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Reducing domestic water use: learning from everyday routines:
A briefing for policy makers and innovators

Key messages:

- Greenhouse gas emissions associated with hot water use in the home are substantial, but often overlooked in pathways to achieving climate change mitigation targets.
- Understanding routines – how they vary and how they change – can support policy and intervention.
- Efforts to reduce demand can be informed by learning from people with experience with different water systems, restricted water supplies or water shortages.
- Contemporary social and cultural trends, for example, home and garden aesthetics, can reveal emerging demand shifts, and open potential opportunities to reduce long-term demand.
- Re-designing bathroom infrastructures with a focus on the user experience can enable comfortable, sustainable bathing practices.

Centre for **Climate Change** and **Social Transformations**

CAST is a global hub for understanding the systemic and society-wide transformations that are required to address climate change. Based at the University of Bath, our additional core partners are Cardiff University, the University of East Anglia, the University of York, the University of Manchester and the charity Climate Outreach.

Introduction

Domestic water use accounts for 6% of the UK's total carbon dioxide emissions[1]. Energy use associated with heating water for showering, bathing, laundry, cleaning and other purposes is the second highest in homes, only exceeded by energy use for space heating. Substantial emissions are also associated with water treatment. Reducing domestic water demand could therefore make a considerable contribution toward reaching the UK Government's climate change mitigation targets.

This briefing note explores how insights from everyday life – particularly from research that investigates the diversity and complexity of people's ordinary patterns of water use – can support impactful, systemic changes to reduce water demand and its associated energy use. Current policy centres on improving the efficiency of existing infrastructures, such as with low-flow shower heads, or encouraging voluntary behaviour change through educational campaigns. However, placing responsibility with individuals to act based on information would require unprecedented behaviour change to have an impact at the scale and pace required to meet climate change mitigation objectives[2].

Findings

Learning from everyday routines

Everyday water use is habitual, occurring as people pursue a range of objectives such as personal hygiene, cooking or gardening. Water is not used for the sake of using water: its use is shaped by a variety of factors beyond personal preference such as social norms, cultures and technologies[3].

Interventions designed to work with cultural and technological developments can be powerful. They avoid being dependent on millions of individuals making deliberate changes point of water use and instead encourage social change by, for example, shifting ideals of aesthetics and cleanliness. In doing so, sustainable water use becomes normalised and embedded in everyday routines.

Technique 1: Learning from communities living with different water infrastructures, policies and experiences of scarcity

Consumption patterns are shaped by infrastructure conditions, homes, experiences of water scarcity (or abundance), cultural norms and social expectations. People have diverse experiences that impact their water use and can inform demand management, helping to understand how people respond when water is limited or how previous experiences enable (and resist) water conservation practices.

The experiences of people who have lived with different types of water infrastructures (e.g., water tanks, wells, rainwater harvesting), policy (e.g., time-limited access) and climatic impacts (e.g., high temperatures, interruptions to water supply or shortages) can help us learn about the social dimensions of water demand in changing contexts.

Findings

Example 1: Pre-migration and post-migration patterns of water use

Pre- and post-migration patterns of water use, particularly when moving from low to high-resource consumption countries is a way of observing how water consumption needs are met across changing circumstances.

Initial findings from interviews with 15 householders in England who have migrated from water-scarce countries show a range of adaptive practices for cleaning, laundering, and bathing with less water, including domestic reuse, and partial-body bathing. However, non-negotiable use patterns were observed across contexts, such as frequent (daily) laundering with infants and bathing for prayer.

Example 2: Off-grid homes - liveaboard houseboat dwellers in the UK

Off-grid homes provide insights into daily life without the convenience and availability of modern water supply systems, often involving some degree of full, or partial, water (and energy) self-sufficiency[4]. Decentralised water system use is currently underexplored in the Global North as part of water demand management[5]. Liveaboard houseboats provide one example as many inhabitants are reliant on a self-managed domestic water tank system.

Ongoing research with 14 off-grid houseboat dwellers in England has found that daily consumption patterns are reduced across all activities from bathing to cleaning and laundering.

Image 1: Researcher's own: off-grid liveaboard dwelling

Image 2: Researcher's own, off-grid liveaboard houseboater's 'click-to-use' shower

Technique 2: Exploring societal trends that impact water use

Water demand is often seen as a function of population growth and technological efficiency, but this doesn't capture the influence of wider societal trends. For example, changes in bathroom design or gardening styles influence everyday water use. Over time, new trends emerge, while some persist and others disappear, with direct consequences for how, when and how much water is used.

Futures-oriented techniques offer useful frameworks to identify emerging societal trends and understand their influence on demand – for example:

- Horizon scanning involves systematically scanning relevant sources of content, such as websites or media, to identify signals that could indicate changes in the way that certain everyday practices are undertaken. These signals include cultural developments, political sentiments or emergent aesthetic fashions, and can be used to anticipate potential future shifts in demand.
- Participatory scenario creation is a technique that engages stakeholders from diverse backgrounds to co-create explorative low-carbon future scenarios.
- Backcasting, which may also be participatory, uses a preferable future scenario as the starting point from which to create deliberate policy and innovation pathways between today and the preferable future scenario[6].

Example 3: Low-maintenance gardening trends

Undertaking a horizon-scanning exercise of popular gardening online gardening websites indicates an emerging trend in low-maintenance gardening styles. For example, 'lazy lawns' is a trend which encourages restricted mowing practices, allowing grass to grow longer, increasing resistance to dry spells and encouraging biodiversity. Xeriscaping, meanwhile, is a landscaping style which utilises drought-tolerant plants and efficient irrigation techniques to create gardens that require minimal water input compared to traditional planting. Both trends curb hosepipe watering, which can use 16 litres of drinking water for every minute they are used[7].

Image 3: 'Lazy lawn' Photo by Stephan Eickschen on Unsplash

Technique 3: Harnessing practice-oriented design to enable sustainable water consumption

Practice-oriented design examines what people *do* (their daily habits), with a focus on homes and everyday routines. By emphasising end-users and their practices, practice-oriented design engages empathetically with peoples' needs, aspirations, habits and routines. In doing so, practice-oriented design can produce novel outputs, fostering sustainable practices that are both usable and desirable[8].

Example 4: Sustainable bathing inspired by practice-oriented design

Researchers in the Netherlands[9] used practice-oriented design to create a prototype intervention that uses up to 90% less warm water than a traditional shower. 'Splash' introduces equipment into the bathroom space that detaches bathing from flowing water and enables comfortable partial-body bathing to reduce water use. Design interventions such as this resist the normalisation of water intensive practices.

Image 4: 'Splash' a less water-intensive bathing practice by Kuijer and De Jong (2011)

Conclusion

Interventions informed by what people do, rather than what they think, are powerful tools to reduce demand. Crucially, they don't rely on individuals to make a conscious decision to reduce consumption at the point that water is used. Harnessing insight from the three techniques explored in this briefing note can enable long-term and systemic changes in society's relationship with water.

Further reading

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References/Further reading:

- [1]Bond, A., & Hoolohan, C. (2021). Reducing emissions across the water system: investigating the role of domestic water demand in UK climate change mitigation.
- [2]Watson, M., Browne, A., Evans, D., Foden, M., Hoolohan, C., Sharp, L., (2020). Challenges and opportunities for re-framing resource use policy with practice theories: The change points approach. Global Environmental Change 62, 102072. https://doi.org/10.1016/j.gloenvcha.2020.102072
- [3]Cahill J., Hoolohan, C. and Browne, A., (2024). Social practice theory and household water demand: A review of literature and research evidence. WIRES Water https://doi.org/10.1002/wat2.1719
- [4]Pickerill, J. (2015). 'Cold comfort? Reconceiving the practices of bathing in British self-build eco-homes' Annals of the Association of American Geographers, 105(5), pp.1061-1077.
- [5]Wilkinson, C. and Gibbs, L. (2021). 'Beyond mains water: a survey of households that are self-sufficient for water in regional Australia', Australasian Journal of Environmental Management, 28(2), pp.149-168.
- [6]Davies, A.R., Doyle, R., (2015). Transforming Household Consumption: From Backcasting to HomeLabs Experiments. Annals of the Association of American Geographers 105, 425–436. https://doi.org/10.1080/00045608.2014.1000948
- [7]https://www.waterwise.org.uk/save-water/
- [8]Steen, M., Kuijt-Evers, L., (2007). Early user involvement in research and design projects - A review of methods and practices. 23rd EGOS Colloquium (European Group for Organizational Studies).
- [9]Kuijer, L., De Jong, A.M., (2011). Practice theory and human-centered design: 1st Nordic Design Research Conference. Nordes.

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