

# The Emergence of Wastewater as a New Supply

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# Overview

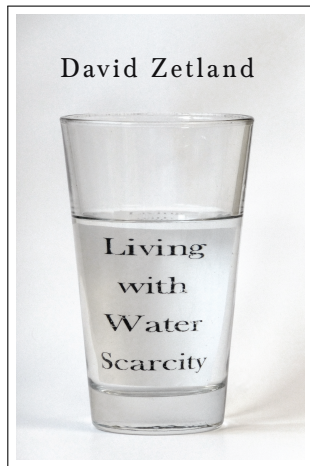
1. Why a water economist?
2. Negative externalities and valuable resources
3. Technology, regulation, prices and markets
4. Urban wastewater
5. Agricultural and industrial wastewater
6. Question & Answer

Download *this* PDF at <http://tinyurl.com/awra-zetland2>

My book is now free!

Most of this talk  
comes from Chapter 4

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## Goal: Internalize “negative externalities”

**Problem:** Keep dirty and clean water separate

**Solution:** Sewers, our greatest public health achievement

**New threats:** Non-point and dangerous pollutants

**Next solution:** Sewers+, i.e., change institutions

# Technology will not save us

Technology can clean any water, at a price, but:

- ▶ Users do not want to pay, so they drink bottled water
- ▶ Polluters may be hard to find, given complex flows

Good news!

Water scarcity has brought **an opportunity** to urban systems that can recycle their wastewater.

... but there are still problems outside the urban sewer system...

# Urban water and wastewater

- ▶ Indoor water can be captured, treated and reused
- ▶ New pollutants can be addressed with spending
  
- ▶ Outdoor/non-point runoff needs regulation and taxes
- ▶ Stormwater systems can be funded by “footprint” taxes

# Agricultural tailwater

Yo Toledo!<sup>1</sup>

- ▶ Fertilizers, manure and -cides get into groundwater and rivers
- ▶ Taxes and regulations miss *outcomes*
- ▶ Markets (C&T) miss non-point sources and non-traded yuck

Farmers should bear collective responsibility

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<sup>1</sup>Yes, invasive mussels matter, but runoff rules.

# Industrial wastewater

- ▶ Factories, frackers, mines, et al. **must clean** discharges
- ▶ Accidents and heavy risks **must be insured**

“If you can't afford it, then you shouldn't do it”



## In conclusion

- ▶ Pollution is lowering the supply of *usable* water
- ▶ Households, farmers and industry must pay
- ▶ Government involvement is critical
- ▶ It's MUCH cheaper to protect an aquifer than filter it

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

Book: [livingwithwaterscarcity.com](http://livingwithwaterscarcity.com) ← It's free!!

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Now let's do the Q&A!