

# Groundwater Governance

The road from theory to failure... to sustainability

21 Mar 2013, David Zetland



# Groundwater governance theory

Most groundwater – like most water – is used for agricultural irrigation

- In theory, shared (common pool) groundwater needs institutions to limit the tragedy of the commons among present and future users
- Weak institutions result in overdrafting, depletion, higher costs and dry wells
- Dry wells will lead to consolidation (one farmer) or institutions

Elinor Ostrom (Nobel 2009) began as an *institutional* political scientist who explained how LA groundwater users stopped overdrafting to prevent saltwater intrusion. Their schemes are still working.

*But this theory has not worked in many places...*

# Groundwater governance failure: causes

Institutions (formal rules or informal norms) will not emerge if there are “cheaper” ways to address the problem

For example...

**Theft:** take water from the neighbors who do not have rights or jurisdiction

**Myopia:** take water from the future

**Subsidies:** Encourage crops, pumping, use

**Rescue:** take water from surface sources, harming others and environment

Changes in costs and benefits lead to unsustainable depletion of a resource that we will REALLY need when climate change disrupts water flows

*Don't eat your seeds!*

# Groundwater governance failure: examples

## **Theft:**

Texas: Right of capture (neighbor has no right to prevent you from pumping)

Palestine: Israel pumps from Mountain Aquifer and prevents Palestinians from using “their” water

## **Myopia:**

Land grabs (global): Use water for 50 or 99 years and leave (Saudi, Sudan)

Security (poverty): Better to have crops than be dead

**Subsidies:** Hurt poor in India (rich with deeper wells), below cost in Cyprus, corn in US

**Rescue:** Surface water will replace (not!): US, China, India, Peru, Spain, et al.

# Sustainable groundwater governance

Local institutions can manage groundwater basins on a sustainable basis

They do not need to be designed or managed at the international, federal or national level, but they can be destroyed by interference

Authorities can improve governance by

- Preventing theft (property rights)
- Reducing myopia (sustainable investors and food markets for the poor)
- Ending subsidies (send saved money to the poor)
- No rescues (set and protect e-flows)

Set constraints & let local solutions emerge (e.g., abalone in Australia)

BONUS! Citizens will be happy that their water and money are not wasted

# Groundwater governance successes

**India (Gujarat):** Power rationing to farmers increase power to villages, reduced electricity \$ losses, and improved g/w (<http://tinyurl.com/cevseqa>). Small-scale water harvesting and check dams are useful, local solutions.

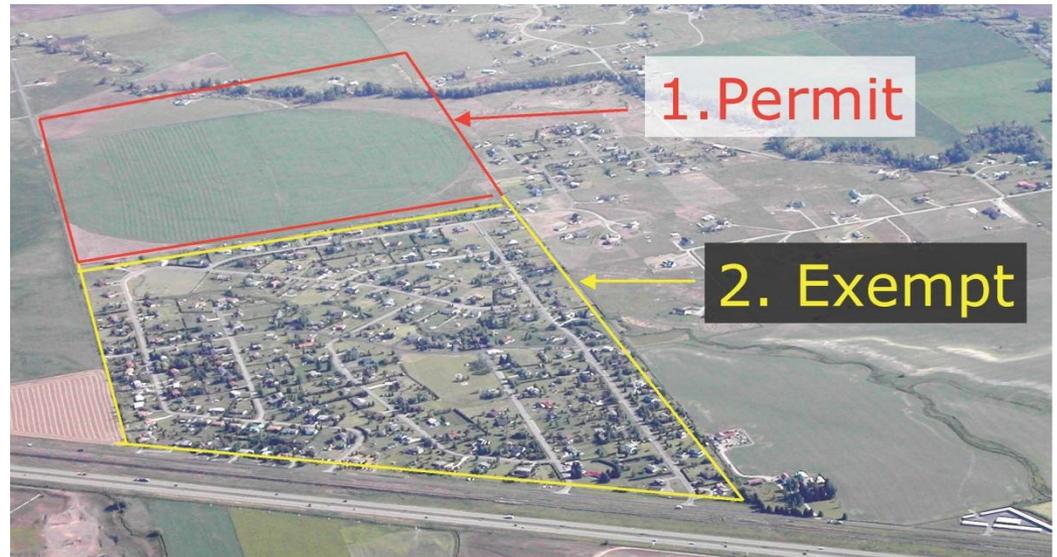
**China (Shanxi):** Metered electricity for farmers' groundwater pumping has resulted in cost recovery and rising ground water levels (<http://tinyurl.com/c6oxhdv>).

**USA (Kansas):** Metered wells, conjunctive use, minimum streamflows, etc. (<http://tinyurl.com/cnfbpb6>)

**Anywhere →**

Send me more!  
[dzetland@gmail.com](mailto:dzetland@gmail.com)

*But wait...*



# Is tradition or complexity the problem?

Remember this tradition?

Phone boxes are gone because telecoms (PTTs) had their monopolies disrupted by mobile competition.

Remember PTT customer service? The lines?

Monopolies can be lazy while they take your money.

Some sectors in water (desal, bottled water, meters) are VERY responsive; others are slow.

It's because managers work for themselves. Customers suffer with poor service, even death.

Remember the phone box the next time someone says "it's hard to change traditions" or "this problem is complex"



Even children can budget their candy.  
Why can't adults budget their water?  
Because they cry and get more. Grow up.

For more excitement....

Blog: [Aguanomics.com](http://Aguanomics.com)

Book: [EndofAbundance.com](http://EndofAbundance.com)

Data: [WaterDataHub.com](http://WaterDataHub.com)

email: [dzetland@gmail.com](mailto:dzetland@gmail.com)

