New Thinking in Water Governance

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"Can incentives motivate sustainable domestic water consumption?"

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Objectives

- Make survey findings *clear* and *fully understandable*

- Usefulness and limitations of study

- Future potential

Research Questions

- Can incentives influence domestic water use behaviour?

- What type of incentives do individuals prefer?

- What type of water saving measures do individuals prefer?

Methodology

- Choice experiment with optional qualitative fields

- Two type of water saving measures. Three incentives, three domains

- Internet mediated behavioural research

- **Quantitative** analysis: Chi-square test and Wilcoxon signed rank test

- **Qualitative** analysis: Present unedited

Survey Design

Choice Experiment Generic Levels and Attributes (New Design)

Attributes	Levels		
Water saving measure	Adopt water saving behaviour for 3 months	Adopt water saving technology	
Incentives	Consumers that adopt water saving behaviour enter lottery for luxury hybrid car (Lottery)	Consumers that adopt water saving behaviour receive 5% discount in water bill (Cash)	Consumers that adopt water saving behaviour can opt for donation* to a water charity. (Altruism)

*Amount equivalent to 5% discount in water bill

Choice experiment

Option A	Option B	Option C
Reduce shower time to 5 minutes for *3 months*	**Purchase** and **install** *water efficient* showerhead	Maintain current behaviour
Enter lottery for luxury hybrid car	Enter lottery for luxury hybrid car	

Option A	Option B	Option C
Turn off tap while brushing teeth and washing for *3 months*	**Purchase** and **install** *water efficient* tap	Maintain current behaviour
Receive 5% discount on water bills	Donation to water charity	

Option A	Option B	Option C
Use a **full load** for *dishwasher & washing machine* for *3 months*	**Purchase** and **use** *water efficient* dishwasher and washing machine	Maintain current behaviour
Donation to water charity	Enter lottery for luxury hybrid car	

Sample

- 1117 fully completed survey responses from 48 countries

- 463 from Singapore

- 330 from the UK

- **Publicity avenues:** Mailing lists, personalised email, web advertisement, Facebook, blogs

Findings from Survey - UK

- **General preference** for water saving measures:
  Prefer behavioural change to adopting water efficient technology

- **Specific preferences** for water saving measures
  Shower - *Prefer* efficient shower head *to* reducing shower time
  Wash Basin - *Prefer* tap off while washing *to* installing tap aerator
  Laundry and Dishwashing - *Prefer* using full loads *to* installing water efficient appliances

Findings from Survey - Spore

- **General preference** for water saving measures:

  Prefer adopting water efficient technology to behavioural change

- **Specific preferences** for water saving measures

  Shower - *Prefer* efficient shower head *to* reducing shower time

  Wash Basin - *Prefer* tap off while washing *to* installing tap aerator

  Laundry and Dishwashing - *Slightly prefer (not statistically significant)* installing water efficient appliances to using full load

Votes for measures

Wilcoxon Signed-Rank Test Statistics for Water Saving Measures

		Singapore		UK	
		Z	Asymp. Sig (2−tailed)	Z	Asymp. Sig (2−tailed)
Shower	T − B Votes	10.952[a]	.000	5.678[a]	.000
	B − SQ Votes	11.147[a]	.000	7.602[a]	.000
	T − SQ Votes	16.874[a]	.000	11.084[a]	.000
Basin	T − B Votes	6.094[b]	.000	8.555[b]	.000
	B − SQ Votes	16.129[a]	.000	12.699[a]	.000
	T − SQ Votes	13.595[a]	.000	8.511[a]	.000
Laundry/	T − B Votes	1.686[a]	.092	6.159[b]	.000
Dishwashing	B − SQ Votes	11.962[a]	.000	10.467[a]	.000
	T − SQ Votes	12.668[a]	.000	5.866[a]	.000
Total from	T − B Votes	2.238[a]	.025	5.158[b]	.000
three domains	B − SQ Votes	16.134[a]	.000	12.494[a]	.000
	T − SQ Votes	16.657[a]	.000	10.353[a]	.000

Technological (T), Behavioural (B), Status Quo (SQ)

a. Based on positive ranks.

b. Based on negative ranks.

Votes for incentives

Wilcoxon Signed-Rank Test Statistics for Incentive Votes

		Singapore		UK	
		Z	Asymp. Sig (2 −tailed)	Z	Asymp. Sig (2−tailed)
Shower	D − L votes	12.997[a]	.000	11.418[a]	.000
	D − C Votes	13.077[a]	.000	10.611[a]	.000
	L − C Votes	2.234[a]	.026	2.104[b]	.035
Basin	D − L votes	12.105[a]	.000	10.765[a]	.000
	D − C Votes	12.498[a]	.000	10.238[a]	.000
	L − C Votes	3.114[a]	.002	1.620[b]	.105
Laundry/ Dishwashing	D − L votes	11.261[a]	.000	9.031[a]	.000
	D − C Votes	11.307[a]	.000	8.177[a]	.000
	L − C Votes	1.717[a]	.086	1.679[b]	.093
Total	D − L votes	14.088[a]	.000	12.233[a]	.000
	D − C Votes	14.376[a]	.000	11.492[a]	.000
	L − C Votes	2.660[a]	.008	2.267[b]	.023

Discount (D), Lottery (L), Charity (C)

a. Based on positive ranks.

b. Based on negative ranks.

Comments

"I am not sure how a water charity works, I am suspicious of it, and I will thus not donate to it."

"I would prefer to adapt my behaviour to conserve water. Also, it is an added bonus to receive a discount on your bill or to send a donation to charity - it feels more positive than being entered for a lottery!"

"I am motivated by money, not charity. And the chance of winning the lottery is too low to be an effective incentive. I will do the cheapest option (turning off tap whilst brushing teeth) in order to save on my water bill."

"Singaporeans don't use dishwashers."

"A water-efficient tap seems to be a long-term solution to saving water. And I have this thing about leaving the tap running while I brush my teeth - it just seems cleaner (irrational I know!)"

"Perhaps manufacturers should only produce water efficient machines and this is the correct way forwards, rather than trying to bully consumers?"

Usefulness

- Theoretical justification on the role of incentives for water conservation

- High proportion of individuals from the Internet generation.

- Variety of incentives

Limitations

- Internet sampling biases

- Constraints on implementing incentives

Future potential

- Research model - web based stated choices survey

- Practical implementation of creatively designed policies. Incentives. Conservation challenge. Dynamic pricing. Choice architecture.

Acknowledgements

Thank you!

loveforwater.org