

# Challenging Drinking Water Affordability and Wastewater Services in Urban Environments

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## Objective

Many water supply and wastewater authorities are facing major **challenges** on the continuous and uninterrupted provision of services:

- rapid urbanization
- aged infrastructure
- resource scarcity
- poor water quality
- network losses
- etc.

Potential **response** => increase of operational and maintenance costs

**Increasing tariffs and fees** for water users

Question: Are the water and wastewater fees still **affordable**, especially for the poorest segments of the population?

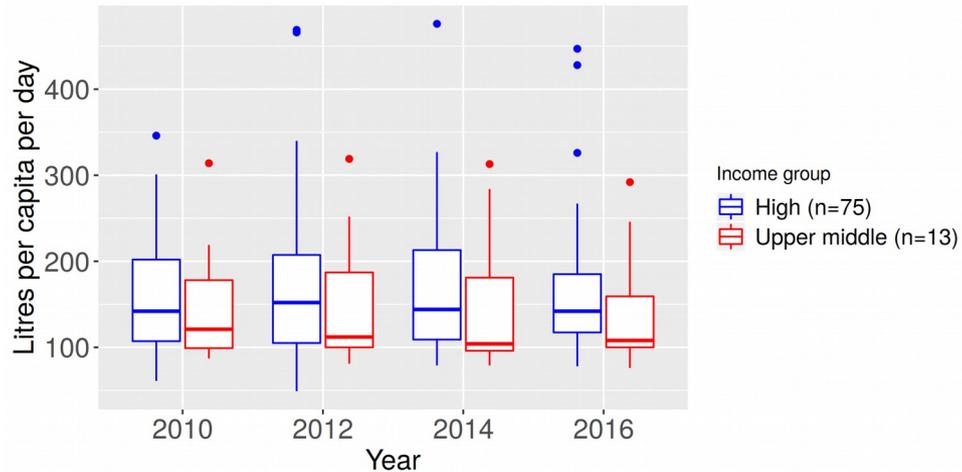
## Method

**Approach:** identify potable water consumption trends, cost variable relations, institutional relationships, and calculate water affordability; selected case studies provide further insights.

**Data** was extracted from a dataset made available by the Specialist Group of Statistics and Economics from the International Water Association:

- Water and wastewater fees for 100m<sup>3</sup> for 195 cities in 2017
- Abstraction source for 45 countries
- Household consumption per capita for 177 cities
- Data on regulation in 39 countries
- Minimum wage data collected from Internet
- Scope limitation: upper-middle and high-income cities

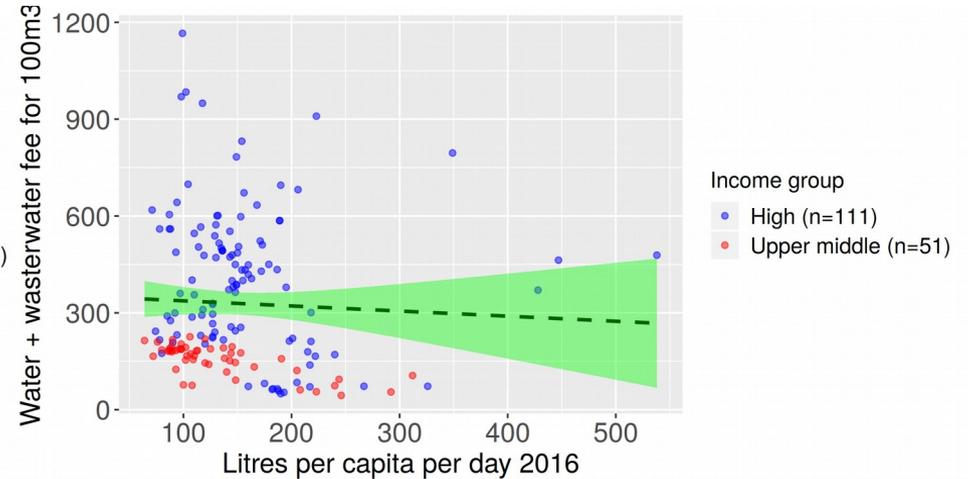
# Potable water consumption trends



There is **no significant trend** in water consumption in terms of litres per capita per day (lpcd) between 2010 and 2016.

The **consumption in high income countries** (156 lpcd in 2016) is **on average higher than in upper-middle income countries** (145 lpcd in 2016).

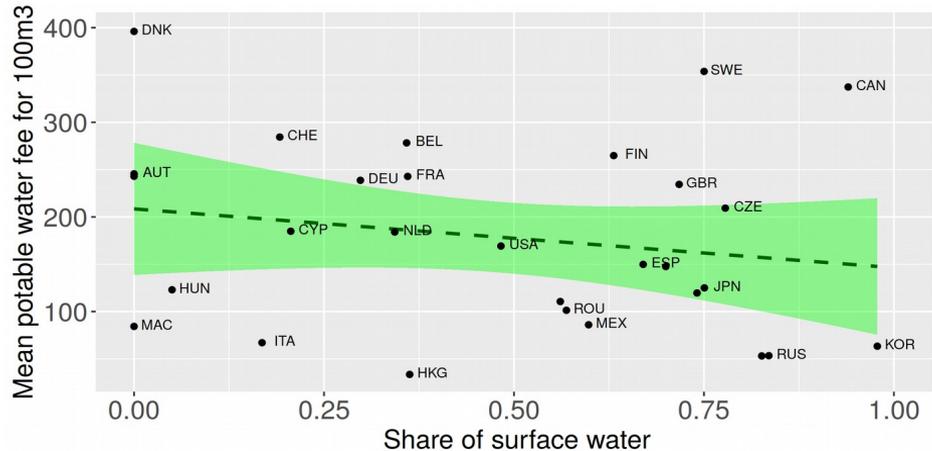
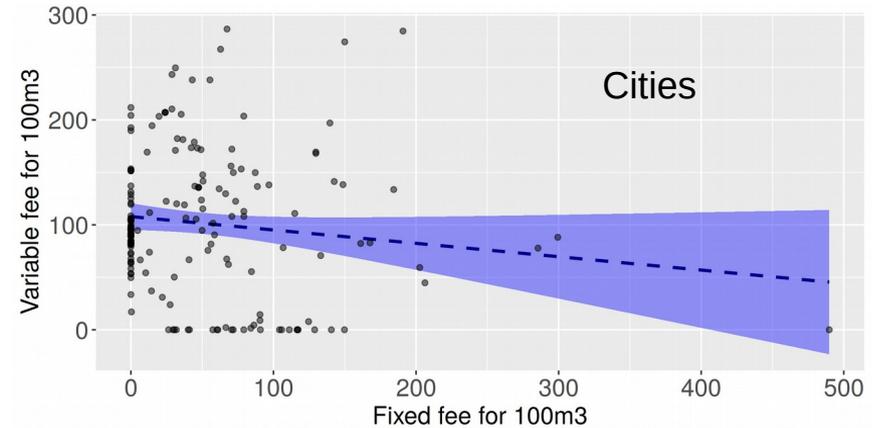
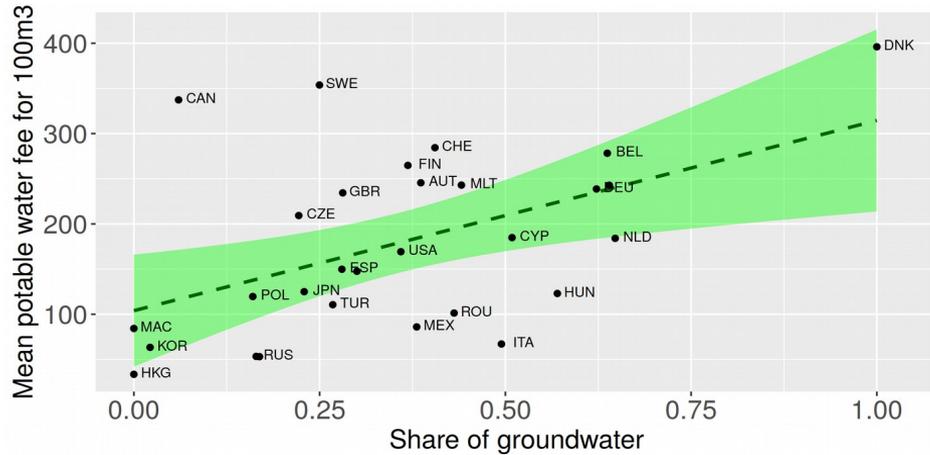
Taking all cities that submitted consumption data in 2016 (169 high and 81 upper-middle income) the difference is even more pronounced: 145 versus 122 lpcd.



There is wide range in fees and consumption, showing that **fees are not the only determinant in how much water households consume** (as generally water fees are a small percentage of households' incomes). However, a **small negative trend** can be found, showing that in cities where fees are higher consumption is somewhat lower.

The graph also shows that fees in high income countries are higher than in upper-middle income countries.

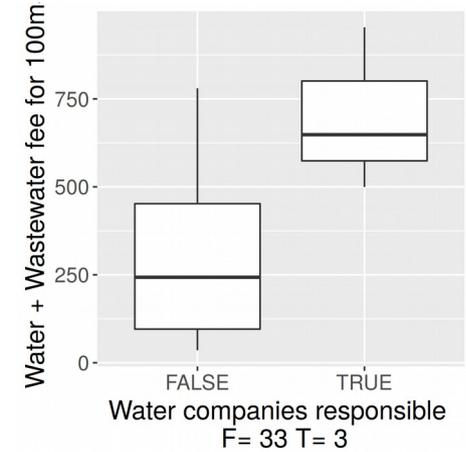
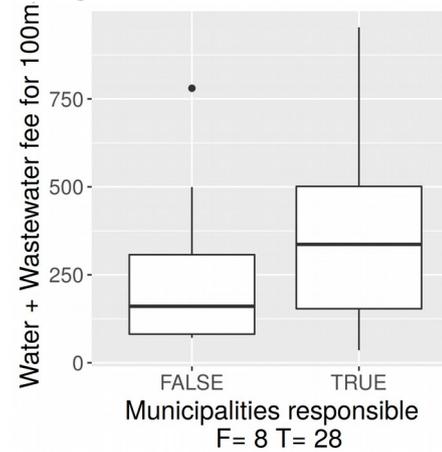
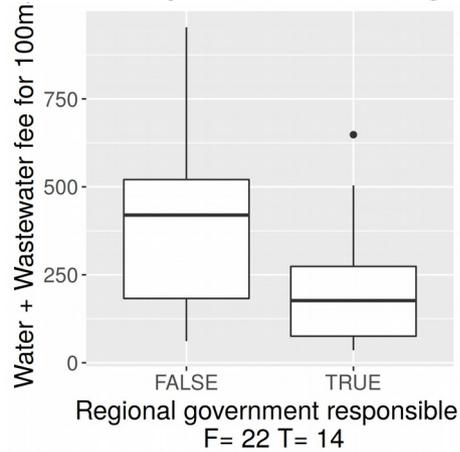
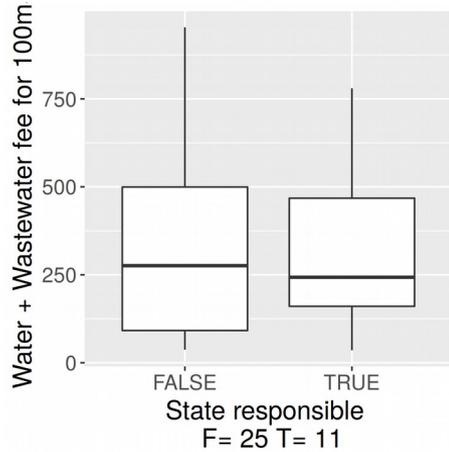
# Cost variable relations



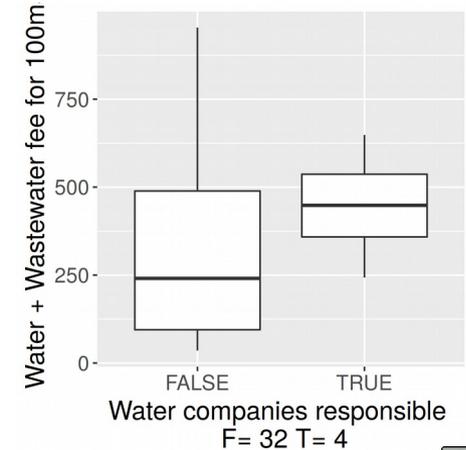
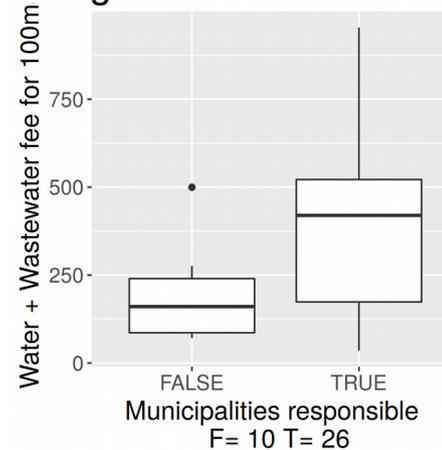
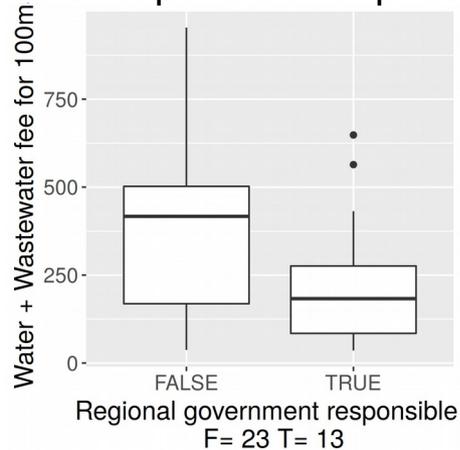
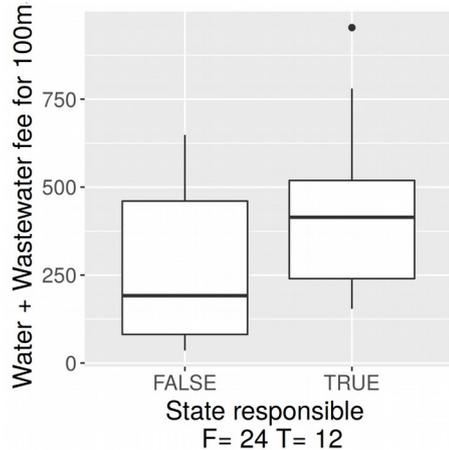
- As the share of groundwater to produce potable water in a country increases, the fee increases (correlation coeff. 0.50)
- As the share of surface water to produce potable water in a country increases, the fee decreases (correlation coeff. -0.21)
- There is a wide range of tariff settings with respect to fixed and variable portions. 23 out of 191 cities only have a fixed fee (likely unmetered use) and 63 only have a variable fee

# Institutional relationships

Who is responsible for organising the water services?

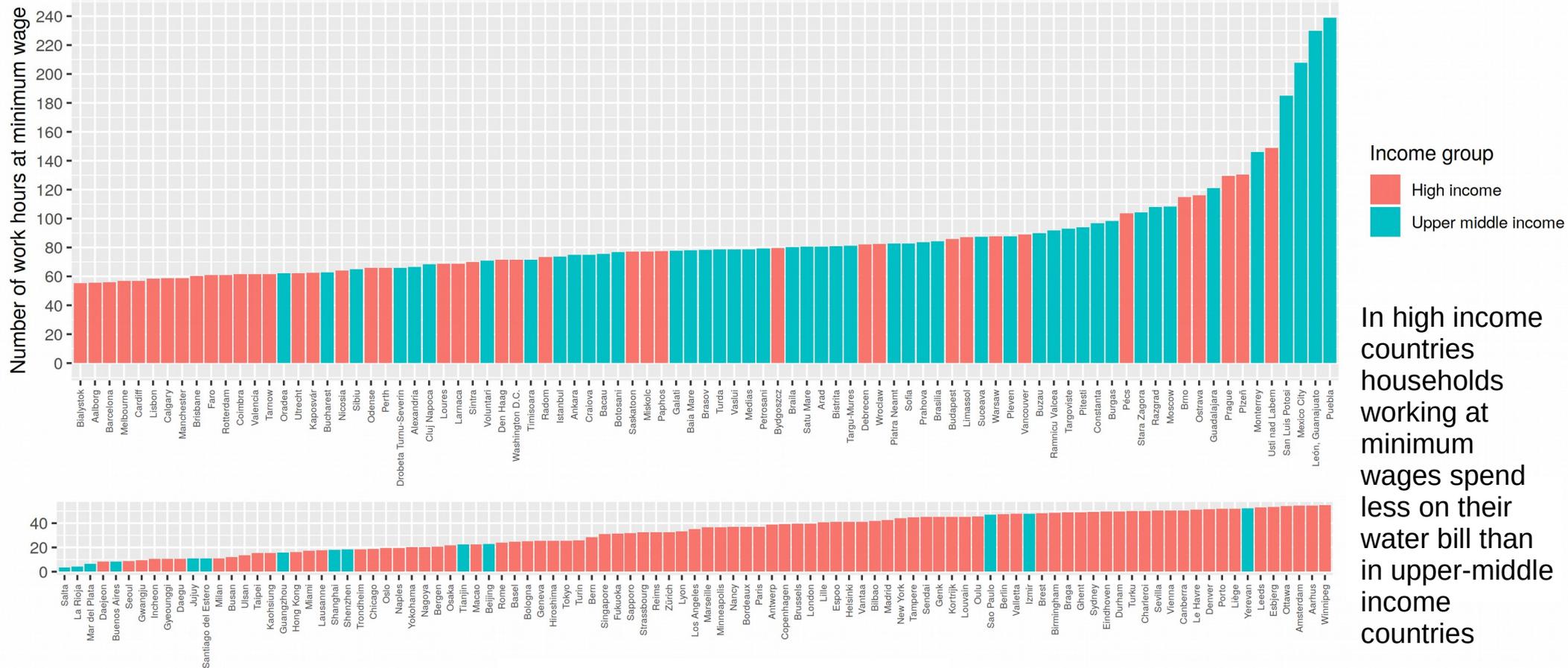


Who is responsible for price setting of the water services?



Tariffs are generally higher in places where municipalities and water companies are responsible.

# Water affordability



The number of hours that someone needs to work at the minimum wage for an annual 100m<sup>3</sup> of water ranges from 3.5 (in Salta, Argentina) to 238 (in Puebla, Mexico). The median is 53 hours.



## Cases

**Singapore** ranks 43<sup>rd</sup> in terms of affordable tariffs. In Singapore water and wastewater tariffs are the same for everyone. Low income households receive U-Save vouchers from the government with which they can pay their utility bills. In this way the price signals for water conservation are not distorted.

**Salta, Argentina** ranks 1<sup>st</sup> in terms of affordable tariffs. Water companies are unable to recover costs and need government transfers. Still, households unable to pay for their water bill can apply for a subsidy of 60% or 100% of their monthly water bill.

**New York, USA** (rank 66), has a Home Water Assistance Programme to make water and sewer bills more affordable for low-income households. An amount is credited to the water bill that can be used to offset the fees.

### Preliminary Conclusions

- Water fees vary significantly among cities
- Municipalities and water companies set usually higher prices (which may be reflection actual costs better)
- Affordability could be more often an issue in lower-middle income countries.
- Many cities have assistance programmes