Historical and Current Transboundary Water Issues

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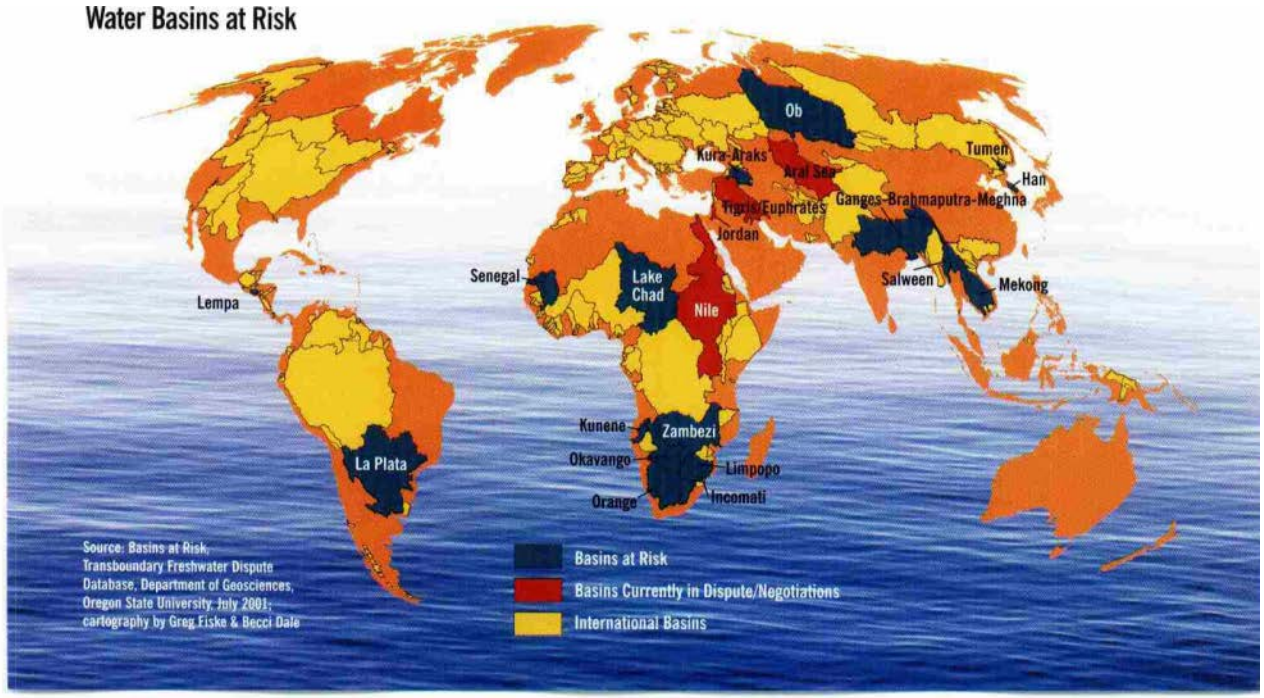
Outline

- Objective
  - Provide an historical sketch (Soviet and Post-Soviet period) of transboundary water issues in the region in relation to the political and governance landscapes. Include Aral Sea basin and Indus, and Ganges
- Topics
  - Transboundary Waters
  - International Water Law
  - Aral Sea Basin
  - Syr Darya Basin
  - Amu Darya Basin
  - Indus Basin
  - Ganges Basin
  - Conclusions

Transboundary Waters: 263 Basins



Foreign Policy – September/October 2001

- Harbingers of conflict:
  - Unilateral development
  - Internationalized basin
  - No / ineffective institutions
  - General animosity
  - Downstream hegemony
- Some warning signs:
  - Large scale development
  - Rapid changes
  - Civil unrest

Transboundary Waters: What's the Issue?

- Difficulties in reaching multilateral transboundary water resources agreements:
  - Domestic and international politics
  - National priorities, and
  - Skewed perceptions of costs, benefits and risks of actions

- Decisions among countries sharing a limited resource based on:
  - Consultation,
  - Negotiation,
  - Information sharing, and
  - Cost allocation

Transboundary Waters: International Law

- *Guidelines* for sharing transboundary water
- Share Information
- Notify and consult with neighbors about proposed works
- Utilize water in equitable and reasonable manner
  - Optimal and sustainable
  - Consider relevant factors
- Cooperate in use, development and protection
- Prevent harm
  - Take appropriate measures
  - Discuss compensation, if necessary

International Water Law

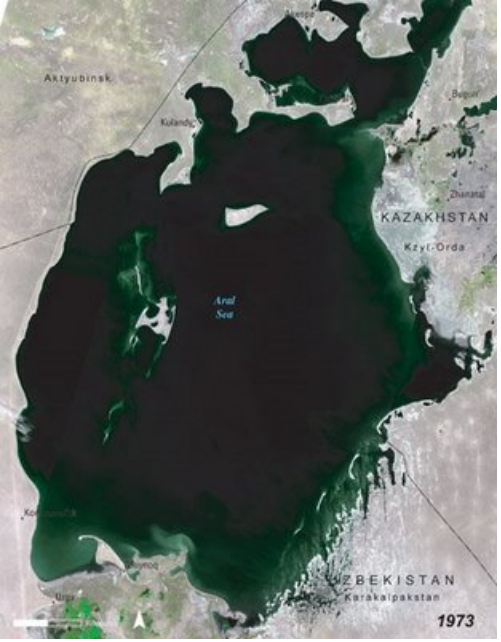
- **Helsinki Rules**
  - "Rules on the Uses of the Water of International Rivers" (1966)
- **Helsinki Convention**
  - "Convention on the Protection and Use of Transboundary Watercourses and International Lakes" (1992)
- **UN Convention**
  - "Convention on the Law of the Non-navigational Uses of International Watercourses" (1997)

- Intended to be framework documents
- Provide guidance for more specific multilateral agreements governing particular transboundary situations

Aral Sea Basin

Aral Sea Basin

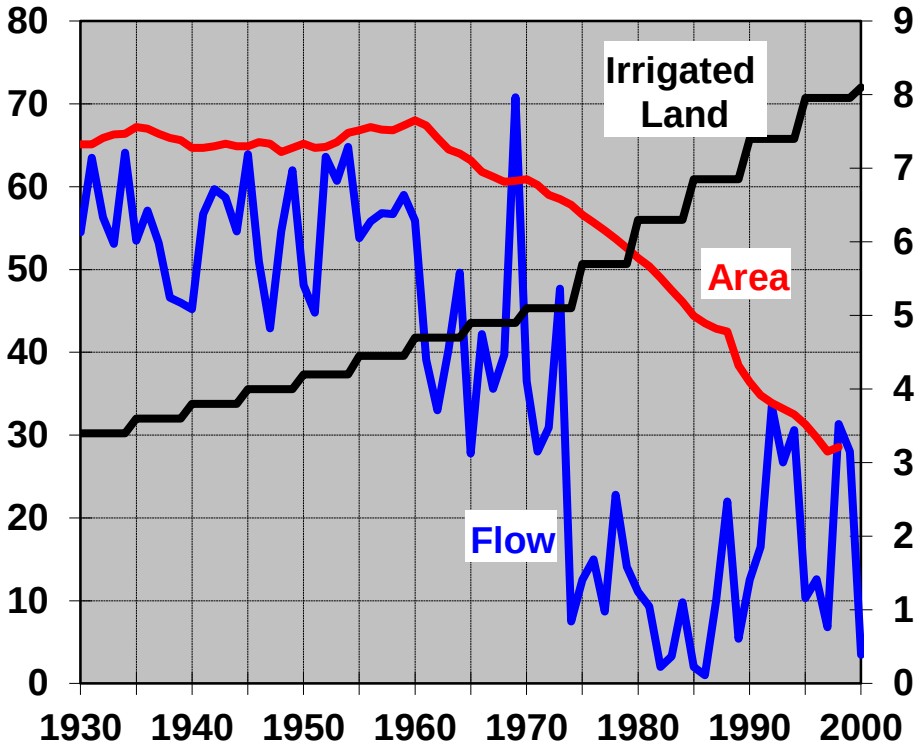
USGS, EROS Data Center



1973

USGS, EROS Data Center

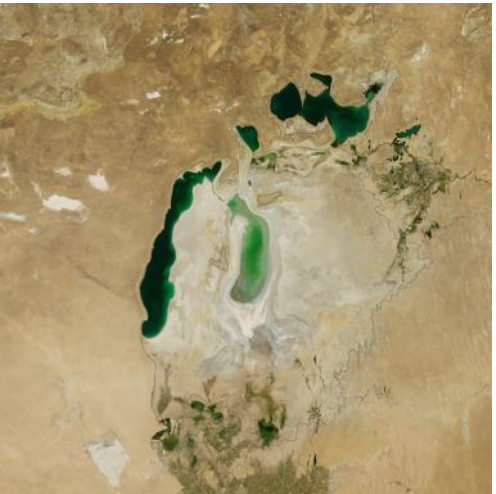
1985



Flow (km^3), Area (10^3 km^2)

Irrigated Land (10^6 ha)

2011



Nasa, World of Change

2000

Nasa, World of Change

Aral Sea Basin: 1992 Almaty Agreement

- Established Interstate Commission for Water Coordination (ICWC)
  - Includes all 5 Aral Sea basin countries
  - Determines regional water management policy
  - Regulates use and protection of transboundary water
  - Administers Basin Management Organizations
- Approved prior USSR water allocations (% of flow)
  - Amu Darya (Protocol 566), Syr Darya (Protocol 413), Aral Sea (Decree 1110)
- No harm clause
- Provision for "extremely dry years"
- Required information sharing
- Promotes joint research and efforts to resolve Aral Sea "problem"

ICWC founders (from left to right): M. Zulpuyev, N. Kipshakbayev, A. Ilamanov, A. Nurov, R. Giniyatullin, April 6, 1992, Ashkhaba

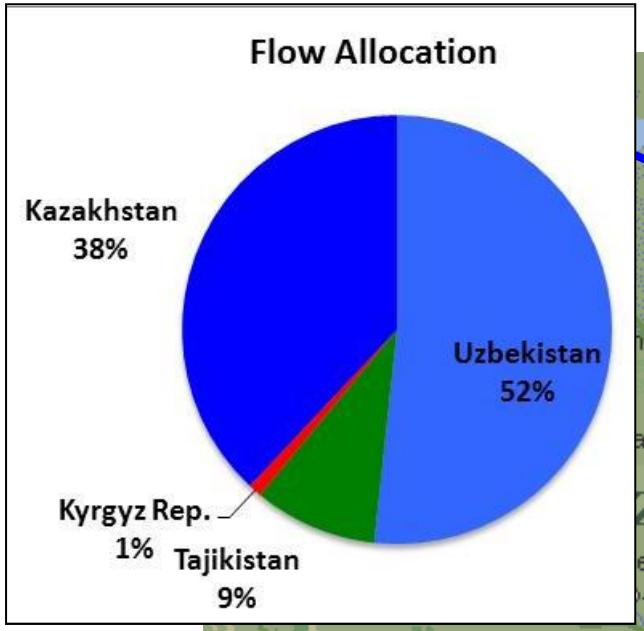
Aral Sea Basin:
Two Decades of Cooperation

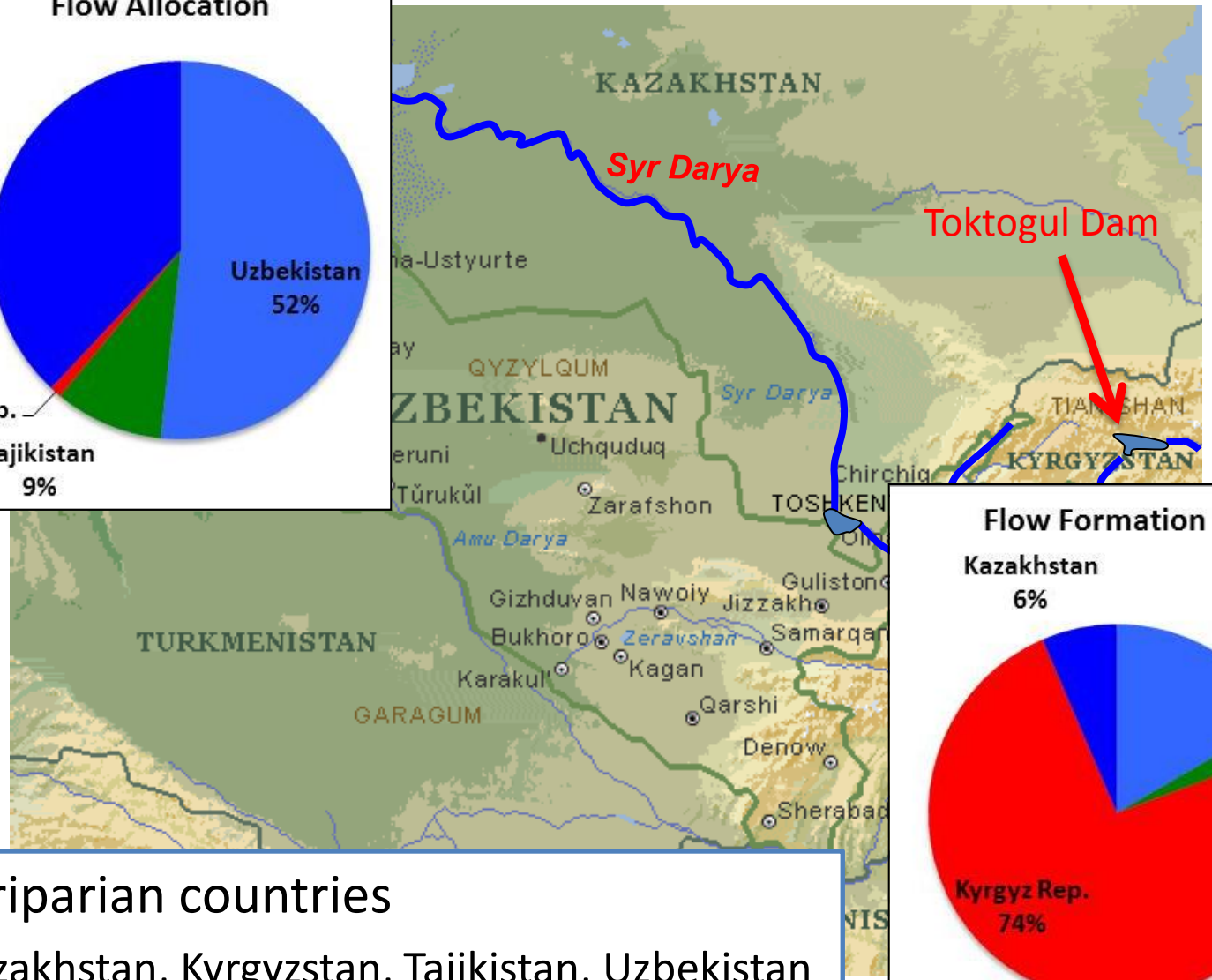
- Information sharing
  - Joint monitoring and data shared, but
  - Poor Notification/Consultation
- Equitable use
  - Not entirely: Prior allocations favor downstream countries
- Reasonable use
  - Yes, but
  - “Extremely dry years” undefined
  - Allocations need to be confirmed or revised
  - Compensation need to be revised to include multiyear flow and storage
- Avoid harm
  - Not entirely: Flooding, incomplete fuel deliveries

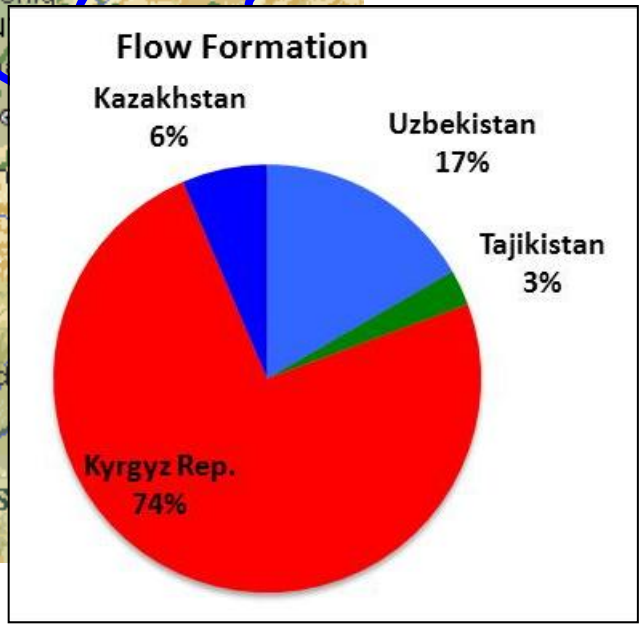
Aral Sea Basin: Issues

- No joint basin management plan
  - Some short-term planning
  - Reservoir release schedules
  - No comprehensive IWRM
- Water allocation based on previous protocols/decrees
  - Prior allocations favor downstream countries
  - No analysis of adequacy, efficiency, or fairness of allocation
  - Water releases to Aral Sea not followed in practice
- Upstream development
  - New infrastructure not envisioned in agreements
  - Little analysis done
  - Little consultation or information sharing

Syr Darya Basin







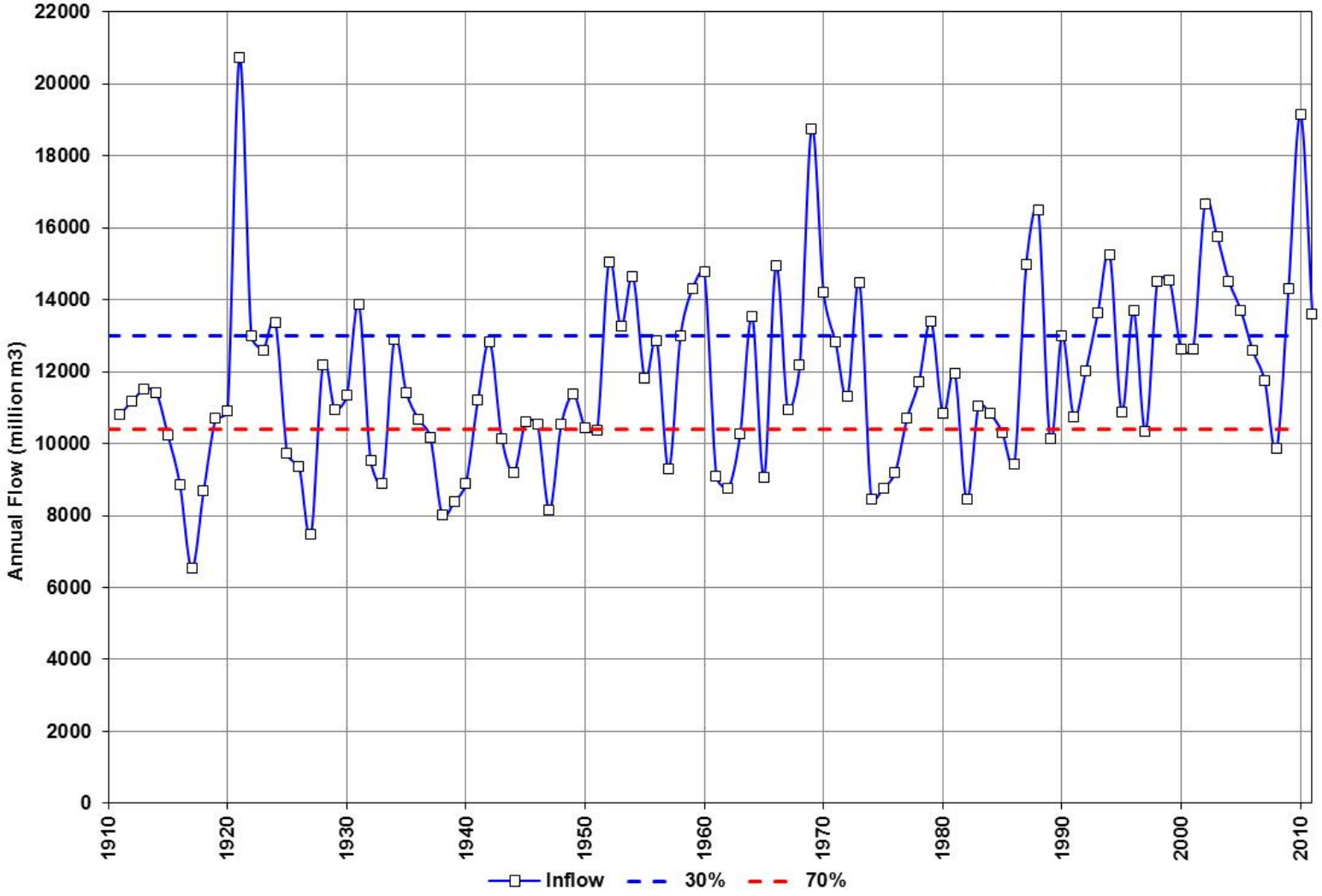
- Four riparian countries
  - Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan

Syr Darya Basin: Cooperation

- 1998 Syr Darya Agreement
- Established management of Syr Darya cascade of reservoirs
  - Annual negotiation
  - Reservoir releases in irrigation mode
  - Surplus summer electricity delivered to Kazakhstan and Uzbekistan
  - Fuel compensation for energy losses (and irrigation water delivery)
- River Basin Organizations and Regional Electricity Grid Operator responsible for implementation of releases and energy transfers

Water and Energy Roundtable, 1998

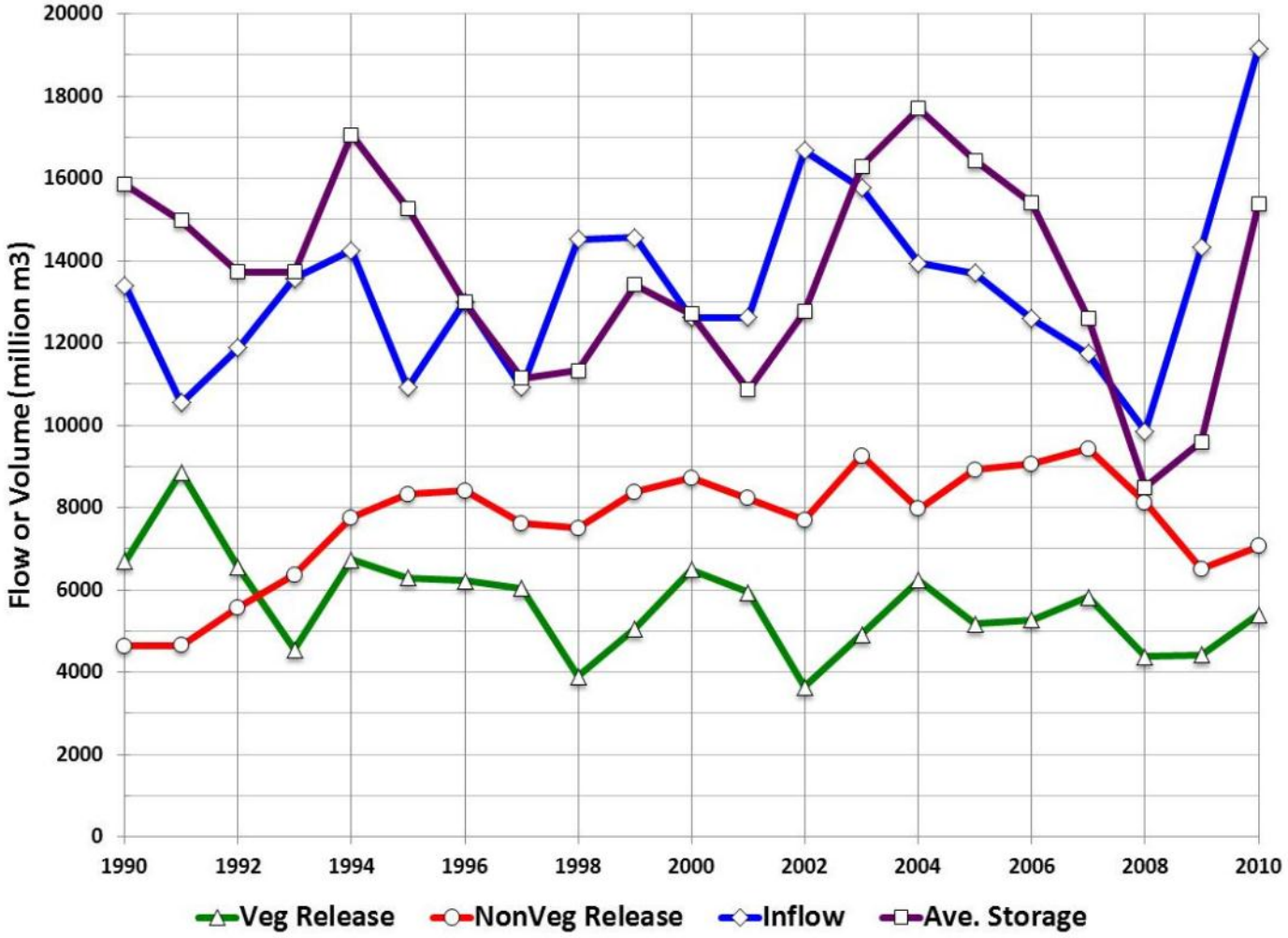
Syr Darya Basin:
Annual Flow at Naryn (1911-2010)



70%

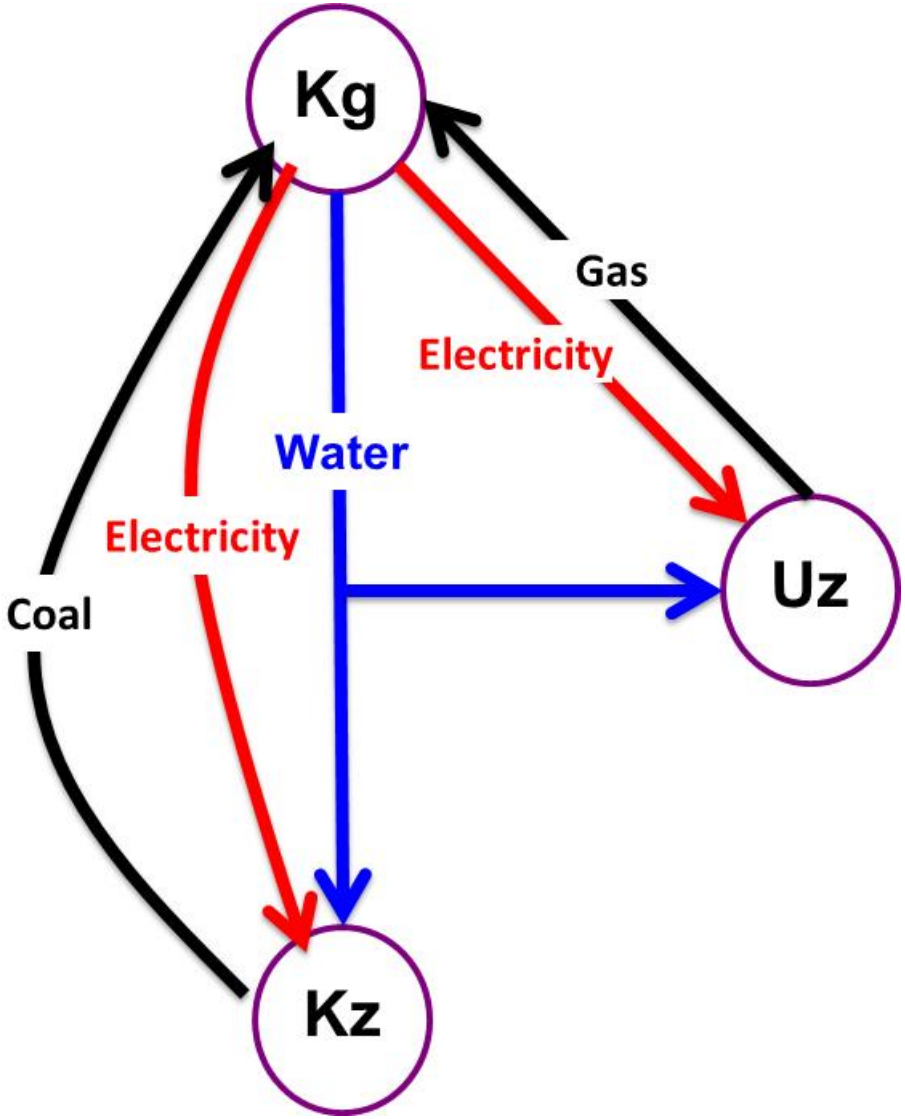
30%

Annual Inflow, Storage and Release Toktogul Reservoir (1990-2010)



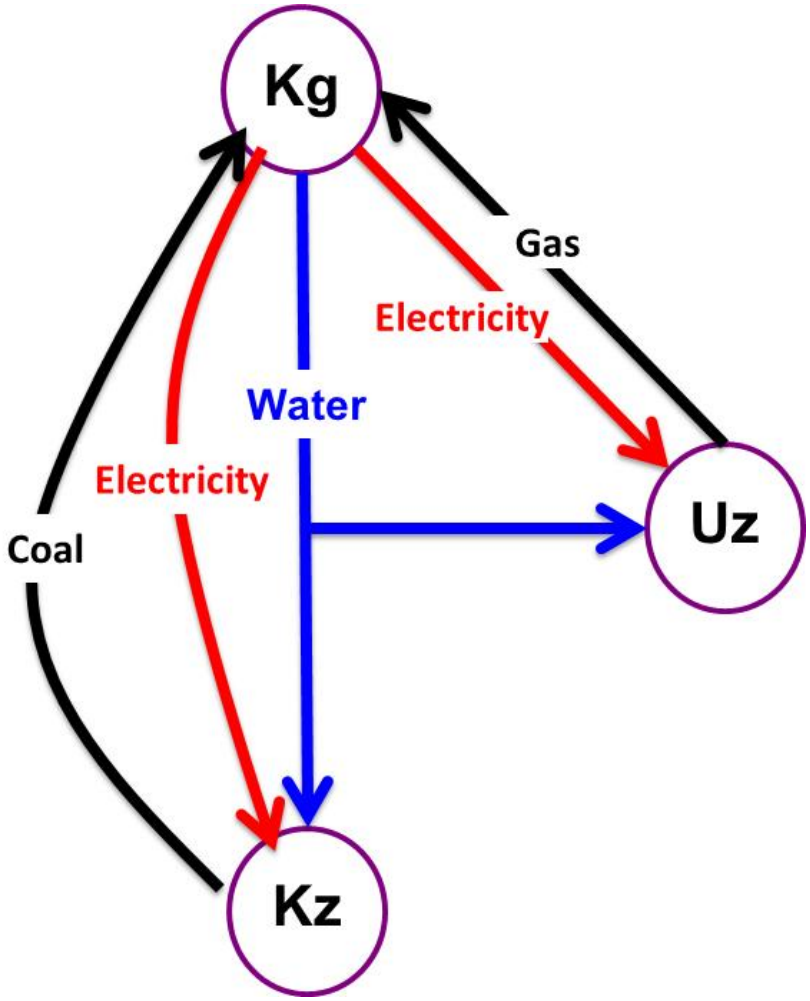
Syr Darya Basin:
1998 Agreement - Implementation

- Kyrgyzstan (KG):
  - \+ UZ gas for energy deficit
  - \+ KZ coal for energy deficit
- Uzbekistan (UZ):
  - \+ Water for agricultural production
  - \+ KG surplus electricity
  - \- Gas for KG energy deficit
- Kazakhstan (KZ):
  - \+ Water for agricultural production
  - \+ KG surplus electricity
  - \- Coal for KG energy deficit

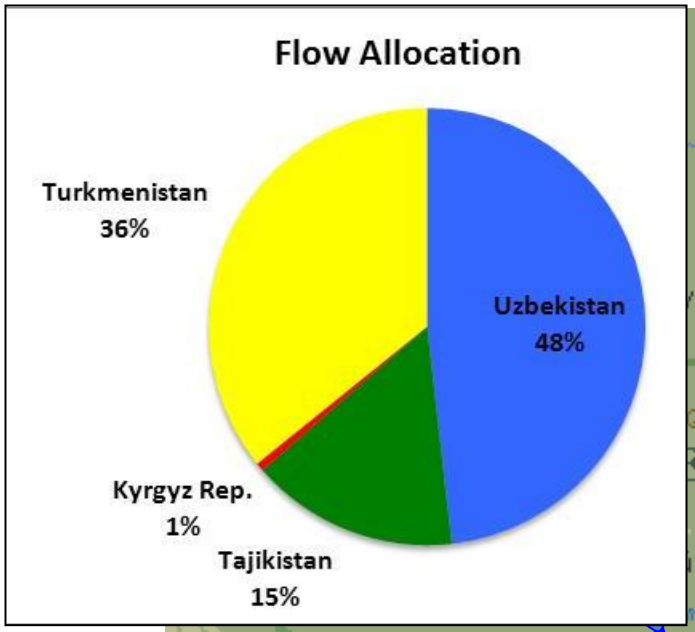


Syr Darya Basin: 1998 Agreement - Issues

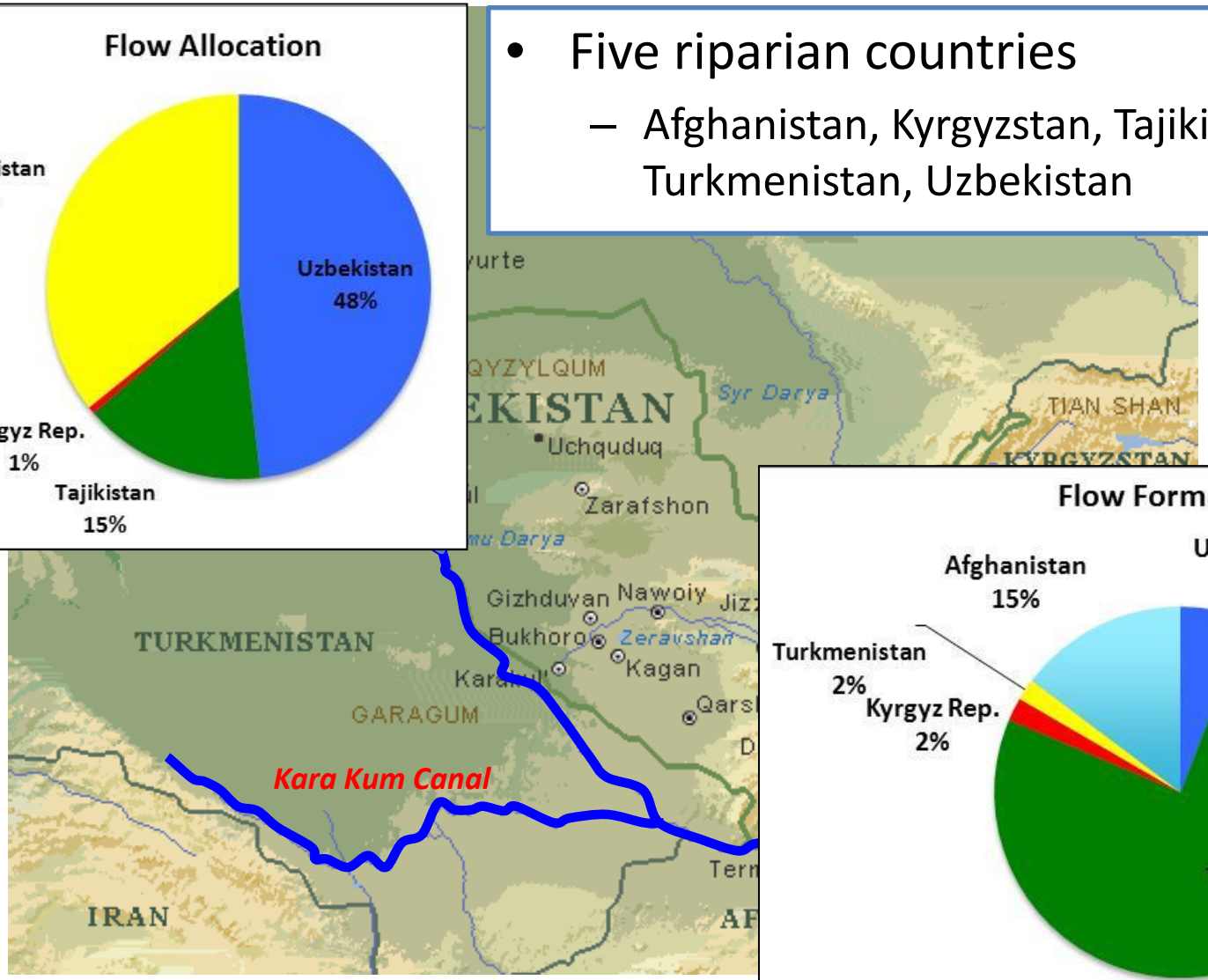
- No basin management plan
- Fuel deliveries often deficient
- Excess winter releases cause flooding
- Different valuation for electricity
- Different costs for gas and coal
- Different net margins for agricultural production
- No valuation of reservoir storage services
- No consideration of hydrologic fluctuations
- No consideration of future infrastructure development

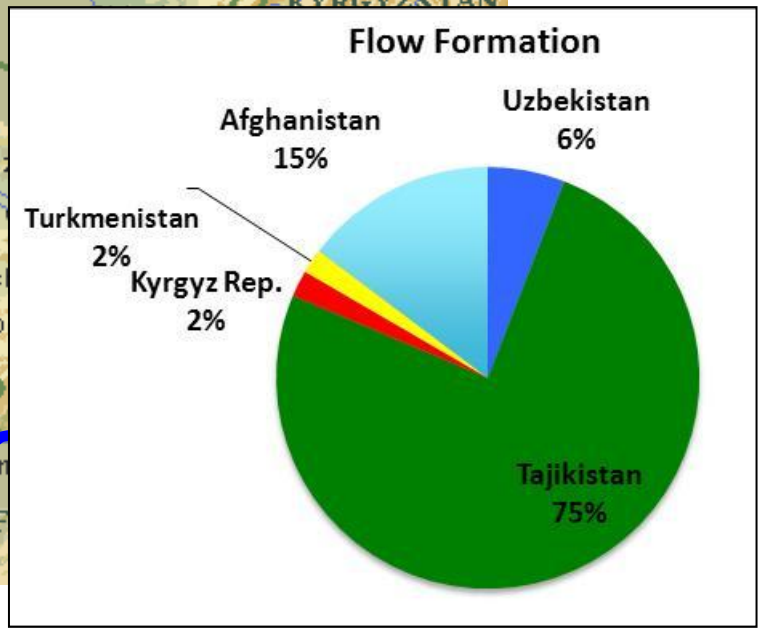


Amu Darya Basin



- Five riparian countries
  - Afghanistan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan





Amu Darya Basin

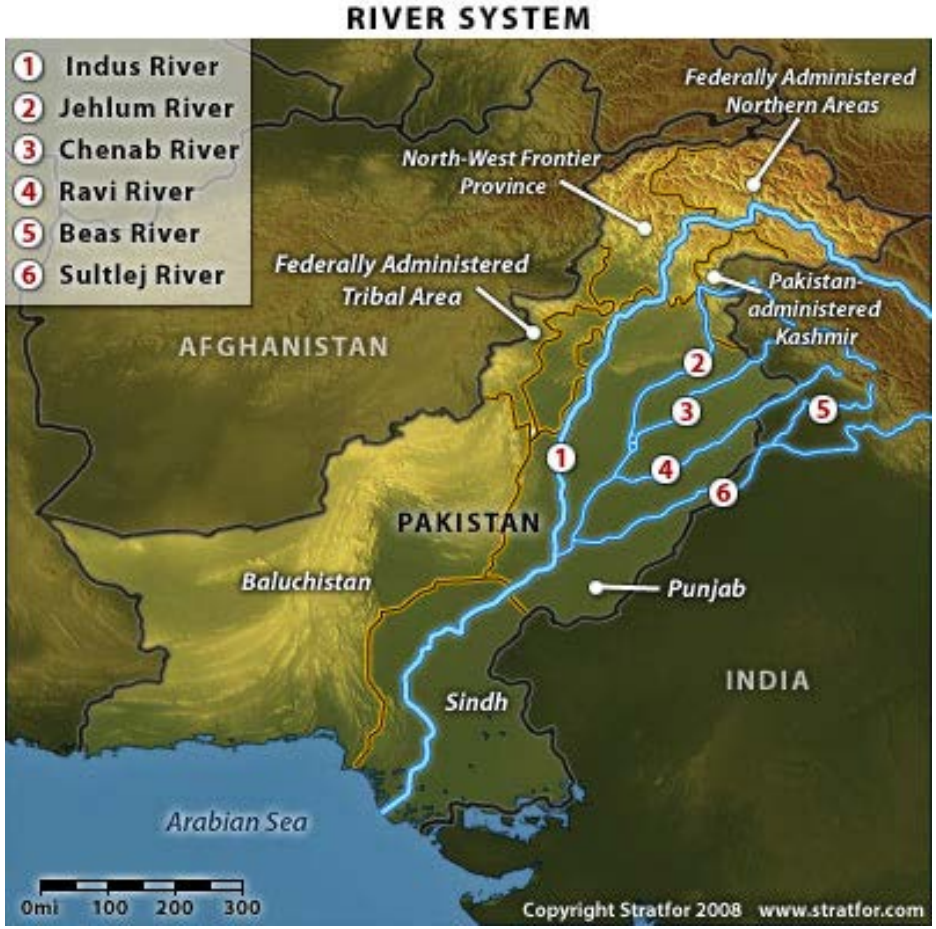
- Less regulation than Syr Darya
- Bilateral agreement (1996) between Uzbekistan and Turkmenistan concerning sharing of the Amu Darya waters (50-50) downstream of Kerki
- Difficulties in extremely dry years
  - shortage concentrates in the tail end of the system in Karakalpakstan, and Turkmenistan
- No multilateral water and energy sharing agreement among riparian states
- Tajikistan has great potential for developing hydropower and exporting electricity
- Afghanistan use of Amu Darya water still somewhat uncertain

Amu Darya Basin: Afghanistan

- Amu Darya flows from Afghanistan
  - 17 billion m^3 estimated
- Amu Darya use in Afghanistan
  - 385,000 ha irrigated area
  - 5 billion m^3 water use
  - Deteriorated irrigation systems
- Amu Darya future use in Afghanistan
  - Drastic increase in water use in Northern Afghanistan is unlikely
  - 443,000 ha (15–20 % expansion)
  - 6 billion m^3 water use
  - Some impact to Uzbekistan and Turkmenistan in dry years, deficit likely passed to Aral Sea
  - Water improvements in Uzbekistan and Turkmenistan could compensate for deficits

Indus River Basin

- 1947 Partition split Punjab
- India cut off water in 1948
- World Bank mediated 1960 Indus Waters Treaty (IWT)
- Pakistan received
  - Indus (Tarbela dam)
  - Jhelum (Mangla dam)
  - Chenab
- India received
  - Ravi
  - Beas
  - Sutlej (Baglihar dam)
- Established Indus Commission
  - Commissioner from each country



Indus River Basin: Difficulties of IWT

- India cannot build without consultation on 3 tributaries
  - Baglihar Hydroelectric Plant (2007)
  - Nimzoo Bagin (2010)
- India unhappy ~75% of water allocated to Pakistan
- Pakistan feels it should get more water as they have 90% of the cultivable land

Indus River basin: Future of IWT?

- IWT acclaimed as one of the most successful water treaties in the world, a treaty that has survived 50 years and 3 wars between riparians
- There is cause for concern given growing populations, water stressed situations and climate change.
- IWT just split the rivers and did not mention joint management of the river basin. Is joint management and demand management possible for the Indus Basin.

Ganges-Brahmaputra-Meghna Basin

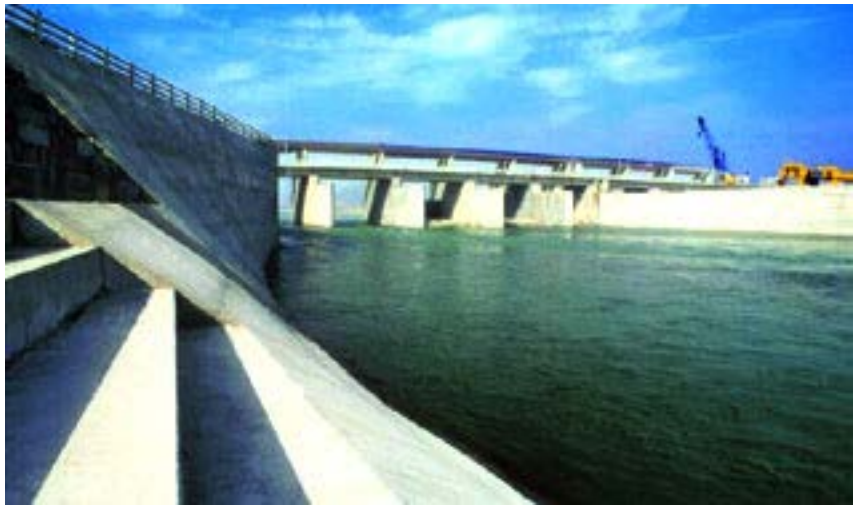
- 4 countries:
  - India (62%)
  - Bangladesh (8%)
  - Bhutan (4%)
  - Nepal (8%)
  - China (18%)
- 3 rivers meet in Bangladesh and flow to the Bay of Bengal as the Meghna River
- Rich basin in terms of natural resources, but among poorest nations

Source: Dinar, A., et al., Bridges Over Water, World Scientific, 2007.

Ganges River Basin

- Conflicts and negotiations for > 50 years
- Main parties : Bangladesh and India (and Nepal?)
- Problems:
  - Floods, sedimentation, soil erosion, and deforestation
  - Bangladesh vulnerable to upstream actions
  - Bangladesh needs minimum dry season (Jan–May) flow for salinity and siltation control

- 1971 - Farakka Barrage
  - Diverts Ganges water to Calcutta
    - flush silt from seaport
  - Adverse effects in Bangladesh
- 1972 - Joint Rivers Commission (JRC)



Ganges River Basin: Water Sharing Treaty

- 1996 Treaty Between India and Bangladesh
- 30 year treaty
- Allocations are based on shares rather than fixed amounts
- Retains JRC as joint monitoring commission
- Missing guarantee of minimum flows
- Calls for joint projects to augment dry season flow at Farakka
- Many other shared rivers, little progress

Concluding Remarks

- Multi-decade cooperation
- Performing monitoring
- Sharing (some) information
- (Some) climate change planning
- Lack IWRM and basin plans
- (Some) allocations need revision
- Treaty compliance difficult under hydrologic extremes
- (Some) participation and transparency lacking

- Treaty terms undefined
  - "Extreme drought"
- Harm - not always avoided
  - Flooding
  - Deficit
- Environment neglected
  - Water quality
  - Environmental flows
- Groundwater under-utilized