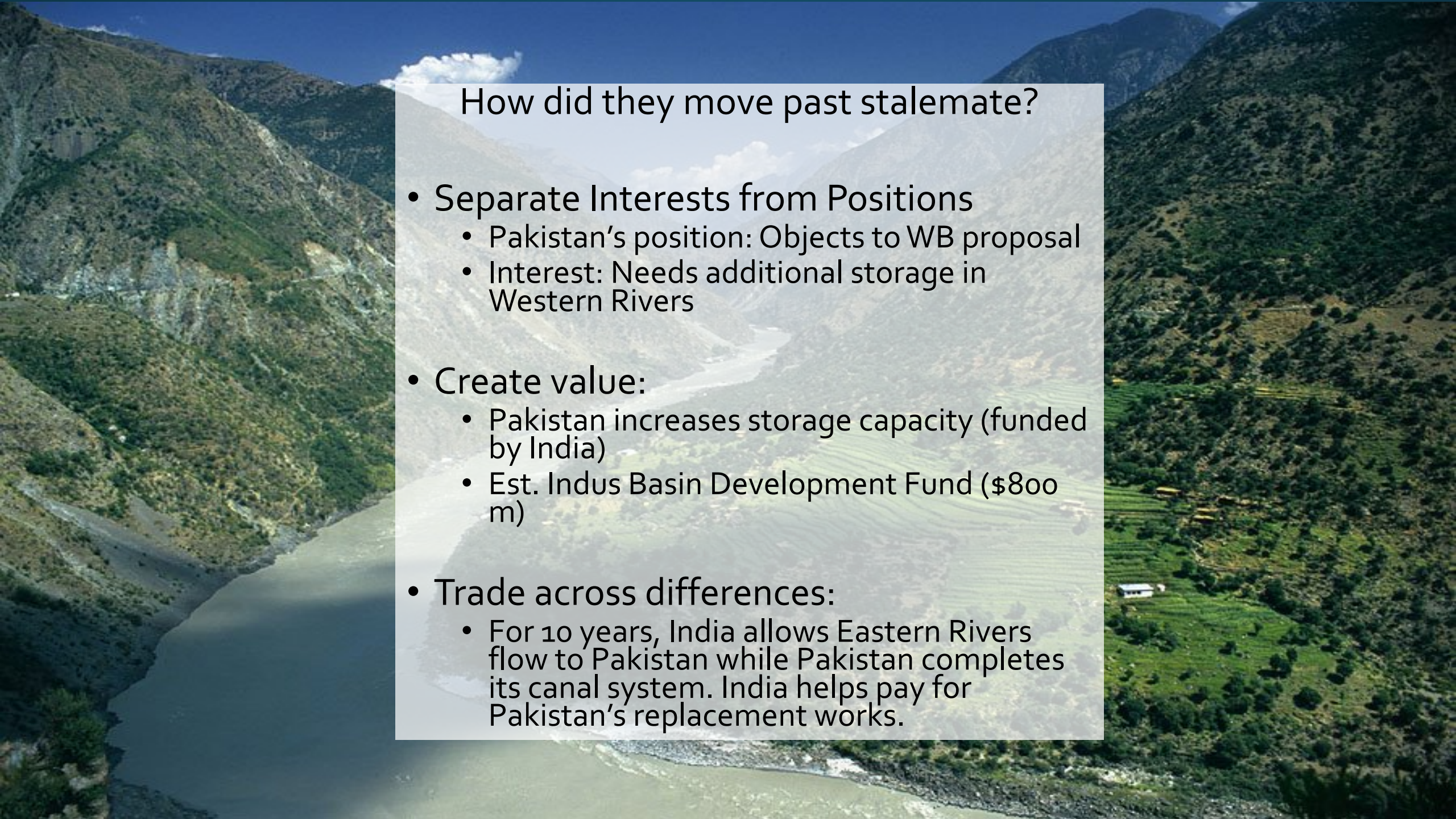
Pakistan receives unrestricted flow of western rivers. India allows flow unimpeded, with minor exceptions.

Pakistan: 3 dams, 8 link canals, 3 barrages and 2,500 tube wells.

10 year transition period.

India provides US\$62m in 10 annual installments.

Data exchange and future cooperation.



How did they move past stalemate?

- Separate Interests from Positions
 - Pakistan's position: Objects to WB proposal
 - Interest: Needs additional storage in Western Rivers
- Create value:
 - Pakistan increases storage capacity (funded by India)
 - Est. Indus Basin Development Fund (\$800 m)
- Trade across differences:
 - For 10 years, India allows Eastern Rivers flow to Pakistan while Pakistan completes its canal system. India helps pay for Pakistan's replacement works.

Weaknesses of IWT

- Water not managed in an integrated way
 - Includes 2/4 riparians: Afghanistan and China both have increasing water demands
- Dispute resolution mechanism unclear (e.g. 2016 Kishenganga and Ratle hydroelectric power plants)

An aerial photograph of a deep river valley. A wide, light-colored river flows from the background towards the foreground. The valley walls are steep and covered in dense green vegetation. On the right side, there are terraced agricultural fields. The sky is blue with a few white clouds. A semi-transparent white box is overlaid on the lower left of the image.

Value Creation

Columbia and Colorado Rivers

Columbia River Basin

- 1944: US and Canada begin study on joint development of dams in CRB
- 1948: Flood (destroys Vanport, OR)
- Feb. 1960: Formal negotiations begin
- Jan. 1961: Treaty signed

Columbia River Treaty between US and Canada (1961)

Three dams constructed in Canada that increase energy production and provide irrigation and flood control benefits to the US.

In return, US paid Canada a lump sum payment for $\frac{1}{2}$ value of estimated future flood damages prevented in the US and gives Canada half the additional power generated by the power plants in the US.





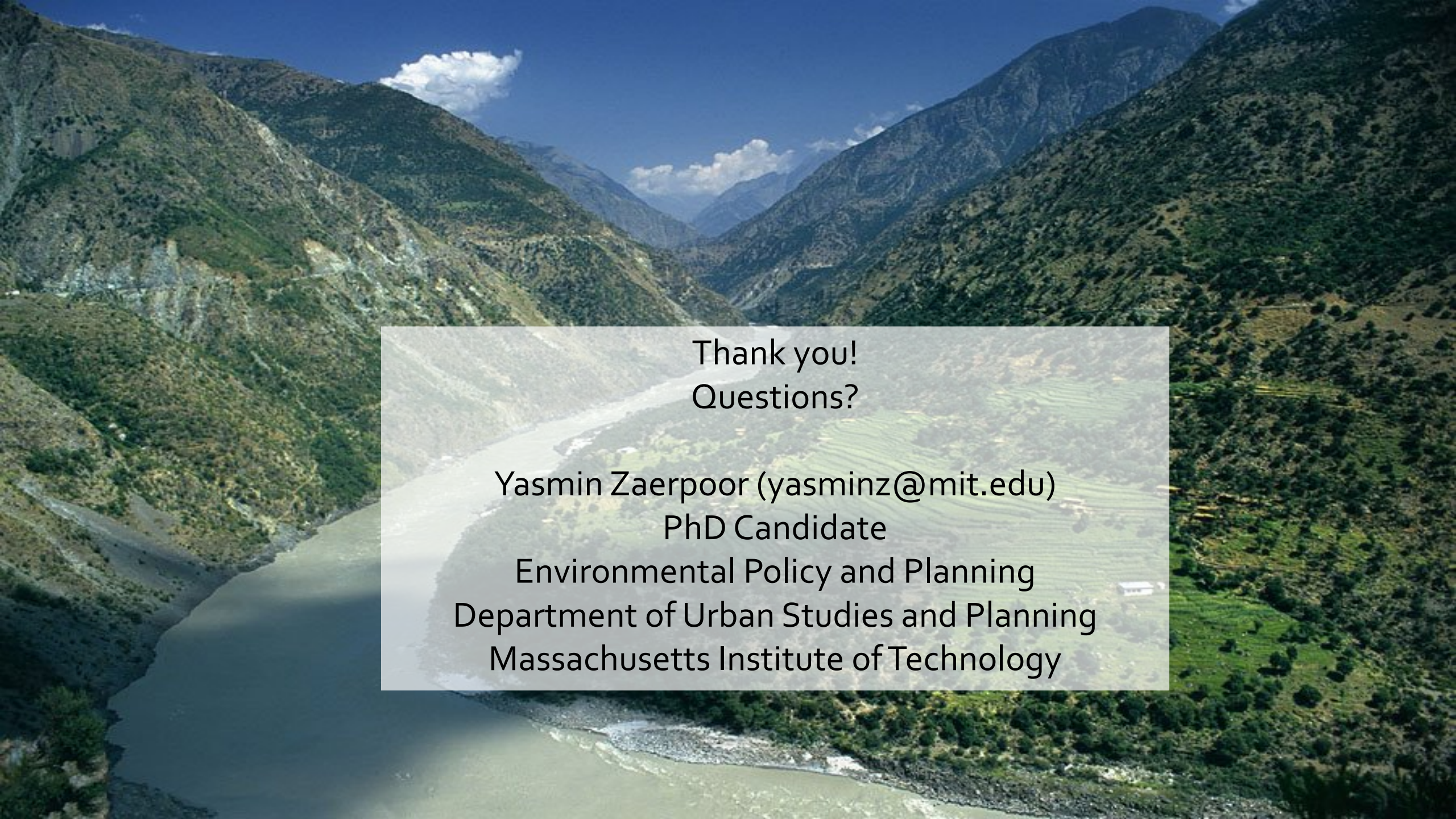
Minute 319 on the Colorado River between US and Mexico (2012)

Mexico stores part of its annual Colorado River water allocation in Lake Mead (in the US).

In return, US ensures higher water storage levels at Lake Mead during periods of drought.

How have river basins created value?

- Increase the scale or scope of water management (IWRM/river basin approach)
- Manage water as a 'flexible' resource (e.g., through technology, reclassifying 'useable' water (for different purposes), more efficient water storage, recognition of virtual water, etc.)
- Trade across differences or bundle benefits
- Focus on the benefits of water (e.g. benefits 'to the river', 'from the river', because of the river, and 'beyond the river' – Sadoff and Grey 2002)



Thank you!
Questions?

Yasmin Zaerpoor (yasminz@mit.edu)
PhD Candidate
Environmental Policy and Planning
Department of Urban Studies and Planning
Massachusetts Institute of Technology