Mobilising publics for resilient water management

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Introduction

This paper explores how one UK water utility mobilises publics to take action towards more resilient water management. It is the first substantial output of the 'mobilisation theme' of the five-year UK TWENTY65 project. The mobilisation theme seeks to map the way publics are mobilised to support resilient water management across the UK, while the focus of the wider project is disruptive interventions that might cause transformative change to water management. Our purpose in this paper is to establish the mobilisation theme's conceptual basis and to illustrate it via some preliminary results.

Historically, water supply, sewerage, drainage and flood risk management services have been delivered through investments in centralised physical infrastructures, with their care entrusted to engineering organisations which address challenges through technological innovation. Unprecedented contemporary challenges, related to climate change, rising environmental expectations, population growth, changes in consumption patterns and deteriorating infrastructures (e.g. Defra, 2017), mean it is increasingly viewed as too expensive (economically, environmentally or reputationally) for organisations to guarantee high quality water services through technocratic means alone (e.g. Sharp, 2017). In line with other areas of utility services, 'predict and provide' is critiqued in favour of more resilient service configurations involving the moderation of demand, the incorporation of expert publics, the better integration with natural systems, and the decentralised provision of some services. A transition towards more resilient water system is therefore widely advocated. Within the water arena, the rise of public engagement has for example been characterised as part of a shift away from technocratic expert-led water management structures towards a more inclusive approach that appreciates and values relevant water 'knowledges' possessed by a range of groups including scientists, practitioners and publics (Mackenzie *et al.*; 2012, Linton, 2014; Sofoulis, 2015). Such approaches recognise that

everyone's knowledge and actions contribute to system management, and together enhance resilience through offering a better warning of unanticipated system changes and increasing the ability to respond flexibly to unexpected shortage.

An important part of the advocated transition involves the increasingly active involvement of the public, which has been widely promoted in recent UK water policy (e.g. Defra, 2017; Ofwat, 2017a) One way through which this is achieved in practice is through organisations mobilising publics to take actions and effectively become mini-managers of the water system. These actions for example include saving water, avoiding disposing of fats oil and grease down the sink, volunteering to monitor stretches of rivers to report potential pollution incidents or community management and 'ownership' of a sustainable urban drainage scheme. These 'mobilisation initiatives' (we discuss this choice of term in more detail below) are effectively seeking to shift ideas about roles and responsibilities. Areas which had previously been seen as delegated to the governance organisation are now presented as involving some element of shared or distributed responsibility, and hence publics are 'responsibilised' in undertaking tasks previously the duty of another (e.g. Barnett *et al.,* 2008, Sofoulis, 2011) in the process of developing a more resilient approach to water management. Despite these changing ideas about the roles and responsibilities of publics in various forms of water management, little is known about the process and outcomes of water mobilisation initiatives that are delivered. As a consequence, critical learning and evaluations across cases, as well as within and between water governance organisations are prohibited. In light of the critical challenges facing the water sector, and in order to move towards more resilient systems, initiatives where publics have more active roles in delivering solutions are likely to become both more frequent and more ambitious. Drawing on four case study initiatives delivered by the UK water utility Northumbrian Water Group, the aim of this paper is hence to investigate the nature and extent of mobilisation schemes in terms of what benefits they deliver and for whom. Through this work, we begin to illustrate the benefits of enhancing our understanding related to mobilisation. In considering various formal and informal processes through which a wide range of 'publics' are encouraged to take action, 'mobilisation' acts as a lens to explore when and how publics are responsibilised by water organisations. In the next section, we discuss different types of public engagement processes in relation to UK water management as well as how 'mobilisation' relates to these forms of engagement and how the concept provides a novel analytical lens providing new understandings of transitions to a more resilient water management.

Public engagement and water

The literature related to public engagement and how it is applied in practice is vast and concepts such as public engagement, participation and behaviour change are used sometimes interchangeably. In this section we begin by discussing the term 'public'. We then define what we understand in relation to these different engagement processes and introduce the concept of mobilisation in more detail.

'The public' in discussions about water refers to those who use water and may (or may not!) have an interest in water services but generally have no direct financial interests in water

services, so are not shareholders. Public interests are not confined to the 'customer' focus on service quality and price, but also include issues of 'citizen' concerns such as water utilities' treatment of the environment, of local stakeholders like farmers, and their investment in assets to support future water services. In what follows, the term 'publics' rather than public is used to stress their plurality and diversity. Publics include the many individuals who may give little thought to water services, but also organised groups, such as those campaigning for cleaner rivers or biodiversity, who may have passionate views about how services are provided and managed. The existence of these groups highlight how water service interests are not always best understood through the binary division into 'publics' and ''organisations'. Instead, organised public groups can act as *intermediaries*, translating between (and potentially transforming) the interests they represent and the water organisation (Moss *et al.,* 2009).

Figure 1 summarises three dominant and interlinked processes of how publics are engaged in water management practices; *Participation*, *Mobilisation* and *Behaviour Change*.

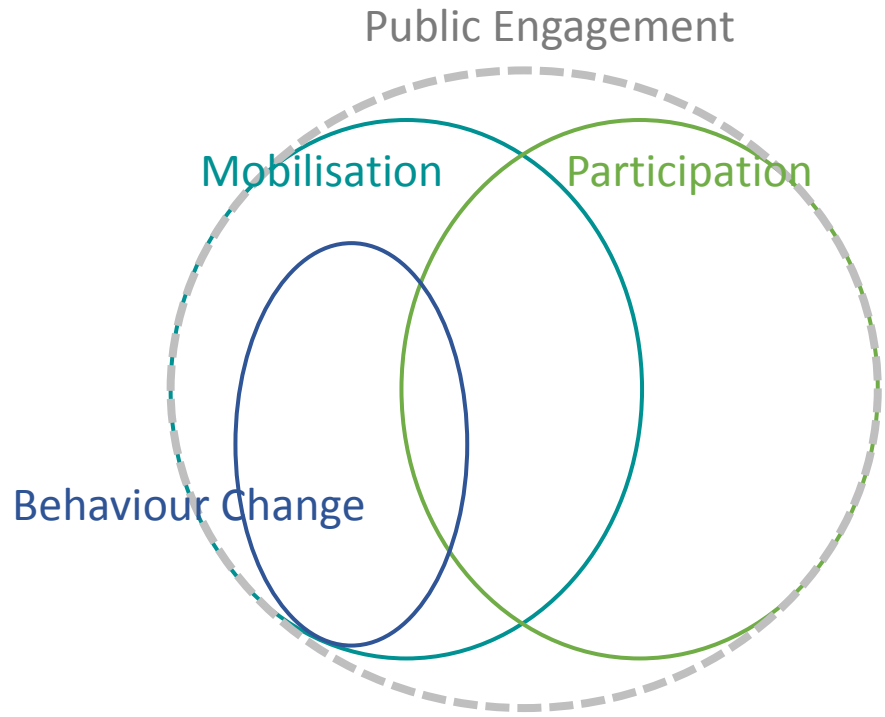

Figure 1: processes of public engagement and water

*Public engag*ement we define as all informal and formal processes of interactions between water governance organisations (such as utilities) and publics. It is a catch-all term and includes processes such as customer services that are not depicted on Figure 1. We use the term *participation,* to refer to formal interactions between governance organisations and

their publics where 'public concerns, needs, and values are incorporated into governmental and corporate decision making' (Creighton, 2005: 7). Ofwat's requirement that UK water utilities consult their customers as part of their price review process is an example of such participation, with 'companies listening to their customers to understand their preferences and priorities and reflecting them in all aspects of their business operations, including their business plans' (Ofwat, 2017b:24). Although important, these activities do not cover the occasions when the utility actively engages publics, seeking changes in their water-related practices. Previously described as 'Participation in Action' (Sharp and Connelly, 2002) and 'mobilising public action' (Sharp, 2017), we refer to these processes as 'mobilisation'. Mobilisation is similar to participation in that they both involve governance organisations interacting with publics, but whereas participation involves collecting public views to (potentially) influence a utilities' actions, mobilisation involves promoting changes in what the public do in support of a 'better' or more resilient water system. An important facet of this novel distinction is the recognition that participation and mobilisation are two forms of public engagement, and hence both contribute to the development of the utilities' relationships with their publics. Moreover, as is discussed in more detail below, effective mobilisation may depend on preceding or parallel processes of participation in which utilities listen to their publics and take their experiences and knowledges on board.

In this paper, we hence define water-related mobilisation as: *the various formal and informal processes through which 'publics' are responsibilised as legitimate targets of change in order to create a wider impact on the water management system.* Such mobilisations are often organised by water utilities, but other governance organisations may equally play a role. Environmental groups might mobilise publics to change their water practices, for example, asking citizens to save water or for farmers to manage their runoff to avoid pollution; equally, scientists might mobilise school children to collate and analyse water data in 'citizen science' projects.

Notwithstanding the novelty of the term mobilisation, many of the activities encompassed by this definition are already discussed in the literature, under the broad category of 'behaviour change'. Indeed, the use of behavioural psychology and economics to inform some interventions in relation to water has a long lineage (e.g. Aitken *et al.,* 1994; Von Vugt, 2001), and continues to this day (see for example the behavioural approaches discussed in the review work of Orr *et al.,* 2018). There are, however, two ways in which our meaning for the term 'mobilisation' is different than the category of activities usually referred to as 'behaviour change'. First, as depicted in Figure 1, there are some mobilisations which fall beyond the scope of behaviour change. Whilst behaviour change initiatives usually aim to use incentives, information and persuasion to reduce individuals' problematic activities, for example, spending too long in the shower or putting waste fat down the drain, the term mobilisation additionally includes less blaming requests to individuals to help with management activities traditionally assigned to water organisations. One example is the 'Water Rangers' scheme initiated by the UK water utility Northumbrian Water Group in which volunteers are trained to monitor watercourses to identify and report suspected pollution incidents. This initiative, which is further discussed below, enables more frequent monitoring of particular watercourses meaning that incidents can be identified earlier, but it also claims to create a feeling of ownership for people involved.

The second area of difference between 'mobilisation' and 'behaviour change' relates to the analytical objectives of the categories. As has been pointed out in well-rehearsed critiques from the social practice arena, analytical frameworks based on 'behaviour change' rely on the assumption that behaviours are 'chosen' by individuals, rather than constrained and influenced by structures, communities, norms and habits (Spurling *et al.,* 2013; Browne, 2015; Foden *et al.,* 2018). This puts the analytical focus on the individuals undertaking behaviours, and on whether and how changes are invoked, but ignores wider questions concerning the role and context of the activity. By developing the new nomenclature, 'mobilisation' it is possible to move beyond this individualistic focus and hence to open up a new set of understandings and analysis. These new opportunities apply at three different scales, that of the initiative, that of the governance organisation, and that of wider water governance, and are discussed in turn below.

Starting with the scale of the individual mobilisation initiative, as well as the questions pursued in behaviour change research concerning 'what change is achieved and how?', one important area of analysis explicit in our definition of mobilisation concerns whether and how responsibility for new water system activities could and should be distributed. Effectively mobilisations bring the established responsibilities of water systems into question. As analyst, it is important to avoid the (often unstated) 'user-blaming' normative assumption of behaviour change approaches that behaviours should change (Sofoulis, 2005; Evans, 2017); but it would be equally unhelpful to apply a blanket neo-liberal critique that mobilisation initiatives will only ever be a means of extracting profits. The concept of 'mobilisation' hence raises questions about responsibilities and makes them an object of study.

Moving to the scale of the initiating water governance organisation, an important novelty of focusing on mobilisation is the attention directed to the interventions' context, specifically to the relationships between the initiating organisation and its publics, and to other initiatives which preceded, ran parallel or followed it. Questions raised at this scale include: why the mobilisation was initiated; who was selected as its targets; why the mobilisation occurred when it did; and, whether and how the initiating organisation learnt from it. Questions are also raised concerning: do those initiating one form of mobilisation communicate with other mobilisers in their organisation; and, are there mechanisms through which learning from one mobilisation process is shared and available to others developing later or related initiatives? In this respect the term 'mobilisation' switches the analytical focus from the behaviours and those who undertake them to the interventions, those who initiated them, and to the function played by a mobilisation intervention within the context of an organisations' broader strategy and actions.

Similar issues about the functioning and role of mobilisations arise at the broader societal scale in which the set of mobilisation initiatives arising from different organisations is studied together. By researching a wide set of 'mobilisations' across the UK water sector and in developing a taxonomy of the nature and extent of such initiatives our research project is aiming to enhance understandings of the pathways prioritised in order to support system change towards a long-term resilient and more sustainable water management. The taxonomy of initiatives specifically aims to aid exploration of the following questions: do mobilisations deliver benefits and for whom? Who initiates and who is being mobilised?

What water related issues are prioritised? How are publics responsibilised through mobilisation practices to support system change in the water sector? Hence, by using the term 'mobilisation' we are invoking a new conceptual and theoretical lens that sees mobilisation as one part of water governance which allows for new ways of understanding how public engagement processes support transitions in the water sector.

So, how does this understanding of different forms of water engagement sit within the existing literature? Characterising existing research on public engagement in the water sector is challenging, because it is spread across many different disciplines and utilises a variety of terminology. Even if we confine ourselves to one geographical unit such as the UK, we are aware of some strong streams of work relating to public engagement in the water sector in the context of wider governance processes (e.g. Bakker, 2004,2014), mobilisation in relation to water efficiency (Orr *et al.,* 2018) and water quality (Blackstock et al, 2010; Emery and Franks, 2012), largely framed as 'behaviour change'. In the somewhat separate field of flood risk management there is also considerable writing on mobilisation (Butler and Pigeon, 2011; Nye *et al.,* 2011 and Walker *et al.,* 2011) and also work on participation in research (e.g. Lane *et al*., 2013; Landström, *et al.*, 2011; Thaler and Priest, 2014) and flood histories (McEwan, 2017). Further, there is evidence that norms and expectations in relation to water engagements can differ between countries: this is brought home radically by comparing engagements in relation to flood risk management in the Netherland and the UK (Wesselink, 2016). Notwithstanding the large volume of literature crossing different disciplinary areas, it is clear that no existing studies are seeking to look at the wider set of initiatives that we are calling 'mobilisation'. As a consequence, we would argue that there are aspects of transitions to more resilient water management systems that are currently poorly understood. In this paper, we aim to address this gap by analysing such transitions drawing on the three scales outlined above, that of *the initiative*, that of *the water governance organisation* and that of *the wider water sector* to particularly address the following questions: How do mobilisations contribute to systems change in water? Who benefits from these changes and how is change evidenced? Who and how are publics being responsibilised in these processes? How far do extensive accounts of different initiatives such as a taxonomy enables critical engagement with the nature and extent of 'transformation' towards a more resilient and more engaged form of water management?

Methods and case studies

To address the questions identified above we draw on five initial semi-structured interviews conducted with water practitioners involved in mobilisation activities representing one UK water company: Northumbrian Water Group Ltd. The goal of the interviews was to understand the development and functioning of key mobilisation initiatives. In addition to the interviews, the initial analysis presented in this paper is underpinned by a document review of material associated with these initiatives, as well as relevant UK water policy documents.

Northumbrian Water Limited (NWL)

Northumbrian Water Limited (NWL) is one of ten combined Water and Sewerage Companies in England and Wales and operates both in the north east of England as Northumbrian Water (NW) and south east of England (supply only), under Essex & Suffolk Water (ESW). The utility, employs around 3000 people and supplies 4.4 million people with water across the two regions.

Case study mobilisation initiatives:

The four mobilisation schemes included in this paper address different water related challenges including water stress, water quality and sewer flooding and are therefore designed and carried out by different water functions or teams. The *Every Drop Counts* project is developed and administrated by the Water Efficiency Team with the aim to promote efficient use of water in a targeted town to bring down water bills, protect the environment and to safeguard the needs of future water demands. It takes a 'whole town approach' to promoting water efficiency, and targets two towns a year (one in the north and one in the south) with eight towns involved so far. Activities in targeted towns include water efficiency events, free water and energy saving visits to households by qualified plumbers who install water efficient devices alongside providing water efficiency advise, and activities in schools. The Catchments Team is responsible for developing and delivering *Pesti-wise*, which is a partnership scheme between the water utility and farmers or growers in a targeted catchment. The initiative was launched in 2015 to address rising pesticides levels in rivers and streams that are used for drinking water. The overall aim of the scheme is to reduce run-off from fields and farms to avoid high concentrations of pesticides entering water courses. To achieve this, the scheme offers various types of training on how to handle pesticides, grants for equipment for more precise pesticides application and infrastructure for improved handling of pesticides. To date, the scheme has partnered with around 120 farmers across five sub-catchments. *Rain-wise* and the *Water Rangers* scheme are both developed and delivered by the Corporate Communications team. Rain-wise is a partnership scheme between the utility and communities to manage the amount of surface water that enter the sewer network to reduce the risk of sewer flooding. The initiative has directly engaged over 400 people across 17 priority areas related to how publics can become more involved in co-creating solutions to sewer flooding. For example, publics have been encouraged to help through installing water butts (rain water harvesting) or considering not paving over gardens or using permeable materials for patios and drives. Finally, the Water Rangers scheme recruits and trains volunteers to patrol designated routes along rivers to spot and report on potential pollution incidents, fly tipping or blockages to rivers. The scheme currently involves 62 Water Ranger volunteers and 13 assistants (children and dogs) and since 2014, 235 issues have been reported.

Mobilising publics and water

Table 1 summarises outcomes from the interviews and documentary analysis in relation to why the mobilisation was initiated and occurred when it did; who the selected targets were;

and whether and how the initiating organisation learnt from the mobilisation process and how this learning was shared within and outside of the utility. In the rest of this section, we discuss these results in relation to the three scales of analysis introduced above. The aim is to provide a detailed understanding of how publics are mobilised to support change in the UK water sector. Effectively Table 1 is a first draft of a taxonomy of mobilisation initiatives across the UK water sector.

Table 1: summary of mobilisation interviews and document review outcomes

Mobilisation	**Every Drop Counts**	**Pesti-wise**	**Rain-wise**	**Water Rangers**
Issue	Water stress	Water quality	Sewer flooding	Water quality
Reason being initiated	Environmental driver (drought) and later on regulatory requirement	Regulatory requirement, economic driver	Engage communities to help preventing sewer flooding	Efficiency: Preventing and minimizing pollution risks; engaging communities on wider issues
Function	Water Efficiency	Catchments Team	Corporate Communications	Corporate Communications
Publics (type and number)	Citizens in targeted town (8 towns ~ 3000/town), schools (200/year)	Farmers in targeted catchments (~ 120 farmers)	Citizens in targeted location (17 communities ~ 400 people)	Volunteers: dog walkers, 'out and about people' (62 volunteers, 13 assistants)
Factors expected to motivate publics to be involved	Save money, environmental concerns, save water, 'do the right thing'	Grant funding, 'do the right thing'	Experienced sewer flooding, environmental awareness, can make a difference, curiosity	'give something back to community', protect water courses for future generations, health benefits
Expectations about the responsibility to be taken by the public	Social responsibility: Use water wisely – no unnecessary use, value water	follow best practice, 'water leaving their land shouldn't be in worse condition than when it entered'	Being aware of and understand impacts of your own action - for example when adding a patio	Being utility's 'eyes and ears', complete training course, patrol and report pollution (and other) problems along designated river stretches

Success and Learning	The whole town approach, water savings long-term Understand the non-engaged Reviewed and revised each year	Levels of engagement with farming community Increased awareness of impact of farming activities on water	Changed company's views on public engagement Project expansion: from plan to behaviour-change-campaign	235 issues reported since 2014, the difference that volunteers make in communities, that they are proud to be volunteering

The initiative

The four initiatives introduced above involve a diverse set of publics ranging from citizens of a targeted town, residents of a specific problem area, school children, gardeners, dog walkers, 'out and about people' to farmers. The primary reason for mobilising publics was to address a specific problem where public involvement was believed to make a difference: these problems related to water stress, sewer flooding, and water quality related issues. Publics were specifically encouraged to: be less wasteful in terms of water use; collect rainwater; consider permeable materials and water retaining plants in gardens; volunteer to patrol river banks to spot potential pollution incidents; and, managing or changing farming practices to reduce pesticide run-off. In most of the cases, the reason for addressing water related problems via mobilisation was due to the difficulty and/or the expense of addressing the issues by technical means. For example, the Pesti-wise scheme works with farmers to manage run-off in order to reduce the concentration of pesticides entering reservoirs and drinking water abstraction points. Removing pesticide residues from drinking water is sometimes impossible, or very expensive, so mobilising farmers to take action to manage their run-off 'at source' is more cost-effective, and in some circumstances, the only option for managing pesticide concentrations. A second example relates to managing sewer flooding as part of the Rain-wise scheme. Here publics are encouraged to help with managing their own and their community's risk of sewer flooding by reducing the quantity of water entering the sewer network by for example using less water, capturing rainwater, creating a rain garden that slows the water flow entering the sewer or using permeable materials for patios and drives. In this example, people are mobilised due to limitations of the existing infrastructure to cope with the amount of water entering the sewer network. In terms of the Water Rangers, the volunteers that signed up for the scheme to regularly patrol and monitor certain river stretches and report potential pollution has made it possible for more frequent assessments of water courses and hence a quicker response time in dealing with pollution and other incidents such as fly tipping or blockages. The water efficiency project Every Drop Counts is slightly different in that it promotes behaviour change ideas (water saving advice) alongside technical intervention in offering free home visits by a plumber to install water saving devices. In this respect, it is recognised that actively changing what people do is as important as promoting new technologies that do not necessarily require publics to change in any way. These ideas align with recent UK water policy that highlight a shift in the role of publics in claiming that people are not just passive consumers of water, but at the heart of the water chain because it is people's behaviour

that ‘drives demand for clean water – affecting the amount taken from the environment, treated and transported to their taps’ (as well as disposed of to the sewer) (Ofwat, 2017a:1).

Through these processes of mobilisations which could involve more ‘active participants’ publics are, albeit sometimes indirectly, responsibilised. In terms of the schemes analysed in this paper the roles and responsibilities might be seen as quite ‘gentle’; involvement in the initiatives are voluntary and for those that chose to take part, there is no real requirement to act or change any water practices. However, the interviews did highlight expectations of publics to ‘do the right thing’, follow best practice or in general being a ‘good citizen’. Although, gently expressed, these suggestions that publics ‘should’ act responsibly and care about their water practices could be problematic given the historic legacy of a technocratic water management with an infrastructure mostly hidden from view (Sofoulis, 2005; Sharp, 2017). In her paper, Sofoulis (2005) explains that because central public or private utilities (she refers to those as ‘Big Water’ (452)) have assumed responsibility for almost all management of water supply and sanitation services, the only responsibility left to the user is simply to use water and to pay the bill. Mobilisation processes however, seeks to shift some of these responsibilities back on to publics as a means to address challenges such as climate change related impacts and population growth, it would be naïve to assume that consumers would happily and easily take on this responsibility simply through awareness campaigns frequently advocated in water and environmental policy (e.g. Defra, 2011, Ofwat, 2011). Sofoulis (2005) provides an Australian example of the problematic changes to distribution of responsibilities in arguing that ‘[a]lthough Big Water’s infrastructure was created to supply drinking quality water to meet demands for cleanliness, flushing toilets, and green suburbs, in a ‘water crisis’, domestic users are suddenly saddled with blame for this situation’ [water shortage] (456), criticised for not understanding the details of the severe situation (even though access to information was not easy to access), and expected to make sacrifices particularly in not using any water in their gardens, ‘quintessential icons of Australian suburbia’ (456). Other critical voices have also noted that blaming individuals for large-scale problems might not be morally sound (Evans *et al.,* 2017). However, despite the parallel dominant role that ‘Big Water’ plays also in the UK water sector, individual responsibility is assumed to be a central element in bringing about change in water management. In the UK Government’s water strategy for England ‘Future Water’ (Defra, 2011), and in the economic regulator Ofwat’s “Push, Pull, Nudge” report (Ofwat, 2011), water efficiency is for example highlighted as a key area to secure a sustainable water service in the future and changes to individual practices are argued to be at the centre of such activities. These documents hope to promote more ‘sustainable behaviour’ through raising awareness, providing clear advice about water savings and through better understandings of consumers’ attitudes and behaviours in terms of water use. In Ofwat’s more recent publication the water consumer is made responsible for driving demand (Ofwat, 2017a), whereas the infrastructure, or the water management system were not assumed to have a role to play here. Shifts in roles and responsibilities in environmental policy do however extend further than consumption related issues to also include processes such as resilience, adaptation and risk management (Galaz, 2005; Welch, 2012; Begg *et al.,* 2016: Begg *et al.,* 2015) through which localities, communities and individuals increasingly hold ‘responsibility for ‘preparedness’, ‘response’ and ‘recovery’’ (Welch, 2012:20) for emergencies such as flooding (Begg *et al.,* 2016). However, there is some evidence of distributed responsibilities related to water efficiency measures in the UK (e.g. Browne et al,

2014). For example, in 'The government's strategic priorities and objectives for Ofwat' (Defra, 2017) it is argued that water companies are expected to further cut leakage and encourage their customers to 'use water efficiently' for example through metering, which communicates a shared responsibility between the service provider and its customers. However, policies shifting responsibilities to publics (e.g. Defra, 2008) tens to assume that understandings and 'responsible' actions can be easily stimulated through more information or incentives, for example through pricing. However, these assumptions may overestimate the agency of individuals to achieve change in their own lives, let alone to influence global change. The perceived extent of individual agency to achieve change was raised in the interviews. One important barrier noted by the utility staff was that many people already believe that they are doing what they can, that they for example already are water efficient, which may influence their motivation to take more responsibility or become more active participants in water management.

Issues of responsibilities within mobilisations are complex and do not only concern what publics are responsibilised for what purpose, but also how assumed responsibilities travel between utilities and their publics throughout the mobilisation initiative, and how these are communicated and debated. By applying our understanding of mobilisation, we seek to move the analysis from what people do and how they should change to instead focus on the intervention and in particular how the mobilisation initiative imagine publics to take responsibility, how processes of responsibilisation are negotiated through these processes to foster change and whether these are individualised (publics), distributed (publics and utilities) or both?

In relation to learning, all interviewees mentioned that the process of working together with publics were seen as one of the greatest areas of success, which was not necessarily an outcome originally considered. For example, the partnership with farmers to reduce pesticides run-off from fields, resulted in the utility being consulted about other water related issues experienced by the farmers, providing wider benefits not necessarily addressing the objectives of the particular scheme. As part of the Water Rangers scheme, the utility has worked with their volunteers to address other issues, not necessarily within the remit for water companies' responsibilities, such as beach cleans. In addition, getting to know their publics, was also seen as a huge benefit of the mobilisation process across the four initiatives. Hence, in combination with more direct benefits, processes of relationship building, not necessarily addressing isolated scheme objectives is an important area of success for mobilisation work. This emphasis on success in terms of relationships counter balances the finding that relatively other few tangible benefits were reported. It seems that providing evidence of direct benefits from processes involving publics is challenging – a few showed 'success' in terms of their stated outcomes of litres of water saved/household/day, number of pollution incidents reported, or reduction in pesticide levels). Hence, mobilisation processes don't necessarily fit narrow ideas of monitoring and evaluations of 'successful' programmes. It follows that if mobilisations are to become more frequent and an ambitious option for addressing large societal challenges such as climate change related impacts (more frequent droughts and floods), it is not only the schemes in themselves that need careful planning in terms of design, but the way in which the process and outcomes of mobilisations are evaluated and treated as 'evidence' in the wider water sector becomes an important and challenging consideration.

The water governance organisation

This scale of analysis focus on the utility and the interventions that have been prioritised to address water related issues and how they interlink and form part of the organisations broader strategy.

Although all four schemes shown in Table 1 mobilise publics to support change, the initiatives have very different legacies. The 'Every Drop Counts' (EDC) initiative originated from 20 years of water efficiency work carried out by Essex and Suffolk Water which started as a response to the 95-96 drought period in the UK. The reason for mobilising publics in the Southeast of England is hence primarily issue driven by the fact that water is scares in the region. Another key driver for an ambitious water efficiency programme such as the EDC, was the construction of a new large-scale drinking water reservoir. To justify the new reservoir to the regulator, it was important to demonstrate that demand was managed alongside new water supply assets. However, in the Northeast region, the main motivation for mobilising publics to reduce water consumption was to comply with regulation and in particular to meet water efficiency targets set by Ofwat. As a response to these, the water efficiency programme, previously focused on Northumbrian Water's southern supply area, was initiated also in the Northeast. Complying with regulation was also the key driver for the development of the Pest-Wise scheme. In this case, the water utility made an agreement with the UK Drinking Water Inspectorate (DWI) to address the issue of pesticides in drinking water. Since there is no effective treatment method for some of the pesticides once they enter the water, the only solution was to work with farmers and landowners and encourage practices that prohibited pesticides to enter the water in the first place. Similar to the EDC initiative, Rain-wise is issue driven in that the motivation for mobilising publics is primarily to address a particular, fairly local, problem, which in this case is sewer flooding. The initiative is 'younger' that the two previous programmes and initiated to pro-actively work with communities to reduce the risk of sewer flooding. Rain-wise was designed as a result of earlier work with communities, primarily informing the utility where problems of sewer flooding had already occurred. From these communications, it was highlighted that communities living in these areas prone to sewer flooding wanted to be more actively involved and be informed about what they could do to help in their local area. Although compliance with regulation might not have been the primary driver for the Rain-wise initiative, the utility does have targets that they need to comply with in terms of reducing sewer flooding, meaning that engaging with communities pro-actively, is likely to be a key justification for investing in the project. The final initiative, Water Rangers started to ensure a more efficient way of monitoring river stretches to prevent or minimise the impact from potential pollution incidents. The main communicated driver is to protect and enhance the local water environment, but similar to the Rain-wise scheme, the utility has responsibility to treat the polluted water which is expensive, meaning that addressing potential problems early with help from volunteers, could also generate cost savings to the utility.

That all schemes to some extent were initiated to address a particular regulatory requirement is perhaps not surprising. The water industry has a long legacy of being technocratic and compliance oriented (Speight, 2015). Also, in order to justify spending money that might in the end fall on the water customer, a 'solid' case needs to be put in

place in water utilities business plans, perhaps making regulatory compliance a key justification for any innovation. Although some of the schemes were initiated because there was no feasible technical solution to the problem, both EDC and Rain-wise demonstrated that more traditional measures (such as installing water efficient devices and using local data to improve flood risk modelling) in combination with public mobilisation would be more effective than a technical solution alone.

Specific publics were selected as 'mobilisation targets' because they lived or operated in an area facing particular water related challenges (water stress, sewer flooding, water quality issues) and all involvements from publics in the schemes analysed in this paper were voluntary. Publics involved ranged from being 'general' in terms of living in a particular area, to quite specific groups such as farmers or land owners (Pesti-wise), 'people out walking anyway', cyclists, dog walkers (Water Rangers) and publics that experienced sewer flooding (Rain-wise). From the interviews with water practitioners involved in mobilisation activities it was highlighted that to address water-related challenges, action is required not only from formal organisations, but also from their water 'customers'. Hence, a more general, less initiative-specific idea of publics as mobilisation targets was communicated. This was for example expressed in terms of publics' role in securing future water supply; 'with the pressures of population and climate change, whilst we're absolutely confident that we have a secure future water supply, it's only going to become more precious, so customers have got to take some responsibility as well'; 'I think that the customer has a role to manage their water use' or in terms of wider environmental impacts: 'water leaving their [farmer's] land shouldn't leave it in any worse condition than when it entered their land'; and related to surface water management 'They acknowledge that there is a part that they can play […],telling customers to make changes to try to manage rainfall. It's gone down really well, really well'.

Finally, in terms of learning, this could be discussed in relation to how the utility as a whole learns from mobilisation activities across functions and also how learning is communicated and utilised to inform decision making and the utility's strategic direction more broadly. For example, The EDC initiative originated from 20 years of different water efficiency project with the aim of bringing them all together under one 'umbrella' to form a more coherent water efficiency programme. This means that learning from individual initiatives now provides a more joined-up approach allowing for more coherent evaluations which in turn informs the next cycle of initiatives. The 'whole town approach' includes a range of water saving activities such as free retrofitting of water efficient devices in people's homes in combination with advice on how to save water, gardening events, school events and awareness campaigns in public spaces. Such an approach has the benefit of communicating that water is involved in many practices that people perform in their everyday lives and could potentially include other water related functions (drainage, water in the environment etc.) in the future.

The other three schemes included in this paper were more focused on a single activity or the single household. For example, the Rain-wise scheme encourage households to consider permeable patio materials, establishing a rain garden or installing a water butt, all to prevent or delay rainwater entering the sewer network. For the Water Rangers scheme, the volunteers focus on a specific area and report on potential issues related to pollution, fly

tipping or blockages. However, regardless of function or issue these schemes are trying to address, they all include processes of mobilising publics. Despite this, these different schemes operate in quite isolated areas within the utility, and are more likely to only inform the particular function, rather than the utility and its direction as a whole. Hence, mobilisation is seen as a method to address a specific issue (e.g. droughts, flooding, pollution) instead of being seen as a process, where mobilisation enables the utility to address water-related challenges in a wider partnership with the communities it serves. Although some events for sharing ideas about mobilisation initiatives were organised (for example presentations over lunch), and notwithstanding future combined activities planned for some of the schemes (EDC and Rain-wise), there is no existing overarching approach to mobilisation in terms of process, messages communicated or lessons learnt. Hence, investigating the communicated messages from such initiatives within utilities and across water sector organisations, becomes an important area for further research.

In the next section, mobilisation in relation to the wider water sector including conceptualisations of 'success', 'evidence' and 'knowledge' is discussed, as well as how mobilisation can offer a new lens to improve understandings of water related transitions.

The water sector

Fully informed comments about the operation of mobilisation initiatives across the whole water sector need to await the completion of the full empirical research. At this early stage, however, it is still possible to flag some key implications from our more prominent findings to date.

One crucial finding concerns the process of evaluating water mobilisations. Mobilisations tend to be introduced when there is an intractable problem which cannot be sufficiently addressed through technical means alone. It is this origin that has driven the processes of evaluating mobilisations based on only their tangible outcomes – for example, the number of litres of water saved. It is striking, however, how the interviewees administering and organising the initiatives perceived that the real value of the interactions lay in the relationships built and the learning they achieved. Hence, learning about different sets of publics and developing relationships to support investigation of new questions or exploration of new problems could mean these initiatives deliver benefits to their organisers including a sense of being strengthened, of having a broader understanding and hence being more able to respond flexibly and imaginatively to challenges they face. How water management resilience more broadly can be informed by a specific initiative's processes of relationship building becomes a key challenge to address. This also raises a profound question for the water sector. Do they agree with these interviewees that such relationships and learning are important and hence enhance the resilience of the system? If these interviewees are seen as mavericks, emphasising unimportant information and relationships which they enjoy (but do not enhance water services), then a reaction that maintains the narrow quantitatively-based evaluation of initiatives according to specific immediate local outcomes is appropriate. If, however, these interviewees' judgements are seen as appropriate, then the water sector faces a much larger challenge: how can

evaluation and measurement 'step up' to appropriately assess and value these more intangible outcomes of mobilisations?

This challenge of how initiatives are quantified and their value assessed is also an issue for the economic water regulator Ofwat. Although mobilisation activities are mentioned as important components of addressing water related challenges such as water shortage, there is no formal collective function for how these activities are monitored and evaluated. At present, UK water utilities' links with publics are primarily measured in terms of the nature of public participation within their price review processes. The aim of consulting publics as part of these processes is mainly to ensure that the service that is delivered reflects water customers 'preferences and priorities' (Ofwat, 2017b:24). It seems clear from our interviewees' comments that their relationships developed through mobilisation activities have enhanced their understandings of some publics and their understandings of their needs; it is probable that these understandings have (consciously or unconsciously) fed into planning for the price review, but it would not be an easy process to prove. Hence, the relationship-building so valued by our interviewees are not currently recognised as valuable by Ofwat. More broadly, the use of the word 'customers' by Ofwat suggests a narrow focus on service quality, not on the broader citizen concerns such as environmental quality or long-term service investments. Finally, this focus on how 'customer preferences' have input to water company periodic development and investment plans is rather limited and blind to the intricacies of relationship development and management and broader resilience benefits that could result. However, at the moment, it is hard to imagine how such relationships could be evaluated and regulated to support a more resilient water system.

Conclusion

The challenges faced by the UK water companies and regulators discussed above bring us back to our research within TWENTY65 and specifically to how 'mobilisation' as an analytical lens enables critical engagement with transitions towards a more resilient and more engaged form of water management. Given that our interviewees, water company rhetoric and policy statements from the regulator are all emphasising the importance of mobilisation initiatives, there is an urgent need for more understanding about these activities. Hence, it is clear that the concept 'mobilisation' is useful in providing an alternative as well as systematic understanding of what is going on in water management practice and how these processes relate to wider policy aspirations. The taxonomy that we expect to grow from Table 1 will provide an initial route to explore what is occurring and how it is happening in terms of mobilising publics in water management. Such understanding will be a starting point for more critical and ethical questions to be identified in terms of how publics are responsibilised in processes of addressing water related challenges and how responsibilities could be distributed and shared across informal and formal water actors. However, in terms of mobilisation initiatives influencing wider water policy more systematically and potentially contributing to a more resilient water management, there are challenges that needs addressing. First, in terms of the UK water industry, there is a need to move beyond processes of *participation* within price review processes where the aim is to provide a service that 'customers' prefer. This means including more wider aspects of the water cycle and value mobilisations as interventions that can inform strategy and wider policy and not

just a solution to an isolated problem. Second, for mobilisations to be perceived 'successful' and delivering benefits for the water sector, collation of evidence and associated evaluation of such initiatives need to be reconsidered. For example, there is a need to capture wider benefits not directly linked to the mobilisation objectives and processes of relationship building, alongside more traditional measurable outcomes. Finally, in terms of research, analyses of publics and their relationships with water need to go beyond 'the individual' as an object of study and instead focus on the intervention (e.g. Hoolohan and Browne, 2016). The conceptualisation of mobilisation applied at three scales (initiative, organisation, water sector) introduced in this paper, offers new and exciting ways of understanding how new roles and responsibilities of publics influence transitions to a more resilient water management.

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