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Testing new behaviour change methods to tackle littered gum

David Hall and Rhys Campbell

What influenced the UK Government to tackle plastic pollution? An analysis of the influences on public policy regarding the problem of plastic pollution, particularly marine pollution, looking at the 25-year Environment Plan

Vicki Chillcott

Moving from awareness to action on single-use plastic bottles

Andrea Turner

How consumer action can help build a sustainable future for fashion

Alana M. James

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Keep Britain Tidy has been working to keep the country clean for nearly 60 years and has expertise and access to a range of stakeholders in the area of litter and environmental quality. Within Keep Britain Tidy, the Centre for Social Innovation serves as an innovation hub to design and develop new approaches towards change that benefits society.

The Journal of Litter and Environmental Quality has been created by the Centre for Social Innovation as an open-access, peer-reviewed journal that will share and discuss the latest research carried out by academics, practitioners and wider stakeholders into litter and environmental quality.

Litter refers to waste products that have been disposed of improperly, without consent, at an inappropriate location.

Environmental quality refers to the standard of the local area and includes all/any issues that might affect the appearance of the area and/or how people perceive the area.

The Journal is available for download from the Keep Britain Tidy website www.keepbritaintidy.org

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2020 REPORT TO READERS

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It is my pleasure to introduce to you the fourth edition of the Journal of Litter and Environmental Quality.

It has been an eventful year for the journal. In 2019 with support from the British Cleaning Council and in partnership with Middlesex University, we delivered a roundtable event to discuss the key issues in litter and environmental quality. Over forty people attended the day, which included presentations on a host of topics including the links between litter and crime, using fear appeal in influencing pro-environmental consumer behaviour, and place attachment and littering. Given the success of the last roundtable, we are currently planning another one for the early half of this year.

The event proved a great opportunity to bring together academics and practitioners who are interested in working together on initiatives to tackle litter and improve environmental quality, and following on from the event, two of the participants – Hall and Chillcott – have contributed articles to this edition.

The first piece, by Hall and Campbell, presents the results of new on-street interventions to deter chewing gum littering and, critically, a new approach to monitoring which is significantly improved from previous approaches. The majority of the sites showed a statistically significant reduction in gum litter over the intervention period, with an average effect size of a 41.8% reduction across all sites.

Chillcott looks at the Government's 25-year Environment Plan, and provides a fascinating analysis of the factors influencing public

policy to address the problem of plastic pollution, and particularly marine pollution. Her chart demonstrating the increase in media attention around plastic pollution over a three-year period with the introduction of the Environment Plan and the airing of *Blue Planet II* makes for very interesting reading.

The third piece by Turner presents research also exploring the issue of plastics following *Blue Planet II*, but from the perspective of whether increased public awareness of the issue has translated into individual behaviour change in respect of single-use plastic water bottles. Turner concludes with a series of useful and practical recommendations to take forward.

The fourth and final thought piece by James explores the idea of how individual behaviour change and action can impact industry in respect to sustainable fashion. This builds on the idea that top-down and bottom-up action both play a role in positive societal and environmental change.

I would like to thank our peer reviewers and esteemed authors, without whom the journal would not be possible. I would also like to thank the staff at Keep Britain Tidy, who helped co-ordinate and edit the publication, and especially the British Cleaning Council for their support.

I hope that the arguments in this journal instigate discussions and debates about the latest emerging issues in litter and environmental quality.

Lizzie Kenyon
Director – Centre for Social Innovation
Keep Britain Tidy

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<p>This case study reports on a trial of new on-street interventions to deter chewing-gum littering.</p> <p>The objective of the trial was to develop and test practical solutions that could be rapidly adopted by organisations working to tackle gum littering.</p> <p>The case study covers three phases of work involved in preparing and delivering the trial:</p> <ol style="list-style-type: none">1. Gathering insight to understand why people litter their gum and where this happens. This consists of new ethnographic research showing that behaviour is heavily influenced by the specific circumstances encountered at the point of gum littering. Through this research, gum littering “hotspots” were identified.2. Creating interventions that could provide timely reminders at the moments when people are most likely to litter. Nine ambient media ideas were developed, each of which was matched to particular types of hotspots.3. Testing the interventions across four sites in Bristol, Cardiff, Islington (London) and Sheffield. An evaluation methodology was developed to ensure that any reduction in littered gum could be attributed to the intervention, and that conditions could be kept as natural as possible, maximising external validity. <p>The majority of sites showed a statistically significant reduction in littered gum over the intervention period, with an average effect size of a 41.8% reduction across all sites.</p>		<p>The problem of plastic pollution is now widely acknowledged, and it is estimated that 60–90% of marine litter is plastic. The UK government advised that it is working towards tackling plastic pollution in the 25-year Environment Plan of 2018. This research aimed at identifying what influenced this decision. Parliamentary debates, academic literature and media influences were reviewed, and campaigners and politicians were interviewed. The theory that policy change requires a collaboration of various influencers is identified in this research and proven thereafter. To do this, the number of debates and articles related to plastic pollution were analysed, and the data displayed a dramatic increase in discourse on and attention to plastic pollution in politics, academia and media attention. The separate influencers identified were analysed, and by collating the investigative data I demonstrated that it takes a combination of influences for policy to be created. Identifying that a combination and collaboration of influencers is required to impact policymakers, allows for reflection on how these influences could be used further afield.</p>	

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30	Moving from awareness to action on single-use plastic bottles Andrea Turner	46	How consumer action can help build a sustainable future for fashion Alana M. James
<p>With a shared ambition to reduce waste from single-use plastics, Keep Britain Tidy and BRITA worked in partnership to better understand the triggers and barriers to increasing the uptake of reusable water bottles and other waste-avoidance solutions by the public and retailers.</p> <p>Focus groups for consumers of bottled water were used to gather insights on the intentions, motivations, capabilities, social norms and other influences on behaviour to determine the most prominent triggers and barriers for using reusable water bottles and other waste-avoidance solutions. Using the insights gathered, a nationally representative online survey was developed to quantify and verify the findings and gather new insights to support the work. In order to gather useful insights about the operational and business barriers for retailers for increasing the uptake of reusable water bottles and providing tap water to the public, four semi-structured depth interviews with senior representatives from high-profile businesses that sell bottled water were undertaken.</p> <p>The research shows that despite <i>Blue Planet II</i> (British nature documentary series on marine life, produced by the BBC and presented by Sir David Attenborough, aired October 2017) doing more than anything else to raise awareness of the impact single-use plastics have on our environment, this has not yet led to a shift in the British public’s behaviour. Only 36% of people carry around a reusable water bottle, and only 31% feel guilty when purchasing a throwaway water bottle. Whilst 44% feel bad for the environment if they buy bottled water, just 17% are strongly committed to finding alternatives to plastic bottles.</p>		<p>Fashion consumers have more power to make a difference than ever before. Their attitudes, behaviour and habits are changing, armed with the knowledge of the impact that fashion is having on the world around us. Their role in this complex paradox has changed to reflect the uncertainty of the environmental crisis, shifting from that of passive user to engaged investor. This sphere of influence also sits with the fashion brands and companies who are vital stakeholders in moving the industry to a more responsible future.</p> <p>The imbalance of human activity in the natural world has caused the onset of an Anthropocene era, with fashion contributing exponentially in a multitude of ways, from the creation of pollution and waste, to the reliance on finite resources such as oil in the production of synthetic fibres. This paper explores the need for a change in our relationship with clothing, with the creation of value suggested to promote product longevity through life extension strategies such as repair and repurpose. Further conclusions include the development of consumer to product value through personalisation and physical tacit behaviour.</p>	

JOURNAL OF LITTER AND ENVIRONMENTAL QUALITY

The Journal of Litter and Environmental Quality would not have been possible without the commitment and hard work of our peer reviewers. They provide not only the information needed for publication decisions but also valuable critiques for authors. We offer our sincerest thanks to the following reviewers who served as referees for the journal.

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Web-link: The journal is available for download from www.keepbritaintidy.org

TESTING NEW BEHAVIOUR CHANGE METHODS TO TACKLE LITTERED GUM

David Hall is Executive Director and founder of Behaviour Change, a London-based social enterprise that develops ideas to help people do the right thing. Since 2009, Behaviour Change has been working with businesses, charities, governments and foundations to expand the understanding of what really works to change behaviour. Current clients and partners include British Cycling, Dogs Trust, the KR Foundation, Scottish and Southern Electricity Networks, WRAP and Mars Wrigley Confectionery.

Rhys Campbell has a Masters in Behavioural Science and is a member of Behaviour Change’s advisory panel, providing support on a range of behaviour change issues. Aside from this he works in the civil service, having held a number of senior policy and strategy roles in both the Victorian Department of Treasury and Finance in Australia and the Department for Education in the UK.

INTRODUCTION

Most gum chewers do not litter their gum – in fact, only 18% of people admit to ever having done so (YouGov, 2016). However, littered gum is unsightly and, once flattened, hard to remove. The fact that gum can stick to the pavement compounds the problem, as over time it can build up and give the impression that dropping gum on the ground is more common than is actually the case. This is of course counterproductive when trying to discourage gum littering and portray it as socially unacceptable. In this respect, as well as the way in which the product itself is consumed, chewing gum stands apart from other forms of litter.

Chewing gum is easy to drop without being observed and, for some, disposing of it can feel urgent once the desire to chew has gone (Revealing Reality, 2016). However, there is little academic literature that focuses directly on gum-littering behaviour, so in attempting to develop solutions to this problem we could not simply build on previous research.

This was in any case a practical project, designed to test solutions that, if successful, could then be rolled out speedily and at scale, so our particular focus was on learning by doing. Although we sought to be rigorous in our approach, this is not an academic paper.

We were also fortunate to have support from Mars Wrigley, the largest chewing gum manufacturer in the UK, and for many years the leading funder of activity to prevent gum littering. They have previously partnered with Keep Britain Tidy and

the Chewing Gum Action Group to help reduce the incidence of littered gum, and were able to offer a great deal of insight into what had been tried in the past (Keep Britain Tidy, 2017).

In 2015, as part of an enhanced corporate commitment to innovate further in this space, Mars Wrigley approached Behaviour Change to develop a new programme of anti-littering interventions.

The aim of this project was to design new, scalable interventions that could generate a visible reduction in littered gum on the streets and be robustly evaluated prior to wider rollout. Some of the ideas that have been tried in the past have been eye-catching and media friendly but expensive and complex to scale up, so our objective was to develop interventions that were simple and cost-effective enough to be delivered on a national scale.

The approach to the project consisted of three stages:

- Gathering insight: Understanding the problem and how it fits into people’s everyday lives;
- Creating interventions: Developing a long list of creative interventions grounded in behavioural science; and
- Testing on the ground: Piloting the most cost-effective, highest impact ideas to determine which ones have the greatest potential to be scaled up.

Using this approach, we designed and ran a series of pilots in four cities across the UK.

1. Gathering insight

We began by seeking to answer three basic questions on littered gum: who drops gum, where, and why?

1.1. The limitations of prior research

Given the lack of previous work in this space, a full literature review was not considered relevant. However, Mars Wrigley were able to make a number of unpublished internal research reports available to the project team. This existing research relied heavily on segmenting people into groups who were more or less likely to litter gum, based on self-reported survey data. Given people’s reluctance to admit to littering, such research has its limitations. As only some litterers appear comfortable with confessing to their behaviour, segmentation risks exaggerating the extent to which gum littering is confined to young, male, antisocial individuals.

In order to go beyond this limited perspective, we also sought to understand why people litter and where this happens, given research on the influence our physical and social environment has on our behaviour and decision making (see Todd and Gigerenzer, 2007). For example, we know that the cleanliness of our environment influences our likelihood to litter, as we infer from our surroundings how normal (and acceptable) behaviour such as littering is (Cialdini, Reno and Kallgren, 1990). We also know that communicating social norms has proven to be an important influence on our likelihood to participate in other pro-environmental behaviours, such as looking after the natural environment (Cialdini et al., 2006) or reusing hotel towels (Goldstein, Cialdini and Griskevicius, 2008). It is therefore important to understand both the social and environmental contexts behind behaviours such as gum littering.

1.2. Conducting ethnographic research to get under the skin of gum-littering behaviour

In order to generate a fuller picture of gum littering, we commissioned a major new piece of ethnographic research to identify the drivers of this behaviour. Conducted in partnership with Revealing Reality, this research drew upon the available literature on littering and evaluations of previous interventions, as well as involving an extensive fieldwork programme across four locations in the UK: Southampton, Kettering, Doncaster

and Islington (London). These locations were chosen to provide a variety in size, population demographics and litter enforcement policies across urban areas known to have higher incidences of gum littering.

In each location, researchers conducted two days of place-based fieldwork in a range of local “zones” such as high streets, shopping precincts and train stations, which involved mapping gum litter, site observations and over 40 street interviews. On top of this, more in-depth person-based fieldwork was conducted to better understand the motivations behind gum littering. This included ethnographies with four 16-40 year old “gum litterers” per site (sixteen in total) who regularly passed through these zones in their day-to-day lives. These day-long sessions included accompanied journeys and culminated in extended interviews. These respondents were carefully recruited using a screening questionnaire that disguised questions about gum littering amongst a wide range of other everyday low-level antisocial behaviours.

Observing actual gum littering “in the wild” was hard, as it is a tiny, momentary action, and only one instance of physical littering was observed (and caught on camera) in the 12 weeks of fieldwork. However, detailed mapping of gum litter on the ground combined with what people told us in interviews highlighted six key moments or “hotspots” where gum littering occurs:

- around public transport and while travelling;
- during shopping trips;
- in cut-throughs/alleyways;
- at nightlife locations;
- whilst eating on the go; and
- around public bins themselves.

We were able to understand the behaviours underlying gum littering in these disposal hotspots through the in-depth interviews, as these individuals gradually began to open up, admit to and talk about their gum-littering behaviours. While this behaviour is normally considered antisocial, it was clear that our sample was not made up of stereotypically antisocial people, instead reflecting a diverse cross section of society. In fact, from this research, a clear profile for a typical “gum litterer” did not emerge. Instead, while there was some difference in people’s predisposition

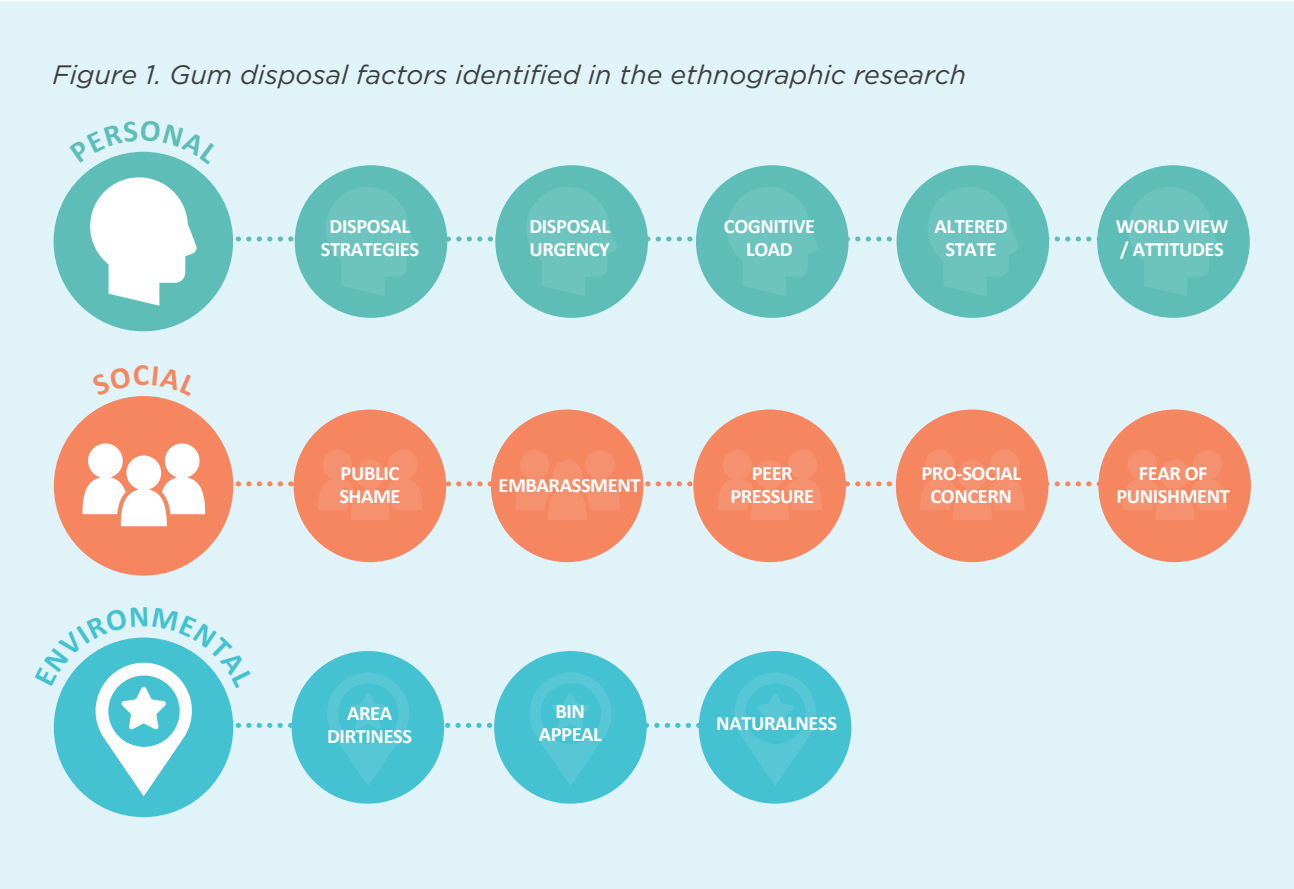
to litter gum, we found people’s behaviours were inconsistent, and more variation was determined by the immediate environment and circumstance people found themselves in than from differences between the individuals themselves. We found people rationalised their behaviour in light of the circumstances they were in, and not on whether it was the right or wrong thing to do. So none of our sample admitted to gum littering in all circumstances (no one said they would do it in a work context or in front of their mother, for example). We also discovered that in many cases there was an element of

pro-social concern when people did drop gum, for instance attempting to ensure that it was away from a busy walking route where it was likely to be stepped on.

When it came to the people who littered gum, our research therefore suggested that we were dealing with individuals who knew the right thing to do and already did it some of the time. Compared to targeting an unrepentant hard core of antisocial people, this appeared to be much more fertile ground for interventions designed to nudge people towards the right behaviour.

1.3. Determining gum-disposal “hot spots”

By triangulating the evidence of how gum litter was distributed with the self-described behaviour of the people who pass through those environments, we were able to build up a picture of the factors driving gum litter and how these differed across the six disposal hotspots. These factors can be grouped into personal/internal, social and environmental, as per Figure 1 below:



Each hotspot featured a different combination of factors that influence individual behaviour. For example, while area dirtiness makes disposing gum more appealing in both cut-throughs and nightlife locations, the motivations appear to be different in each.

Cut-throughs play more to our social desire to avoid shame from being seen to litter gum, hence dropping it when we cannot be observed by others, whereas pressure from peers to not appear fussy can influence people in nightlife locations.

This research shed new light on the problem of littered gum, helping us to design interventions where they could have the most impact. We could see that the problem was heavily influenced by the very specific circumstances encountered at the point of gum littering and can be driven by a variety of factors that lead people to rationalise doing an activity they know is wrong. By targeting these moments, we aimed to pre-empt this behaviour and nudge individuals towards doing the right thing.

2. Creating interventions

The next stage in our process was to consider how insights from the research could be used to develop new interventions with the power to influence gum littering. Building on our understanding of the circumstances in which people litter gum, we set out to develop timely reminders that could interrupt people at the point of disposal.

The most cost-effective and scalable way to provide prompts was to design ambient media around disposal hotspots that would encourage people to dispose of their gum correctly. While changing the environmental factors relating to disposal would be more costly, influencing the perceptions of social norms or reminding those with high cognitive load of local disposal strategies can be done through appropriate messaging.

2.1. Designing effective messaging




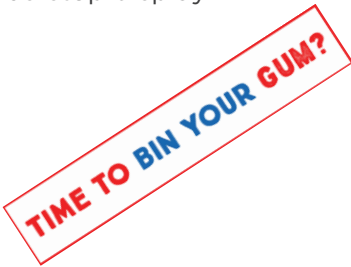
In order to develop these messages and ensure they were matched to the specific contexts they would be deployed in, we ran workshops with relevant stakeholders (such as Keep Britain Tidy and Local Authorities) to bring in their perspectives of what would work best on the ground. Alongside this, we also set out to find different sites to

pilot interventions to give us a diversity of settings, such as shopping districts, transport hubs and busy streetscapes. Once chosen, we visited the proposed sites to observe the flow of people through those areas and to see if there were environmental factors that might interfere with the planned media. We also spoke to site owners (such as shopping-centre management) to gather their perspectives on what drove gum-littering behaviour in their specific areas.

Building on the workshops, we developed a long list of ambient media ideas, which were then narrowed down and worked up into final designs. Each design (see Table 1) built on a different behavioural insight and was matched to certain disposal hotspots. For example, our visit to the intervention site at Farringdon station showed this to be an extremely busy location and suggested that many people assumed there were no bins inside, so the “Time to Bin Your Gum” design was chosen to act as a timely reminder. At St David’s Shopping Centre in Cardiff we chose the “Kitty” design as the Centre wanted a more emotive, engaging intervention, and our research inspired us with the revelation that some people react more emotionally to the idea of gum getting stuck to an animal’s paw than to a person’s shoe.

Signage, such as posters or floor stickers, was custom designed so it could be fitted in the most relevant places in each disposal hotspot, such as bins, shopping-centre or station entrances, or car-park floors. We were also able to deliver a message on an electronic display at a bus station located near a shopping centre. This was not only a cost-effective way to get the message out there but it leveraged an existing message board that already attracts the attention of those around it, ensuring the message is both salient and timely.

Table 1. List of intervention designs		
Design	Behavioural insight	Settings targeted
Kitty 	We are strongly driven by our emotions and the idea of gum on a kitten’s paw is emotionally affecting for some. This intervention uses a touch of humour and an unexpected image to drive salience.	Shopping street/district Retail outlet/centre Outdoor seating Food and drink on the go
Sticky Shoe 	An official sign warning the public not to drop gum. This builds on the insight that people don’t like gum sticking to their shoe.	Bus stop Station – interior Station – entrance Car park
66 bins 	A common excuse people give for not using bins for their gum is that there weren’t any nearby. This intervention dispels this myth to point out how many bins there actually are in the area, whilst also being an attractive way to make the bins themselves more noticeable.	Shopping street/district Outdoor seating
Bin’s right here 	People do not always spot bins even when they are very close by. This intervention makes sure the bins are unmissable. It’s about being in the right place at the right time, acknowledging the fact that somebody might want to dispose of their gum at that moment and making the bin the obvious place to do it.	Bus stop Shopping street/district Outdoor seating Car park Food and drink on the go

Design	Behavioural insight	Settings targeted
<div>Bin your gum</div> <div></div>	A bright, noticeable poster. This has a straightforward “bin your gum” message, to deliver a timely reminder to chewers, but is deliberately made for places where a strong design ethic is needed, as opposed to a more “official” look and feel.	Shopping street/district Retail outlet/centre – entrance
<div>3-2-1 bin your gum</div> <div></div>	This intervention is designed for cut-throughs – paths or alleyways which people are often rushing or passing through. These sites are rarely a destination, just a means to get somewhere else, and they often feel neglected or messy with no bin in sight – which makes gum littering more likely. This countdown primes people to wait and dispose of their gum when they reach the next bin.	Cut-through
<div>Time to bin your gum?</div> <div></div>	This intervention makes sure the bins are visible in a busy location and gives a timely prompt at a transitional point – suggesting to people to dispose of gum before going inside.	Bus stop Station – interior Station – entrance Shopping street/district Retail outlet/centre – entrance Food and drink on the go
<div>Thanks</div> <div></div>	A lighter-tone intervention that simply thanks people for doing the right thing and binning their gum. Builds on the idea that binning your gum is a social norm and is expected by others.	Bus stop Station – entrance Shopping street/district Retail outlet/centre Outdoor seating Food and drink on the go
<div>Bus-stop display</div> <div></div>	Waiting at the bus stop is a common gum-disposal circumstance, with the arrival of the bus being the subconscious prompt to do so. Using a message on the real-time information display just before the bus is due to arrive is an ideal moment to suggest that it's time to bin your gum.	Bus stop

3. Testing on the ground

The interventions were tested across four sites: Bristol, Cardiff, Islington (London) and Sheffield. Again, these were chosen to be diverse, representing a spread of disposal hotspots as well as being spread geographically, so we could test the effectiveness of our intervention across a range of settings. This also meant that we partnered with different stakeholders at each site – for Bristol this was the business

improvement district, Cardiff the shopping centre management, the local authority for Islington, and a combination of local transport company, the local authority and public/private businesses in Sheffield (who owned different sections of pavement).

There were several locations selected at each site, using different poster designs in each one (see Table).

Table 2. List of interventions used by site		
Site	Settings	Campaign used
Bristol	1. Shopping centre 2. Shopping centre 3 Shopping centre 4 Shopping centre 5. Shopping centre 6. Bus stop	66 bins 66 bins 66 bins 66 bins 66 bins Bus stop display
Cardiff	1. Shopping centre 2 Shopping centre 3. Car park 4. Shopping centre	Kitty Kitty Sticky shoe Kitty
Islington (London)	1. Bus stop 2. Tube station 3. Overground station	Bin's right here N/A – disrupted Time to bin your gum
Sheffield	1. Cut-through 2. Train station platform 3. Moor/cinema 4. Devonshire street	3-2-1 bin your gum Sticky shoe Bin your gum Thanks

3.1. Evaluating intervention effectiveness

We reviewed previous methods used to count litter and evaluate litter reduction campaigns and found that many incorporated gum within all litter, or measured it using the same methods as other types of litter which grade visual assessments of cleanliness, something that's hard to do accurately with gum litter. Others that measured gum alone involved cleansing between measurements, which in itself could affect behaviour. There is a

growing body of evidence that suggests that cleansing an area is likely to affect littering behaviour (Cialdini et al, 1990). Based on this learning, we contracted an independent research company, BMG, to develop a new evaluation approach. It was designed to ensure that we could attribute any reduction in littered gum to the intervention, and that conditions could be kept as natural as possible, maximising external validity.

The evaluation approach consisted of a field trial, run as a before-after study for each site, with effectiveness determined by the reduction in incidence of littered gum during the four-week period post-intervention (treatment period) compared with the four weeks before the intervention (control period). To ensure changes in littered gum were not the result of changes in the volume of pedestrians, CCTV footage at each site was examined to count the number of pedestrians flowing through each site during both the control and treatment periods. From this, an “expected amount” of new littered gum could be calculated that would be found during the post-intervention period to form the counterfactual estimate. The treatment effect would therefore be the difference between this expected amount of littered gum and the actual amount of new gum found.

At the start of both the control and treatment period, a high-resolution image was taken to use as the base image from which to count new pieces of littered gum during that period. Crucially, given the known effects of an area’s cleanliness on individuals’ likelihood to litter, the area was not cleaned before either period to avoid this confounding the results.

The methodology for counting gum and calculating the treatment effect had the following stages:

i. Reconnaissance and making areas safe:

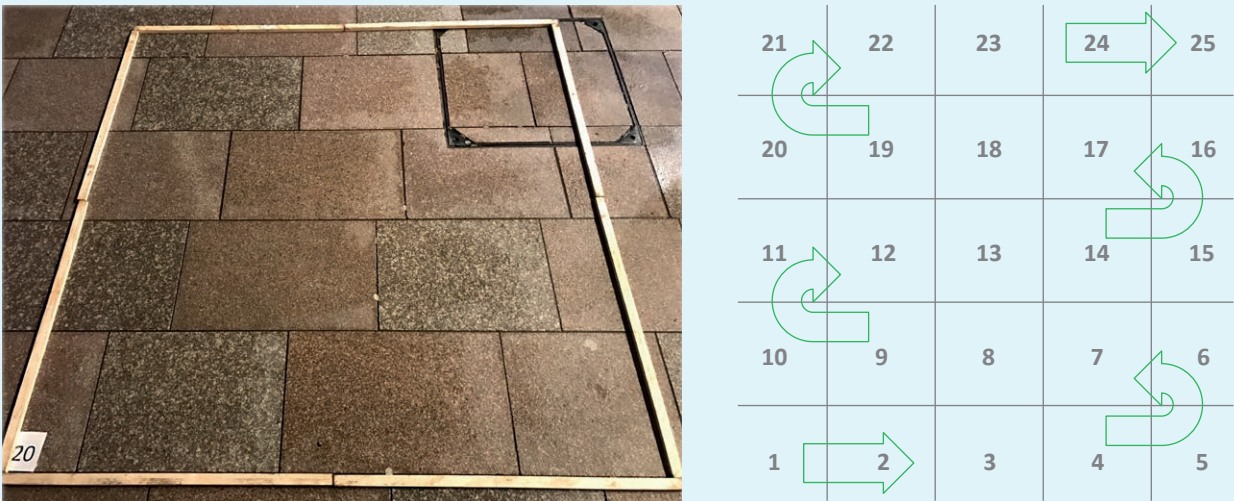
At the beginning of each fortnight, during the control and treatment periods, gum counting sweeps were conducted to count new gum against the baseline image taken for that site (Figure 2). The team of field researchers started by coning off the area from pedestrians and then clearing the area of any debris and litter (but not gum) to make it clear and safe for counting. Any changes to the site’s use which could influence the results (such as newly erected stalls or construction work) were recorded.

ii. Area sweep: Each site was divided into 2x2m squares to form a site grid. The fieldwork team would sweep each square within the grid, with one team member working through the square identifying each genuine piece of gum, while the other corroborated whether the gum was new or old by using a handheld camera to display the baseline image. New gum was identified if it met the following three criteria:

- a. confirmation that no previous gum was there
- b. minimum size of a five pence piece
- c. verification via a pin that the consistency is that of new gum and not anything else.

“3D Gum” that had not yet been flattened was not marked by a pin and recorded separately to “2D Gum”, given the high likelihood that it would be swept, blown or washed away between sweeps. A pin was placed in all new 2D gum, and at the end of each square’s sweep a new high-resolution picture was taken.

Figure 2. Picture of a pre-examination square, and illustrative site grid and sweep path



iii. Analysis of new gum results: After sweeping the sites, the results were analysed by comparing the new image taken from the sweep with the original image taken the day one “base image” of that period. As some gum will disappear

naturally with cleaning and general erosion, new pieces of gum identified from each sweep were marked on both that day’s image and the base image, building up a count of all new gum over that period on the base image (Figure 3).

Figure 3. Site image, with confirmed new gum marked by a green circle, and old gum with red arrows



iv. Estimation of pedestrian traffic: After the volume of new gum was counted for each period, estimates of the total pedestrian traffic were calculated. We did this by installing cameras to capture CCTV footage of pedestrian flow through the area. Doing so required approval from the relevant site owners and putting up signs to notify the public. As part of the evaluation process, two-minute segments of footage were randomly picked from each hour of the day, leading to 1,344 minutes of footage being analysed for each period (48 minutes per day over 28 days). Researchers observed each segment of footage and counted the pedestrian traffic. This was then used as the basis for determining the average traffic for each hour period, and in turn the day’s estimated total traffic, and the total count of foot traffic for that site over the period. We were not able to gain permission to use CCTV for each site, so we instead relied on proxies in some cases, such as the shopping-centre door-counter figures.

v. Calculations: First, to form the counterfactual estimate for each site (the expected volume of littered gum – Eg), the percentage reduction in

pedestrian traffic (p) between the control (C) and treatment (T) periods was applied to the volume of littered gum (g) found in the control period. Thus:

$$Eg = (Cp - Tp)/Cp \times Cg$$

This approximates the volume of littered gum we would expect from the volume of people seen during the intervention period should no intervention take place. Secondly, we subtracted the actual amount of littered gum found during the treatment period (Tg) from this amount to determine our treatment effect (Y). Thus:

$$Y = Eg - Tg$$

To determine if this effect was statistically significant, a Poisson distribution test was used to compare the variance between the expected and actual amount of littered gum during the intervention. As Poisson distributions measure the probability of a discrete number of events occurring (in this case gum dropping) over a period of time, this statistical test could allow for comparisons between different time periods for the same type of event occurring.

3.2. Results of the trial

Table 3 below shows that the majority of sites showed a statistically significant reduction in actual gum litter against the amount of gum

litter that would have been expected given the estimation of pedestrian traffic over the intervention period. There was an average effect size of a 41.8% reduction across all sites.

Table 3. Results of intervention by location						
Location	Site	Gum in control period	Expected new gum post-intervention based on pedestrian traffic estimation	Actual new gum post-intervention	% reduction, accounting for changes in pedestrian traffic	P-value
Bristol	1	101	101	88	12.9%	-
	2	30	30	15	50.0%	*
	3	127	127	46	63.8%	***
	4	67	67	27	59.7%	***
	5	65	65	46	29.2%	*
	6	53	53	30	43.4%	***
Cardiff	1	55	33	13	60.6%	***
	2	55	33	15	54.5%	***
Islington	1	53	53	28	47.2%	***
	3	43	43	29	32.6%	-
Sheffield	1	67	81	52	35.8%	***
	2	66	80	53	33.8%	***
	3	38	46	31	32.6%	***
	4	72	87	54	37.9%	***
Compromised sites*						
Cardiff	3	14	8	11	(37.5%)	-
	4	22	13	18	(38.5%)	-
Islington	2	-	-	-	-	-

*Notes: For details on compromised sites, see section below. Results for these were not included in the overall average reduction.

Overall, it seems that the campaigns, by providing timely prompts to those who might otherwise litter gum, were a success. The number of different sites used in the trial and the differences between these sites (such as bin numbers, bin locations and setting) make comparisons across locations

difficult, so it is hard to determine whether certain campaigns were more effective than others. However, based purely on percentage reductions in gum litter achieved, the two most successful appeared to be the “Kitty” and “66 bins” campaigns.

3.3. Site complications

While great care was taken to ensure these findings were as robust as possible, some complications did arise. Unplanned cleaning in Bristol and heavy rain in Cardiff and Islington impacted on subsequent site sweeps by removing some gum and making old gum appear new.

More specifically, complications arose that interfered with the results for three sites:

Site 3 in Cardiff: Located in the shopping-centre car park, utilising large floor stickers with the sticky shoe design as the main intervention. Unfortunately, about one week into the intervention period, the stickers started to come loose off the ground, obscuring the message (see Figure 4). As soon as this was noticed by car-park staff, they removed all the large floor stickers from the site, leaving only smaller, less salient wall-mounted signage. Gum counting continued at this site for the duration of the intervention, which showed a non-significant increase in gum dropped at the site. However, we removed this from the overall results above due to the intervention failure early on.



Site 4 in Cardiff: Use of the site changed significantly between the pre and post-intervention phase, with a German market present on this street pre-intervention, but not post. Despite requesting no gum cleaning be undertaken or “sweeper buggies” used at these

sites during the intervention, site cleaning did occur and specific gum cleaning was suspected here while the market was underway. Again, a final post-intervention count of gum was still conducted and showed a non-significant increase in gum litter at this site.

Site 2 in Islington: This site was compromised during our post-intervention sweeps and had to be abandoned. Construction works took place here and disrupted our ability to make accurate counts. Eventually, the entire surface we had been measuring was removed, terminating the intervention at this site.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE INTERVENTIONS

Through this process we found that it took the combination of multiple elements to get the approach right. Rather than being able to roll out one intervention across a range of domains and expect results, finding an effective solution requires understanding of the local context and most common disposal factors present in each site, and working with different stakeholders to develop a solution that can work in that area. Care also needs to be taken to choose appropriate locations for ambient media to ensure it is salient and close to the point of disposal, but still suited to the local environment.

This trial showed that simple reminders at the point of gum littering can have a big impact on the incidence of littered gum. By moving away from a conception of gum litter as a problem caused by a small group of antisocial individuals only and building a better understanding of its behavioural drivers, we were able to design effective interventions to disrupt this behaviour and nudge people towards doing the right thing.

Behaviour Change have now created a free toolkit (www.tacklegumlittering.co.uk) for Local Authorities and others to use so they can scale up these interventions themselves. Alongside this, we are continuing to develop and trial further interventions, with a particular focus on understanding the long-term impact of ambient media and the extent to which it might become less effective over time.

REFERENCES

Cialdini, R.B., Demaine, L.J., Sagarin, B.J., Barrett, D.W., Rhoads, K., and Winter P.L. (2006), “Managing social norms for persuasive impact”, *Social Influence*, Vol. No. 11, pp. 3-15.

Cialdini, R.B., Reno, R.R., and Kallgren, C.A. (1990), “A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places”, *Journal of Personality and Social Psychology*, Vol. 58 No. 6, pp. 1015-1026.

Goldstein, N., Cialdini, R., Griskevicius, V. (2008), “A room with a viewpoint: Using social norms to motivate environmental conservation in hotels”, *Journal of Consumer Research*, Vol. 35 No. 3, pp. 472-482.

Keep Britain Tidy. (2017), “KBT17 policy position: Chewing gum litter”, available at: www.keepbritaintidy.org/local-authorities/reduce-litter/gum-litter/policy (accessed 6 January 2019).

Revealing Reality. (2016), “Understanding gum littering, research report”, p. 29.

Todd, P.M. and Gigerenzer, G. (2007), “Environments that make us smart: Ecological rationality”, *Current Directions in Psychological Science*, Vol. 16 No. 3, pp. 167-171.

YouGov. (2016), Omnibus survey, 2,016 GB Adults, 13-14 October 2016.

SUPPLEMENTARY INFORMATION

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WHAT INFLUENCED THE UK GOVERNMENT TO TACKLE PLASTIC POLLUTION? AN ANALYSIS OF THE INFLUENCES ON PUBLIC POLICY REGARDING THE PROBLEM OF PLASTIC POLLUTION, PARTICULARLY MARINE POLLUTION, LOOKING AT THE 25-YEAR ENVIRONMENT PLAN

Vicki Chillcott is a postgraduate student from the University of Sussex, in Environment, Development and Policy. Her work focuses on the influences on policy regarding plastic pollution in the UK. Vicki’s interests also engage with work around sustainability, in particular waste and responsible resource use. In her personal life she is an advocate for using less single-use plastic, buying local produce, ethical consumerism and, home grown food.

1. INTRODUCTION

Plastic debris has now been found in all oceans, and research is only just beginning to understand the future impact of this proliferation of marine plastics on biodiversity (Gall and Thompson, 2015) and contamination of the food chain (Barboza et al., 2018). Plastic pollution has been reported in many freshwater systems, leading to suggestions that plastic waste is so extensive within the environment that it can be used as a geological indicator of the proposed Anthropocene era (Geyer, Jambeck and Law, 2017).

In 2018 the UK government advised it is working towards tackling plastic pollution in their 25-year Environment Plan (“the Environment Plan”). There was an increase in academic articles related to plastic pollution, suggesting it is becoming a prevalent issue, leading to increased public awareness and a push for political action (Bonanno & Orlando-Bonaca, 2018). The importance of non-governmental action and public awareness is well documented (Dauvergne, 2018b), while scientific advances and knowledge networks have also been shown to help shift societal discourses, nudging states towards negotiating agreements to protect the oceans (Dauvergne, 2018a). The power and influence of NGOs on public opinion,

legislation, consumer demand and corporate discourses has been seen in the alteration of global discourse against whale hunting (Dauvergne, 2018a). Another example is the global policies on microbeads, which through legislation are changing social norms and behaviour (Dauvergne, 2018b). Despite this, global governance is failing to protect the oceans due to various unconnected states, groups and policies (Dauvergne, 2018a).

The intention of this research is to identify the common themes that have permeated various policy discourses to understand what led the UK government to publicly tackle plastic pollution in 2018, and more broadly to better understand what makes policy change happen, specifically environmental policies. By identifying what influences policymakers it will be possible to reflect on how these influences could be used further afield in newly industrialised regions which lack the infrastructure to deal with the waste (Doshi, 2018; Yagoda, 2018). This paper will demonstrate and evaluate the increased attention given to plastic waste in parliament, the media, and academic papers, analysing the recent discourse around the problem to understand what has influenced this political attention.

Firstly, I look at discourse around plastic pollution in academia, from the 1970s to the present day, noting that the amount of academic research has increased substantially in the last two to three years. Secondly, I analyse public influences, particularly the increase in media attention around plastic pollution and the role of NGOs in influencing public behaviour and social norms. Thirdly, my focus is the political and economic influences that emerged from my desk-based research, exploring the notions of natural capital and the circular economy. Finally, I discuss the influence of the political climate in the UK, particularly issues around Brexit and the Conservative Party's image. Although I have chosen to separate them to evaluate them individually, I understand that each actor is linked, and that various sectors in society can influence governmental policy.

2. THEORY AND METHOD

2.1 Method

My research mainly focuses on the situation in the UK due to the seemingly sudden attention on the issue of plastic pollution there. It was interesting to evaluate the changes within one of the leading economic countries in the world, and analyse what caused the shift in attention and eventual influence on policy change.

I began by looking at Hansard¹ and searched for words and phrases that relate to plastic to analyse the quantity of references. I developed timelines to show the increased attention to plastic pollution in the UK parliament and the media.

2.2. Influence of science on policy

Keeley and Scoones note that scientific knowledge plays a major role in environmental policy (1999). Using two databases – Scopus and the Web of Science – I searched for the term “plastic pollution”. Based on the results, I developed a review of the literature between 1970 and 2018. Using a selection of articles, I analysed and explored what changes have occurred in the academic discourse around plastic pollution. This formed the beginning of my evidence for what influenced the UK government to tackle the problem.

2.3. Civic effects on policy

Jasanoff and Wynne recognise the importance of discourses in developing policies. They refer to Maarten Hajer, who showed that the discourses of actors – local commitments, practices and institutions – ultimately shape “what they care to know” (1998:15). Thus, demonstrating the importance of all actors as their use of available evidence is subjective.

To analyse the media attention around plastic pollution, I searched for articles relating to “plastic pollution” in the main UK newspapers. Again, I developed timelines to show the increased attention. I interviewed six individuals from both governmental and non-governmental roles to understand their ideas about what led to the increase in discourse on plastic pollution. I interviewed Caroline Lucas MP and Jo Ruxton in person, and three more NGO professionals over Skype, and I received a reply to my interview invitation via letter from Claire Perry MP. My interview data is drawn on throughout my paper to engage with the relevant theories I address.

2.4. Political and economic influences on policy

I used data from Hansard¹ to analyse common themes in the parliamentary debates with relation to plastic pollution. I used the coding programme NVivo to ascertain the number of occasions the terms “plastic pollution”, “plastic waste” and “single-use plastic” were mentioned. The output of this analysis guided the discussion towards the key aspects of influences. I combined this data with my literature reviews and primary data collection. My interviews with various stakeholders included discussions on other aspects of the plastic-pollution debate and the growing discourse around ideas such as the “green economy” (Borel-Saladin and Turok, 2013), the “blue economy” (Silver et al., 2015), “green washing” (Walker and Wan, 2012) and the “circular economy” (Ellen MacArthur Foundation, 2012). In a paper exploring environmental norms, Dauvergne undertook a similar exercise of “reviewing highly cited articles and by conducting keyword searches of leading journals” in order to understand the importance of scientific evidence in influencing social norms (Dauvergne, 2018b:581).

¹ The official report of all parliamentary debates (Great Britain, 2018).

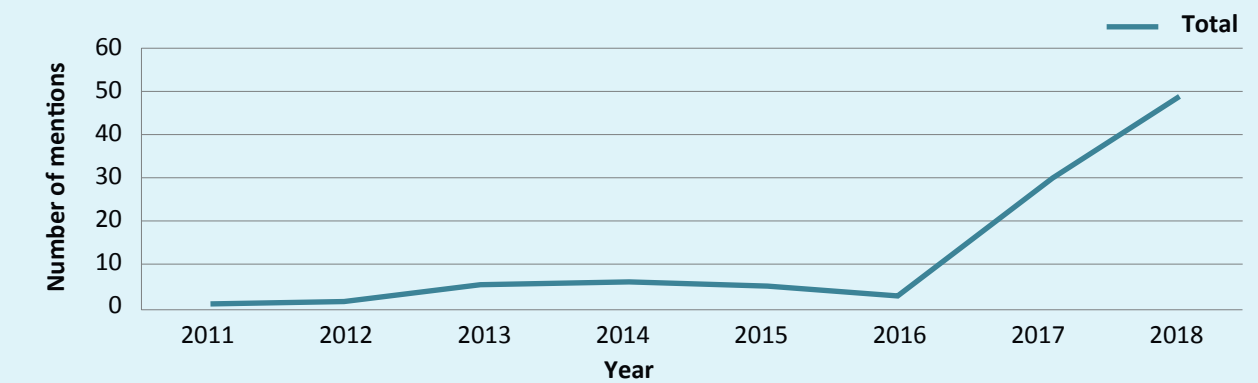
3. RESULTS AND DISCUSSION

3.1 Preliminary analysis

The search for the word “plastic” in Hansard resulted in 2,244 results (as of 24th August 2018) between 1990 and 2018, the early mentions of which concerned recycling. Due to the large number of references, it was necessary to refine the search for phrases that related specifically to plastic pollution to see if there was a trend. “Plastic bags”, “plastic cups” and the “circular economy” have been particularly prevalent in discourse around the

issue, both in the media and academia, so I choose these terms in the search (Xanthos and Walker, 2017; Esposito, Tse, and Soufani, 2018). I developed a timeline using my initial analysis (see Figure 1) which showed a clear increase in discourse around plastic pollution issues in the UK parliament, with six or fewer mentions of the selected terms in parliament between 2011 and 2016 and none prior to 2011, before rising to 28 mentions in 2017 and 50 mentions in 2018. My intention then became analysing the influence on the apparent shift in attention to this environmental issue.

Figure 1. A graph displaying the number of times the terms “plastic pollution”, “plastic waste” and “single-use plastic” were mentioned in the UK parliament by year

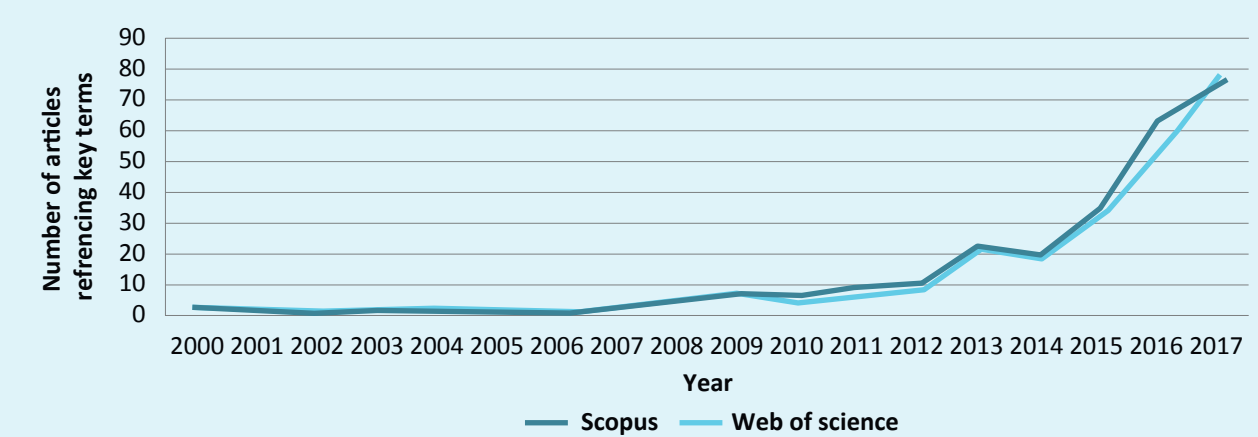


3.2. Influence of science on policy

As with the findings in Hansard, I found that the academic literature around plastic pollution also increased. A gap in the literature around

identifying why the UK has decided to tackle plastic pollution this year was identified; however, this is not surprising due to the apparently abrupt introduction of the topic into the discourse.

Figure 2. Number of articles when “plastic pollution” was searched for in both the Web of Science and Scopus databases between 1974 and 2017



The increase in the number of articles is substantial. Initially, the early articles in the 1970s concerned technology, referring to plastic and pollution separately. This seemed to shift to an overview of the problems of plastic pollution from 1984. When I searched for “plastic pollution” in Scopus it appeared seven times in 2009, reaching 78 by 2017. This increase accelerated again, with a threefold increase in Scopus from 34 in 2015 to 96 in 2018. Similarly, the Web of Science database results more than doubled from 32 in 2015 to 2018 in 67.

The Web of Science articles from the late 1980s refer to a 1975 National Academy of Sciences study that “estimated that ocean vessels annually discharge over six million tons of solid waste”, including plastic, each year (Azzarello and Van Vleet, 1987:295; Blockstein, 1988:19). The MARPOL convention was created in 1973 to protect the seas from pollution from ships, Blockstein argued that this predominantly focused on pollution in the form of oil and poisonous liquids from ships, and until 1988 did not include plastic garbage (1988; imo.org, 2018).

A review from the late 1980s argued that international legal regimes existing to mitigate pollution in the oceans should be “fully utilized to regulate plastic pollution of the oceans” (Lentz, 1987:361). This review acknowledged that the problem was “attributed not only to dumping of municipal waste and ship-generated garbage, but also to the discharge of materials from plastic manufacturers.” Yet, the problem has not been resolved, “with over nine million metric tons of plastic flowing into the oceans in 2015”, hence the attention now (Dauvergne, 2018a:23).

In the 1990s, scientific evidence began to highlight the severity of the problem of plastics on marine life, but the extent of the toxicity was speculated, and as Gregory suggested there was “an overly simplistic faith that such problems can be solved by public education initiatives” (1991:15). In 2010, Halden published a literature review summarising “more than 120 peer-reviewed publications on health effects of plastics and plasticizers in lab animals and humans” (2010:179). Perhaps this evidence influenced governments to act, since the Honolulu Strategy, for instance, a global framework “to reduce the ecological, human health, and economic impacts of marine debris globally”,

was introduced in 2011 (Shevealy, S., Courtney, K. and Parks, J.E., 2012:ES-1).

It appears that academic attention on plastic pollution began to increase dramatically from around 2010, with a focus on the ingestion of marine life, particularly birds, and the growing evidence that all water systems are affected by plastic pollution (Eriksen et al., 2014). The academic literature from 2010 started to focus more on microplastics, and the ingestion by marine life, with many papers demonstrating a focus on the discourse around plastic in the five gyres (Eriksen et al., 2013).

The Marine Pollution Bulletin published 142 articles relating to plastic pollution between 2014 and 2017 on the Science Direct website. The increase in literature from 2013-14 is substantial, as Figure 2 shows. The quantity increased fourfold on both Scopus and Web of Science. The articles begin to untangle themes that may have influenced governance, including the idea that plastic pollution is a “threat to global economy” (Webb et al., 2013:1).

The two most-cited articles demonstrate the severity of the plastic problem and advocate further investigation of the dynamics of plastics in the oceans, estimating that the total floating microplastic load ranges between seven and thirty-five thousand metric tons (Eriksen et al., 2014).

The widely-cited 2017 paper by Geyer, Jambeck and Law reflects the growing concern of the contamination of plastic waste in the natural environment. This could explain why recent academic literature has been highly critical of governments not doing enough. When I interviewed Caroline Lucas, she reflected that it is difficult to know whether the rise in research and policy action is a coincidence, whether the increase in evidence has influenced policy or if “researchers are doing more because there’s more political appetite for it” (Lucas, 2018).

It would be interesting for further research to focus on who has funded the increasing number of studies around plastic pollution, to see whether it is fuelled by government interest or whether political appetite has driven the research.

The Marine Conservation Society’s Great British Beach Cleans have been discussed in parliament, demonstrating the direct influence on politicians in their discourse (Great Britain. House of Commons, 2014).

The Marine Conservation Society regularly collects and uses citizen science data. In 2017, ten years’ worth of data was analysed, which concluded that most of the litter found on beach cleans in the UK occurred from public littering, indicating that land-based inputs are likely key sources of marine anthropogenic litter (Great Britain. House of Commons, 2018). I interviewed Dr Laura Foster, the Head of Clean Seas from MCS, who said they look at existing research in addition to their citizen science project and speak to academics and members of industry to explore alternative solutions.

The evidence on the effect on human health from plastics has been discussed as an influence on political attention. When I interviewed Jo Ruxton, who produced the film A Plastic Ocean, she informed me that she co-founded A Plastic Ocean Foundation because evidence showing how plastic pollution has adverse health effects was discovered during filming.

Although there has been a large increase in the scientific literature, policy has only affected a minimal proportion of plastic pollution. In his papers from 2018, Dauvergne argues that there have been some gains from bottom-up governance, but these are falling short (Dauvergne, 2018 a and b).

Keeley and Scoones state that “scientists establish the facts about environmental realities, and policymakers come up with policy options in the light of the facts” (1999:7). They explain “mutual construction”, through which policy drives research and vice versa (1999:9). Rochman, Cook and Koelmans (2016) suggest that science influences policy change, and argue that the recent proliferation in focus groups, programmes and policy change regarding plastic pollution is due to the increase in scientific research on the issue of plastic debris. Ultimately, they suggest that science and policymakers should work together,

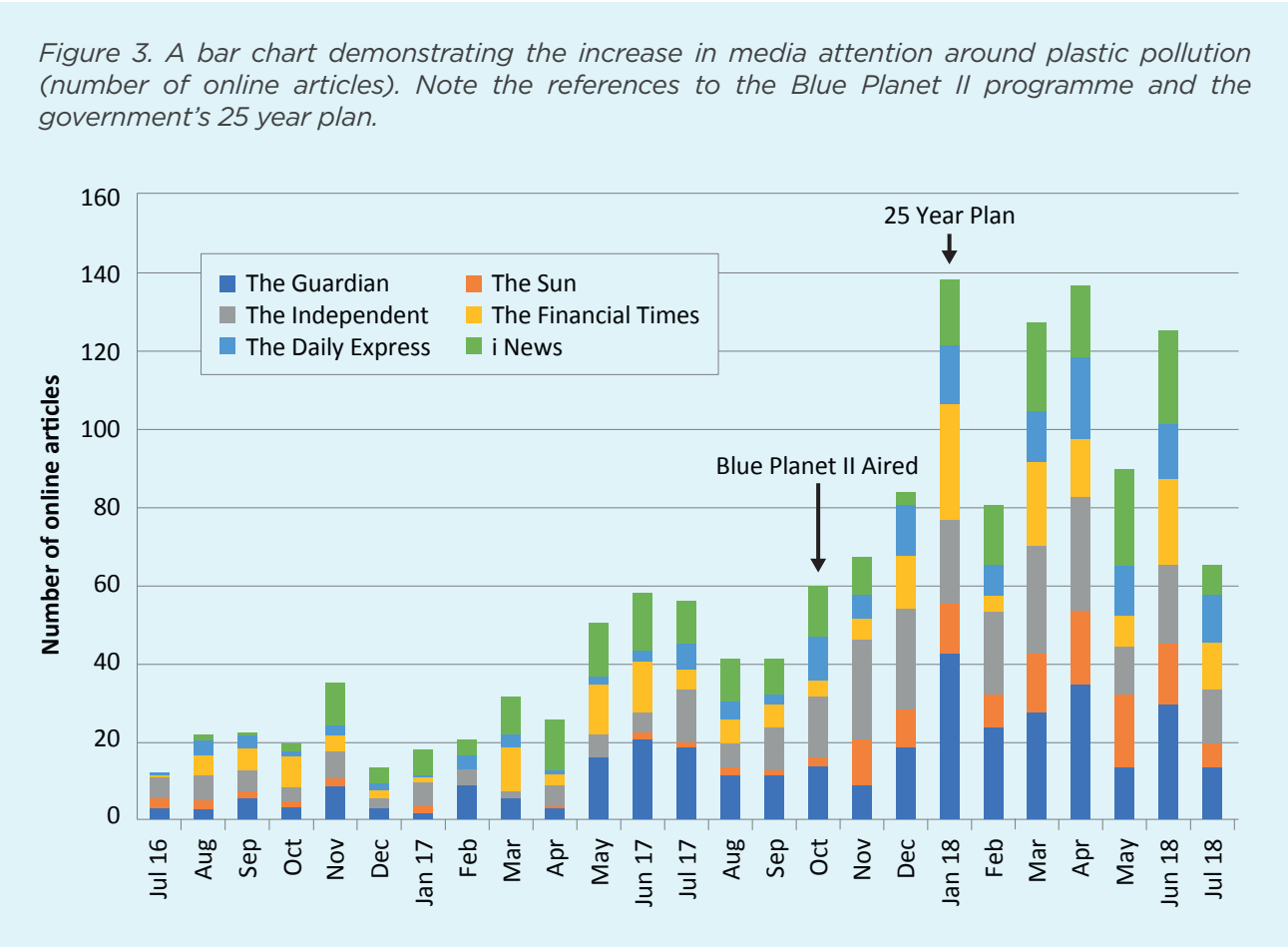
using science to drive positive change and fill the gaps in knowledge, incentivised by the need for evidence to enable policy change (2016:16–23).

My research identified that to affect policy there is, in a sense, a transition from scientific evidence, for example an increase in awareness derived from scientific evidence which ultimately influences policymakers to adjust their discourse to represent their voters’ concerns. However, rather than being linear it is a collaboration of actors that influence each other that drives change. This corroborates Jasanoff and Wynne’s (1998) argument that the policy-science relationship is not a linear schema of speaking truth to power. Moreover, there are complex frameworks including policy cultures. Science is key for policy change and helps to change social norms and behaviour, which ultimately begins to reveal why science is not the sole influence on the UK’s recent action, as policy is influenced by a collaboration of actors.

3.3. Civic effects on policy

The increase in media attention to plastic pollution shows a staggering rise in national newspaper articles focusing on the problem. I identified a clear increase in attention on the issue, particularly after the Blue Planet II series, and again following the release of the Environment Plan.

My interviews soon became focused on the “Blue Planet effect” – the notion that the recent attention to plastic pollution was inspired by the BBC documentary series Blue Planet II, which aired in the winter of 2017 (Pozniak, 2018; Stranger, 2018; Murray, 2018). All the participants discussed how the programme helped to push the issue up the political agenda, demonstrating the influence of the media on policy.



Clapp and Swanston (2009), Dauvergne, (2018) and Knoblauch, Mederake and Stein (2018) discuss norm dynamics and their impact on policy. Clapp and Swanston reflected on plastic-bag policy discourse, looking at the role of industry actors and how the media affects social norms, referring to the 2009 BBC documentary *Message in the Waves*. Their paper focuses on the differences in policy and action between developed and developing countries, suggesting that although there has been movement in plastic-bag policy in both the Global North and South, public pressure is a major influence in the former, stemming from NGO campaigns which predominantly target Western governments (according to Knoblauch, Mederake and Stein (2018:3)).

Hall explained the Foucauldian idea around discourse and power that discourses “produce meaningful knowledge about that subject. This knowledge influences social practices, and so has real consequences and effects” (1992:295). Ruxton spoke about interviewing Sylvia Earle, the marine biologist and National Geographic explorer, who said,

“you might not care even if you know, but you can’t care if you don’t know” (Ruxton, 2018). Ruxton believes that public awareness is key to the plastic-pollution problem.

Once the public begins to support an issue, NGOs use the public pressure in the form of petitions to take to parliament (Greenpeace, 2018). The Greenpeace petition for a deposit-return scheme for plastic bottles received around three hundred thousand signatures, and the petition to get supermarkets to reduce their plastic received around five hundred thousand, a record for Greenpeace. The City to Sea petition for a plastic tax, received 240,000 signatures and a petition for a cotton-bud ban received 157,000 signatures (Greenpeace, 2018; Cassar, 2018). Petitions are a way to provide a platform to indicate the electorate’s concerns. (Greenpeace, 2018). All of my interview participants reflected an increase in attention to the plastic problem after *Blue Planet II*. The Conservative MP and Minister of State at the Department for Business, Energy and Industrial Strategy Claire Perry advised in a letter to me that “the government has been very keen to harness this enthusiasm” (Perry, 2018).

The *Blue Planet* effect was frequently mentioned in interviews, media, and parliament debates (Hansard). *Blue Planet II* demonstrated the effect that plastic pollution was having on the oceans and instigated conversation and debate about plastic pollution (Mail Online, 2018). Michael Gove, the Secretary of State for Environment, Food and Rural Affairs at the time, was quoted as being “haunted” by images from the series (Rawlinson, 2017). Following *Blue Planet II* in the winter of 2017, the media attention more than doubled (see Figure 3), including in *The Daily Mail* and *The Telegraph*, reaching beyond the “usual papers like *The Guardian* and *The Independent*, and thus incorporated different and more conservative readers” (Greenpeace, 2018).

Blue Planet II put the problem of plastic pollution into people’s homes (Foster, 2018), giving people who may not have been aware of it knowledge – and knowledge is one important precondition “for the development competence leading to action and behavioural adjustments in relation to the environment” (Jensen, 2002). “Behavioural change is fast becoming the ‘holy grail’ for sustainable development policy” (Jackson, 2005: cited in Hargreaves et al., 2011:80). It is important to note that many green groups, including the participants interviewed, were already aware and campaigning about the plastic problem – Sky had launched its *Sky Ocean Rescue* in January 2017, but *Blue Planet II* brought it to a broader audience (Greenpeace, 2018; Cassar, 2018; Foster, 2018; skyoceanrescue.com, 2018). A body of literature considers the “correlation between pro-environmental attitudes and pro-environmental behaviour” (Bamberg and Möser, 2007:14), and the importance of behaviour, as the world’s problems are caused by humans, such as “global warming, urban air pollution, water shortages, environmental noise, and loss of biodiversity” (Steg and Vlek, 2009:309). Behaviour change is one thing, but in order to influence policy it has to be recognised by policymakers, or businesses, who see a gap for commercial gain in the marketplace.

Vince and Hardest argue that “the traditional form of governance through government and regulation has been unable to solve many of the world’s ‘tragedy of the commons’ environmental issues” (2018:6), meaning that the oceans as a “common” resource have been

polluted by the “tragedy” of human-made plastic. They discuss the benefit of a “holistic, integrated approach” to solve the marine-pollution issue with a combination between community and market instruments (2018:3). This is similar to Jasanoff and Wynne’s policy culture framework and the collaboration of “shared beliefs, discourses, practices and goals” that are combined influences in the theoretical approach to social construction (1998:17).

Businesses reacted to the Government’s Environment Plan. Shortly after publication, Iceland committed to eliminating plastic packaging (Slawson, 2018) while Morrisons advised that paper bags would be used for loose fruit and vegetables (Field, 2018), and a rise of attention on the prospect of plastic-free aisles ensued (Taylor, 2018). In the same sense that the government can be seen to be tackling the problem for “good news stories” (Greenpeace, 2018), businesses can boost their reputation by being seen to be tackling the issue.

3.4. Political and economic influences on policy

Political and economic factors are important to this discussion. The circular economy is mentioned in the Environment Plan along with the comment that “the economy exists within the natural world and cannot be separated from it” (Defra, 2018a:84). A theme that became prevalent during the interviews is that the political climate is a factor in the government tackling plastic pollution. The referendum result for the UK to leave the EU (referred to as Brexit hereafter) was suggested as a reason for the government moving forward with a plastic-pollution policy as “something positive that the government can be seen to be doing” (Foster, 2018).

Annex 1 of the Environment Plan is focused on understanding natural capital, defined as “the elements of nature that produce value or benefits to people (directly and indirectly), such as the stock of forests, rivers, land, minerals and oceans, as well as the natural processes and functions that underpin their operation” (Defra, 2018b:6). In the 25-year Environment Plan and its Annex 1 (Defra, 2018b), using the coding programme NVivo, “capital” was found 261 times, “value”² 203 times, “economic”³ 169 times and “costs”⁴ 146 times (see Table 1).

²Including “stemmed words”: value, valued, values, valuing.
³Including “stemmed words”: economic, economically, economics.
⁴Including “stemmed words”: cost, costly, costs.

Table 1. Word count in the 25-year Environment Plan and Annex 1			
Rank	Word	Count	Similar Words
19	capital'	261	capital, capital'
32	valuing	203	value, valued, values, valuing
45	economic	169	economic, economically, economics
60	costs	146	cost, costly, costs

Almost every time “capital” was counted it followed the word “natural”. Similarly, most times “value” was used (which can denote importance rather than just monetary value) it referred to the economic value of natural resources and natural capital. For example, “the way farmland and woodland filter the air is valued at £182m and £794m per annum” (Defra, 2018a:42).

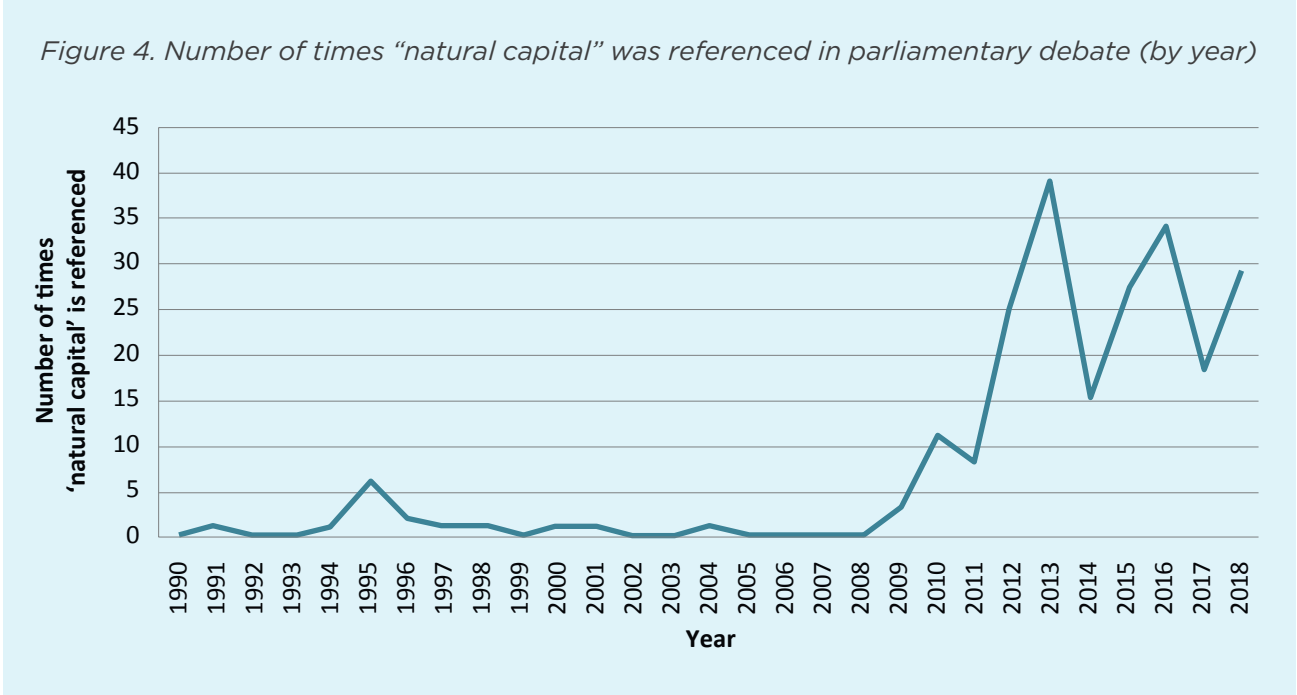


Figure 4 shows that the use of the phrase “natural capital” in parliament increased substantially since 2008, from zero mentions in 2008, natural capital was referenced 39 times in 2013 and 29 times in 2018. This probably coincides with the creation of the Natural Capital Committee (NCC) – an independent advisory committee that advises the government on the sustainable use of natural capital – and therefore the beginning of the focus on this issue. It was first used in 2012, with its 2016 focus assisting the government in developing its Environment Plan (Gov.uk, 2018).

It is argued that natural capital should be accounted for in the equation of profits, “to provoke society to acknowledge the value of ecosystem services” (Liu et al., 2010:54). Valuing natural resources could be a way to ensure the protection and conservation of species and habitats.

However, rather than for the protection of nature itself, the term “natural capital” refers to the benefit for humans and ensuring there are enough resources to live comfortably. Accepting a monetary value on nature accepts its commodification (Read and Cato, 2014).

Critics of the idea of nature as capital find fault with classing natural ecosystems as services, and Read and Cato argue that labelling nature as capital exploits and makes “available for sale the very natural world those same environmentalists seek to protect” (166). There are those who argue that the “‘natural capital’ agenda is morally wrong, intellectually vacuous, and most of all counter-productive” (Monbiot, 2018a). Using natural resources for human means – i.e. food and jobs, as stressed by the NCC – is what Fairhead, Leach and Scoones identify as “green grabbing”, which is appropriating land for food or fuel (2012).

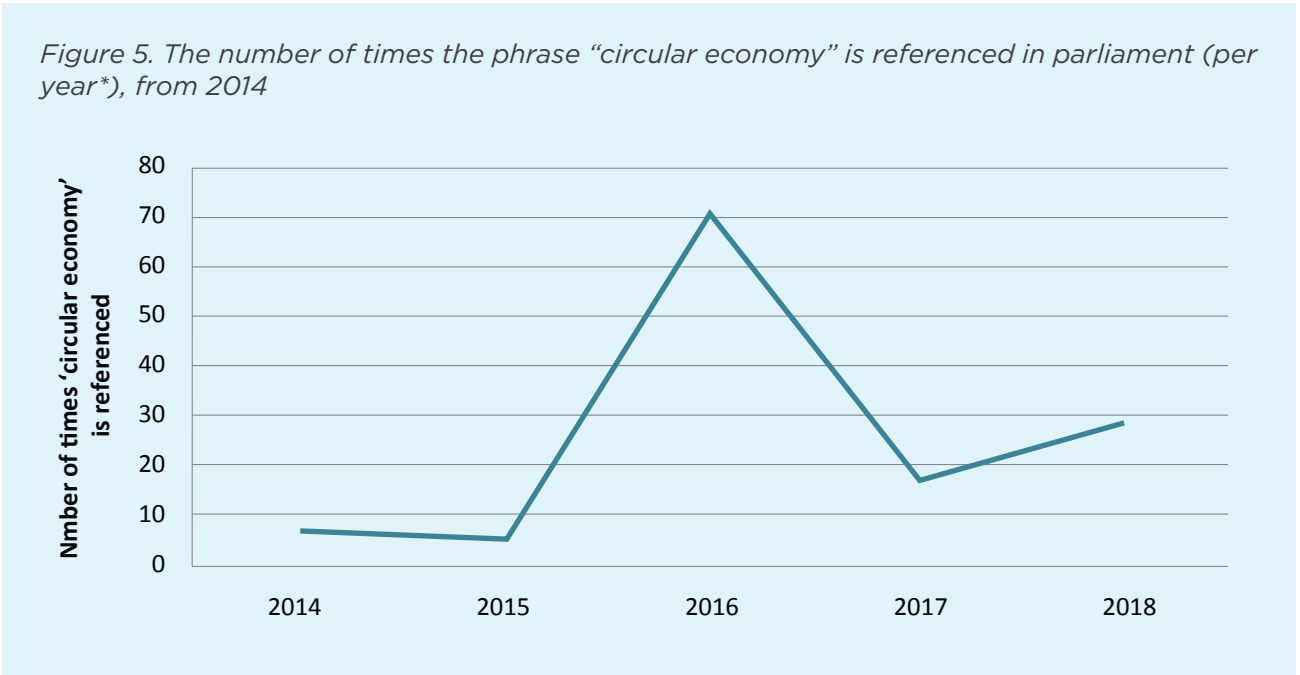
The discourse around governance can arguably be seen to focus on economics and protecting the ocean as a resource. There is the potential of greenwashing from politicians in their promotion of the green economy – an economy that protects the environment alongside stimulating global economic recovery (Borel-Saladin and Turok, 2013). Greenwashing has been defined as a strategy to symbolically engage in environmental issues but lacking action (Walker and Wan, 2012). Borel-Saladin and Turok criticise the green economy as being limited to an “orthodox economic model” (2013:217). Liu et al. expand on the commodification of nature and the ocean in which the environment is seen as “one of society’s important assets” (2010:54). Read and Cato state that accepting the valuation of nature is “acceptance of its

commodification” (2014:153). I argue that governance is perhaps beginning to value the ocean as a commodity, and therefore focuses on protecting it.

There is growing attention around a sustainable design for an economy, replacing the linear model of “mass production and mass consumption” (Esposito, Tse and Soufani, 2018:6). Esposito, Tse and Soufani identify the arguments for a circular economy, which “could potentially eliminate 100 million tons of waste globally in the next five years”. They suggest that “value creation continues to be critical in moving the circular economy from concept to practice” (13). The new model has the potential to be disruptive as well as innovative, as it effects government policy, businesses and consumers. When referring to the circular economy, the Environment Plan argues that “a healthy economy depends on a healthy environment” (Defra, 2018a:84). The term “circular economy” is used in reference to efficiency and reducing waste and costs. The Ellen MacArthur Foundation’s

“The New Plastics Economy: Rethinking the future of plastics & Catalysing action” (2016) is referred to.

Further documents relating to the circular economy discourse include “Closing the loop – An EU action plan for the circular economy” (European Commission, 2014) and the Institute for the European Environmental Policy’s “Plastics marine litter and the circular



economy” (Brink et al., 2016). The circular economy was referenced in 61 debates between 2014 and Summer 2018, not including sessions on “topical questions”⁵ (See Figure 5).

It was apparent from the interviews that Michael Gove was prominent in the attention to plastic pollution. Appointed as Secretary of State for Environment, Food and Rural Affairs in 2017, he requested that the Natural Capital Committee advise on the 25-year Environment Plan. “He has been a much more active environment secretary than any that we’ve had in recent history” remarked the Green Party leader and MP Caroline Lucas (2018). Part of the discourse around Michael Gove was the idea that he and the current Conservative government are looking for good news stories (Greenpeace, 2018), and Gove “wants to make a name for himself at Defra” (Lucas, 2018). Dr Foster from Marine Conservation Society believed the 25-year Environment Plan was driven by Michael Gove’s engagement with the plastic issue and how “politicians can improve their image” (2018).

Due to the current environmental climate following Brexit, it was insinuated that the government is using this issue to be seen to doing good (Foster, 2018; Cassar, 2018). Brexit had much news coverage following the EU referendum in June 2016, with online newspapers dedicating entire sections to the topic (The Guardian, 2018; The Sun, 2018). It is not clear whether it is a coincidence that, at the same time as Brexit was covered a lot in the media, the Blue Planet programme made the public aware of the plastic pollution problem, which led to the government “tackling something that the public care about” (Cassar, 2018). However, the political climate has arguably had an influence on the Environment Plan.

4. Conclusion

I aimed to reflect on the potential influences and reasons for the UK government to tackle the plastic-pollution problem. My investigation in carrying out interviews and looking at parliament debates and documents highlighted how the plastic-pollution problem has been addressed by a policy looking at plastic consumption and litter. I spoke to campaigners and one Member of Parliament, and received a reply letter from another MP. Their opinions joined theories around policymaking I identified in my research particularly that it takes a combination of influences for policy to be created. It was clear from the theory that influencers collaborate with each other, and my primary research showed this in reality – science affected civic responses which in turn influenced political attention and action, while civic and consumer responses influenced both business and political action, with organisations and politicians adjusting to keep consumers or voters.

In addition to the conclusion that policy change needs a combination of collaborative influences, it is important to account for the specific circumstances at the time. The media event of Blue Planet II was agreed by all I spoke to in having had substantial influence on the issue. Following this and considering the political climate with Brexit, which must be acknowledged, interviewees recognised that the government focused on the popular environmental issue for a good news story. Overall, the economic priority to utilise the natural capital seems dominant in influencing the government’s plan to secure the environment, with the acknowledgement of the public concern used in the rhetoric in the Environment Plan. The increased public concern on the issue of plastic pollution was the catalyst for increasing actions from all actors that are needed for policy change.

⁵ Topical questions in the House of Commons are questions that may be asked by MPs during the last 15 minutes of most ministerial question sessions (UK Parliament, 2018).

REFERENCES

Azzarello, M., and Van Vleet, E. (1987), “Marine birds and plastic pollution”, *Marine Ecology Progress Series*, No. 37, pp. 295–303.

Barboza, L.G.A., Vethaak, A.D., Lavorante, B.R., Lundebye, A.K., and Guilhermino, L. (2018), “Marine microplastic debris: An emerging issue for food security, food safety and human health”, *Marine Pollution Bulletin*, no. 133, pp. 336–348.

Bamberg, S., and Möser, G. (2007), “Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour”, *Journal of Environmental Psychology*, Vol. 27 No. 1, pp. 14–25.

Blockstein, D. (1988), “Washington Watch: Congress tackles ocean plastic pollution”, *BioScience*, Vol. 38 No. 1, p. 19.

Bonanno, G., and Orlando-Bonaca, M. (2018), “Ten inconvenient questions about plastics in the sea.” *Environmental Science & Policy*, no. 85, pp. 146–154.

Borel-Saladin, J., and Turok, I. (2013), “The green economy: Incremental change or transformation?” *Environmental Policy and Governance*, Vol. 23 No. 4, pp. 209–220.

Brink, P., Schweitzer, J.P., Watkins, E., and Howe, M. (2016), “Plastics marine litter and the circular economy”, A Briefing by IEEP for the MAVA Foundation.

Cassar, M. (2018), Interview for postgraduate research project. 25th July.

Clapp, J., and Swanston, L. (2009), “Doing away with plastic shopping bags: International patterns of norm emergence and policy implementation”, *Environmental Politics*, Vol. 18 No. 3, pp. 315–332.

Dauvergne, P. (2018b), “The power of environmental norms: Marine plastic pollution and the politics of microbeads”, *Environmental Politics* Vol. 27 No. 4, pp. 579–597.

Dauvergne, P. (2018a), “Why is the global governance of plastic failing the oceans?” *Consequences of Actor Level Livelihood Heterogeneity for Additionality in a Tropical Forest Payment for Environmental Services Programme with an Undifferentiated Reward Structure*, No. 51, pp. 22–31.

Defra (2018a), *A Green Future: Our 25 Year Plan to Improve the Environment*. London: HM Government.

Defra (2018b), *A Green Future: Our 25 Year Plan to Improve the Environment Annex 1: Supplementary Evidence Report*. London: HM Government.

Doshi, V. (2018), “Here is why Mumbai have criminalised plastic bags”, *The Independent*, available at: <https://www.independent.co.uk/environment/mumbai-india-plastic-bag-ban-environment-recycling-pollution-a8430641.html> (accessed 27 August 2018).

Ellen Macarthur Foundation (2012), *Towards the Circular Economy: Volume 1*, available at: <https://www.ellenmacarthurfoundation.org/assets/downloads/publications>

/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf (accessed 30 August 2018).

Ellen MacArthur Foundation (2016), “The new plastics economy: Rethinking the future of plastics & catalysing action”, available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/NPEC-Hybrid_English_22-11-17_Digital.pdf (accessed 11 June 2018).

Esposito, M., Tse, T., and Soufani, K. (2018), “Introducing a circular economy: New thinking with new managerial and policy implications”, *California Management Review*, Vol. 60 No. 3, pp. 5–19.

Eriksen, M., Mason, S., Wilson, S., Box, C., Zellers, A., Edwards, W., Farley, H., and Amato, S. (2013), “Microplastic pollution in the surface waters of the Laurentian Great Lakes”, *Marine Pollution Bulletin*, Vol. 77 No. 1–2, pp. 177–182.

Eriksen, M., Lebreton, L., Carson, H., Thiel, M., Moore, C., Borerro, J., Galgani, F., Ryan, P. and Reisser, J. (2014), “Plastic Pollution in the World’s Oceans: More than 5 Trillion Plastic Pieces Weighing over 250,000 Tons Afloat at Sea”, PLoS ONE, Vol. 9 No. 12, pp. 1-15.

Greenpeace. (2018), “Interview for postgraduate research project”. 20 July.

Gregory, M. (1991). The hazards of persistent marine pollution: drift plastics and conservation islands. *Journal of the Royal Society of New Zealand*, 21(2), pp. 83-100.

The Guardian (2018), “Brexit”, available at: <https://www.theguardian.com/politics/eu-referendum> (accessed 27 August 2018).

Imo.org (2018), “International Convention for the Prevention of Pollution from Ships (MARPOL)”, available at: [http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-\(marpol\).aspx](http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx) (accessed 27 August 2018).
Hall, S. (1992), “The West and the rest: Discourse and power”, in S. Hall and B. Gieben (eds.), *Formations of Modernity*, Cambridge: Policy Press.

Halden, R. (2010), “Plastics and health risks”, *Annual Review of Public Health*, Vol. 31 No. 1, pp. 179-194.

Hargreaves, T. (2011), “Practice-ing behaviour change: Applying social practice theory to pro-environmental behaviour change”, *Journal of Consumer Culture*, Vol. 11 No. 1, pp. 79-99.

Jasanoff, S., and Wynne, B. (1998), “Science and decision making”, in S. Rayner and E. Malone (eds.), *Human Choice & Climate Change: Volume 1, The Societal Framework*, Columbus, Ohio: Battelle Press, pp. 1-87.

Jensen, B. (2002), “Knowledge, Action and Pro-environmental Behaviour”, *Environmental Education Research*, Vol. 8 No. 3, pp. 325-334.

Keeley, J., and Scoones, I. (1999), “Understanding environmental policy process: A review”, IDS Working Paper 89.

Knoblauch, D., Mederake, L., and Stein, U. (2018), “Developing countries in the lead – what drives the diffusion of plastic bag policies?” *Sustainability* 10, pp. 1-24.

Lentz, S. (1987), “Plastics in the marine environment: Legal approaches for international action”, *Marine Pollution Bulletin*, Vol. 18 No. 6, pp. 361-365.

Liu, S., Costanza, R., Farber, S., and Troy, A. (2010), “Valuing ecosystem services”, *Annals of the New York Academy of Sciences*, Vol. 11851 No. 1, pp. 54-78.

Lucas, C. (2018), Interview for postgraduate research project. 6 July.

Mail Online (2018), “Viewers criticise Blue Planet II for linking plastic to whale death”, available at: <http://www.dailymail.co.uk/news/article-5100643/Blue-Planet-II-slammed-linking-plastic-dead-whale.html> (accessed 30 August 2018).

Monbiot, G. (2018a), “Price less”, available at: <https://www.monbiot.com/2018/05/18/price-less/> (accessed 27 August 2018).

Murray, J. (2018), “The Blue Planet Effect: BBC to ban single use plastics from 2020”, *Business Green*, available at: <https://www.businessgreen.com/bg/news/3026642/the-blue-planet-effect-bbc-to-ban-single-use-plastics-from-2020> (accessed 27 August 2018).

Perry, C. (2018), Plastic Pollution, 8 August, personal email communication.

Pozniak, H. (2018), “The Blue Planet effect: Why marine biology courses are booming”, *The Guardian*, available at: <https://www.theguardian.com/education/2018/jan/12/blue-planet-effect-why-marine-biology-courses-booming> (accessed 27 August 2018).

Rawlinson, K. (2017), “Michael Gove ‘haunted’ by plastic pollution seen in Blue Planet II”, *The Guardian*, available at: <https://www.theguardian.com/environment/2017/dec/19/michael-gove-haunted-by-plastic-pollution-seen-in-blue-planet-ii> (accessed 27 August 2018).

Read, R., and Cato, M. (2014), “A price for everything?’: The ‘natural capital controversy’”, *Journal of Human Rights and the Environment*, Vol. 5 No. 2, pp. 153-167.

Rochman, C., Cook, A., and Koelmans, A. (2016), “Plastic debris and policy: Using current scientific understanding to invoke positive change”, *Environmental Toxicology and Chemistry*, Vol. 35 No. 7, pp. 1617-1626.

Ruxton, J. (2018). Interview for postgraduate research project. 23 July.

Shevealy, S., Courtney, K. and Parks, J.E., 2012. *The Honolulu Strategy: a global framework for prevention and management of marine debris*.

Silver, J., Gray, N., Campbell, L., Fairbanks, L., and Gruby, R. (2015), “Blue economy and competing discourses in international oceans governance”, *The Journal of Environment & Development*, Vol. 24 No. 2, pp. 135-160.

Skyoceanrescue.com. (2018). Sky Ocean Rescue - Inspiring people to make everyday changes to #PassOnPlastic | Sky Ocean Rescue. [online] Available at: <https://www.skyoceanrescue.com/> (accessed 8 Dec. 2019).

Slawson, N. (2018), “Iceland supermarket vows to eliminate plastic on all own-branded products”, *The Guardian*, available at: <https://www.theguardian.com/business/2018/jan/15/iceland-vows-to-eliminate-plastic-on-all-own-branded-products> (accessed 27 August 2018).

Steg, L., and Vlek, C. (2009), “Encouraging pro-environmental behaviour: An integrative review and research agenda”, *Journal of Environmental Psychology*, Vol. 29 No. 3, pp. 309-317.

Stranger, J. (2018), “The Blue Planet effect: Who can you really trust?” *Campaignlive.co.uk*, available at: <https://www.campaignlive.co.uk/article/blue-planet-effect-really-trust/1457702> (accessed 27 August 2018).

The Sun. (2018), “Brexit”, available at: <https://www.thesun.co.uk/topic/brexit> (accessed 27 August 2018).

Taylor, M. (2018), “World’s first plastic-free aisle opens in Netherlands supermarket”, *The Guardian*, available at: <https://www.theguardian.com/environment/2018/feb/28/worlds-first-plastic-free-aisle-opens-in-netherlands-supermarket> (accessed 27 August 2018).

Vince, J., and Hardesty, B. (2018), “Governance solutions to the tragedy of the commons that marine plastics have become”, *Frontiers in Marine Science*, Vol. 5 (June).

Walker, K., and Wan, F. (2012), “The harm of symbolic actions and green-washing: Corporate actions and communications on environmental performance and their financial implications”, *Journal of Business Ethics*, Vol. 109 No. 2, pp. 227-242.

Webb, H., Arnott, J., Crawford, R., and Ivanova, E. (2013), “Plastic degradation and its environmental implications with special reference to poly (ethylene terephthalate)”, *Polymers*, Vol. 5 No. 1, pp. 1-18.

Yagoda, M. (2018). “Huge wave of plastic pollution shows extent of global damage”, *The Independent*, available at: <https://www.independent.co.uk/news/world/plastic-pollution-wave-video-dominican-republic-environment-parley-activist-santo-domingo-a8457251.html> (accessed 27 August 2018).

Xanthos, D. and Walker, T. (2017). International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review. *Marine Pollution Bulletin*, 118(1-2), pp.17-26.

MOVING FROM AWARENESS TO ACTION ON SINGLE-USE PLASTIC BOTTLES

Andrea Turner (Certified Member, Market Research Society), Market Research Manager: Andrea is a market and social-research specialist with over 17 years' experience. Working within Keep Britain Tidy's award-winning Centre for Social Innovation, one of the world's leading litter and waste-behaviour research organisations, Andrea currently manages the delivery of all the research projects for the organisation, with a strong focus on understanding public behaviour and using social-research innovation techniques to change behaviour.

1. BACKGROUND

1.1 Background

In 2018, UK bottled-water sales¹ topped four billion litres, an increase of 7% on the previous year. The market was estimated to be worth £3.3bn at retail prices. Zenith Global predicts that the market will continue to grow robustly, but at a slower pace than in recent years, with forecasts of 3–5% growth a year up to 2023.

With BRITA's longstanding commitment to offering consumers more sustainable alternatives to single-use plastic and supporting efforts to protect the marine and wider environment, as well as Keep Britain Tidy's aspiration to end waste for present and future generations, there is a shared ambition to reduce waste from single-use plastics. In 2016, Keep Britain Tidy and BRITA partnered to identify joint initiatives for addressing the problem. The first project, entitled Water, Water Everywhere, commenced in 2017 and explored the state of play with regards to businesses serving tap water, the public's attitudes towards asking for tap water in reusable water

bottles, and the provision and usage of water dispensers in schools. This project, which forms part of BRITA's wider #SwapForGood campaign,² explores the triggers and barriers to increasing the uptake of reusable water bottles, and builds on the work undertaken in 2017.

1.2 Aim and objectives

The aim of this research was to understand what would support the greater uptake of reusable water bottles by the public and retailers.

The objectives were to:

- understand the personal, social and environmental triggers and barriers to the uptake of reusable water bottles
- identify the excuses and narratives at play across both audiences and how to address them
- develop a series of practical recommendations for increasing the uptake by both the public and retailers

¹ Zenith Global's Water Drinks Report, 2019 featured in Packaging News, 12 March 2019.

² BRITA's #SwapForGood campaign aims to help eradicate the use of single-use plastic bottles by encouraging people to make small changes to their lifestyle that can have a big impact on the environment.

2. METHODOLOGY

The research was carried out between January and February 2018 by Keep Britain Tidy's Centre for Social Innovation and involved:

- Two x 1.5-hour focus groups with 24 consumers of bottled water to explore the triggers and barriers to using reusable water bottles. The focus groups included a mix of those who had never used a reusable water bottle and those who occasionally use a reusable water bottle, and were split by how environmentally minded the participants were.
- Four x 45-minute semi-structured, in-depth telephone interviews with senior representatives from high-profile businesses that sell bottled water. These included a major supermarket, a food-on-the-go retailer, a company managing transport hubs and a large leisure-centre company. The interviews were structured to gather insights about the operational and business barriers, both internally and externally, to

increasing the uptake of reusable water bottles and took place in March 2018.

- A nationally representative online perceptions survey³ with 2,138 adults aged 18+ in the UK. The survey was designed to verify and quantify the insights gathered from the focus groups and telephone interviews. Comparisons are made with a similar survey⁴ conducted in the same way in 2017.

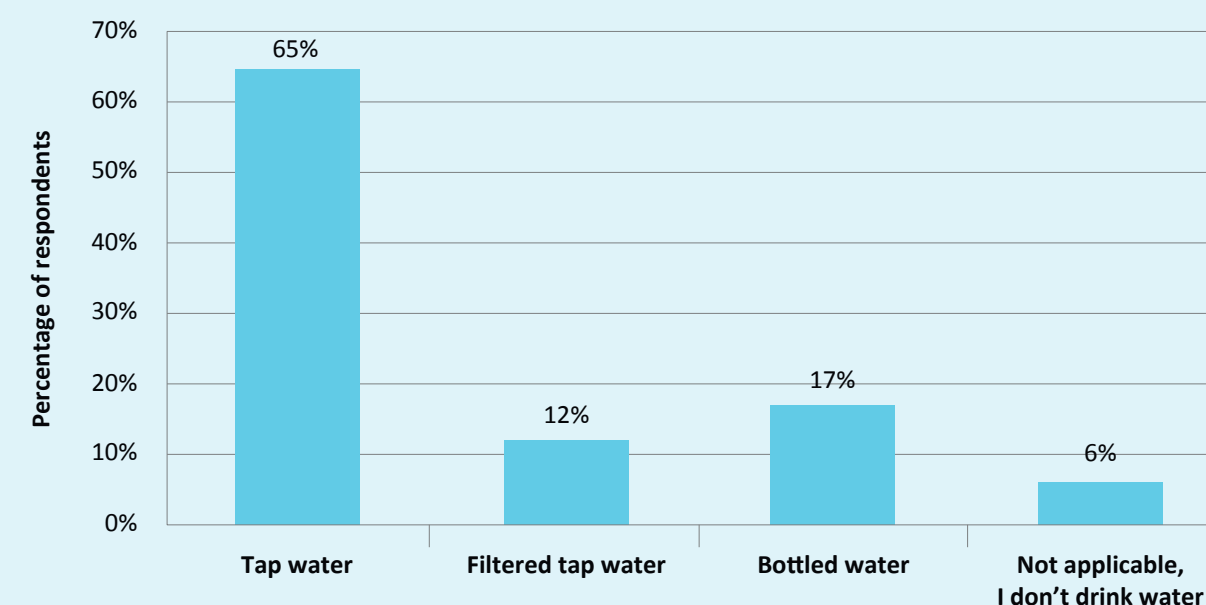
3. UNDERSTANDING THE TRIGGERS AND BARRIERS TO INCREASING THE PUBLIC'S USAGE OF REUSABLE WATER BOTTLES

3.1 Drinking-water sources at home and away from home

Type of water generally consumed

The vast majority of respondents (65%) said that they generally drink tap water as opposed to bottled water (17%) and filtered tap water (12%). Just 6% said that they don't drink water on a regular basis (see Figure 1 below).

Figure 1. Type of water most consumed by respondents



Base: All respondents = 2,138

³ Undertaken by YouGov, 28-29 March 2018. The survey was conducted with the UK public using an online interview administered to members of the YouGov Plc UK panel of eight hundred thousand plus individuals who agreed to take part in surveys. The total sample size was 2,138 adults. Emails are sent to panellists selected at random from the base sample.

⁴ The survey was undertaken by YouGov, 16-17 March 2017.

Source of water consumed when away from home

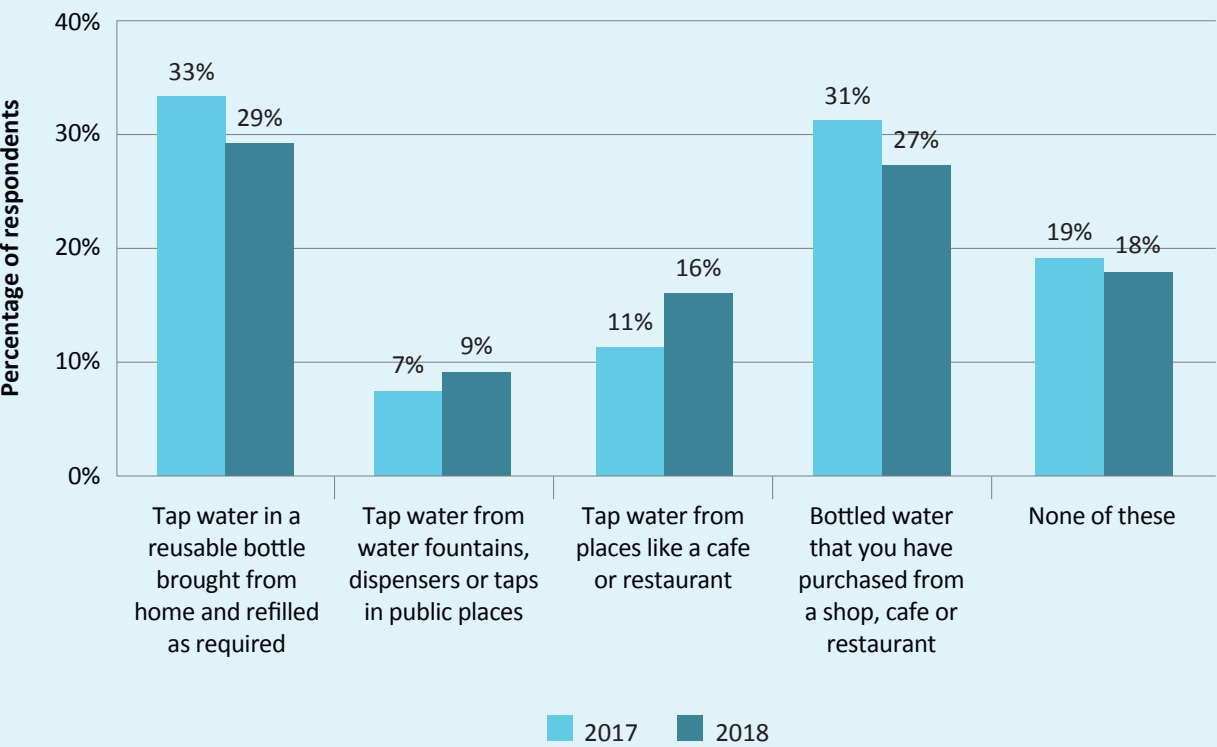
When away from home, the largest proportion of respondents (29%) reported that they drink tap water in a reusable water bottle brought from home that they refill as required. Women (33%) were more likely than men (25%) to do this.

In all, 27% said that they drink bottled water purchased from a shop, cafe or restaurant,

whilst 16% drink tap water from places like cafes and restaurants. Just 9% of respondents indicated that they source their drinking water from public water fountains, dispensers or taps whilst out and about.

The results remain similar to those of 2017, with minor changes across all indicators (see Figure 2 below).

Figure 2. Source of water mostly consumed when away from home



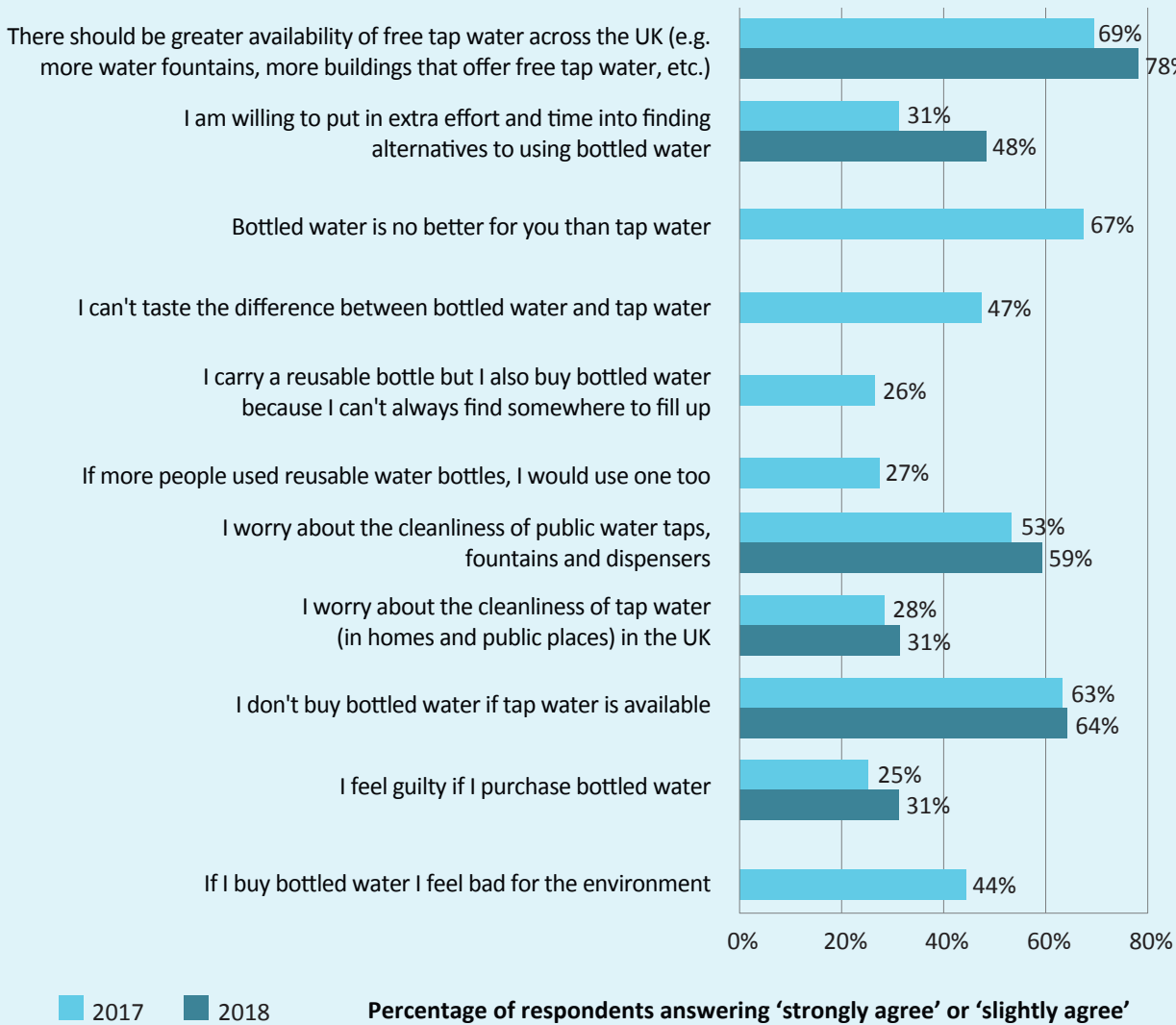
Base: All respondents, 2018 = 2,138, 2017 = 2,119

3.2 Perceptions of tap and bottled water in the UK

Respondents were shown a list of statements made by other people regarding different perceptions of tap and bottled water in the UK, and were asked to state the extent to which

they agreed or disagreed with each statement. Comparisons are made with 2017 data, where it exists (see Figure 3).

Figure 3. Percentage of respondents agreeing with statements about water



Base: All respondents, 2018 = 2,138, 2017 = 2,119

Around eight in ten (78%) people agreed that there should be greater availability of free tap water, such as more water fountains and buildings offering it. Around two-thirds agreed that bottled water is no better for you than tap water (67%), and around half (47%) can't taste the difference. Those in the East Midlands were the most likely to agree that they can't taste the difference between bottled water and tap water (56%), whereas agreement was

lowest in the East of England (40%). More than six in ten said that they don't buy bottled water if tap water is available (64%), although 59% worry about the cleanliness of public water taps, fountains and dispensers, and a third (31%) worry about the cleanliness of tap water, be it in the home or in public places.

Around one in two people are willing to put extra effort and time into finding alternatives to bottled water (48%).

The focus groups revealed that there were social norms at play with regards to usage of reusable water bottles; respondents would be more likely to use a reusable bottle if others did so too.

“(I would be more comfortable using a reusable bottle) if they were more accepted, more culturally recognised”.
“If more people carried them around (I would be more likely to use a reusable bottle too)”.

This concept was tested in the quantitative survey. More than a quarter of respondents (27%) agreed that if more people used a reusable bottle then they would too.

It was apparent in the focus groups that respondents were very much aware of the environmental issues surrounding single-use plastics.

“The environmental thing is very big at the moment. It does make me stop and think (about buying bottled water)”.

“If I use bottled water I feel very bad for the environment”.

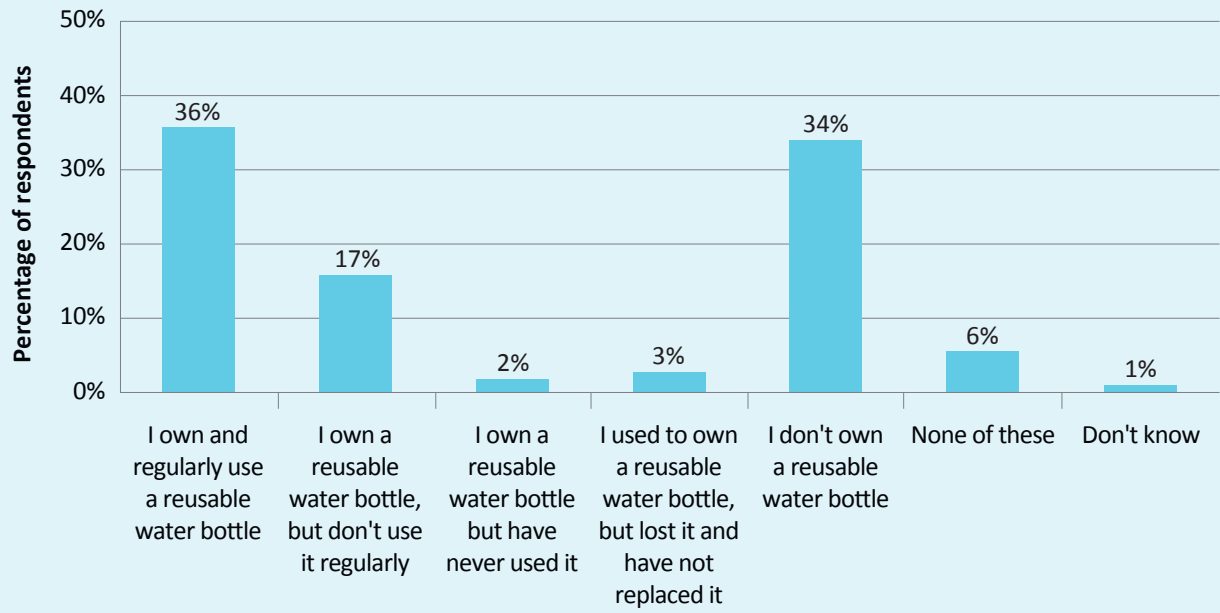
The quantitative survey showed that, when purchasing bottled water, 44% felt bad for the environment and 31% felt guilty about it. The proportion of people feeling guilty had risen by seven percentage points from 24% since 2017. Guilt was higher among women where 35% felt guilty, compared with 27% of men.

3.3 Reusable bottles

Ownership and usage of reusable water bottles

Just over a third of people (36%) owned and regularly used a reusable water bottle, whilst 17% owned one but didn't use it regularly, and 2% owned one but had never used it. Around a third (34%) did not own a reusable water bottle. Women were more likely than men to own and regularly use a reusable water bottle, with 40% doing so compared to 31% of men. Younger people were more likely to own and regularly use one, with 49% of 25-34 year olds and 45% of 18-24 year olds doing so, compared with 27% of those aged 55 and over (see Figure 4 below).

Figure 4. Ownership and usage of reusable water bottles



Base: All respondents = 2,138

Occasions and reasons when regular reusable-bottle users might buy bottled water

Those respondents who said that they regularly use a reusable water bottle were asked about the occasions when they might be likely buy bottled water, along with reasons why.

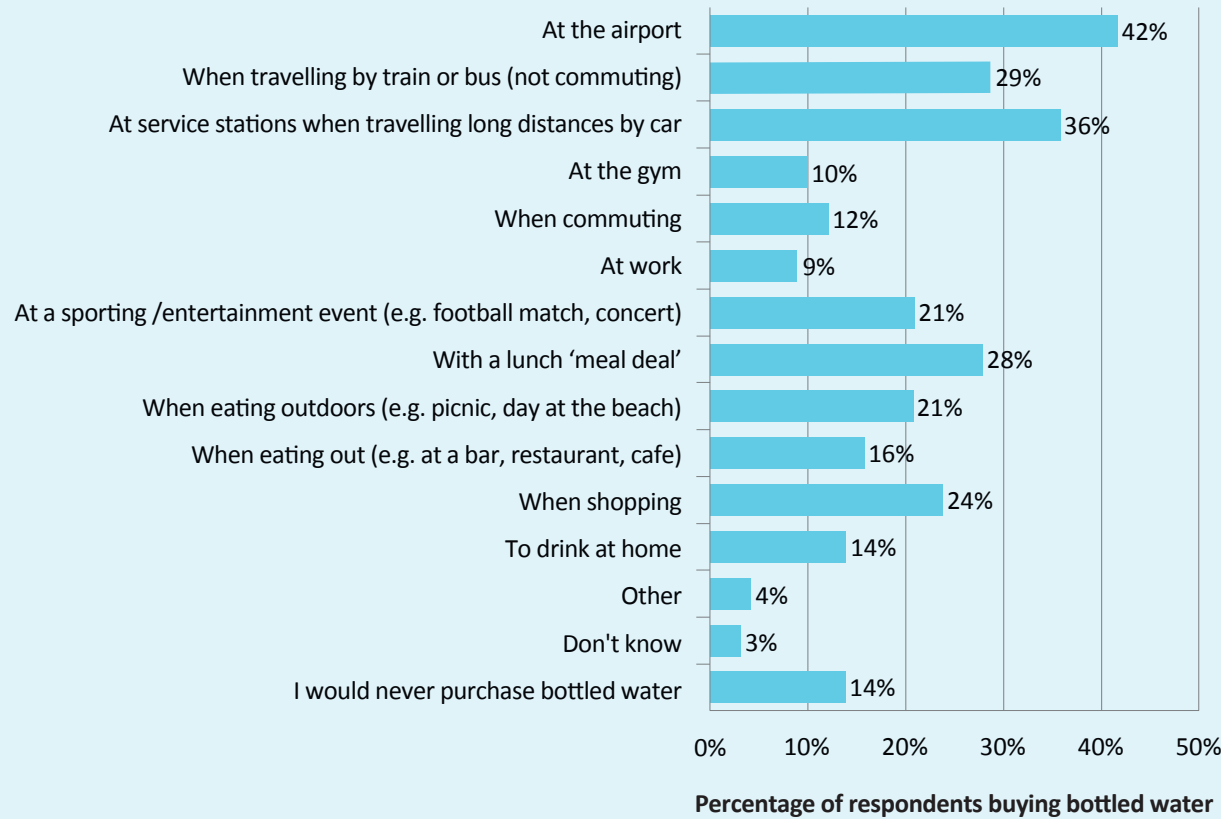
Travel was a key factor – “at the airport” was the most common occasion on which they would purchase bottled water (42%). This is not surprising given the restrictions around liquids in hand luggage and perhaps a lack of awareness (or maybe forward planning) given that you can take an empty bottle through airport security and fill it once you are through.

When at service stations and travelling long distances by car (36%), when travelling by train or bus, not commuting (29%) and with a lunch “meal deal” (28%) were also cited as the other most common occasions (see Figure 5 below).

The focus groups found that the perceived lack of access to tap water whilst travelling, especially long distances, was a key driver of the decision to purchase bottled water.

“Travelling, say on a car journey, is a good time to have bottled water”.

Figure 5. Occasions when respondents might buy bottled water

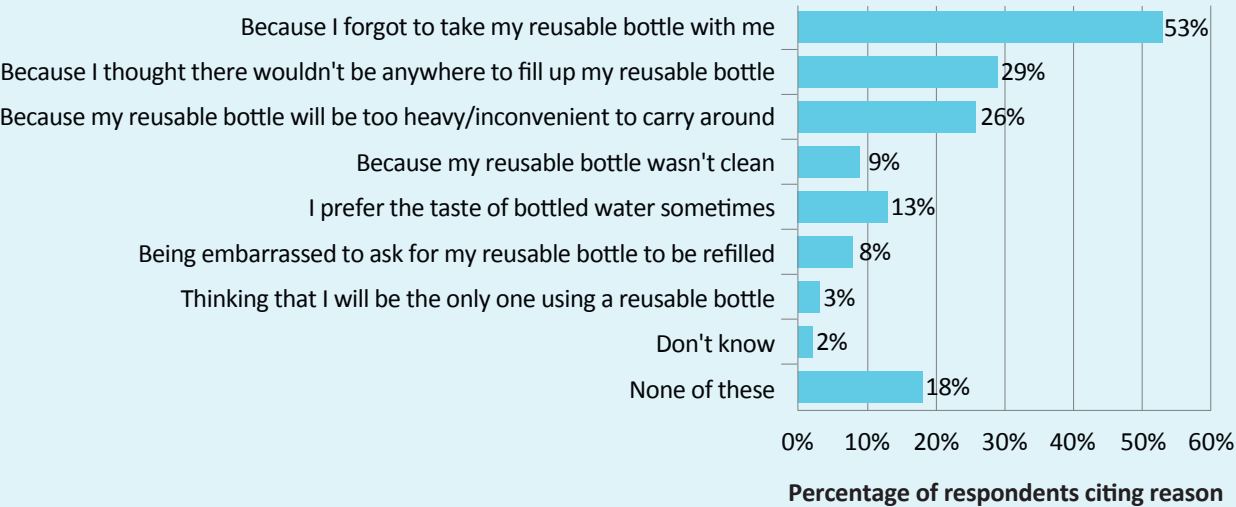


Base: All respondents who regularly use a reusable bottle = 762

Regarding the reasons why those who regularly use a reusable water bottle might purchase bottled water, forgetfulness was the most common reason given and was cited by the majority (53%) of regular reusable bottle users.

Thinking that there won't be anywhere to fill up the reusable bottle (29%) and that the reusable bottle would be too heavy/inconvenient to carry around (26%) were also common reasons given (see Figure 6).

Figure 6. Reasons why respondents might still buy bottled water



Base: All respondents who regularly use a reusable bottle = 769

Increasing the uptake of reusable water bottles

Respondents were shown a list of circumstances and were asked to state whether each one would make them more or less likely to use a

reusable water bottle, or whether it would make no difference. The results are shown in Table 1 below, alongside those from the 2017 survey, where comparative data exists.⁵

Table 1. Factors affecting likelihood of using a reusable water bottle		
Would each of the following circumstances make you more or less likely to use a reusable water bottle when out and about, or would it make no difference?	Proportion of respondents (“a bit more” and “a lot more” likely) 2017	Proportion of respondents (“a bit more” and “a lot more” likely) 2018
If I could help myself to drinking water in shops, cafes, etc. and did not need to ask the staff for it	-	73%
If there was a greater availability of tap/filtered water	55%	69%
If I knew that businesses would willingly fill up my water bottle	55%	67%
If I could be sure that the water is safe to drink for refilling my bottle when out and about	49%	61%
If there were more public water fountains available	-	58%
If I knew my rights as a consumer to request tap/filtered water	41%	52%

Base: All respondents, 2017 = 2,119, 2018 = 2,138

⁵ The survey used in 2017 was updated to reflect insights from the public focus groups and consultation with retailers. Not all questions from 2017 were asked in 2018.

There is strong evidence that the greater availability of tap/filtered drinking-water facilities would increase the uptake of reusable water bottles across the UK, with 69% of respondents indicating that this would make them “a bit more” or “a lot more” likely to use a reusable water bottle when out and about. This is an increase of 14% since the previous survey was conducted in 2017, which perhaps demonstrates a substantial increase in awareness levels of alternatives to bottled water.

The perception that businesses have a role to play in the provision of drinking-water facilities also increased this year, with 67% agreeing that they would be more likely to use a reusable bottle if they knew that businesses would willingly fill it up – up from 55% the previous year. Better still would be if people could help themselves to drinking water without needing to ask staff – around three-quarters (73%) agreed that this would increase the uptake of reusable bottles. This was evidenced in the focus groups, where people felt that being able to “help yourself” to drinking water would take away the feelings of awkwardness in asking for refills and aid behaviour change.

“(I would be more likely to use a reusable bottle) if water was more available and more organised”.

For half of people (52%), knowing their rights as a consumer in requesting tap/filtered water would make them more likely to use a reusable bottle.

A large proportion of respondents (61%) indicated that being sure that water is safe to drink would encourage them to use a reusable water bottle, an increase from 49% in the previous year. Therefore, it is imperative that interventions aimed at increasing access to tap/filtered water for the public should ensure that health and safety concerns are addressed.

Style and design of reusable water bottles

Similarly, respondents were shown circumstances regarding the style and design of reusable water bottles and were asked to state whether each one would make them more or less likely to use one, or whether it would make no difference (see Table 2).

Table 2. Style and design features affecting likelihood of using a reusable water bottle	
Would each of the following circumstances make you more or less likely to use a reusable water bottle when out and about, or would it make no difference?	Proportion of respondents (“a bit more” and “a lot more” likely) 2018
If I knew my reusable bottle was hygienic	58%
If more reusable bottles were designed to filter tap water	47%
Better-designed reusable water bottles, e.g. lighter, more stylish, more durable	44%

Base: All respondents = 2,138

The design and style of reusable water bottles were discussed in depth in the public focus groups, along with design features that would improve the experience for the user. Respondents in the focus group outlined concerns about hygiene standards (avoiding bacteria and mould), the shape and weight of the bottles and worries about them leaking.

“My reusable one at work got mould in it, I decided to look and open up the straw and it was green all over”.

“I’m afraid my water bottle is going to leak everywhere”.

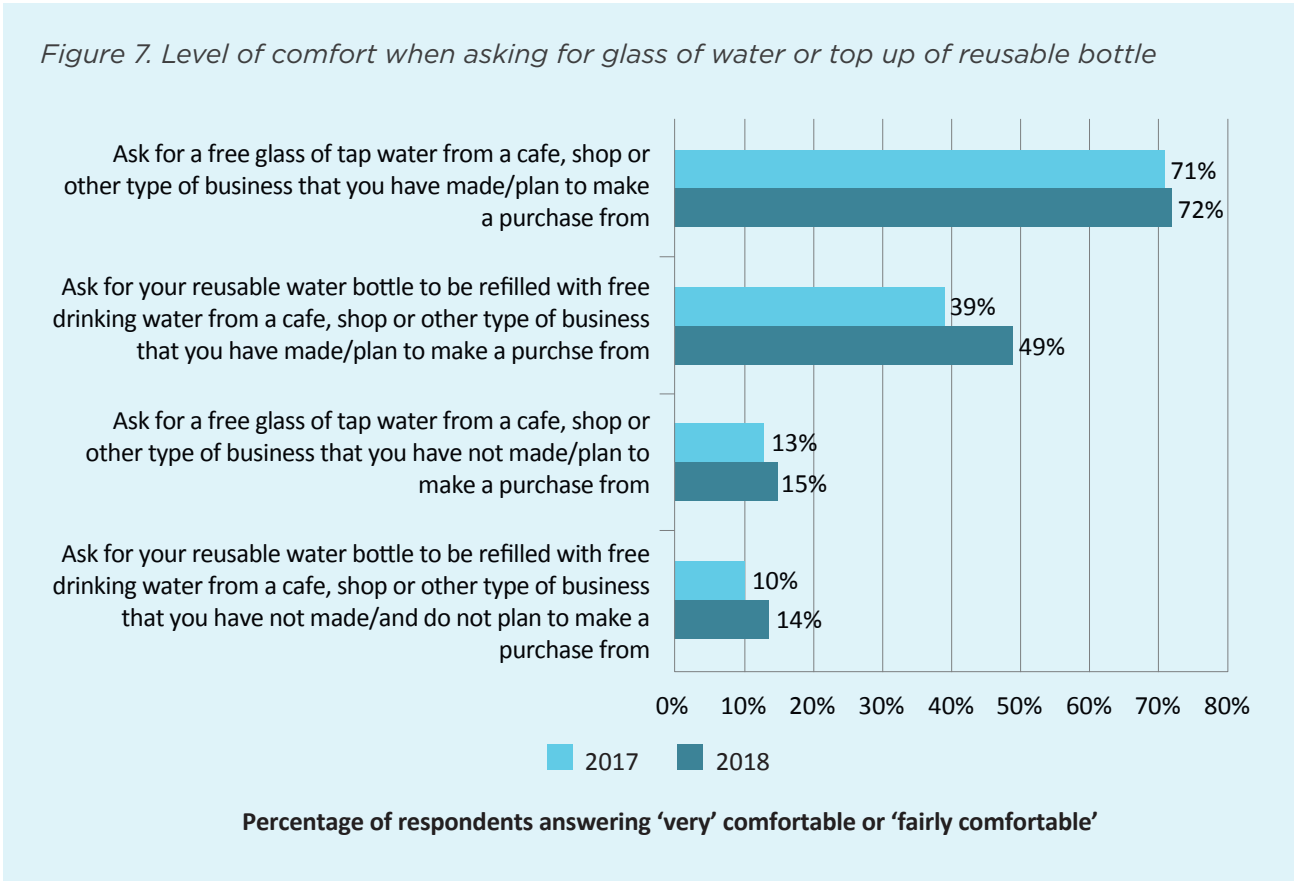
The quantitative survey found that hygiene was a factor influencing the likelihood of using a reusable bottle. More than half (58%) would be more likely to use one if they knew it was hygienic. Ensuring that guidance for maintaining hygiene standards is supplied to those purchasing/using reusable bottles is an important factor in any efforts to maximise the uptake of reusable bottles on a large scale. Almost half of respondents (47%) stated that they would be more likely to use one if they were designed to filter tap water, and 44% would be more likely to use them if they were designed better, e.g. were lighter, more stylish and more durable.

3.4 What’s the perceived role for businesses in increasing the uptake of reusable water bottles?

Current state of play for the public accessing water from local businesses

Respondents were asked how comfortable they would feel if they requested a free glass

of tap water or top up for their water bottle in businesses that they had made, or planned to make, purchases from and those they had not (see Figure 7).



Base: All respondents = 2,138

Generally, there were no changes in how comfortable people felt asking for a free glass of tap water from business that they had/had not made or intended to make a purchase from between the 2017 and 2018 data. However, there was a noticeable change in the proportion of people that felt comfortable asking for a free top up in their reusable bottle from such businesses, which increased by 13%, from 36% in 2017 to 49% in 2018.

Respondents were typically comfortable when making a request for a free glass of tap water from a business that they have made a purchase or plan to make a purchase from (72%). Respondents weren’t as comfortable asking for their reusable bottle to be refilled, even when they had made a purchase or planned to make a purchase from the business (49%).

Respondents were typically uncomfortable asking for either a free glass of tap water or their reusable bottle to be refilled from a business that they had not made/didn’t plan to make a purchase from. This was evidenced in the focus groups, where respondents described feelings of awkwardness and self-consciousness if they were to ask for their reusable bottle to be refilled, which was deemed to affect their likelihood to purchase bottled water.

“If I hadn’t purchased (something), I would have felt bad about it, really self-conscious”.

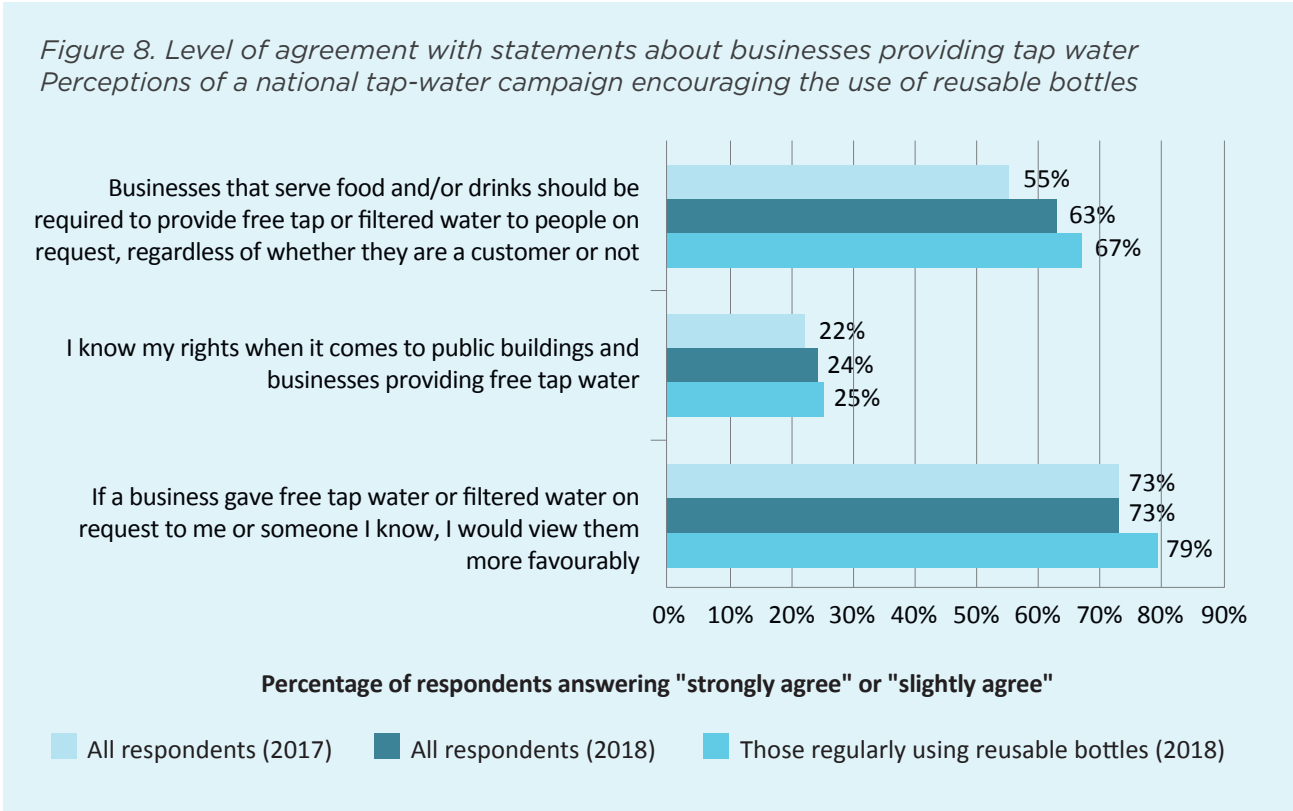
“If we hadn’t bought something we would feel uncomfortable about asking to get our water bottle refilled”.

Businesses providing tap water

Around two-thirds of respondents agreed with the statement that businesses that serve food and/or drinks should be required to provide free tap or filtered water to people on request, regardless of whether they are a customer or not (63%). Agreement was slightly higher among those who regularly used a reusable water bottle (67%). Just a quarter of people (24%) agreed that they know their rights when it comes to public buildings and businesses providing free

tap water. Those who regularly use reusable bottles did not have a greater awareness of their rights; similarly, only a quarter of people agreed that they know their rights.

More than seven in ten (73%) of all respondents agreed that they would view a business more favourably if it gave them or someone they knew free tap water. Again, agreement was slightly higher among those who regularly use a reusable water bottle (79%) (see Figure 8).



Base: All respondents = 2,138, those regularly using reusable bottles = 769

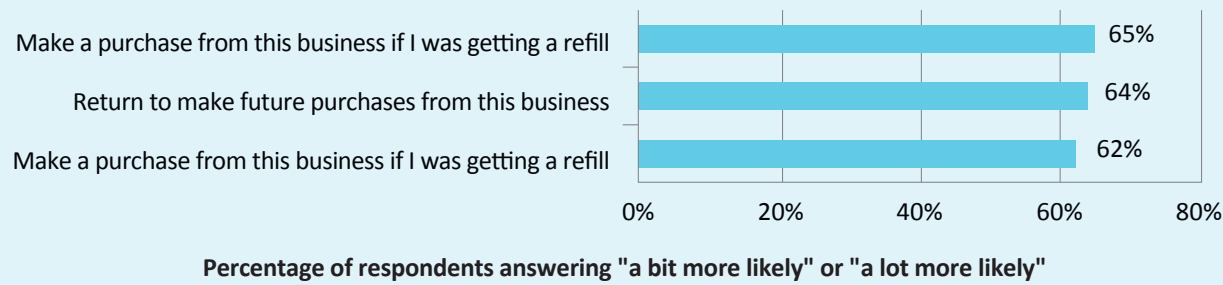
Respondents were informed of the ReFILL scheme⁶ currently operating in certain parts of the UK. They were then asked a series of questions about the scheme and its potential impact on their behaviour.

Two-thirds (66%) of respondents said knowing that local businesses in their area were participating in the ReFILL scheme would make them more likely to use a reusable bottle when out and about.

Around two-thirds also stated that they would be likely to make a purchase from a business involved in the scheme if they were getting a refill (64%), and that they would be likely to return to a participating business to make future purchases (64%). A similar proportion (62%) would also be likely to make a purchase from a participating business over its competitors that are not part of the scheme. The results are shown in Figure 9.

⁶ ReFILL is a national, practical tap-water campaign that aims to make refilling a reusable bottle as easy, convenient and cheap as possible by introducing refill points on every street. Respondents were asked to imagine that there was a free tap-water scheme available in their area, where local businesses have signed up to be a ReFILL Station, allowing passers-by to “pop in to top up” their reusable bottle free of charge.

Figure 9. Impact of the Refill scheme on buying behaviour



Base: All respondents = 2,138

3.5 Level of support/opposition for levy on plastic bottles

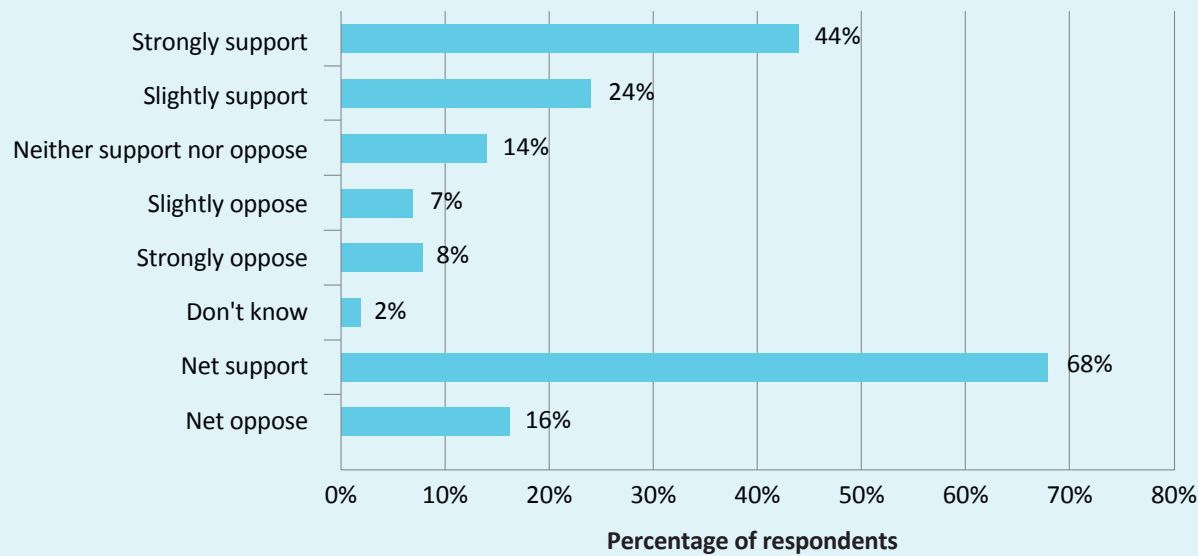
The idea of a levy on drinks sold in plastic bottles was tested in the quantitative survey. Respondents were asked if they would support or oppose the introduction of a five pence levy on plastic bottles, similar to the charge currently in place for plastic bags (see Figure 10 below). In general, the public were in support of the levy (68% were supportive). However, when the concept was explored in depth in the focus groups there were a number of practicalities to consider that could affect the intended impact.

Respondents debated the level of the levy and felt that five pence wouldn't be enough to alter purchasing behaviour.

Similarly, how any levy was framed when presented to the public was also perceived to be likely to affect the success. There was a feeling that people will need to be aware that a levy is in place and that it was not just an increase in the price of bottled water.

"I don't think 5p would make a difference".
"It's different. When you are shopping, you are adding 5p (for a plastic bag), but unless you are telling people they are paying (a levy), they just think that's the price of the water".

Figure 10. Level of support for levy on drinks sold in plastic bottles



Base: All respondents = 2,138

Respondents were also asked if a levy of five pence on single-use plastic bottles would make them more or less likely to use a reusable water bottle when out and about, or if it would make no difference. Two-fifths of respondents (42%) stated that it would make them more likely (a bit more likely or a lot more likely) to use a reusable water bottle.

4. FEEDBACK FROM BUSINESSES THAT SELL BOTTLED WATER

As part of the research we consulted with senior representatives from four businesses that sell bottled water to understand the triggers and barriers to increasing the uptake of reusable water bottles and how businesses can play a role in enabling this. Their feedback is outlined below.

4.1 Reducing the environmental impacts of the business

All four respondents agreed that reducing the environmental impacts of their business operations was a priority for their organisations. This included reducing different types of waste/waste sent to landfill, increasing recycling and reducing energy. To some extent, for all four respondents this was by their customers' (or the wider public's) concerns over environmental issues.

"We want to reduce the environmental impact of the things that have the greatest environmental impact first".
"We are very much influenced by the public, although we are already quite tuned in to customer thought processes".

4.2 Current provisions made for customers to drink water

Each retailer differed in their provision of drinking water. Whilst all sold bottled water and three out of four provided tap water, the provision differed from one retailer to another and there was a perception that this was perhaps inconsistent across sites/outlets across the UK. None of the retailers actively promoted access to tap water for customers.

"We sell bottled water as part of our range...Regarding tap water, people can ask for it, it's very informal, but that's the process that should be used".

The extent to which drinking-water options were taken up by customers also differed between retailers. The provision of free tap water was not promoted by any of the retailers and there was a sense that the take-up of tap water (whether in a glass or refilling a reusable bottle) was low, but requests were not specifically monitored and there was a likelihood that requests were honoured for both customers and non-customers, although the definition of a customer varied. For two respondents, a customer was anyone in their sites/outlets, whilst for the other two it was someone who was spending money.

"We don't promote it (access to free tap water). I've no sense of level of demand of people asking for refills".

Respondents were asked what they thought were the most important qualities for their customers when it came to the water served in their businesses. Responses were wide-ranging, and for tap water included:

- cleanliness
- being safe to drink
- source
- cleanliness of the water dispenser, including being free from calcification
- taste

"If it's clean and safe (a water dispenser/fountain) then I think it's a good indication that people would be happy to drink from it".

For bottled, it included:

- cost
- availability/convenience
- quality
- mineral content
- brand influence
- temperature
- taste
- perceived health benefits

4.3 Plans to change provision of water for customers

All four organisations consulted had intentions to improve the provision of tap water to their customers, albeit their intentions for what the improved provisions would look like differed and were not set in stone. Trialling new provisions and monitoring success besides identifying lessons learnt before large-scale implementation were key to the decision-making process. One organisation was keen to get involved with the Refill scheme but had a number of operational issues to address before signing up all its UK outlets.

“We are actively looking into it, but we haven’t got a clear plan of what we are going to do”.

“We will need to do tests and trials before we implement anything more broadly”.

4.4 Level of priority for providing more convenient options for customers to access free water

There were mixed views around how much of a priority it was to provide more convenient options for customers to access free water. However, all four respondents recognised that public awareness and concern for single-use plastics are currently rising, and envisaged that customer demand for access to free water could increase as a result. Therefore, there would be a need for them to meet this demand and customers’ expectations.

“It’s a relatively high priority because of the customer perception of plastic bottles”.

“It’s not a top priority. We are starting to look at it and anticipate a demand... We will eventually need to do something more”.

4.5 Barriers to increasing opportunities for customers to access free water and/or reusable bottles

Barriers to increasing the provision of free water for customers were predominantly operational ones for the individual organisations consulted. There was a general feeling that whatever provision was delivered would need to be fairly consistent across all their sites/outlets in the UK. Whilst it wouldn’t necessarily be a “one size fits all” approach, the general process would need to be the same so that customers would have the correct expectation of the provision wherever they were in the country.

“We need a process, and that process must be the most appropriate way for us to provide it (tap water). It must be a process that works consistently”.

Specific barriers included:

- understanding the best way for the business to provide water, i.e. a chosen method and how they can make it work for the business/fit into the “customer experience”
- identifying how to offer tap water/refills at the same time as maintaining the current level and speed of service
- cost of installation/setting up
- cost and process of servicing/maintenance of the provision
- ensuring consistency across all sites/outlets
- ensuring that the water provided is clean and safe and identifying where responsibility for this lies
- location of where to site the provision/space available for the provision
- ensuring accessibility to all people
- raising awareness that the provision is available
- understanding the potential impact on sales of bottled water and how to generate wider benefits for the business.

“Can we still serve customers as quickly and effectively, even at peak times? It could negatively impact our service. It is another process that would need putting in place and a process that wouldn’t be generating any income”.

“Water fountains make a mess and are better placed on tiled floors so that spillages can be easily cleaned up. They also need maintaining and that creates a job for staff”.

In terms of how these barriers could be overcome, responses were different from each of the four organisations. For one, increased demand from the public, political pressure for businesses to take action and examples of how other businesses had made it work, including how they had turned it into a benefit for their business, would help to address the barriers. For another, it was important to consult with the local communities, including customers, staff and cleaning contractors, to enable any provision to take into account their input, concerns and ideas. For the third, it was essential to take learnings from the trials to help overcome barriers. For the fourth organisation, legislation was deemed to help overcome barriers, for example if the provision of tap water was written into building regulations then, for any new premises that were built, the location of the water dispensers/fountains/provision would be built in by architects from the beginning, ensuring that the type of provision, its location, how it accesses the water supply and how it is cleaned and maintained ran more smoothly and worked more effectively than if it was an afterthought, being added to an existing building. Public demand and/or wider benefits for the organisation would need to be significant to make the provision, effort and investment worthwhile.

4.6 Level of support for a deposit-return scheme for plastic water bottles

Respondents were asked whether their business would support or oppose a deposit-return scheme for plastic water bottles⁷ and to what extent, if at all, they thought it could have a similar impact to that achieved by the levy on plastic bags. For one organisation, the business already recycles plastic bottles and recycling is a key part of their strategy, and it is written into their contract for the contractors to sift out recyclable items that have been placed in the general waste bin. The introduction of a deposit-return scheme would not impact this. The issue would be around how their outlets would administrate and manage the scheme. For the second respondent it was a case of, if the government decides to go ahead, then they will collaborate in a way that best suits their organisation. For the third, there was a keen interest in the ongoing work around deposit-return schemes in Scotland and the finer detail of how it would work. Depending on what the model looked like and the level of control that retailers could have, there was a feeling that it could help to reduce both plastics and litter, but not necessarily as strongly as intended. The final respondent was unsure of the corporate response to the scheme.

“We have discussed this quite a bit. If the government decides on it, we will collaborate in a way that works best operationally for us”.

There was a general feeling that the issue was different to that of plastic bags, and that the two issues were too different to compare. For example, the five pence charge for a plastic bag is typically a much lower proportion of the overall spend than would be the case for the deposit on a bottle of water, plus the effort required to return the bottle and get the deposit back. A question was raised regarding how the scheme would apply to bottled water purchased in multipacks, in terms of the level of deposit required being quite significant.

⁷ Three of the four interviews took place before the government announced that there would be a consultation on the introduction of a deposit-return scheme in England (28 March 2018).

5. CONCLUSION AND RECOMMENDATIONS

This article has presented the triggers and barriers to increasing the uptake of reusable water bottles and other waste-avoidance solutions by the public and retailers. Provided below is a summary of the overall insights/issues and potential recommendations.

Greater availability of drinking-water facilities

– The present research revealed an increased awareness of the issues surrounding single-use plastic bottles among the public, and as a result businesses are feeling greater pressure from their customers to take action. However, the reality is that behaviour remains relatively unchanged. Using insights gleaned from this research, a number of recommendations for how reusable bottles could overcome such barriers is outlined below, and primary among these is availability. A large proportion of the public stated that they would be more likely to use a reusable water bottle if there was greater availability of drinking-water facilities. There are also positive perceptions of those businesses that offer access to water and suggest positive impacts on their business. Consideration should be given to how new provisions can be created and existing provisions made more visible through greater promotion. We suggest that a quick method of mainstreaming provision could be through making sure all accessible public buildings, e.g. council contact centres, are involved in such schemes as Refill and GiveMeTap! (with the associated #MindTheTap campaign).

Address intergenerational and cultural interventions

– A significant disparity exists between older and younger demographics owning and using reusable items, the latter being far more likely to. These figures are further intersected by the difference in guilt over environmentally destructive actions between women and men, suggesting the need to address both intergenerational and culturally specific interventions.

Normalise re-usable behaviour

– The impediment of potential social discomfort when asking for free tap water is likely to be helped via interventions which focus on the normalisation of reusable behaviours. These include drinking non-bottled water, using reusable water bottles and asking for tap water or refills on the go. Given the environmental concerns of the research respondents, we recommend that messaging and campaigns to promote schemes and/or encourage people to reduce consumption of

bottled water should include values-based messaging about the environmental benefits which can be derived and environmental impacts which can be avoided by participating. Existing campaigns, for example those which encourage people to carry water during hot spells or for health reasons, could be adapted to feature people carrying reusable bottles. Equally, promotion of the fact that free water and refills are available in particular buildings or from particular businesses could help to create and strengthen a social norm around asking for water on the go. It may be helpful to prioritise interventions and campaigns which encourage the 19% of people who already own a reusable water bottle but don't use it regularly or never use it to do so more regularly, over the third of people who don't currently own a reusable water bottle. Forgetfulness and the inconvenience of carrying reusable bottles were cited as key reasons why regular users of reusable water bottles might still buy bottled water. Interventions that demonstrate personal responsibility for the issue and/or how to build reusable water bottles into the daily routine, making them more of a habit, will help to increase usage.

Change public perception of tap water

– Unknown hygiene standards pose a significant but easily remedied hindrance to behaviour change. We recommend that communications about new or existing public water taps, fountains and dispensers address the concern expressed by the public around the safety and cleanliness of the provision. Where new installations are being planned, actual and perceived cleanliness should be considered as part of the design. Work is required to further increase the public's perception of tap water in public places as a clean and healthy resource, and why they should use a reusable water bottle. Around half of people questioned would not feel comfortable asking for a refill in a shop or cafe, even if making a purchase. Interventions which address this are strongly recommended. Again, this could include the better promotions of schemes, as well as other simple actions like putting out jugs of water to which people can help themselves, rather than requiring them to ask staff. These are likely to be effective given that three-quarters of people felt that the option to help themselves would make them more likely to use a reusable water bottle. This will be imperative to any further initiatives to increase uptake.

Decrease travel related usage

– Given that the occasions when those who regularly used a reusable water bottle sometimes purchased bottled water were travel-related and that this was driven by a feeling that there was limited access to top up their reusable bottles in airports, service stations, transport hubs, etc., we recommend raising awareness of any water fountains or dispensers provided in these locations, particularly airports, where the public is not necessarily aware that they are available. Furthermore, we recommend that interventions which encourage people to remember to take their reusable water bottle with them when going out and about, particularly when travelling, could be effective. For example, airports could promote the fact that empty reusable bottles can be taken through security, and ticketing and travel companies could prompt people to pack their reusable water bottle at the same time as reminding them via email or apps to print boarding cards or collect tickets. Reminders could also be sent via similar channels during hot-weather periods or when customers are being given other travel information.

The overall research insights from above shows a number of areas businesses can implement innovative strategies to increase the use of reusable items. For those companies producing or supplying reusable water bottles, it may be helpful to consider the aforementioned public perception of issues around hygiene, as well as the taste and the design, look and feel of the design, as well as the practicality. Consideration should be given to increasing the public's awareness of their rights when it comes to the provision of free water, given that the current levels of awareness are quite low. Further research with businesses that sell bottled water on quantifying the triggers and barriers could provide further insights to help increase the uptake of reusable water bottles and/or support the increased provision of drinking water. We recommend that decision makers, businesses and other stakeholders come together to discuss the recommendations made in this report. Ultimately, united efforts are needed for a meaningful discussion about how to overcome the operational barriers which currently exist, particularly for those that may be in a position to help develop a network of places where the public can access free and safe drinking water whilst on the go.

HOW CONSUMER ACTION CAN HELP BUILD A SUSTAINABLE FUTURE FOR FASHION¹

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Alana's research explores the relationship between fashion consumers and brands in the broader context of social and environmental responsibility. Core research interests include supply chain transparency and accountability and design as a tool for the implementation of circular innovation strategies.

THE CURRENT POSITION

The world is facing a “climate emergency”, a phrase that Greta Thunberg (2019), a 16-year-old student and environmental activist from Sweden, is insisting we use to describe the current global situation. The United Nations (2019) has announced that there are only 11 years to take action to prevent irreversible damage to the planet, meaning that immediate large scale change is needed. The equilibrium between humanity and nature has become unbalanced, with a sustained period of overuse resulting in an urgent call for a shift in daily activities to help prevent an irrevocable impact on the planet. Consequently, this human influence on the world has triggered the Anthropocene, a geological term that indicates the global scale of environmental change brought about by human activity (Brooks et al., 2018). Considered by many as custodians of the global eco-system (Harwood-Jones, 1985), humans are both the cause of the problem and the source of the solution to enable long-term behavioural change for the collective good of the planet.

Although perceived as a negative consequence of human use, the Anthropocene has been interpreted by some to be the start of a positive future, often referred to as “the good Anthropocene” (Bennett et al., 2018). This alternative perspective embraces

the essential change as an opportunity for new modes of commerce, innovative manufacturing systems and the flourishing of humanity. Some believe we are not in crisis but in the beginning of a new ecological epoch, ready for human-directed prospects (Ellis, 2011). In contrast, the Anthropocene has also been described as a myth, a constructed phenomenon to provide people with comfortable terminology to define the uncomfortable reality the world finds itself in. This perception thinks the Anthropocene is a utopian view of a future that is completely uncertain (Aravamudan, 2013).

Since the start of the Industrial Revolution, the global environment has been undergoing significant change as a direct result of human activity, with every action having a degree of social and environmental impact. The daily use of non-renewable resources has been dated back to the invention of the steam engine, where fossil fuels, including coal, oil and gas, were burnt for power. This was adopted by the UK clothing industry by 1870, where textile manufacturers operated more steam engines than any other industry sector. Whilst the sources of power have since changed, the use of the Earth's finite resources has not, with even carbon-neutral factories offsetting their use of non-renewable energy rather than changing the method and source of their power.

FASHION'S CONTRIBUTION

Fashion is one of the most polluting industries in the world, second only to oil, a finite resource on which the production of textiles relies heavily not only as a source of energy but as the raw material for many synthetic fibres. The shift from the predominant use of natural to synthetic fibres has contributed to the growth of the oil industry since the 1920s, when nylon, acrylic and polyester were first utilised for fashion applications. The increased use of these oil-derived fibres in conjunction with rising consumption levels caused the relationship between fashion, humans and the environment to change significantly over time (Brooks et al., 2018). Despite changes in the levels of consumption and material resources, the reliance on the Earth's resources has not waived, with the development of the value market sector and the fast fashion business model enabling further growth. The production of textile products contributes more to climate change than international aviation and shipping combined, and that is without taking into account the social impact that occurs at the expense of humans working in the product supply chain (Environmental Audit Committee, 2019).

The fast fashion business model first came to prominence in 2008, when the recession in the UK caused a surge in popularity of the value and low end of the fashion market. Whether through necessity or greed, UK consumers have become accustomed to the accessibility of large quantities of clothing at relatively inexpensive prices. Fast fashion focuses on the delivery of catwalk inspired products to the mass market and refers not only to the speed of delivery, but also the speed of consumption. A garment produced by a fast fashion retailer is made to a level of quality able to withstand up to only ten wear and wash cycles before disposal (Shields, 2008). This model of production and consumption has resulted in significant social and environmental pressures on the manufacturing supply chain, with the required speed of delivery to market often only being possible through compromises being made. This consumer appetite for new clothing has resulted in the UK's consumption levels being the highest in Europe at 26.7 kg per capita. This compares to a consumption rate of 16.7 in Germany, 16.0 in Denmark, 14.5 in Italy, 14.0 in the Netherlands and 12.6 in Sweden (Commons Select Committee, 2018).

The most sustainable clothing is said to be that which we already own, implying that the use of existing clothing is preventing the further use of virgin materials and ultimately extending the usable life of a product. This extension to the lifespan of a garment however requires alternative user mindsets and the utilisation of methods such as repair and reuse to facilitate practical engagement. Furthermore, education and knowledge are needed to again help develop this systemic shift towards the preservation of clothing in preference to a continual cycle of consumption and disposal. The need for fashion consumers to be upskilled is ever present, with the large majority of people not possessing the ability to apply practical product-life extension strategies such as repair or repurpose. Alternatively, when outsourcing these skills, the provision of repair services and the cost related to this is further putting people off engaging with such strategies, with repairs often costing more than the original purchase of the garment. A report published by The Environmental Select Committee in February 2019 has called to reduce taxes on repair services, the effective implementation of which has recently been evidenced in Sweden.

THE NEED FOR CHANGE

The traditional linear model of fashion consumption is outdated and in need of reform, moving towards a more considered and slower approach to garment production and use. Three hundred thousand tons of garments end up in household waste every year (Commons Select Committee, 2018), indicating that consumers either don't know or don't care about the impact the garments are having on the environment. To prevent this, the government has suggested an extended product responsibility (EPR) be implemented within a fashion context. This approach would see consumers become custodians of clothing rather than owners, but with the environmental onus remaining with the producer. This non-permanent ownership supports alternative consumption models such as the sharing economy, which has been suggested as a strategic priority to move the fashion industry from a linear model of take, make, dispose to a more holistic ownership model. The rental of fashion has escalated rapidly in the US market, with companies such as Rent the Runway being valued at \$1 billion

¹ A version of this article was previously published on The Conversation website: www.theconversation.com.

in March 2019 (Maheshwari, 2019). This model replicates the rush experienced by consumers when purchasing new clothing without the associated social and environmental costs. The success of the rental or access economy has been evidenced across multiple market sectors such as the shift towards streaming film and television through platforms such as Netflix and in the music industry with services such as Spotify.

However, in addition to consumer behaviour change, fashion brands and retailers have their role to play as invested stakeholders in the production and consumption of fashion products. Acting almost as a middle man, the fashion brand has the ability to influence multiple different players, including suppliers during the manufacturing supply chain and their customers through implemented marketing strategies in the purchasing process. At present, evidence suggests that the need for change is being tentatively acknowledged by fashion brands, with conservative action increasingly being adopted across multiple market levels. For example, the recent collaboration between Adidas x Parley has trainers being produced from 75% recycled ocean plastic waste as an alternative to using virgin materials. Further evidence of this existing brand engagement can be seen on the UK high street, where fast fashion retailers have initiated clothing take back schemes to help reduce the amount of clothing going to landfill in preference of recycling. However, this action is being evidenced only in single instances, with the focus towards change often being isolated to one or two areas of the overall fashion lifecycle, i.e. the use of recycled materials or end-of-life solutions, as previously discussed. In order for large scale impact to be achieved, brands need to extend their commitment to reach their business operations, with values being imbedded into everyday actions opposed to focusing on isolated pockets of concentrated activity. This more holistic approach to creating sustainable change could begin to build momentum in the fashion industry as a whole, helping to develop brand trust and consumer loyalty. This approach would work in opposition to current practice, where the consumer is presented with a series of choices which require a prerequisite level of knowledge in order to make responsible and informed decisions.

INCENTIVISING THE CONSUMER

In addition to the retailer being in a powerful position, the consumer also has influence over the choices that they make with their fashion products and consequently the impact these actions have from a social and environmental perspective. Through a series of adaptations in behaviour, consumers can begin to make small lifestyle changes in order to help create a positive sustainable impact. Enactment of their values is essential yet achievable, requiring a slower and more informed approach to purchasing fashion products. Actions such as considered purchasing, shopping as a reflection of personal values, considering alternative options to buying new and responsible disposal are all examples of these changes which consumers can choose to make. However, the successful adoption of such approaches requires active engagement from fashion consumers, with the individuals needing to be incentivised to get involved. This encouragement and rationale for engagement are said to often be the cause for the failure of previously launched initiatives, with consumers switching off from efforts being made to change their fashion use practices. There remain limited examples of this type of activity being exercised in the fashion market, with much focus being on monetary driven motivation opposed to alternative value-based methods. For example, retailers such as H&M and Intimissimi, who implement in-store take back schemes, offer vouchers in return for unwanted clothes. These however require minimum spends on future purchasing in order to use the voucher, encouraging further consumption. Alternative models for motivation are slowly being developed, with Zara collecting unwanted garments and, instead of financially rewarding the customer, donating the items to non-profit organisations and in some cases recycling or repurposing goods into fabrics for charitable uses. This approach relies on consumers' philanthropic values as opposed to physical rewards for responsible behaviour. Marks and Spencer have also utilised "thank you" campaigns to encourage future engagement with their take back schemes, making their customers feel good about their behaviour in order to motivate future repeat engagement.

Further examples of responsible consumer behaviour have focused on the aesthetic qualities of the product in the creation of the

value that an individual places on an item of clothing. Increased value is said to encourage extended ownership and the further likelihood of the engagement with product-life extension strategies such as repair and upcycle. Value is often created within a product when consumers can individually personalise it, such as Nike's NikeiD where consumers can customize shoes, trainers and bags, an example of how a brand has tried to engage their customers in responsible behaviour through the physical form and aesthetics of the end product. This creation of value is also evidenced in the consumer-goods market, with this approach being coined as the "IKEA effect", where users who produce, construct or customise products using their own labour increase their personal connection and worth of the item (Norton et al., 2012). This concept has been adopted into many retail business models, with popular examples including Build-a-Bear Workshop, where customers can customise their soft toys to be individual and unique. A greater time spent touching objects has been proven to increase feelings of ownership and value (Peck and Shu, 2009), with the physical craft of upcycling requiring the user to not only touch but also invest time and effort, resulting in a greater sense of value in the end result.

TOWARDS A RESPONSIBLE FUTURE

Responsible procurement, ownership and disposal are all vital considerations for consumers when exercising their power to create sustainable change for the future of the fashion industry. A new active generation of consumers who are committed to actioning this change have been labelled as "prosumers", as they have a greater influence and ability to construct change than ever before. The role of the consumer is no longer limited to their being a mere passive user, but now requires them to become an engaged investor in the quest towards responsible systemic change. Individuals can no longer wait for brands alone to take action, and, through the adoption of collaboration and individual contribution, small adjustments in everyday behaviour can be crucial in developing the future environmental impact of fashion.

REFERENCES

Aravamudan, S. (2013), “The catachronism of climate change”, *Diacritics*, Vol. 41 No. 3, pp. 6-30.

Bennett, E.M., Solan, M., Biggs, R., McPhearson, T., Norström, A.V., Olsson, P., Pereira, L., Peterson, G.D., Raudsepp Hearne, C., Biermann, F., and Carpenter, S.R. (2016), “Bright Spots: Seeds of a good Anthropocene”, *Frontiers in Ecology and the Environment*, Vol. 14 No. 8, pp. 441-448.

Brooks, A., Fletcher, K., Francis, R.A., Rigby, E.D. and Roberts, T. (2018), “Fashion, sustainability, and the Anthropocene”, *Utopian Studies*, Vol. 28 No. 3, pp. 482-504.

Commons Select Committee. (2018), “Fashion bosses asked to reveal environmental record”, UK Parliament. 5 October 2018 [online]. Available at: <https://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/news-parliament-2017/fashion-bosses-reveal-environmental-record-17-19/> (accessed 12 December 2019).

Ellis, E. (2011), “The planet of no return: Human resilience on an artificial Earth”, *Breakthrough Journal*, Vol. 2, pp. 39-44.

Environmental Audit Committee. (2019), “Fixing fashion: Clothing consumption and sustainability,” UK Parliament, 19 February 2019 [online]. Available at: <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/report-summary.html> (accessed 3 December 2019).

Harwood-Jones, J. (1985), “Custodians of the planet?” *World Futures: Journal of General Evolution*, Vol. 21 No. 3-4, pp. 231-243.

Thunberg, G. (2019), *No One Is Too Small to Make a Difference*. UK: Penguin.

Maheshwari, S. (2019), “Rent the Runway now valued at \$1 billion with new funding”, *The New York Times*, 21 March 2019 [online]. Available at: <https://www.nytimes.com/2019/03/21/business/rent-the-runway-unicorn.html> (accessed 3 January 2019).

maheshwari, M. I., Mochon, D., and Ariely, D. (2012), “The IKEA effect: When labor leads to love”, *Journal of Consumer Psychology*, Vol. 22 No. 3, pp. 453-460.

Peck, J., and Shu, S.B. (2009), “The effect of mere touch on perceived ownership”, *Journal of Consumer Research*, Vol. 36 No. 3, pp. 434-447.

Shields, R. (2008), “The last word on disposable fashion”, *The Independent on Sunday*, 28 December, p.12.

United Nations. (2019), “Only 11 years left to prevent irreversible damage from climate change, speakers warn during general assembly high-level meeting”, *Meetings coverage and press releases*, 28 March 2019 [online]. Available at: <https://www.un.org/press/en/2019/ga12131.doc.htm> (accessed 2 December 2019).

