## International Water Resource Management in Central Asia:

An Evaluation of Past Performance and Projections for an Uncertain Future

Sarah J. Hummel

November 23, 2011

Water basin politics in Central Asia

Patterns of cooperation and noncooperation

The impact of water scarcity

Conclusion

#### The upstream-downstream divide

Politics in international water basins are influenced by two factors:

Di erent levels of dependency

The downstream territory is usually more conducive to agriculture, which comes earlier in development than upstream-specific uses like hydropower

Di erent positional power

Water use by upstream states is limited only by the natural flow of the river, while downstream states are also constrained by the actions of those upstream

There is an inherent tension between the dependency of downstream states and the positional power of upstream ones

# Cotton dependency and the Soviet water management regime

These problems were alleviated during Soviet times because water management occurred at a basin-wide level

Water dependency of the downstream regions was increased through collectivization and the development of the cotton monoculture

Cotton production increased from 662,600 tons in 1913 to 9,078,000 tons in 1980

An irrigation-focused water management regime was designed to cope with the increased demand

Construction reservoirs in upstream areas (Toktogul, Nurek)

Release of water in summer for irrigation

Provision of fuel energy to the upstream regriques) +0.rm7(i) 7(e)-0.-0.3-

#### Post-Soviet developments

After the Soviet Union's collapse there was no longer a central government to guarantee adherence to contracts

Water management became a question of *international* cooperation rather than internal regulation

Conflicts emerged over the optimal water management regimes



#### Cooperative and noncooperative events

Four types of cooperative events:

Formal agreements

Joint statements/protocols

Meetings of International Organizations

O cial discussions outside the purview of IOs

Four types of noncooperative events:

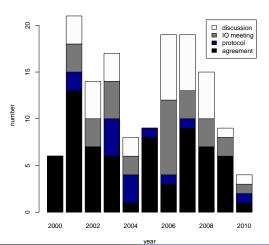
Violence

Nonfulfillment of contract

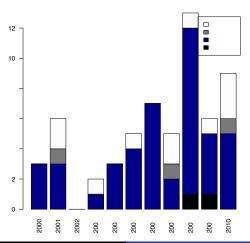
Threat of nonfulfillment

O cial criticism

### Cooperation over time



### Noncooperation over time



Sarah J. Hummel



## Scarcity and cooperation

There are two competing theories of the relationship between water scarcity and cooperation:

```
Higher water scarcity less cooperation (more conflict)
Higher water scarcity more cooperation (less conflict)
```

Water basin politics in Central Asia Patterns of cooperation and noncooperation

#### Predicted probabilities of di erent events

#### Conclusion

No lasting regime of water and energy management has been achieved in the post-Soviet period

Variation in cooperation and noncooperation exists both over time and among dyads

The e ect of relative scarcity on cooperation is ambiguous, although the data for the Amu Darya basin suggest that cooperation may be more likely when scarcity is high