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https://committees.parliament.uk/call-for-evidence/264/decarbonising-heat-in-homes/

Dear BEIS Inquiry Team

BEIS Inquiry - Decarbonising Heat in Homes

Please find below the Waterwise submission in respect of the Inquiry into Decarbonising Heat in Homes

Who is Waterwise

Waterwise was founded in 2005 and is the leading authority on water efficiency in the UK. We are an independent, not-for-profit organisation, receiving funding from supporters across and beyond the water sector and wider sponsorship and research projects. Our vision is that water will be used wisely, every day, everywhere.

Our primary interest in this inquiry is in relation to the potential contribution of greater water efficiency to decarbonising heat in homes and achieving net zero.

There needs to be greater integration of water and energy efficiency in existing and new residential properties.

A 5% reduction in household water use would deliver greater reductions in residential carbon emissions than the total reduction seen in this sector in 2018-19 or 2017-18.

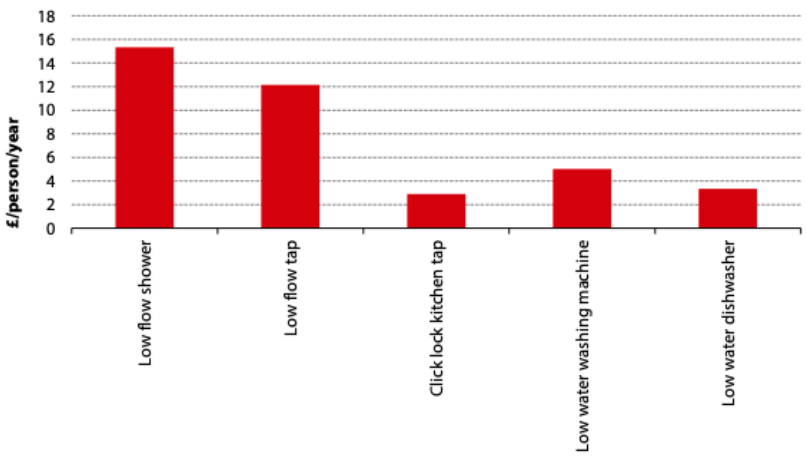
We strongly believe that greater water efficiency can play a vital role in helping reduce the carbon footprint of homes in the short to medium term (between 2020 and the 2030s/2040s) before home energy use is fully decarbonised. We urge the committee to recommend joined-up action by the government on energy and water efficiency, including as part of the Government's 'Buildings and Heat Strategy".

There is a clear link between energy, carbon and water efficiency in our homes

Better linking of energy efficiency and water efficiency can deliver significant benefits given the relationship between the two. Of all the CO2 emissions in the UK, around 6% are from water use[1] with 89% of this coming from heating water in our homes. Around 20% of a typical household gas bill is due to heating water in the home[2]. **Reducing water consumption reduces energy use, carbon emissions and household bills as well as improving resilience to drought**.

The Committee on Climate Change highlighted the link between energy and water efficiency in residential properties in their 2019 report UK Housing: Fit for the Future?[3] including setting out the energy bill saving that water efficiency products in the home can achieve (see figure below) and highlighting that hot water demand accounts for 40% of energy used in a 'Part L' semi-detached house

Figure 2.3. Estimated energy bill savings from reduced water use



Source: Wood Plc et al. for the CCC (2019) *Updating an assessment of the costs and benefits of low-regret climate change adaptation options in the residential buildings sector.*

Saving water saves carbon

Artesia in their 2019 work for Water UK[4] looking at water demand reduction pathways calculated that at a per capita water consumption of 138 litres per person per day the total carbon emission per household per day due to water use is around 2.64 kgCO2e/prop/day (around 1 tonne CO2e/prop/year).

This 2.64 kgCO2e/prop/day figure is based on water delivered to the home (0.12 kg); water centrally heated in home 1.30kg); water heated by electric showers (0.78 kg); washing

[1] https://energysavingtrust.org.uk/policy-research/home-water
[2] https://energysavingtrust.org.uk/home-energy-efficiency/saving-water
[3] https://www.theccc.org.uk/wp-content/uploads/2019/02/UK-housing-Fit-for-the-future-CCC-2019.pdf
[4] https://www.water.org.uk/wp-content/uploads/2019/12/Water-UK-Research-on-reducing-water-use.pdf

machine (0.26 kg); dishwasher (0.16kg); wastewater treated (0.05 kg). No allowance is made for grid decarbonisation or alternative domestic heating technology (e.g. heat pumps).

The table shows the carbon emissions savings achieved as water consumption in the home is reduced. On this basis, even a very modest 5-6% reduction in water consumption could deliver around 50 kgCO2 saving per household in a year or 1.4 MtCO2e per year based on 27.8 million households in the UK[5]

PCC (l/h/d)	Carbon emissions (kg CO2e)
138	2.64
130	2.51
120	2.34
110	2.19
100	2.10
90	1.87
82	1.74

Saving water saves a lot of carbon!
To put these savings into context the 1.4 MtCO2e emissions saving that could be achieved with a 5% reduction in domestic water consumption can be compared with the 1.2 Mt decrease in total residential emissions between 2018 and 2019[6] or the 1.0 Mt decrease in residential emissions the previous year. Reducing domestic consumption by around 15% would deliver a greater reduction in annual carbon emissions than the water sector currently emits through its own operations each year.

Trials in the UK have demonstrated that water saving campaigns can deliver an 8% reduction in consumption in a single year by changing people's habits[7].

In work for Waterwise on water efficiency labelling of products the Energy Savings Trust calculated that fitting and use of more water efficient products could save over 1,600 Ml/d of water by 2045, reducing PCC by over 25 lppd; household energy and water bills in England by £36 billion and cutting emissions by over 50 MtCO2e[8]. A similar water saving scheme in place in Australia since 2005 had already reduced household emissions by > 11 MtCO2e.

We strongly believe that water efficiency needs to be explicitly considered in the Buildings and Heat Strategy as a means of helping reduce the carbon footprint of our homes, particularly in the short to medium term while energy supplies are decarbonised.

Regards

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[5] https://www.ons.gov.uk/releases/familiesandhouseholdsintheuk2019
[6] https://UK_greenhouse_gas_emissions_provisional_figures_statistical_release.pdf
[7] https://www.advizzo.com/portfolio/anglian-water-case-study/
[8] https://waterwise.org.uk/knowledge-base/water-labelling-phase-2-project-technical-report/