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Stakeholder Acceptance of New Alternative Sanitation Systems

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The Theory of Goods

		Rivalry	
		yes	no
Exclusion	yes	① private good	② club good
	no	③ common good	④ public good

The Theory of Goods in the case of water

		Rivalry	
		yes	no
Exclusion	yes	① Bottled Water/ Watertank Lorry	② Well belonging to a tribe
	no	③ River lake	④ Public Waterwork

1. The Theory of Goods- in the case of waste water

		Rivalry	
		yes	no
Exclusion	yes	① private (individual) wastewater treatment plant	② Public-private Partnership to run a wastewater treatment plant + distribution of unreclaimed wastewater among the members for irrigation
	no	③ disposal of unreclaimed wastewater into a river	④ Public wastewater treatment plant

Actors and Instruments in dealing with water

Property of

1. Individual
2. State
3. Group/ Tribe
4. Free access

Regulation via

1. Market/Prices
2. Laws/ Ordinances
3. Custom/ Conventions
4. no regulation

Investment/ Running by

1. Private water company
2. Public water authority
3. Members of a village/ tribe
4. nobody

Tragedy of the Commons in case of water/ wastewater

The Tragedy of the Commons occurs when a natural resource (lake, river) to which a lot of people have free access is depleted or polluted.

Every user has to decide: Hoe much water can I use or how much waste water can I dispose?

If everybody contains himself, the lake/ river can be sustained.

If I contain myself, but others do not, the system will collapse, although I would not have had any short-term profit.

This is the ***users dilemma***.

Tragedy of the Commons in case of water/ wastewater

Why do users not behave sustainable?

1) Because there is a difference between maximizing the economic gain and maximizing the sustainable gain in using natural resources without control of access. Every user considers only his individual benefit, but not the effect on others.

2) Because users follow their individual rationality. The gain of using a common good belongs to the individual. The disadvantage of pollution is spread to everyone. As long as the individual advantage is bigger than the share of the collective disadvantage, it is rational to act in that way. The sum of the rational behavior of the individuals ends in a common tragedy and not in the wealth of nations.

3) Because of the constellation modeled by the ***Prisoners Dilemma***.

Prisoners Dilemma

Prisoners Dilemma

A \ B	**B1 deny**	**B2 confess**
A1 deny	0.5 / 0.5	0 / 10
A2 confess	10 / 0	5 / 5

Numbers = Amount of punishment in years

Decision rule: Minimize the Maximum

Result because of two-way mistrust:
5 : 5

With cooperation (= denying) 0,5 : 0,5 is possible

Prisoners Dilemma with respect to water/ waste water

Farmer A \ Farmer B	**Limit amount of water used**	**Maximize amount of water used**
Limit amount of water used	10 / 10	11 / -1
Maximize amount of water used	-1 / 11	0 / 0

Numbers = profit items

Result because of two-way mistrust: 0 : 0

With cooperation 10 : 10 would be possible

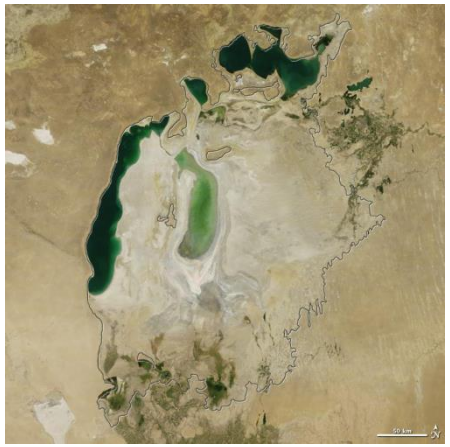
Tragedy of the Commons in case of water/ waste water

Why do users not behave sustainable?

4) As they follow the free rider-argumentation. The effect of my behavior is that low in comparison to the high number of water users that it rarely counts. If I would cooperate, the effect for the community would rarely be countable, but my personal disadvantage would be very high. Olson argues: The bigger a group, the stronger the free rider behavior.

The negative example: Aralsee

Cotton cultivation in the Central Asian Soviet Republics since the 1950s by using artificial irrigation. The inflows of the Aral Sea are used with the consequence, that the Aral Sea dries out and a salt desert remains. The salinization of the landscape affected the cotton cultivation. (Tragedy of the Aral Sea)



The positive example: collective use of alpine pastures

Collective use of the alpine pastures in Switzerland and Austria.

Using the mountains and waters (snow) for ski runs, cable cars, snow-making equipment, huts.

All members of the valley get a share of the profit. Sustainability?




What are the acceptance problems of stakeholders?

Water is understand as a free gift of nature.

To produce additional water demands a price for water, because water becomes either a public or a private good.

First Problem: What is the right price for water?

If the price for water does not cover the costs of production, water subsidized by the state. That is the rule in many developing countries.

The cost of production is covered by taxes or other sources of state income (rent in case of oilproducing countries).

What are the acceptance problems of stakeholders?

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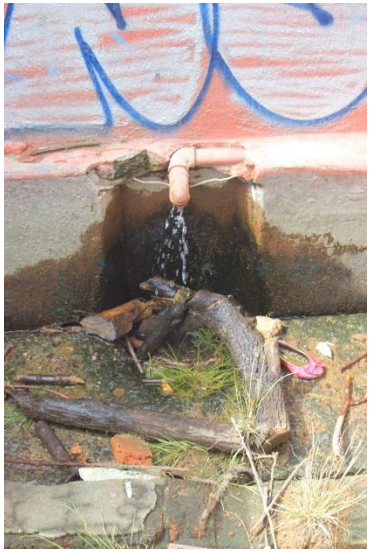
If the price for water is too low, , water is wasted, pipes are not repaired etc.



If the price for water is too high, poor people are not able or are not prepared to pay for water. The government is afraid of political unrest. That is the reason why the price for water, bread and gas in many countries is subsidized.

What are the acceptance problems of stakeholders?

In case of the reuse of reclaimed waste water, problems of acceptance are even worse.

If there is no unterstanding of water as a economic good, there is no understanding of waste water as an economic good at all.

The price for reclaimed waste water has to be much higher than for fresh water to cover the costs for reclaiming waste water.

Public waste water treatment plant

Simple Waste Water Treatment Plant / Rainwater Harvesting

What are the acceptance problems of stakeholders?

Empirical surveys in Ghana have shown that farmers are preprared to spend money (small investments) for rainwater harvesting, but not the money needed for effective rainwater harvesting. Lacking is an understanding of the cost-benefit-relation.

The acceptance to pay money for a small and easy to handle waste water treatment plant to use reclaimed waste water for irrigation is hard to imagine, because an understanding of waste water as an economic good is lacking.

(Lit.: Clement Dorm-Adzobu, Rainwater Harvesting in the Coastal Savanna Region of Ghana. Braunschweig 2012. = Forschungsberichte aus dem Institut für Sozialwissenschaften, Nr. 104.)

What are the acceptance problems of stakeholders?

Waste Water Canal in Konya, Turkey

Just the opposite occurs:

Farmers like to use unreclaimed waste water for irrigation, because they have free access and because the waste water contains nutrients.
The alternative, to pay for reclaimed waste water and for artificial manure, is unattractive.

What are the acceptance problems of stakeholders?

People are not prepared to reuse reclaimed waste water by several reasons.

The willingness depends on:

1) The quality of the reclaimed waste water
2) The price of the reclaimed waste water (the better the quality, the higher the price)
3) For what the reclaimed waste water is used

What are the acceptance problems of stakeholders?

Empirical surveys in California (a semi-arid area with serious water shortage) show:

The preparedness to use reclaimed waste water is low, if the water comes close to the body. It is growing, if the water is far away from the body.

Not accepted is reclaimed waste water

- as drinking water
- as dishwater
- as washing water
- for swimming pools
- to shower

What are the acceptance problems of stakeholders?

Accepted is reclaimed waste water:

- for toilet flush
- for carwash
- for irrigation of green spaces (not necessarily in the own garden)
- for irrigation in agriculture, if the quality of products is controlled
- for cooling in industrie, etc.

What are the acceptance problems of stakeholders?

Empirical surveys in hotels in Turkey show that hotel managers are prepared to reuse reclaimed waste water for irrigation of green spaces and sport grounds in the hotel compound because of saving water (and money).

Managers of tourist companies are against it. They are afraid that tourists avoid such hotels because of the smell.

Tourists are undecided. The acceptance depends on the quality of the reclaimed waste water.

But if the costs are too high, the hotel managers are against the reuse.

The acceptance paradoxon in the reuse of waste water

	Acceptance	
	yes	**no**
price	low	high
quality	high	low

The dissolution depends on the case and the circumstances

The case of a postmodern society

Comprehensive reuse of reclaimed waste water demands a good quality and a good price.

This is only possible in *wealthy societies* with an understanding of water/ waste water as an economic good and a green consciousness.

The case of a modern society

The most serious problems of acceptance occur in *newly industrializing countries.*

Economic growth and population growth demands enourmous additional amounts (agriculture, industry, households) and produces enormous amounts of waste and waste water.

Although the economic change is dramatic, the change of consciousness is slow or even absent.

→Pioneer-Latecomer-Problematic: The contemporary threshold and developing countries argue that the wealth of the industrialized countries results (also) of the depletion of nature. Would these countries contain themselves, the development gap would maintain. Industrialized countries want to uphold their wealth.

The case of a modern society

The waste of fresh water is high because of damaged pipes and because the price for water is low.

The pollution of water is high.

Farmers are familiar with using unreclaimed waste water for irrigation as a common good.

Governments subsidize the price of water by political reasons.

The understanding of water/ waste water as an economic good is not (yet) given among the population.

A green consciousness is lost/ not given.

The case of a traditional society

The limited reuse of reclaimed waste water is possible by less quality and a low price.

This is, if we follow the argument of Elinor Ostrom, possible in societies where water/ waste water is understood as a common good and has to be transformed into a club good. A green consciousness is given by traditional customs.

(Lit.: Elinor Ostrom, Governing the Commons: The Evolution of Institutions for Collective Action. New York: Cambridge University Press 1990.)

What are the acceptance problems of stakeholders?

	Postmodern	modern	traditional
Understanding of water as economic good	Yes	Yes/No	No
Understanding of waste water as economic good	Yes	No	No
Willingness to invest in waste water treatment plant	Yes	Yes/No	No
Green consciousness	Yes	No	Yes
Acceptance of water/ waste water prices, covering costs	Yes	Yes/No	No
Acceptance for reuse of reclaimed waste water	Yes, depends on	Yes	No
Acceptance for reuse of unreclaimed waste water	no	yes	Yes (?)