

Response to UK Waterwise consultation on 'A Water Efficiency Strategy for the UK' – November 2016

The responses to the consultation questions set out below draw on independent academic research carried out in the context of the Natural Environment Research Council (NERC) funded work on water scarcity and drought, the MaRIUS project (<http://www.mariusdroughtproject.org/>). We gratefully acknowledge funding from NERC for the research that has informed the responses to UK Waterwise's consultation (Grant No. NE/L010364/1).

Q1. Do you think that water scarcity is a serious threat to the UK?

The combined natural science and social science elements of the NERC funded MaRIUS project provide further evidence of an increasingly significant risk of more frequent and potentially more severe droughts and water scarcity in the UK. This view is based on the climate and water resources modelling work undertaken by the project as well as its collection and analysis of data of the perceptions of the risk of drought of a range of professional stakeholders in water resource management in the UK, such as water resource planners in water companies, staff in the EA, NRW and SEPA, as well as consultants, and citizens in specific regions, including the Thames basin.

The following publications arising from the MaRIUS project address the potential risks and impact of drought and water scarcity in the UK:

Jaume Freire-Gonzalez, Christopher Decker, Jim W.Hall, 'The Economic Impacts of Droughts: A Framework for Analysis', *Ecological Economics*, 132 (2017) 196-204, 196.

Edoardo Borgomeo, Mohammad Mortazavi-Naeini, Jim W.Hall, Michael O'Sullivan, Tim Watson, 'Trading-off tolerable risk with climate change adaptation costs in wider supply systems', *Water Resources Research*, 52, 622-643, 628.

Q2. Do you think that there needs to be greater consideration given to the impacts of water scarcity and if so by whom?

In terms of economic impacts, a key conclusion of one strand of our research in the MaRIUS project is that greater consideration needs to be given to how water is managed and used both during a drought event, and over the long-term. This research has shown that different management choices and consumer behaviour can exacerbate or mitigate the impacts of water scarcity and drought, especially on farmers and the energy sector (Jaume Freire-Gonzalez, Christopher Decker, Jim W.Hall, 'The Economic Impacts of Droughts: A Framework for Analysis', *Ecological Economics*, 132 (2017) 196-204, 199).

There is a significant role also to be played by the public and third sector in the UK, including local councils and housing associations in planning for water efficiency. It appears that more

could be done e.g. through water company and Housing Association partnerships for increasing water savings by Housing Association tenants.¹

Research in relation to historic droughts, such as the 1976 drought, shows that significant savings were achieved during that drought e.g. by hospitals.

Moreover, according to the precautionary principle which can be relied upon by English courts in order to review administrative decision-making², such as that of local authorities, regulatory agencies, i.e. the EA and Ofwat, incomplete scientific evidence about the impacts of drought and water scarcity may not be a bar to public bodies interpreting widely their legal duties under various legislative provisions to promote water efficiency.

Another key finding of research for the MaRIUS project is that public and community attitudes to drought and water scarcity can be important in terms of the willingness of consumers to accept supply shortages or disruptions. Many individuals in England and Wales are in particular concerned with the impacts of flooding.

Q3. Do you think that increased water efficiency is a legitimate response to the threat of water scarcity?

Increased water efficiency is likely to be perceived as more legitimate than the imposition of temporary water use bans or more severe water supply restrictions during drought. Social science research has counselled caution about developing a 'blame culture' in which in particular individual domestic water customers are perceived as a key source of water scarcity.³ Partnership approaches between public sector, private water companies and the third sector which seek to develop structural approaches to reducing water scarcity are likely to be considered as some of the most legitimate responses, in the sense of being supported by a whole range of stakeholders and as justified by transparent, co-operative decision-making by a range of key stakeholders.

It is also important to be aware that the economic and resource use effects of water efficiency are largely unexplored. There is a potential risk that efficiency improvements could lead to a greater use of the resource, leading to a 'rebound effect' as has been seen in energy economics (See Khazzoom, J.D., 1980. Economic implications of mandated efficiency in standards for household appliances. *Energy Journal* 1, 21–40; Greening, A., Greene, D.L., Difiglio, C., 2000. Energy efficiency –consumption and the rebound effect– a survey. *Energy Policy* 28, 389-401; Freire-González, J., 2011b. Methods to empirically estimate direct and indirect rebound effect of energy-saving technological changes in households. *Ecol. Modell.* 223(1), 32–40).

¹ Personal communication to Bettina Lange from water resource manager in water company x. Social Science research for the MaRIUS project provides anonymity for interviewees, and they are therefore identified, e.g. as 'x'.

² Elizabeth Fisher, Bettina Lange and Eloise Scotford, *Environmental Law: Text, Cases and Materials* (2013), Oxford, Oxford University Press, 434.

³ Rebecca Pearce, Suraje Dessai, Stewart Barr, 'Re-Framing Environmental Social Science Research for Sustainable Water Management in a Changing Climate', *Water Resource Management* (2013), 27, 959-979.

Q4. How can we better integrate water and energy efficiency programmes?

For example, through the consideration of joint subsidy schemes. The UK government is currently promoting a range of home energy efficiency measures, e.g. home insulation, which may be coupled with water efficiency measures.

As recognised in the consultation, these efforts are likely to be aided by developments in Information Technology which should allow consumers to have greater access to information about their consumption levels, and therefore potentially empower them to be in control of consumption.

Q5. How can we better measure and monitor best practice water efficiency in the UK? Is per capita consumption the best indicator?

While per capita consumption is a useful indicator, it may also turn into a plank in the building of a 'blame culture' (Pearce, Dessai & Barr, referred to above) and needs to be complemented by the assessment of water footprints, including virtual water use, of entire sectors, e.g. the domestic sector, energy sector, agricultural sector, pulp and paper sector as well as food and drinks manufacturing sector and the local authority sector.

Sector specific measurements of water consumption could then inform performance targets e.g. for local authorities and these, in turn, could be linked to local authority climate change adaptation strategies, including water risk strategies, that address in an integrated way both flooding and drought risk at local council level.

Q7. What other indicators or approaches could be used to help monitor progress or set targets towards greater levels of water efficiency?

Indicators:

There is potential for benchmarking different water providers in terms of relative water efficiency. This comparative approach can act as a spur for improvements, and is likely to be more feasible as competition is rolled out since consumers can choose to be supplied by the most water efficient suppliers.

Approaches:

Local authorities in the UK are already carrying out very important work in relation to recycling which is leading to behaviour change, such as a reduction in household waste. There may be scope for local authorities to combine waste reduction and water saving messages, e.g. also in relation to reducing food waste where food production is associated with particular high water use.

Question 8: Do you agree with our definition and vision for water efficiency in the UK?

In principle yes, though the vision statement of a UK in which all ‘people, homes and businesses’ are water efficient seems to neglect the role of public sector organizations, such as schools, universities, council buildings and hospitals.

Q9: Do you agree with the recommendations for building a water saving culture?

In principle, yes. Building a water saving culture will also be facilitated by greater awareness of the water consumption entailed in the production of a range of goods and products, not just white good household appliances. There may be scope for integrating water consumption labelling, including the use of virtual water, of food products. This would avoid consumers being bombarded with various types of different labels, e.g. organic credentials, calorific value of food etc. and would integrate water efficiency information into labelling of food products.

Including and addressing water efficiency in the third sector and private sector is another important step. People spend a considerable amount of time at their workplace where they use water for making coffee/tea, using the toilet, showering, cleaning and to an even greater proportion in production processes. A water saving culture should therefore include a link between water companies’ water efficiency strategies, the third and private sector and private customers. If people experience practical examples of water efficiency at their workplace they might apply water saving recommendations at home and *vice versa*.

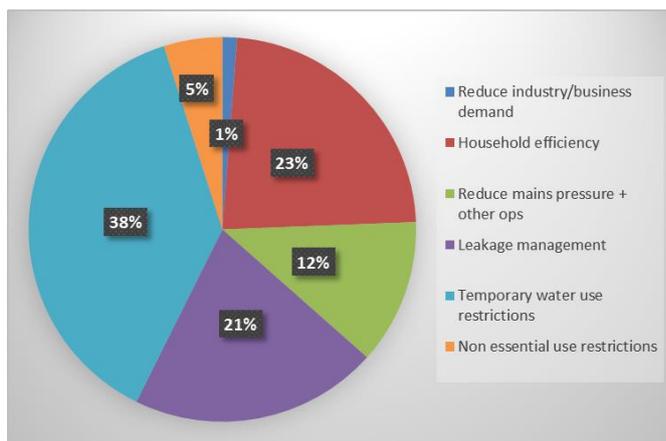


Figure 1: Distribution of demand side options among water companies in England

Source: Dr. Christina Cook et al. *Drought Planning Primer*, forthcoming publication from the MaRIUS project.

In Autumn 2014 Dr. Christina Cook reviewed the most recent Drought Plans of nineteen water

companies⁴ and sorted drought management options referenced in the plans into the Environment Agency 2011 Drought Guidance categories. Figure 1 shows that temporary water use restrictions (both TUBs and ordinary drought orders) were the most frequently stated option to reduce the demand for water, followed by household efficiency measures. Moreover, Figure 1 shows that there is scope for water companies to broaden the range of drought management options that they consider as preventative measures, apart from the reliance on temporary water use restrictions during drought.

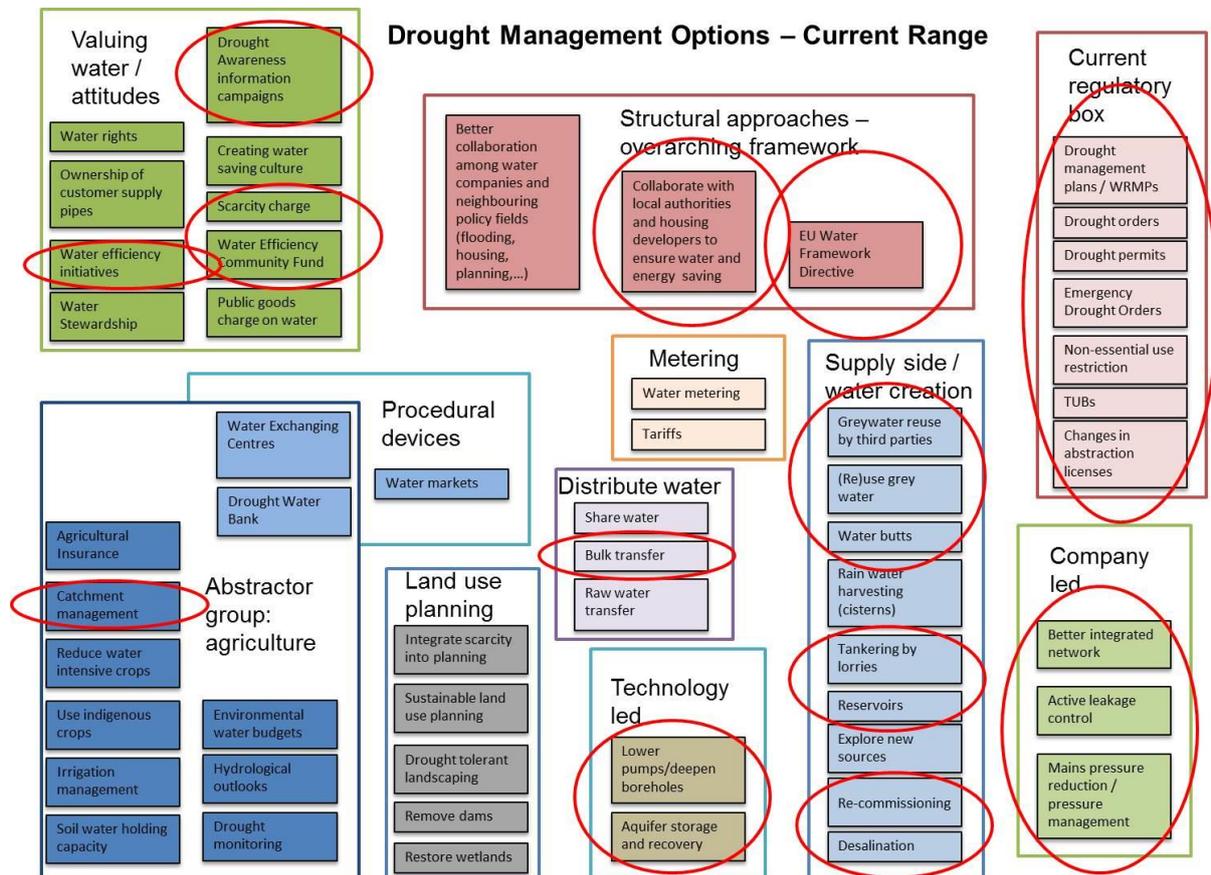


Figure 2: Drought and water scarcity management options – possible vs. current range (red circles) in the UK (Source: Dr. Kevin Grecksch, MaRIUS project researcher)

In 2016, Dr. Kevin Grecksch analysed national and international academic and grey literature on drought and water scarcity management and identified a non-exhaustive list of key drought management options from other countries, especially Spain, Australia and the United States (California) that are more pro-active rather than reactive, and which highlight that currently employed drought management options in the UK rely significantly on restricting water use in times of drought and are therefore, with the exception of elements of drought plans and water resources management plans, potentially too much focused on thinking about water scarcity in the context of *actual drought events*. International literature shows that proactive measures that focus on cross-sectoral collaboration, certain abstractor groups,

⁴ Affinity, Anglian, Bristol, Cambridge, Cholderton & District, Essex and Suffolk, Northumbrian, Portsmouth, Sembcorp Bournemouth, Severn Trent, South Staffordshire, South West, Southeast Water, Southern, Sutton and East Surrey, Thames, United Utilities, Wessex, Yorkshire.

such as farmers, as well as options that put emphasis on the *value of water* are the way forward in enhancing resilience to the increased risk of drought and water scarcity.

Furthermore, an analysis of all current English and Welsh Water Companies' Water Resource Management Plans (WRMP) by Dr. Kevin Grecksch explored themes and patterns with regard to current drought and water scarcity management practice. Against the background of internationally available drought management options, the analysis shows that while some water companies introduce in their WRMPs innovative demand management options at the 'appraisal of options' stage, they later discard these options. Hence the majority of water companies apply the 'standard' set of options ("current regulatory box", Figure 2) and hardly push for innovation. These missed opportunities, apart from notable exceptions such as for instance WRSE (Water Resources in the South East), include better collaboration with neighbouring water companies, neighbouring policy sectors such as agriculture or for example collaborating with energy suppliers, energy saving campaigns or housing associations in order to reduce the overall water and energy demand.

Q10: How can we bring together partnerships to deliver this wider level of awareness?

Our analysis of the existing Water Resource Management Plans of water companies in England and Wales shows that a number of water companies are currently engaging in partnerships with local authorities and housing associations in order to reduce demand for water in these organisations, but a significant number of water companies do not engage in such partnerships. There is thus scope to consider expanding such partnerships and to learn from the sector's 'best practice' examples.

A further general issue we have identified in our research is the absence of a specific cross-sectoral body that shares information and coordinates different initiatives across water supply areas.

Q13: How can we ensure that non-regulated members (e.g. TPIs) of the water sector help to deliver water efficiency?

There may be no arguments in principle against bringing TPIs indirectly into the framework of regulation. For instance, by reformulating Section 93 A of the Water Industry Act 1991.

Section 93 A Water Industry Act 1991 currently reads:

93A Duty to promote the efficient use of water.

(1) It shall be the duty of every water undertaker **[F1 or licensed water supplier]** to promote the efficient use of water by its customers.

(2) The duty of a water undertaker **[F1 or licensed water supplier]** under this section shall be enforceable under section 18 above—

(a) by the Secretary of State; or

(b)with the consent of or in accordance with a general authorisation given by the Secretary of State, by the Director.

A new sub-section 3 could be added:

(3) Every water undertaker [or licensed water supplier] shall take reasonable steps to ensure TPIs promote the efficient use of water by their customers.

What those 'reasonable steps' are could be further fleshed out through e.g. voluntary Codes of Practice which would also help to disseminate knowledge about best practice, also on the basis of comparable international experience, in the sector.

A proposal to bring TPIs indirectly into the ambit of legal regulation may also be considered in the light of wider insights gained from other sectors, such as the energy sector where experience suggests that some TPIs do not actually assist in efficiency and conservation efforts.

Q18: Should water companies incentivise the uptake of water efficient devices and fittings through rebates and other financial levers?

Yes, and it would be important for water companies *to integrate* strategies that provide e.g. rebates on the standing charge imposed on domestic and industrial customers in response to the fitting of water efficient appliances with tariff incentives for reductions in metered water use.

Moreover, it is important that the wider economic regulatory framework also recognises the importance of water efficiency and provides appropriate incentives for water companies to fund such rebates.

Q25: Do you agree with the recommendations for improving water efficiency in cities and urban developments?

Yes, the idea of the 'city as a catchment' as also tried and tested in Australia, is a truly innovative concept. It may be possible to develop 'Catchment Abstraction Management Strategies' (CAMS) - currently developed by the Environment Agency for a number of natural catchments – also for large conurbations in the UK that are subject to water stress. The success of such urban catchment planning may also depend on taking an integrated view. This would entail to include - as 'abstractors' and 'dischargers' - urban industrial and service sector businesses, as well as public sector organizations, in accounts of water balances in the city catchment. The development of '**City CAMS**' may benefit from the existence of established local government political participation structures, e.g. local councils, housing residents' associations etc., which can facilitate wide stakeholder involvement in the development of and support for such city CAMS. Moreover, large business and public sector organizations in cities may already have significant data about their water use and discharge which could further facilitate the development of city CAMS.

The current duty imposed upon public authorities under S. 83 Water Act 2003 to ‘conserve water’ could be reformed.

The current duty reads as follows and the suggestion for change is inserted with red ‘track change’:

S. 83 Water Act 2003: Efficient water use by ~~Water conservation by~~ public authorities

In line with the Waterwise strategy ‘conservation of water’ is narrower than water efficiency, and the increased challenge of water scarcity requires more structural, further reaching water efficiency, not just water conservation measures.

(1) In exercising its functions and conducting its affairs, each public authority shall take into account, where relevant, the desirability of efficient use of water ~~conserving water~~ supplied or to be supplied to premises.

(2) In subsection (1), “public authority” means any of the following—

(a) a Minister of the Crown (within the meaning of the Ministers of the Crown Act 1975 (c. 26)),

(b) a Government department,

(c) the Assembly,

(d) a local authority (within the meaning of section 270(1) of the Local Government Act 1972 (c. 70)),

(e) a person holding an office—

(i) under the Crown,

(ii) created or continued in existence by a public general Act, or

(iii) the remuneration in respect of which is paid out of money provided by Parliament,

(f) a statutory undertaker (being any person who, by virtue of section 262 of the Town and Country Planning Act 1990 (c. 8) is or is deemed to be a statutory undertaker for any purpose), and

(g) any other public body of any description.

Again, a Code of Practice could flesh out principles of ‘efficient water use’ in the public sector context, considering e.g. procurement strategies.

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