Today

- Ownership – property
- Development of property rights
- Taxonomy of goods

- Property rights regimes
- Appropriation and provision rights
- Prior appropriation rights in the US

- Framework for a comparative study of linking land and water governance

Ownership ≠ Property

Questions to the property rights theory?

- What does it mean to “OWN”?
- What kind of different forms of ownerships are there?
- What is the most *useful* ownership form?

Trade as an exchange of property rights to take action

1. Traditionally, we exchange physical goods.

2. Today we exchange rights to act or rights to deal with a physical good.

   → Property rights approach

Ownership

Ownership is a fundamental legal concept.

Only an owner can be expropriated!

→ an owner does not always have all property rights.

Other property relations can be derived from ownership as a master category: e.g. bundles of rights on land are temporarily transferred to other holders (leasing).

For many water bodies (aquifers, lakes, sea, rivers) the state is the owner but grants many rights to federal states, communities, water user associations or individuals.

In contrast to land, there is hardly a documentation of water ownership which is entered into a register.

Water Rights

Property (Possession)

Example: do you ride a bike to work?

Property (Possession)

Property law about rights to things: bicyclists, tenants

“I have the right to use the bike, but I do not own it. The owner is my friend”

You can gain property without ownership, e.g. Theft.

“I have the right to use the lake for fishing, but I do not own it. The owner is the community”. You can gain property without ownership, e.g becoming a member of an angler association who signed a contract with the local community.

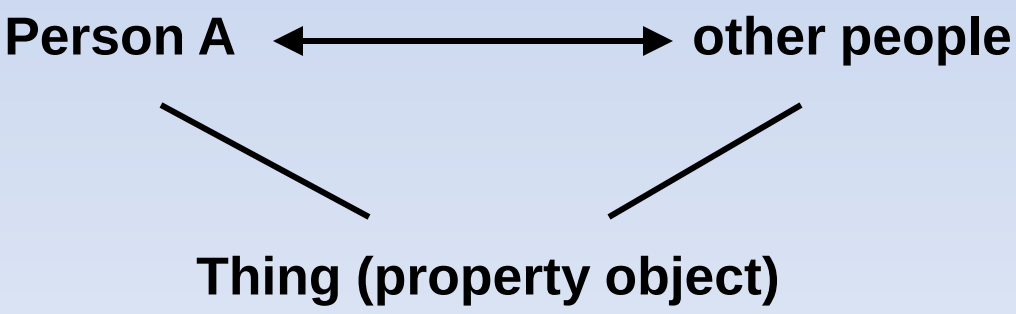
Water Rights

Property is not a thing, e.g. the water body of a lake.

Property is about rights in a thing.

Property is a bundle of rights and duties.

Property is a social relationship (von Benda-Beckmann et al., 2006): The rights and responsibilities that actors, here individuals and groups of individuals have, e.g. to access, withdrawal, develop and transfer or to maintain and protect objects, here water units and infrastructure.



Water Rights

The understanding of property rights theory is fundamental to understand water governance:

- Various property rights regimes are possible.
- Each property rights regime grants certain bundles of rights to certain users and actors.
- The history of property rights may legitimate the state to intervene in the sector.
- Various socially accepted systems of property ownership lead to different management forms including conflict regulation mechanism.

Bundles of water rights (traditionally)

Property Rights regulate:

- USUS:
  - who & how an asset can be used
- USUS FRUCTUS:
  - who can appropriate returns
- ABUSUS:
  - who can change form, substance & location

Water Rights

What are water rights?

Customary claims

Customary law

de-facto rights

Perceived claims

Rules-in-use

Perceived rights

Customary rights

De-jure rights

Informal right

Formal right

Rights in action

Water Rights

Water rights are

An „authorized“ demand to use (part of) a flow of water, including certain privileges, restrictions, obligations and sanctions accompanying this authorization, among which a key element can be the power to take part in collective decision-making about system management and direction.

Water Rights

Main element of water rights definition is “authorization”

Property (Eigentum) is a claim to a benefit stream, and a property rights (Verfügungsrecht) is a claim to a benefit stream that some higher body (usually the state) will agree to protect through the assignment of duty to others who may covert (begehren), or somehow interfere with the benefit stream (Bromley, 1992, page 4).

braod definition

A water right is when water use is certified by an authority (individual or collective) *with legitimacy and power* of enforcement, and recognized by users and non-users alike (Beccar et al., 2002, page 2).

Water Rights

Irrigation water rights can be distinguished

According to the right holder:

- Collective

- individual

Water Rights

Full private property:

Private ownership is a legal concept.

Extreme definition by Blackstone (1959, p. 113): despotic ruling, of an individual person over goods, means ignoring and excluding all other rights of all others.

Wider definition:

Full private ownership would mean all bundles of access, withdrawal, management, exclusion and alienation rights – are completely associated with one individual.

Water Rights

Water rights establish the following aspects

(Beccar et al., 2002, p. 4):

1. Who has the right to use water and to use the infrastructure
2. What conditions and criteria hold for obtaining these rights
3. How, where and when each user is allowed to use water and infrastructure
4. What obligations must be fulfilled to maintain one's right
5. To what degree will each user take part in collective decision-making about system management

Water Rights

De facto property rights are highly disaggregated (Schlager and Ostrom, 1992).

They include 5 bundles of rights or customary claims:

1. Access
2. Withdrawal

} Operational-level

3. Management
4. Exclusion
5. Alienation

} Collective-choice

Any of these may or may not be well defined in a certain property rights regime.

Water Rights

5 bundles of rights or customary claims:

1. Access
2. Withdrawal
3. Management
4. Exclusion
5. Alienation

Water rights

Water Rights

How to gain water rights:

1. By being a member of a local community
2. By endowment or inheritance
3. By participating in the (re)building of the hydraulic infrastructure
4. By buying and selling of rights
5. By buying and selling land rights
6. By concession from the state authority
7. By prior appropriation rights

Typical rights holder

Bundles of Rights Associated with Positions

	Owner Eigentümer	Proprietor Besitzer	Claimant Anspruchssteller	Authorized User	Auth. Entrant
Access	X	X	X	X	X
Withdrawal	X	X	X	X	
Managment	X	X	X	X	
Exclusion	X	X			
Alienation	X				

Ostrom and Schlager (1996; p. 133)

Water Rights

What kind of rights do we have at the sea?

- Right to the fish
- Right to collect mussels, corals
- Rights to recreation, walk at the beach
- Rights to deposition
- Right to ship on it
- Right to dive
- Right to extract salt from it
- Right to install wave power installations
- Right to install wind power
- Right to fishes of aquaculture ponds.
- Right to put sun lotion into it

Who owns those rights?

Water Rights

What kind of property rights do exist at an irrigation canal?

Water rights in community irrigation management regimes

Water distribution has a close relationship to social context and power structures.

Rights are directly related to membership in the community and participation in other community activities.

Content and distribution of water rights reflect prevailing inequalities.

Development of property rights

Why do private property rights emerge – economic perspective

Property on natural resources emerges, i.e. actors invest time and money, in the establishment and enforcement of property rights, if (Anderson and Hill, 1975; 2004; Demsetz, 1967)

- the economic value of the resource increases.
- the probability of loosing the (customary) claim of using the resource increases.
- the establishment and enforcement of private property rights is getting less expensive.

Drivers for the emergence of property rights

1. Population growth / Migration
2. Technical progress
3. Trade / Start to produce for the market (monoculture)
4. More profit due to investments in land/water, both require more security
5. **Reverse argumentation:** only with the establishment of private property rights, people begin to invest. The latter than calls for more security.

Why and when do property rights on water change – non-economic perspective

1. Inefficient socially-suboptimal property rights do often prevail; based on cultural norms and habits those do only very slowly change.
2. Lobby groups and asymmetric power relationships do influence.
3. Agrarian reforms: Reforms do often happen in periods of political upheavals offering a “window of opportunity” for change.
4. Changes in water legislation or policy

Changes in water rights

5. Infrastructure projects

Each infrastructure project entails water rights redefinition

Discussion about future water rights has to happen before beginning to build.

6. Actual water rights do often change when land rights change.

Water Rights

Do we need property rights in the world of Robinson Crusoe?

Or in the world of „Cast Away“ with Tom Hanks?

Maybee, when „Wilson“ shows up?

Taxonomy of goods

Property rights regimes

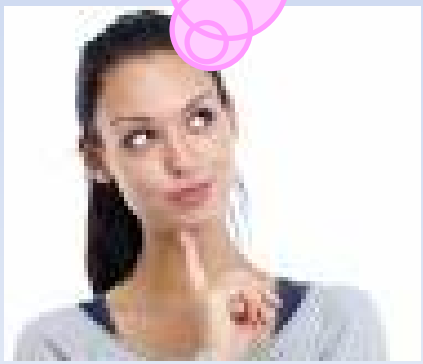
Water Rights

- Please draw the classical matrix of economic goods

Traditional Categorizing of Goods

		Excludability	
		High	Low
Rivalry	Low	Club Goods (Toll Goods)	Public Goods (Collective Goods)
	High	Private Goods	Common-Pool Goods (Allmende)

Water Rights



Specification of Common-Pool Resources

High Rivalry? First: define exactly what the resource unit is!

Low Excludability? Second: Check, is it difficult to exclude others from the resource system?

Subtractability of the **resource unit,**

but jointness of the **resource system.**

Resource unit‘s subtractability is typical for a common-pool resource!

Water Rights

Examples for water resources that we use as common-pool goods:

- Fishing grounds
- Aquifers
- Irrigation canals

Definition Commons (Common-pool good)

- In the end, humanly designed rules decide whether we can speak of a good as a common-pool good.

- Often we observe a clear difference in the divisibility (rivalry),
  e.g. between liter of irrigation water or “place to sail on the ocean”.
- Goods like water are not private, public or common – we make them to be like that!
- But if we exclude somebody from the use, this is political, legal, cultural or technological determined!

Water Rights

Common-pool resources cannot only be “negatively defined” in contrast to features applicable for private goods:

- Subtractability of resource units
- Low excludability

But also “positively defined” (Theesfeld, 2010):

- Irreversibility and time lag
- Indivisibility
- Fuzzy boundaries
- Decentralisation of abstraction
- Externalities
- Information asymmetry
- Uncertainty and data needs

} Groundwater aquifer system

Typical resource characteristics call for particular management solutions!

Water Rights

- We must distinguish between the resource and the property rights regime in which the resource is held.
- Each resource type can be managed under **different property rights regimes**! (Bromley and Cernea, 1989). There is no common-property resource!!!
- Common-pool resources can be managed and controlled by:
  - **Government property regime,**
  - **Common property regime,**
  - **Private property regime, or by**
  - **Open access**

But no clear cut!

A variety of different arrangements!

- The regime defines how cost and benefit streams are split among the actors.

Important property rights regimes

Open Access	State Property	Common Property	Private Property

Continuum of Property Rights Regimes →

- Property Rights Theory: continuous move towards private property rights
- No clear assignment of a type of good to a property regime

What are the (dis-) advantages of each property regime?

Open Access

- Perfect without scarcity
- Overuse if scarce
- Un-reflected use
- No transaction costs involved
- Provides access for everybody

State Property

- "Owner" provider of public goods
- Keeps future options open
- Bigger political influence
- Limited monitoring abilities
- State failures

Common Property

- Controlling decentrally possible
- Local suitable organisational solutions
- Economies of scale for certain attributes
- Less flexible than private property

Private Property

- Efficient allocation
- Incentives to innovate invest
- Coordination function/ preference matching
- Difficult if externalities involved

What factors do influence the choice for a property rights system?

- Transaction costs
- Efficiency
- Power
- Path dependency
- Ideology
- Distributional consideration (fairness)

Water Rights

The tragedy of common-pool resources!?

- Recall the Hardin case (1968) ...

Water Rights

The tragedy of open access!!

- Hardin (1968) predicted overexploitation of a common-pool resource. But, overexploitation is a matter of the property rights regime.
- Failure to distinguish between common property regime and no property regime is responsible for pessimism.
- Tragedy occurs under the creation of open-access conditions often as a consequence in the water sector by privatizing a government property regime. An ineffective private firm or pseudo-cooperative, is in fact an open-access system.

The solution to the tragedy

There are many more options to solve the tragedy than those concluded by Hardin (Feeny et al., 1990):

- State control
- Private property
- Common-pool resource regimes: manifold examples show how in those systems the property rights do exactly match the natural conditions, e.g. long-enduring irrigation systems in Nepal.

Special and important water rights

1. Water rights
2. Appropriation rights
3. Provision rights
4. Prior appropriation rights

Applying theories: Linking Patterns

Framework for comparative studies

of linking land and water governance

Motivation I: Coase Theorem

1. *<u>Coase Theorem</u> (1960): Achieve an optimal level of pollution or resource use by an arbitrary assignment of property rights to either the polluter(s) or the pollutee(s).*

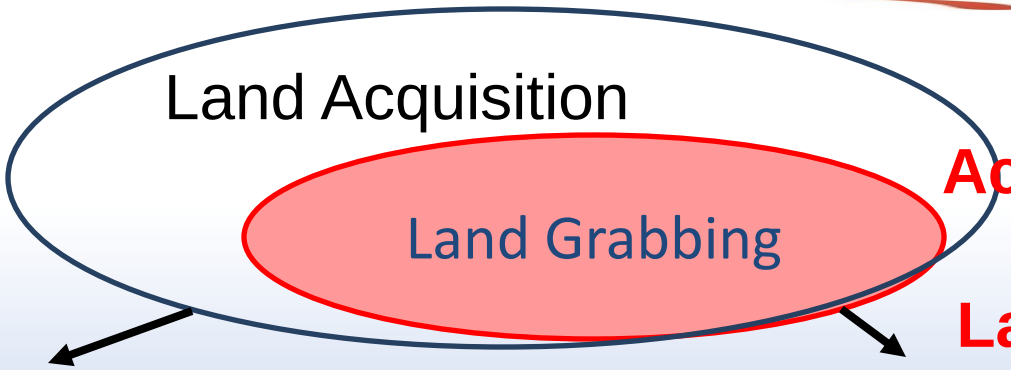
But, because we know that we face TC, power relationships, moral considerations, overlapping rights and claims systems, presumptive entitlements, high number of involved actors, we rather learn from Coase:

2. *The assignment of property rights to a specific party has effects on the optimal level of pollution/resource use and the other criteria by which be evaluate a policy measure.*

Motivation II: Avoiding "Grabbing Effects"

Drivers

Increasing price volatility
Food insecurity
Biofuel demand
Speculative investments



Land Acquisition ≠ Land Grab

Investor (Grabbing) country

Host (Grabbed) country

pros	cons
Modernization in technology & infrastructure	Loss of customary land rights
Productivity increase	Displacement
Knowledge transfer	Environmental degradation
Employment	Monoculture

- What are social, economic and environmental impacts of the investment?
- We need a conceptual manner to analyse land acquisition effects on all resources including water

→ in order to avoid negative implications

Linking sectors as regards large land deals

- Research gap: Not enough recognition what happens with the agricultural water sector, faced with large-scale land acquisition.
- Research gap: Non recognition that **water grabbing** comes along with land grabbing.
- Water is an aspect that turns land deals into an lucrative investment (Woodhouse, 2012).
- Water plays not always an explicit official role (Mehta et al., 2012).
- In the “FAO Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests” water relations are not mentioned.
- Hypotheses:
  - Water is often a direct driver for the investment.
  - If not, the investment might still have an indirect impact on the community or individual water governance.

Research need: Conceptual approach for the joint analysis.

Linking sectors: State of the art

Two approaches to link land and water acquisition at the global scale:

1. Concept of virtual water transfer (Allan, 2011) is extended by the dimension of taking land abroad to produce water intensive commodities (Warner et al., 2013).
2. A first study on the quantitative assessment of the associated water grabbing is done by Rulli et al. (2013).

But how is water reallocated locally?

Recap: Bundles of Property Rights

Bundles of property rights and duties are divisible (Demsetz, 1967; Alchian and Demsetz, 1973; Bromley, 1982).

De facto property rights are highly disaggregated (Schlager and Ostrom, 1992; Ostrom and Schlager, 1996; Meinzen-Dick, 2014).

They include **5 bundles of rights**:

1. Access
2. Withdrawal

} Appropriation rights / Operational-level

3. Management
4. Exclusion
5. Alienation

} Provision rights / Collective-choice level

Any of these may or may not be well defined in a certain property rights regime.

Applying theories: Linking Patterns

The Proposed Concept

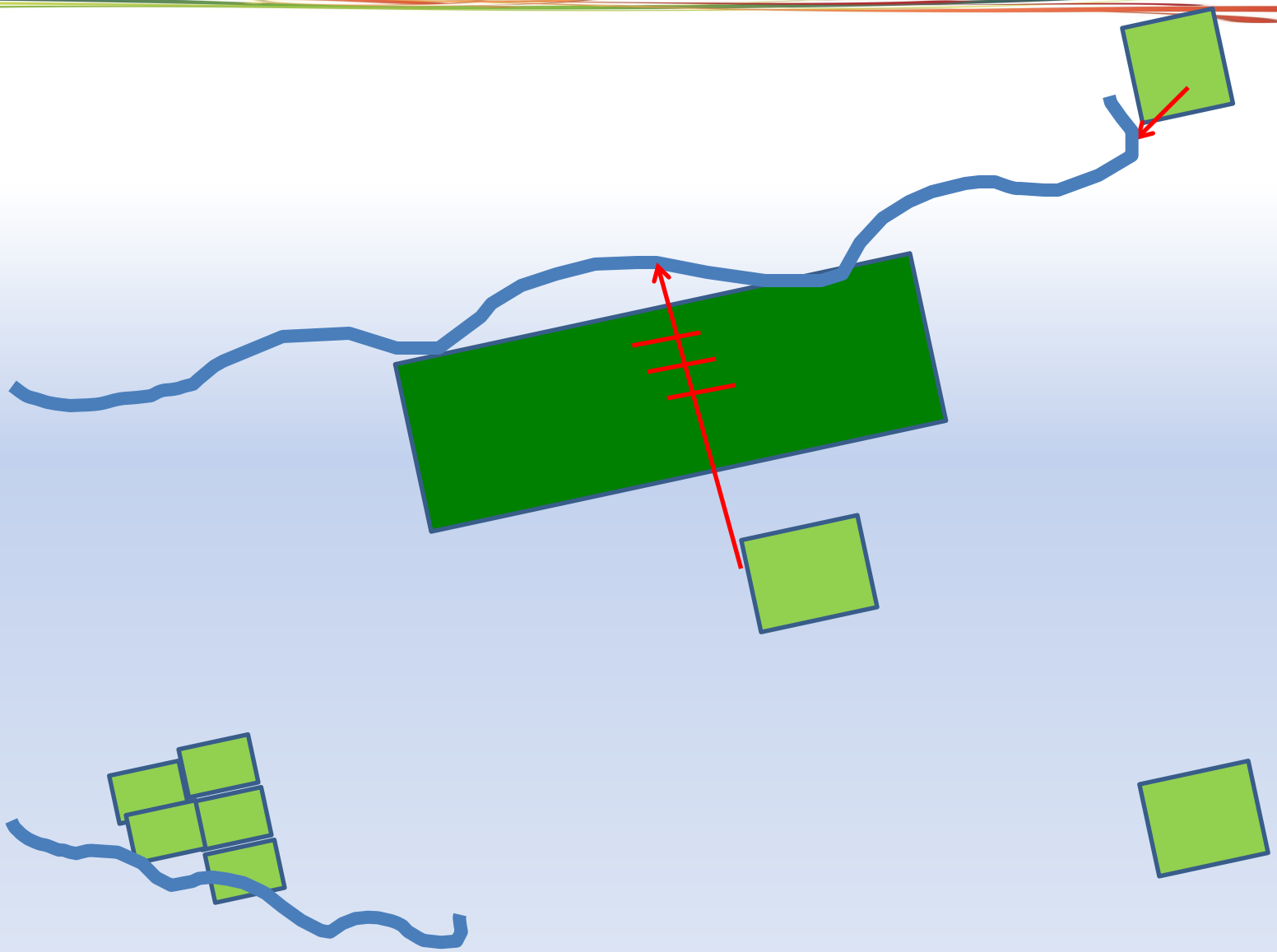
Nine Linking Patterns

- Property rights perspective.
- Rights “de-jure” de claims “facto rights”
- Patterns are neutral!

Linking Patterns of land & water property rights

Patterns	Applied research questions addressing changes in the agricultural water sector	Possibly affected property rights: Access (Acc), Withdrawal (W), Management (M), Exclusion (E), Alienation (Al)
1.Ecological pattern	Do the natural water conditions require irrigation?	Acc, W, M, E, Al
2.Judical pattern	Are water rights explicitly included in the land negotiation or contract?	Acc, W, M, E, Al
3.Use pattern	Does the competition for water and the total uptake increase?	W
4.Resettlement patterns	Does the competition of water users increase off-side the new investment farm?	Acc, W

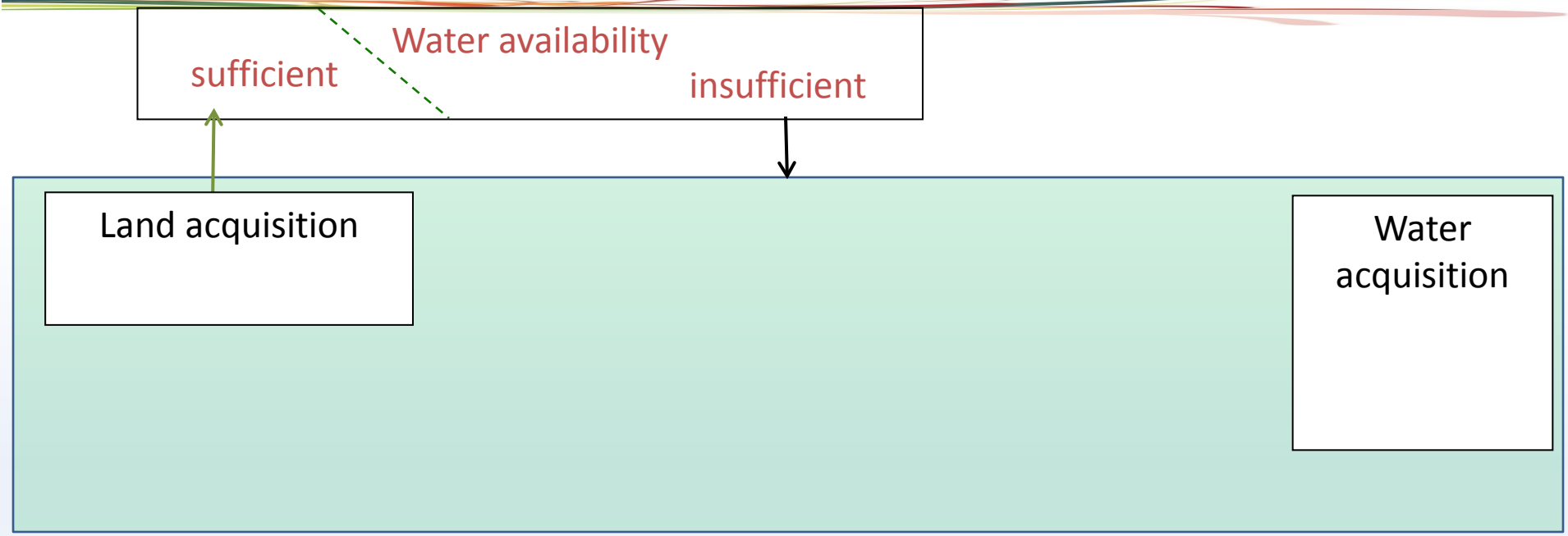
Competition for land and water rights



Linking Pattern of land & water property rights

5.Commercialization pattern	Does the formalization of land rights (at least as far as it concerns the investor) lead to additional land deals, which in turn changes the number of water users and the total amount of water being used? Does it lead to an establishment or enforcement of water payments?	Acc, W, M
6.Land use pattern	Does the change in cropping structure entail a change in irrigation?	W
7.Conducive pattern	Is there a shift in the share of ground and surface water use?	Acc, W
8.Infrastructure pattern	Does the building of new infrastructure or its reconstruction change the actual irrigation habits of the users?	Acc, W, M, E
9.Governance pattern	Do informal or even formal water governance arrangements change?	Acc, W, M, E, Al

Direct or indirect linkages



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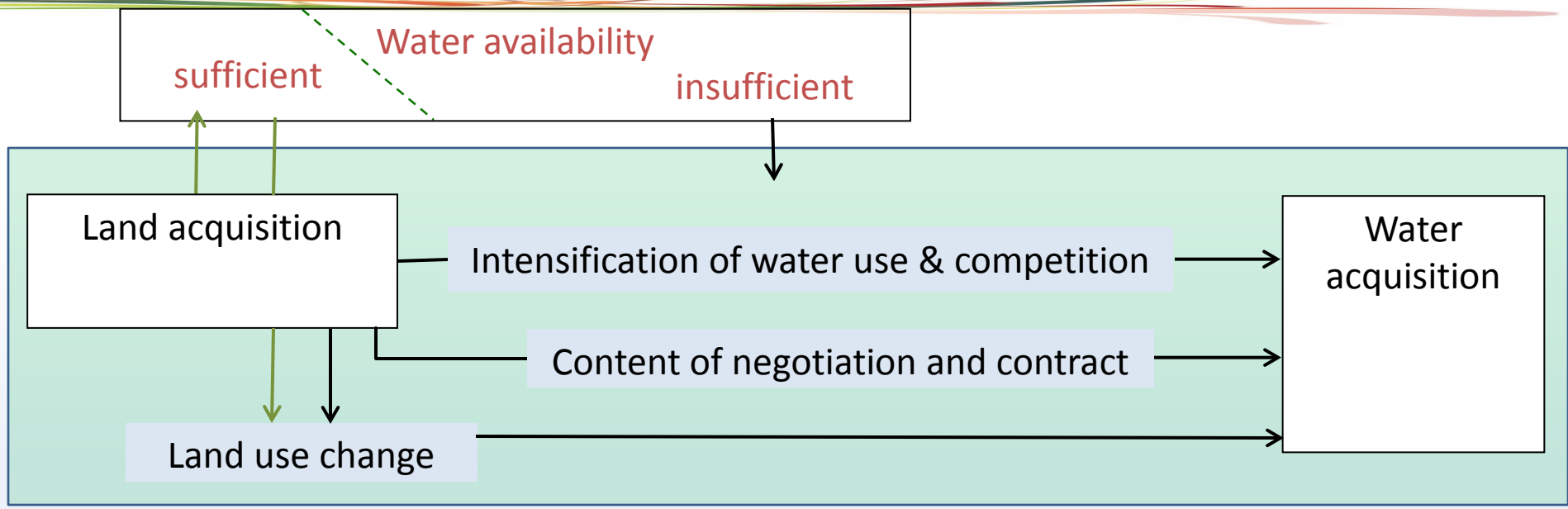

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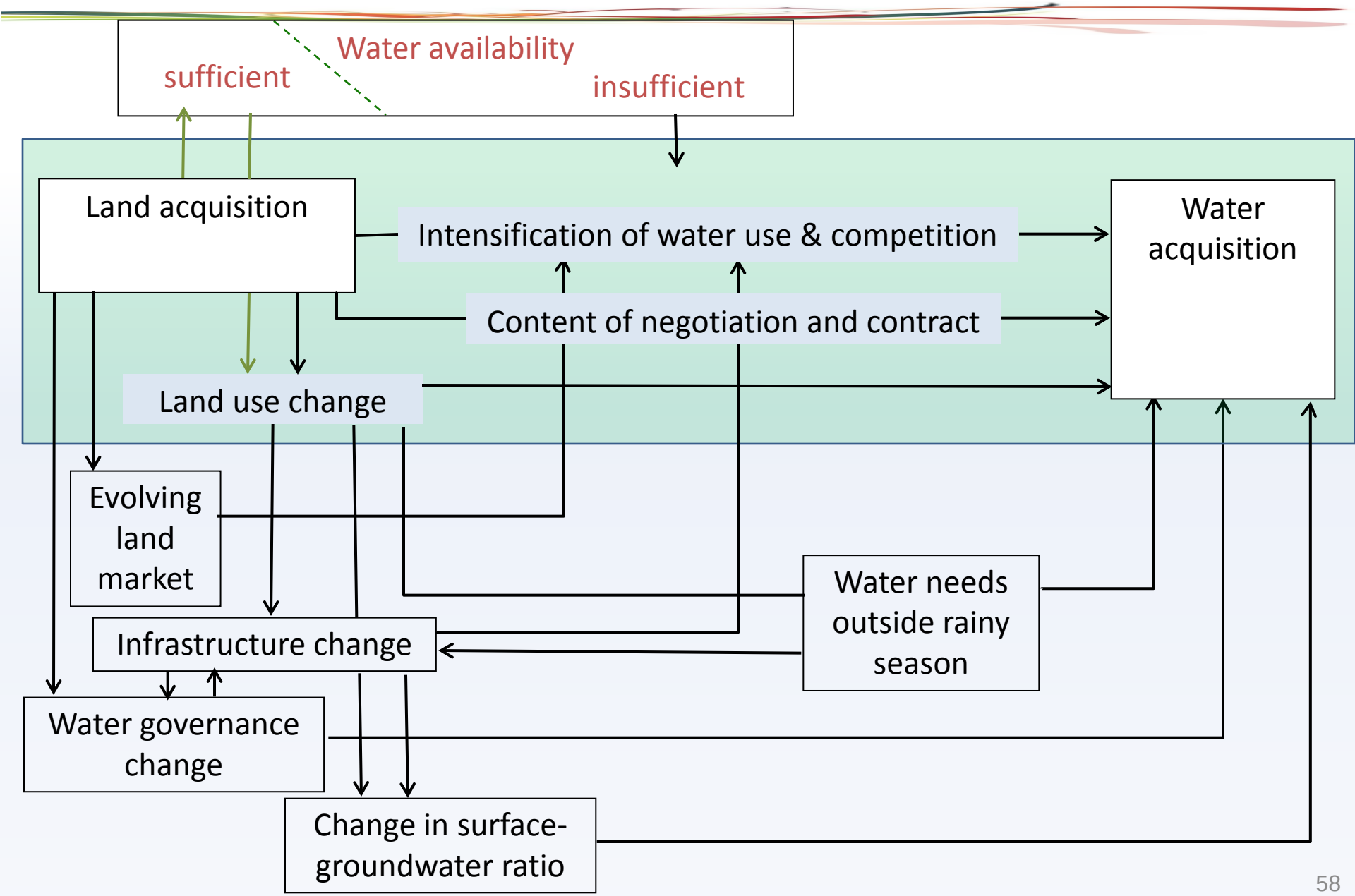

Case study Tajikistan, Central Asia

- Arable land in total is limited (6% of total land area)
- Land is state property, but farmers can gain long-term use rights.

Case study Tajikistan: South Province Khatlon

Local Farmers

- Irrigation intensive agriculture is dominated by cotton famers and small household plots

Chinese Investor

- Rice production has higher total water requirement
- Different organization of water flow (continuous & good quality)

Pictures: Gehrigk 2011

Pictures: Gehrigk 2013

Case study Tajikistan

Four linking patterns could be identified:

- Use pattern
- Land-use pattern
- Infrastructure pattern
  - The investor rebuilt an upstream pump and invested in primary canal system.
  - Investment in infrastructure that is beneficial but makes local farmers dependent on the irrigation schedule of the investor, who is served first.
- Governance pattern

This restricts the “de-facto water rights” of the small-scale farmers and the cotton farmers.

Scientific relevance

Studies on how to link the land and water sector should be more systematic.

1. Patterns

- Patterns can help to structure empirical analysis.
- **Comparing case studies** to come to reliable predictions about the impact of land acquisition on water acquisition based on certain characteristics of the process.
- Quantifying the amount of water changing its user is a huge empirical/scientific challenge:
  - Hydrological estimation models
  - Conceptual basis to predict effects at a local scale
- The positive feedbacks for the water sector from the initial land take are under-researched.

Take home message

- Differentiation: Ownership – Property
- 5 bundles of property rights
- 4 types of goods

- 4 property rights regimes
- Knowledge on specialized water rights terms

- Awareness how to link changes in land and water rights