

## Assessment of the national water and energy saving potential of greywater reuse – Israel as a case study

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# What is GWR and how can it effect Israel's water economy ?

#### **Onsite reuse of light GW :**

- 1. shower/ bath
- 2. washbasin
- 3. washing machine

#### **Reuse for:**

- 1. Toilet flushing
- 2. Garden irrigation



## What would happen if all new apartment buildings were required to install GWR systems?



#### A typical installation in a multi-storey apartment building



Taken from: Gross et al. (2015)

#### Population Growth – Driver of urban water demand increase



# Urban consumption is the fastest growing segment of Israel's water economy





#### Annual national water saving by GWR

Assuming GWR is mandated in all new construction from 2012



Bands are different proportion of domestic water supplied by GWR



#### GWR can <u>slow down</u> the growth rate of urban water demand



By 2050 – 30% reuse only in buildings built after 2015





### Decentralized water production saves water and energy.







### **Cumulative monetary savings due to GWR**

Assuming GWR is mandated in all new construction from 2012



Bands are different proportion of domestic water supplied by GWR



### Summary - GWR in Israel can:

- **~10%** ✓ **Reduce** urban water demand by:
  - 120-200 MCM/y in 2050

~ $0.5\%a \checkmark$  Reduce national electricity consumption by:

- 560 GWh /y in 2050
- **~10%** ✓ Avert construction of 1-2 desalination plants by 2050
  - ✓ Save money
    - Cumulative sum of ¬ 50 billion NIS (ca. 15 billion US\$) in 2050
  - ✓ Prevent emission of  $6-8 \cdot 10^6$  tonnes CO<sub>2</sub> by 2050
  - ✓ Reduce negative environmental effects



#### **International State of GWR**





# Why is the testing regime so important?





Capital cost =  $100k + 6.7k*\rho$  [NIS]

500,000

300.00

200,000

100.000

# Because it destroys commercial viability.



