

Water Economics for Sustainability in the GCC

Slim Zekri

Sultan Qaboos University, Slim@squ.edu.om

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Economists' tools

1. Pricing

2. Laws and regulations

- a. Maximum allowable consumption
 - i. Emergency situations
- b. Regulations on water devices
 - a. Maximum flow l/sec
 - i. faucets 5 l/sec instead of 10-12 l/sec
 - ii. Sensor based faucets in public places: Mosques, malls, restaurants ...
 - b. Dual flush toilets
 - c. Plumbing requirements for greywater

3. Taxes/subsidies

- a. Taxing inefficient consumers
- b. Rebate programs to encourage technology adoption

4. Moral suasion/Awareness raising

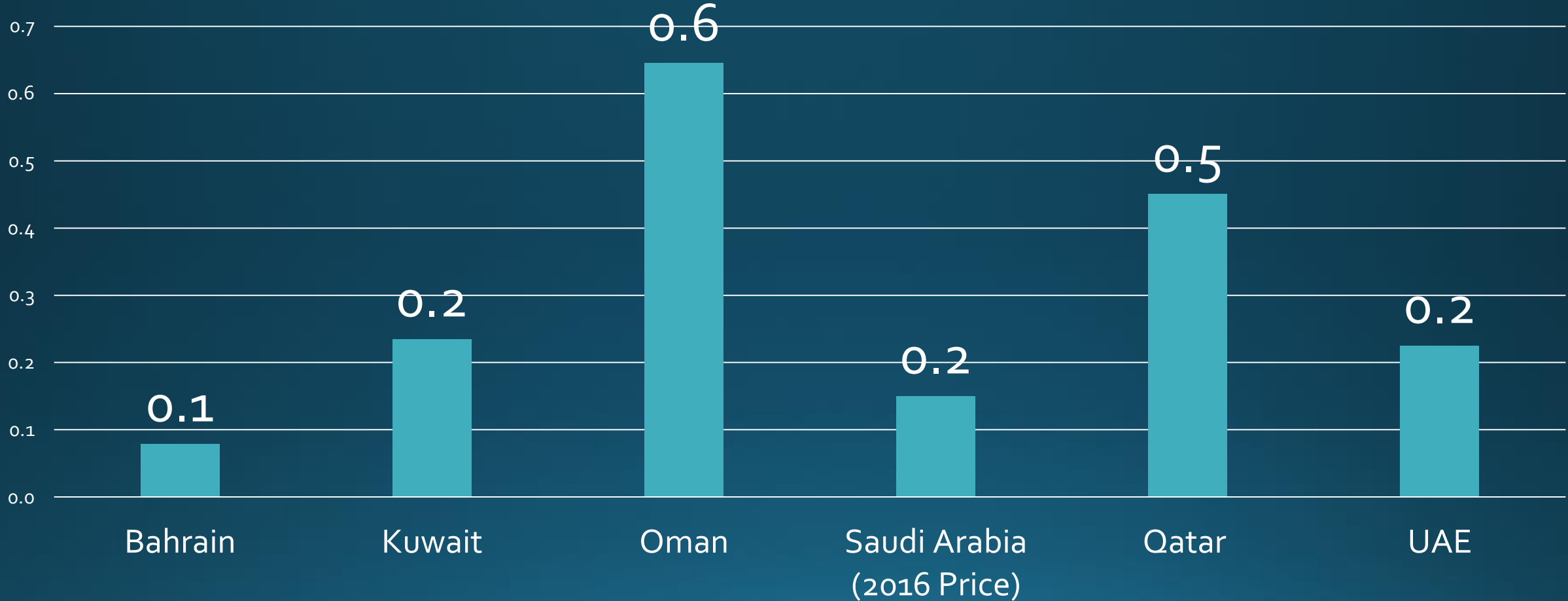
- a. Public education
 - i. Short videos in social media
 - ii. Documentaries about desalination, wastewater treatment
 - iii. Water-energy nexus
 - iv. Experiences in other countries
- b. Shaming
 - i. Data analysis and comparisons among users, districts...

Water Demand depends on

- Income
- Price of water
- Climate and seasons (outdoor uses)
- Technology cost and ease of use
 - Water saving devices
 - Greywater and onsite reuse
 - Owned vs rented house

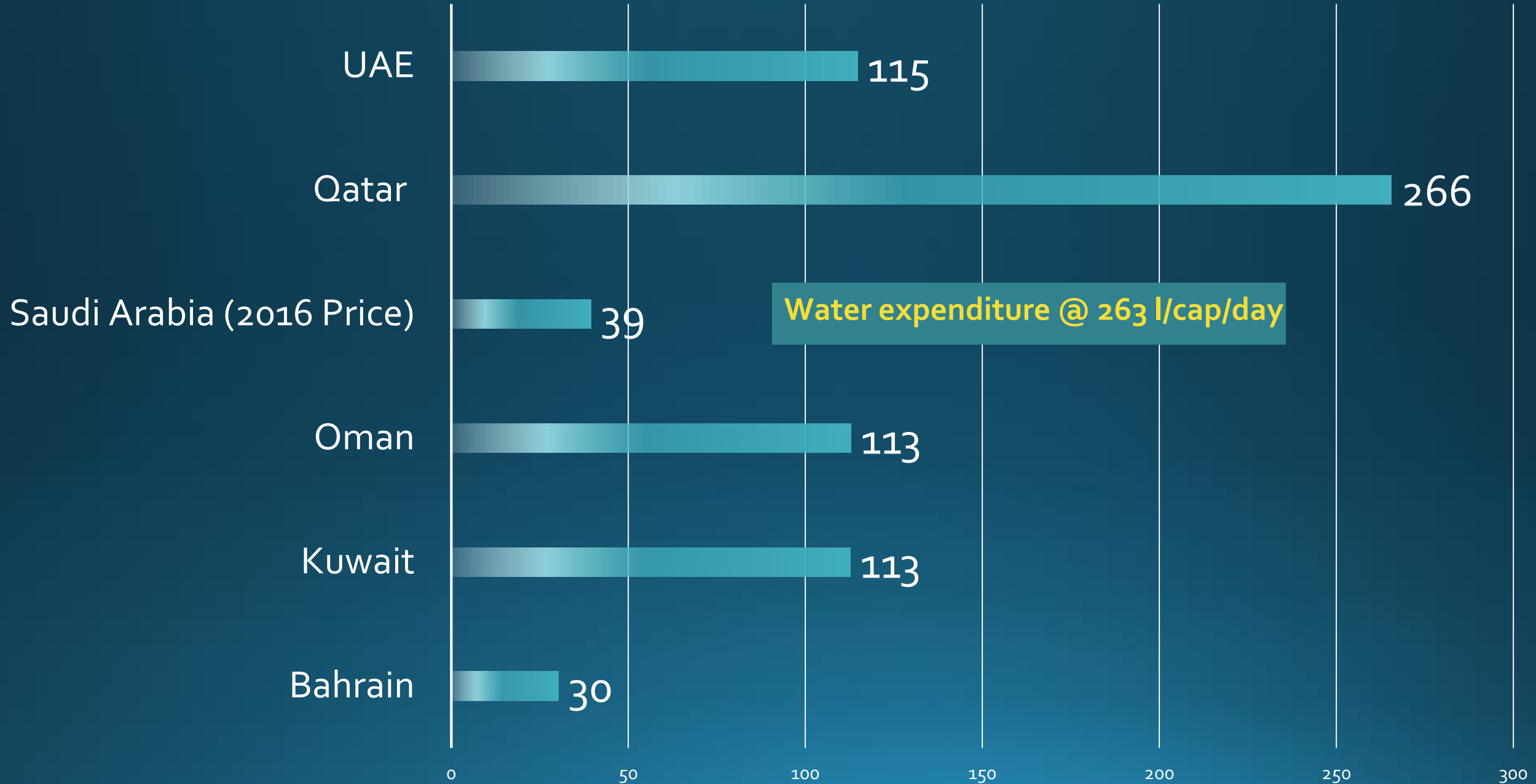
2nd Block or Flat Water Price. Saudi Halala/Liter

100 Halala = 1 SAR



Reducing differences in Water prices among GCC. Citizens compare prices on social media

WATER EXPENDITURE HALALAS/CAP/DAY



Proper mix of tools

- Targeted subsidy + Price + Regulations + Incentives + Moral suasion

Subsidy should not be removed

- Prices in GCC countries are very low not reflecting scarcity
 - Environmental costs are not accounted for
 - Cost recovery is NOT possible
 - Budget deficits will lead to low maintenance of infrastructure
 - Higher leaks
- Subsidy should be targeted
 - Income based subsidy
 - Only low-income families should get subsidy
 - Assorted with a quantity limitation: 60-90 liters/cap/day
 - Full cost pricing for consumption above 90 l/day

Rebate programs

- Rebate programs: technology subsidies for consumers used to speed up adoption of new water efficient technologies
- Often water-efficient technologies are uneconomical compared to their less-efficient alternatives
 - Water prices are too low
 - Inefficient technologies are low cost and have been in the market long ago
 - They have no “invention cost”, no patents...
- For outdoor water uses:
 - Specific programs might encourage naturoscaping, native gardens, grass replacements, timers, soil sensors, drippers...



Not all technologies are uneconomical... yet no adoption



pure natural drinking water مياه عذبة طبيعية نقية

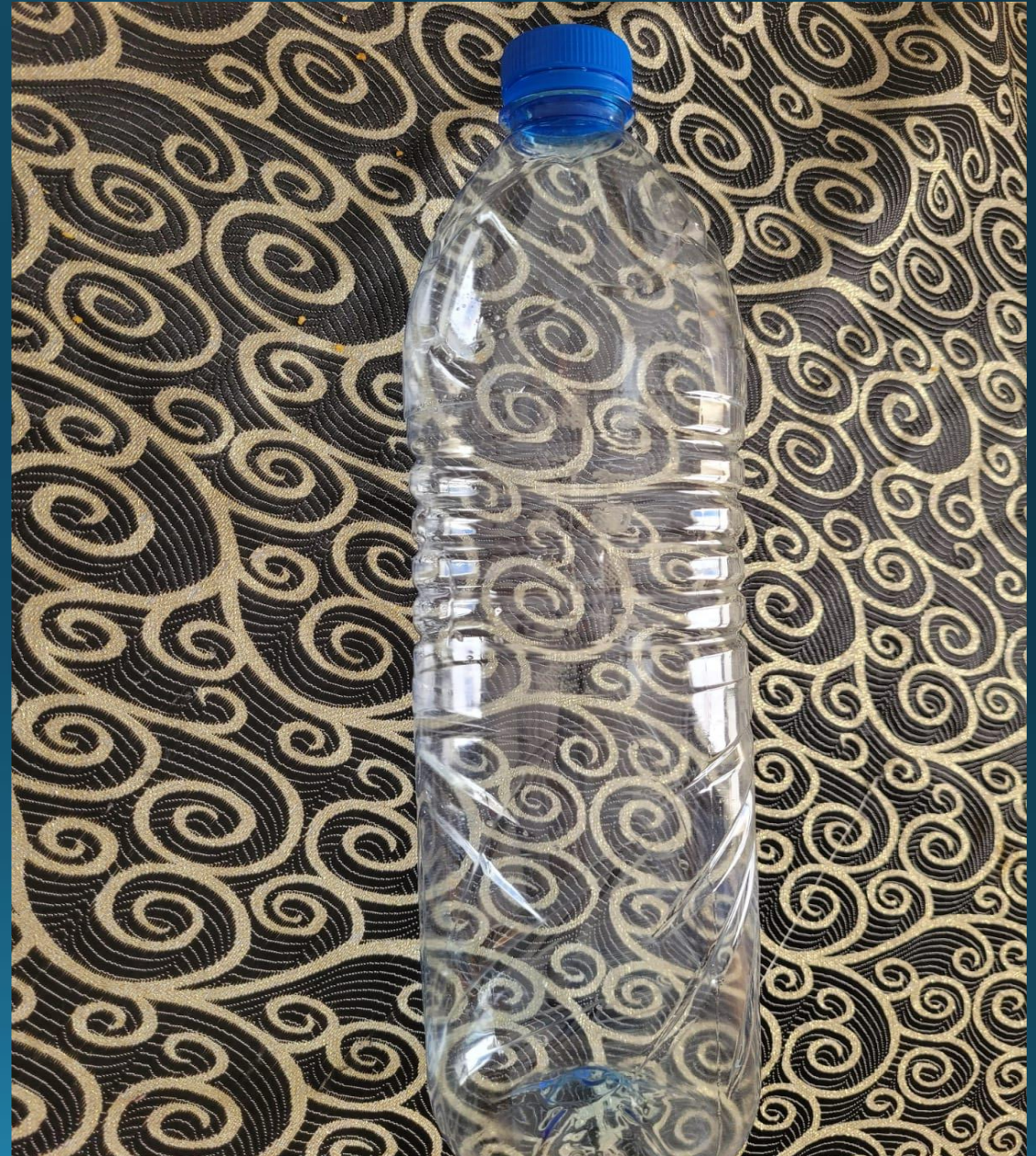
Per Liter of Water	
9 mg	4 mg
15 mg	0.6 mg
30 mg	0.02 mg
0.2 mg	12 mg
9.5 mg	25 mg
192 mg	7.1 mg

البيانات مبينة ونتيجة من فحص الأيونات
والتي تتوافق مع المواصفات القياسية التي وضعتها منظمة الصحة العالمية
والتي هي أعلى من المواصفات القياسية التي وضعتها منظمة الصحة العالمية
من قبل منظمة الصحة العالمية في عام 2004.
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Supply - 1 Year from the date of production.
Many more uses available, from 1 liter and 100 ml.
Produced by Al-Chokher Bottled Water Drinking Factory P.S. No. 19,
P.O. Box 157, Durrat Al-Baydan, Dammam, K.S.A. 31421.
From the Heart of Saudi Waters in Dammam.

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Not all technologies are uneconomical... yet no adoption

- Reducing the volume of the flush toilet by inserting a plastic bottle of 1.5 liters
 - Cost free
 - Maintenance free
- Requires showcasing and persuasion only

Flush toilet volume reduction INSERTING plastic bottle of 1.5 l	1.5
Number of flushes /day/person	2
Water saving/cap/day	3
% of total Household adopting	50%
Total water saved/day	53
Total water saving in Mm³/year	19

- Potential saving of 19 Million \$/year

Exp: Rebate programs in California: free Aerators



FAUCET AERATORS

Replace a public lavatory faucet that uses 2.0 gpm or more with an EPA WaterSense labeled device that uses 1.0 gpm or less and start saving water today! Faucet aerators are **complimentary** to commercial customers of both SDG&E and Moulton Niguel Water District.

▶ **Save over 500 gals/year/aerator!**

Ex-post rebate from Spain

- in Zaragoza, Spain an additional incentive is attributed to households who reduced their water use by at least 40% within the first year of joining the new tariff.
- Household receive a discount of 10% on their water bill.

Public authorities des-incentives to save water

- Take-or-pay contract
 - Authorities commit to buying or paying the water whatever happens for periods of 20-30 years
 - Juicy business
 - 8- Feb-2022: Barka Desalination Company says phase one received a an oversubscription of 4.83 times of offer shares. The allotment price for shares has been determined at 145 baisa at the highest end of the price range of 115-145 per share
- Authorities plan for supply increase 5 years ahead of time
 - They base their supply increase on observed demand

What to do with the saved water?

- SAR or MAR during low demand periods in winter
 - Increase water security for all cities
- Postpone investments in new desalination plants
 - Encourage employees contributing to postponing new investments
- Measure water leakages in monetary terms not only in volume
 - Leakage brought from 20% to 15%
 - \$58 Million saved as a consequence
- Attribute bonuses to employees directly involved in leakage reduction
- It is more economical to invest in rebate programs than new desalination plants
 - 2 m³ saved/aerator
 - 20 SAR/saved/aerator/year. Cost of 1 aerator < 10 SAR

Conclusions

- Mix of tools for water saving at household level and public organization
- Price is only one of the tools
- Water regulations: faucet flow; Plumbing requirements for greywater...
- Showcasing, communicating and informing the public: **HOW TO SAVE WATER**
 - Prime time information on how to reduce water use at home
 - 2-3 mn short videos on social media
 - Stop spending public money on expensive useless “empty messages”
- Rebate programs are very effective if prices reflect scarcity
- Incentives for public employees directly involved in leakage detection and reduction
- Incentives for planning and postponing investments in new desalination plants
- Incentives for ASR/MAR implementation hand-in-hand with water demand management