

Department for Environment, Food and Rural Affairs: Measures to reduce personal water use

Consultation response from the

Centre for Competition Policy

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Date: 09th October 2019

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CCP Response to ‘consultation on measures to reduce personal water use’

As a general point, much of the consultation document lacks information about the benefits, costs or both of the proposed interventions. Some of the questions cannot be addressed without a full cost-benefit analysis carried out by independent experts. As a consequence, many of our answers are guarded and require a lot of reservations.

- 1. Do you consider that the current approach in Building Regulations (i.e. a mandatory minimum standard for new homes but with local authorities in water stressed areas having discretion to ask for a higher standard through a Building Regulations Optional Requirement) is effective?**

This question cannot be given a meaningful answer without information about the costs involved and the benefit achieved. Information is needed about the additional cost for each element. Information is also needed about the relationship between the costs of compliance with the regulations and the size and location of the property. On the benefit side, how much of the additional cost will be reflected in the market value of the house?

A proper answer to this question requires a full and detailed expert cost-benefit analysis.

Depending on costs and what it does to the value of the house, Defra may consider only requiring it for houses of a certain value. Water conservation evidence from the US (see, Lu et al., 2019) suggests that it is the water consumption of the more wealthy which needs to be constrained. Wealthier households usually face a higher irrigation requirement as they tend to have larger gardens and swimming pools, and outdoor water use can account for a substantial proportion of total water consumption. However, the overlap between high water users and high-income households in the UK, with its temperate climate, may not be as strong.

- 2. Do you consider that the current minimum standard of 125 litres per person per day and optional requirement of 110 litres per person per day should be changed, and if so what might be an appropriate new standard?**

This question cannot be given a meaningful answer without information about the costs and benefits involved.

- 3. Are there any other issues relevant to using Building Regulations to set water efficiency standards that the government should consider?**

One possible issue is the placement of the meter. If metering is to have an impact on the household's consumption the meter (or a separate device reporting key water consumption information) must be placed where the householder can easily see the information it provides. Households who are exposed to more consumption information are expected to have a better understanding of the relationship between their water use habits, water consumption and water expenditure (Lu et al., 2019). Even with ‘accessible’ water consumption information, many households may choose, rationally or otherwise, not to engage with it.

- 4. To what extent do you agree or disagree that Government should work with water companies and local authorities to run partnership retrofit and behaviour change programmes in existing homes?**

The question is really what the government adds to the picture. It could insist on proper cost-benefit analyses before implementation. For example, it is increasingly pertinent to gather robust evidence and cost-benefit analyses of not only water efficiency projects at the aggregate level, but also the relative effectiveness of individual measures used such as retrofit programmes and behavioural trials.

Currently, there is little evidence on the cost-effectiveness of information-based interventions on water conservation in the UK, as noted by Defra in its Rapid Evidence Assessment 2018.

Ofwat is currently consulting on collaborative innovation between companies and targeted financial support to facilitate this. Perhaps reducing personal water use could be made an important theme of the innovation competition, and an effective incentive framework could be in place to encourage companies to collaborate (Bowen et al., 2019).

A general question is a balance between a standardised approach across the country versus local discretion. Different water resource pressures across the country suggest local discretion may have significant value.

5. *To what extent do you agree or disagree that information on water efficiency should be displayed on water using products?*

If ultimately we are relying on consumer choice (rather than building regulations) to drive reductions in water consumption, then consumers will need to have the relevant information to hand.

There is certainly evidence to suggest that even those with a pre-stated desire to act might not be able to do so without information on their usage or how they can adapt this (Brock, 2015, Brock & Borzino 2016)

In addition, devices incorporated or attached to specific appliances (e.g. showers and washing machines) that allow households to monitor usage at the actual point of consumption can be effective in reducing water consumption (Lu et al. 2019).

6. *To what extent do you agree or disagree that providing information about products' water efficiency changes peoples' purchasing behaviour and reduces their use of water?*

This is an empirical question – there is currently insufficient research to answer the question with any degree of confidence. There are two separate questions: affecting the purchasing decision, which is a one-off and affecting use, which is a dynamic question and depends on the degree of discretion over use allowed by the products.

It is also necessary to remember that purchases of large appliances, e.g. washing machines, is relatively infrequent. Even if peoples' purchase decisions are altered by the water efficiency information it may still take a long time for a large number of households to be operating water efficient appliances. As a starting assumption, one might expect wealthier households to replace appliances on a more frequent basis.

7. *To what extent do you agree or disagree that water efficiency labels should be linked to building standards and minimum standards?*

We have nothing to add on this proposal.

8. *How else could government or water companies encourage people to use more water efficient devices/appliances at home?*

An emerging trend in the field of behavioural economics has been to illustrate how human psychology can inform useful tools to facilitate change. Examples include providing simple information and in appealing to our preoccupation with social comparisons (Alcott, 2011; Brock, 2015).

Regarding water conservation, in particular, evidence from a large-scale behavioural intervention in the US (Ferraro and Price, 2013) suggests that the reduction in water consumption from offering

socially comparative feedback to households could be equivalent to the effect of a 12%-15% increase in average price. Lu et al. (2019) provide a comprehensive review of the effectiveness of behavioural trials to conserve water and discusses the feasibility of behavioural interventions in the UK. Despite the success of behavioural interventions in other locations and their potential cost-effectiveness, there is little UK-specific evidence. Lu (2019) highlights the key barriers to conducting effective information-based behavioural interventions in the UK water sector, discusses issues regarding the practical design and implementation of an intervention and provides an agenda for future research and interventions. So far there is little evidence on the persistence of the effects of behavioural interventions through time.

9. *To what extent do you agree or disagree that people should pay for water according to how much they use?*

The question is really whether we should use prices to curb demand. In theory, the price mechanism seems to be an effective means to constrain the use of water, but relying on water pricing may have a negative effect on poorer households given that society wishes households to always afford water for essential purposes (drinking, cooking and sanitation).

There are charging options that could strike a balance between affordability and conservation objectives. For example, Increasing Block Tariffs (IBTs) are a pricing structure under which the per-unit price varies with consumption so that prices are low for 'essential' consumption and high for 'discretionary' consumption. In practice, the success of IBTs in meeting both distributional and conservation objectives depends on their design and consumer response. Lu et al. (2019) review the international evidence on using IBTs to conserve water, highlighting the operational challenges of implementing effective IBTs. Setting the usage level deemed 'essential' is difficult without accurate up to date information about household occupancy. Before IBTs could be introduced in the UK a key step would be to develop a substantial body of evidence around individual households' water consumption and expenditure.

10. *To what extent do you agree or disagree that the amount of households charged by metered volume should be increased beyond and/or faster than what is already planned by water companies?*

Given the premise of the consultation, metering should be compulsory, so that we know what the demand of individual households really is, we can send signals to consumers and we have a better means of detecting leaks. However, the existence of meters to provide data to water companies and other organisations is separate from the question of charging households by water consumption. See our response to question 9 around the challenges of volumetric charging when there are substantial equity concerns.

Government should stop hiding behind the firms. There is not a practical reason why compulsory metering is not feasible and thus increased efficiency through accurate demand analysis be established.

11. *If you agree that the amount of households charged by metered volume should be increased, what do you think would be the best or most appropriate approach? Do you have suggestions for increasing metering other than what is mentioned above?*

Work on a presumption that usage is high if the consumer is not metered as there is no financial incentive for a consumer to constrain their consumption. However, analysis needs to be performed to discover whether the choice not to be metered is a rational response, i.e. those who chose not to be metered are those that would see an increase in their water bill if a meter were installed. If those

currently without a meter are predominantly those who would see their water bill increase under a system of compulsory metering, one should be prepared for potentially vocal opposition to universal charging by metered volume.

12. Are there any other issues we need to consider with regard to increasing metering?

Following on from our response to Q11, a switch to compulsory metering is likely to increase the bills of those not previously metered. This will in some cases create hardship while at the same time increasing the revenue received by water companies. It seems reasonable to earmark some of the additional revenue for a hardship fund to deal with any adverse effect on vulnerable or poor consumers.

It is worth considering whether there are specific traits of certain un-metered households that could indicate that they are at particular risk of hardship should their water bill increase.

13. To what extent do you support or oppose use of smart water meters instead of manual meters?

That surely depends on the difference in costs and the extra benefits which derive from the meter being smart. Given the multitude of issues encountered with the roll-out of smart meters for energy, the water sector should think carefully about the pros and cons of different options and potential lessons from the energy sector.

14. To what extent do you support or oppose use of incentives to encourage customers to use less water?

As Lu et al. (2019) demonstrated, this depends critically on design. There is a dearth of evidence regarding the long-term effect of incentives on water conservation. In energy, the evidence is incredibly mixed and highly dependent on the sample and treatments employed (Abrahamse et al, 2005; Allcott & Rogers, 2014; Dolan & Metcalfe, 2015).

As summarised in Lu et al. (2019), in Zaragoza, the combination of Increasing Block Tariffs and a reward scheme managed to achieve a 27% reduction in overall water consumption between 1996 and 2008. Under the reward scheme, households who reduced water usage by at least 40% in the first year of joining the scheme received a 10% discount off their bill, and a similar discount continued to apply to these households for each further 10% reduction in water usage achieved in each subsequent year.

15. What incentives could water companies use to reduce customer use of water?

See Lu et al. (2019). The ability of water companies to use monetary incentives or behavioural interventions to promote water conservation is difficult (impossible) when firms collect water consumption information at infrequent intervals (this data is entirely absent for unmetered households). Timely and easily accessible water consumption information is essential if households are to respond to incentives. Household are unlikely to adjust their behaviour for financial reasons unless they can see that their efforts to conserve water lead to reduced bills.

Collating frequent consumption data is also required if non-financial incentives, such as social comparison, are to be used. Of course, increasing the frequency of collecting consumption information from and communicating information to households should be weighed against the cost of doing so. Efforts to increase water conservation will almost certainly require increased communications with households and, hence, additional costs.

16. To what extent do you support or oppose the use of RWH and GWR schemes at individual level?

What are the costs and what are the benefits of the proposals? While it may seem intuitively obvious that these would be positive measures, robust evidence is essential to assessing whether the schemes make sense. For example, it may be that these schemes are more appropriate for larger properties with large gardens, but we need evidence.

17. To what extent do you support or oppose the use of RWH and GWR schemes at community scale?

See response to Q16: it all depends on the evidence regarding likely costs and benefits.

18. How can government or water companies most effectively encourage people to reuse water in their homes?

The simplest way (albeit one with consequences for equity and affordability) is to make the use of mains water more expensive, or more in line with the true costs of its delivery and its value as a scarce resource. The implication of the consultation's emphasis on water conservation is that its increasing scarcity means over time a litre of water will become more valuable/costly to produce. Also, provide information to households and consider behavioural interventions, as these can have at least short-term impacts. The key challenge is that beyond collecting water for garden use it appears RWH and GWR may require significant investment and interventions to the fabric of existing homes to be implemented. This raises questions about whether RWH and GWR offer financial returns to households justifying the investment. Even if the financial returns were good, not all households will have the capital available to make the investments.

19. Do you have any evidence/views/comments on the potential impacts on water bills for various customers and geographical regions should the management of supply pipes be transferred to water companies?

We have no particular evidence on this point, however, if the transfer of supply pipe maintenance implies that water companies become liable for the costs of maintaining supply pipes it would seem inevitable that company costs would increase and, hence, water bills would be likely to increase. The nuance is whether the costs of fixing a damaged supply pipe charged solely to the property owner with the supply pipe issue or socialised across all water bill payers.

20. Of the alternative options above, which is your preferred? Please explain why or if you have other ideas.

The necessary evidence is not provided in the document.

21. What other options are available to reduce leakage from customer supply pipes?

Before considering the options for reducing leakage, there is a need to consider the cost of the water from leaks. Leaks should only be addressed when the value of the water lost or damage caused, exceeds the cost of addressing the leaks. One presumes that leaking water will feed back into the water cycle and so might not be truly lost, i.e. it may seep back into an aquifer. In this instance, one might think the real cost of the leak is primarily the cost of treating and transporting the water that leaks.

22. What are the main barriers to changing behaviours to reduce personal water use? Please rank your top three options by order of importance:

We believe the top three barriers to changing behaviours towards reducing personal water use are:

1. Insufficient information about personal water usage
2. Lack of financial incentive (we note that 'investment in more water efficient equipment is prohibitively expensive' could also be interpreted as a lack of financial incentive.)

3. Insufficient information about water scarcity

The options chosen above suggest the clear need for information-based interventions to be carried out in the UK water sector. First, UK water consumers generally lack knowledge on water resources, their own water consumption and tariffs. As summarised in Lu et al. (2019), the low level of engagement may be due to: (i) the UK having a temperate climate and is not typically perceived as drought-prone; (ii) water bills are typically small relative to household income and thus attract little attention; (iii) many households have an unmetered water supply. This context suggests both the need and the scope for households to become more water-efficient through becoming better informed and prompted to act.

Despite the success of behavioural interventions in other locations and their potential cost-effectiveness, there is little UK evidence involving robust empirical studies. Often there is a lack of understanding around the need to distinguish between different elements of interventions and their respective effects in water conservation in the UK. A surprisingly small number of projects sought to quantify the contribution of information provision/communication towards in terms of water savings. For the very few projects that intended to capture these effects, weak design and the practical obstacle of a lack of metering prevented robust evaluations (Lu, 2019).

Further randomised control trials of behavioural interventions that provide households with the necessary information to use water more wisely and that seek to assess the cost-effectiveness of information provision should be a research priority. A robust evidence base should be established that covers topics including the conservation effects of different information types; how persistent these effects are; how the effects vary across households with different water consumption levels and socioeconomic characteristics; and how outcomes vary according to the organisation providing/endorsing the information and the communication channel used.

23. Which organisation(s) (if any) should communicate about how to reduce personal water use? Please select all that apply.

We need different levels of granularity and specificity to make information-based interventions effective. That is, an appropriate interplay needs to be established between highlighting areas of national significance and using local relevance and sensitivities to engage consumers with social norms and everyday water conservation practices. Sao Paulo's water conservation communication was very effective, primarily because SABESP (the water company) received strong support from the city's Bishop and Sao Paulo is an overwhelmingly catholic state. At the recommendation of the Bishop, all the priests spoke about the importance of water conservation in numerous Sunday sermons.

24. If there are any further matters that you would like to raise or any further information that you would like to provide in relation to measures to reduce personal water use, please give details here.

There is a lack of empirical evidence and sound peer-reviewed academic research on water consumption and water conservation in the UK.

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