

Examining institutional path dependency in shared water management in the Ferghana Valley, the Syr Darya basin

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Economic perspective to cooperation

- Benefits (economic, political, environmental, mixed)
- Institutions:
 - rules agreed and followed by actors representing different parties

[Institutional] Path dependency

- Decisions and investments made in the past might make it difficult to abandon established institutions and therefore influence and limit the scope of decisions at present
 - **Shared water management:** often capital intensive complex nature, involvement of multiple actors, lengthy negotiations and high transaction costs

State of the Research

Institutions

- Douglas North, Elinor Ostrom, Oliver Williamson

Path dependency concept

- Brian Arthur
- Paul David
- Paul Pierson 2000 (political)

Critique

- Stan Liebowitz and Stephen Margolis (markets)

Common Pool Resources, Water Governance

- Timothy Heinmiller 2009, Jenniver Sehring 2009

The gap

- International water management with focus on one basin

Four Levels in Economic analysis of institutions

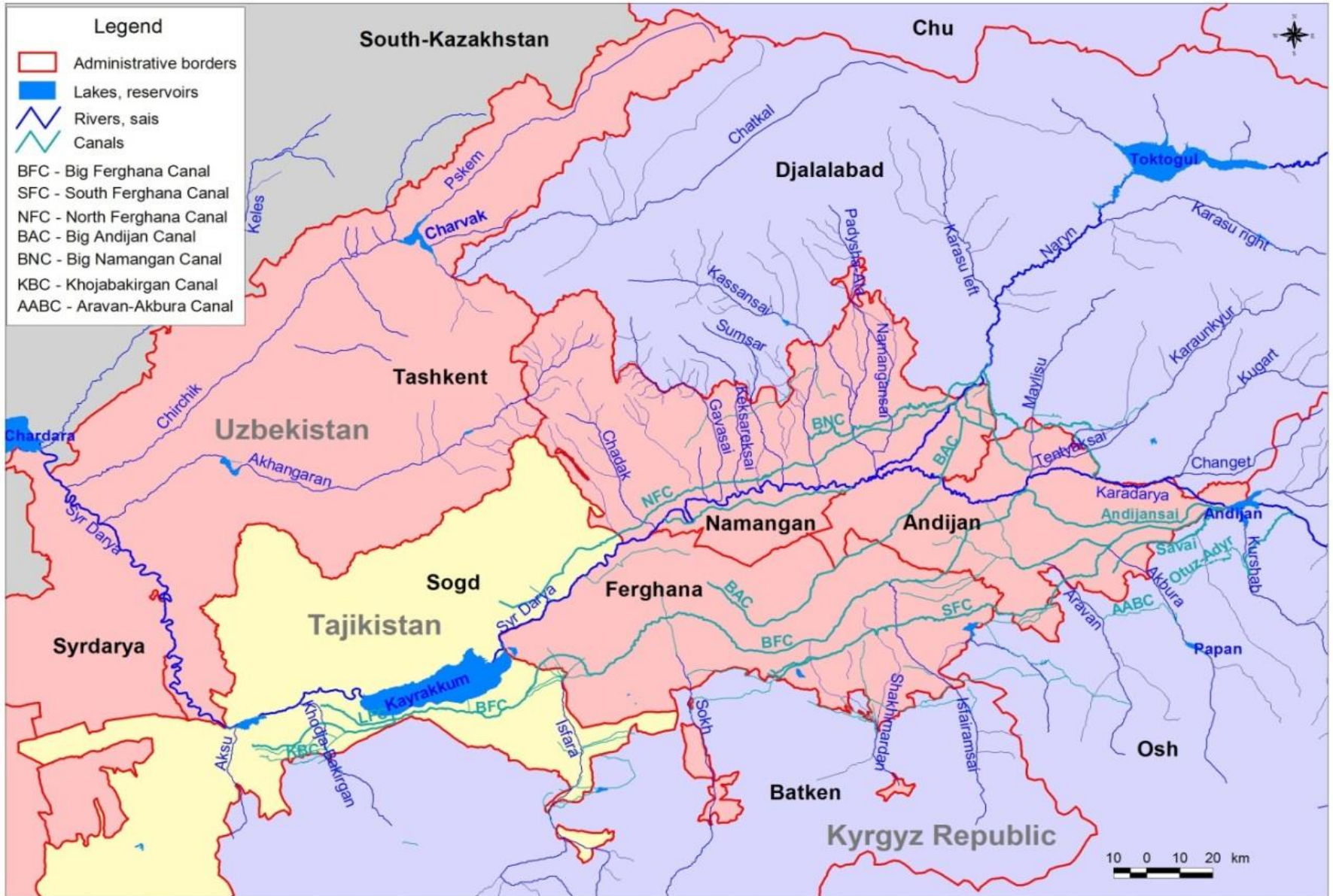
ECONOMICS OF INSTITUTIONS

	LEVEL	FREQUENCY (YEARS)	PURPOSE
L1	<p>EMBEDDEDNESS: INFORMAL INSTITUTIONS, CUSTOMS, TRADITIONS, NORMS RELIGION</p>	10^2 TO 10^3	OFTEN NONCALCULATIVE; SPONTANEOUS (CAVEAT: SEE DISCUSSION IN TEXT)
L2	<p>INSTITUTIONAL ENVIRONMENT: FORMAL RULES OF THE GAME — ESP. PROPERTY (POLITY, JUDICIARY, BUREAUCRACY)</p>	10 TO 10^2	GET THE INSTITUTIONAL ENVIRONMENT RIGHT. 1ST-ORDER ECONOMIZING
L3	<p>GOVERNANCE: PLAY OF THE GAME — ESP. CONTRACT (ALIGNING GOVERNANCE STRUCTURES WITH TRANSACTIONS)</p>	1 TO 10	GET THE GOVERNANCE STRUCTURE RIGHT. 2ND-ORDER ECONOMIZING
L4	<p>RESOURCE ALLOCATION AND EMPLOYMENT (PRICES AND QUANTITIES; INCENTIVE ALIGNMENT)</p>	CONTINUOUS	GET THE MARGINAL CONDITIONS RIGHT. 3RD-ORDER ECONOMIZING

- L1: SOCIAL THEORY
- L2: ECONOMICS OF PROPERTY RIGHTS
- L3: TRANSACTION COST ECONOMICS
- L4: NEO-CLASSICAL ECONOMICS/AGENCY THEORY

(Williamson 1998)

Ferghana Valley



Data and analysis

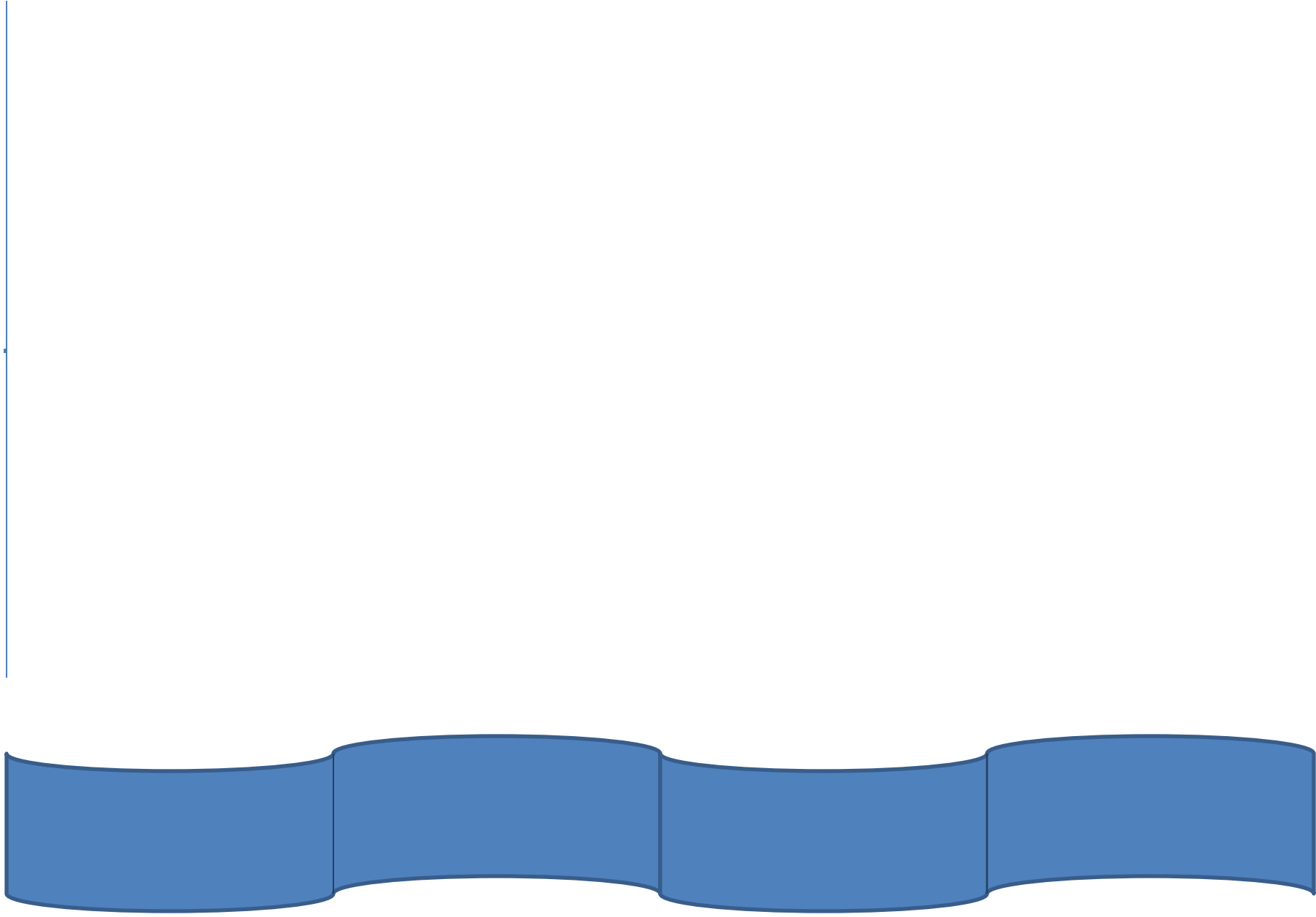
- DATA:
 - Agreements, protocols, resolutions, orders, decisions, reference/certificates, letters and other forms of correspondence (204 documents - more than 2,660 pages) period between 1917 and 2013 + other relevant studies
- ANALYSIS:
 - chronological order
 - type of document (agreement, protocol, resolution, order, decision, reference/certificate, letter, etc.)
 - laterality (unilateral, bilateral, multilateral, etc.)
 - parties signed/involved, level of involvement (regional, national, meso, local)
 - participating department (water, energy, transport, etc.)
 - type of object (reservoir, river, small river, land, pump-station, etc.)
 - benefits considered
 - whether sharing the benefits is considered (if yes, with clarification)
 - whether sharing the costs is considered (if yes, with clarification)
 - benefit-sharing mechanisms applied
 - location of the object(s)
 - property rights associated with the object
 - implementation of the agreed terms
 - other notes: connection and reference between the documents

Findings

- 1992 Almaty Agreement
(also other documents, e.g. 1995 Nukus Declaration)
 - to adhere to the existing pattern and principles as well as acting regulations of water allocation from interstate sources
- In the Ferghana Valley, this created a number of difficulties:
 - open issues of border delimitation
 - issues related to implementation of the ambitious plans
 - complexity of the inter-republican water infrastructure with high number of issue linkages

Riparian A

Riparian B



Level 1: traditions, morale, norms

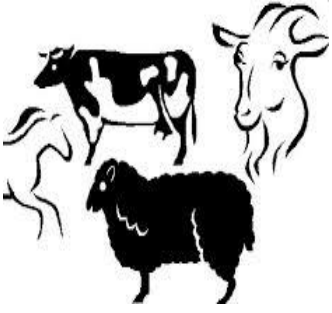
Path dependency

Traditions to cultivate agricultural products using irrigation and to rear livestock:
before the Soviet period (1917)

Implications at present

Well established across the borders. There is no disagreement as to what should be the use of water and land resources except for the energy mode of the Toktogul reservoir (however, it is not tradition based, rather demand driven).

Riparian A



Riparian B



L1: traditions,
morale, norms

Level 2: rules of the game & entitlements

Path dependency

Implications at present

1) Property rights:
since 1920s - infrastructure
was located upstream (on the
source) but operated by
downstream (by main
beneficiaries)

Mainly carried over.

2) Equal proportion allocation
principle (EPAP): between
1960s and 1983 by
development of the Scheme
of complex use and protection
of the Syr Darya water
resources

EPAP - advantage in reaching agreements as it seems
to be fair – equally distribute water to the lands
according to the sizes and efficiency coefficients.

Taking the existing lands as a baseline the Scheme
created inequality between early and late developers.
Parties have: incentives to hide or exaggerate data to
get more water, disincentives to increase efficiency as
the other party will request to re-consider the shares
to make the water supply levels equal

Riparian A



Riparian B



L1: traditions,
morale, norms

L2: rules of the game
& entitlements

Level 3: governance structures & organization

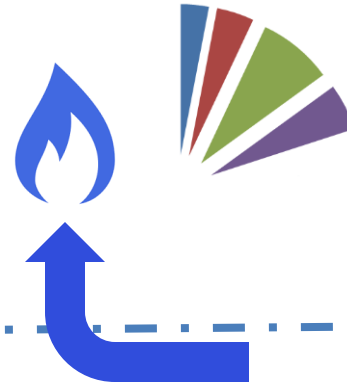
Path dependency

Governance structures – sub-basin allocations: partly formed during the entire Soviet partly reconsidered after independence

Implications at present

Here it is yet to be established how actors jointly can manage the shared water resources as the existing intergovernmental governance structures do not deal with the STTs and whether they should build on the EPAP or gradually move towards market based principles as it seems to be one of the favorable options for all the sides involved. As L3 is based on L2, the changes in shares are justified with adherence to the equal proportion allocation principle. However, this seems to be in conflict with the changing demand for water as the countries have been undertaking various reforms influencing the cropping patterns as well as organizational structures in agriculture and irrigation. High (quantitative) level of issue linkages seems to make the stability of the agreements vulnerable.

Riparian A



Riparian B



L1: traditions,
morale, norms

L2: rules of the game
& entitlements

L3: governance
& organization

Level 4: marginal benefits & efficiency

Path dependency

Initiated during the Soviet period within the Scheme by closing the basin and promoting efficiency as the only source of irrigation expansion;

Being reorganized by national reforms in water and land sectors

Implications at present

Were first prompted by the basin closure and deepening economic crisis in 1980s when increase in agricultural output became possible only through efficiency. With the financial constraints after independence as well as outdated infrastructure and irrigation networks, it seems that the states are hardly managing to keep the maintenance and operation (mostly cleaning) works. In addition, uncertainty on the shared water resources make the riparians look for national solutions.

Riparian A



MAX
from available:
-sectoral allocation;
- technology;
-national reforms;
and other.

Riparian B



MAX
from available:
-sectoral allocation;
- technology;
-national reforms;
and other.

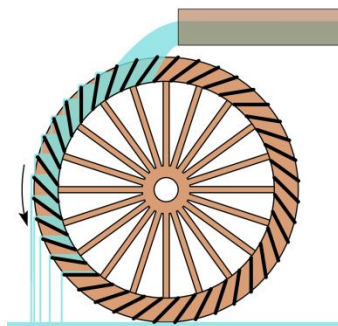
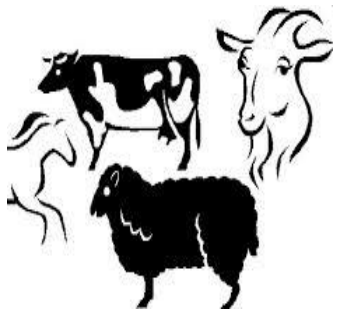
L1: traditions,
morale, norms

L2: rules of the game
& entitlements

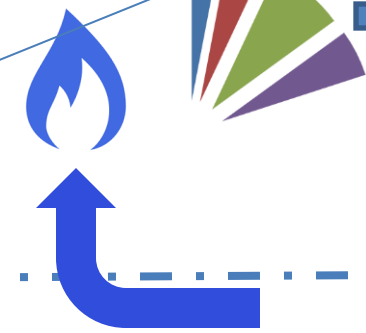
L3: governance
& organization

L4: marginal benefits
& efficiency

Riparian A



Riparian B



MAX
from available:
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L1: traditions,
morale, norms

L2: rules of the game
& entitlements

L3: governance
& organization

L4: marginal benefits
& efficiency

Other issues

- L1 institutions are baseline → sudden change for agriculture dependent population
- L2 - disincentives to increase efficiency as the other party will request to re-consider the shares to make the water supply levels equal
- L3 - high (quantitative) level of issue linkages → the stability of the agreements → vulnerable
- L4 - financial constraints after independence + outdated infrastructure and irrigation networks → hardly managing with O&M (mostly cleaning)

Thank you for your attention!

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