Plastic Packaging: What are we doing to our planet?

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Abstract

Single use plastic (SUP hereafter) packaging is heavily used within the food retail industry as it provides protection and enables greater convenience in today's consumption-driven fast-paced society. However, this form of packaging poses considerable concerns to the environment and public health, causing harm to wildlife and potential chemical contamination of the food chain through ingestion and storage. Awareness regarding negative impacts has risen over recent years; as a result businesses, organisations and the government are facing increasing pressure to reduce plastic packaging. This research employs qualitative semi-structured interviews with four individuals representing the following stakeholder groups: activists; plastic free shop proprietors; a supermarket; and a sustainable food retail business. The findings demonstrate that the societal change away from using SUP as packaging has emerged from environmental concerns and challenging its use is necessary to reduce plastic packaging. Going forward, the research identifies areas where SUP reduction has gathered significant momentum and where further work is needed.

Keywords: *Single Use Plastic (SUP), Packaging, Sustainability, Consumption, Environment, Society*

Introduction

Recent years have witnessed a growing awareness and concern amongst the general public regarding the detrimental health and environmental implications of SUP food packaging (Adam and Raisborough, 2010). As a result, there is a growing campaign calling for action to

be taken by businesses and the government to reduce plastic packaging. This research investigates the current move away from SUP in parts of the UK's food retail industry and seeks to explore this societal change from its roots and assess the future advancements in the industry.

Three key aims were established alongside a series of objectives that consider the past, present and future of the movement (Figure 1).

(i) To elucidate the motivations and reasoning behind the movement away from SUP.

(ii) To explore a plastic packaging free food retail shop, to understand the logistics of operating plastic free and the barriers and challenges faced.

(iii) To investigate the future of the movement to understand the differing perspectives going forward.

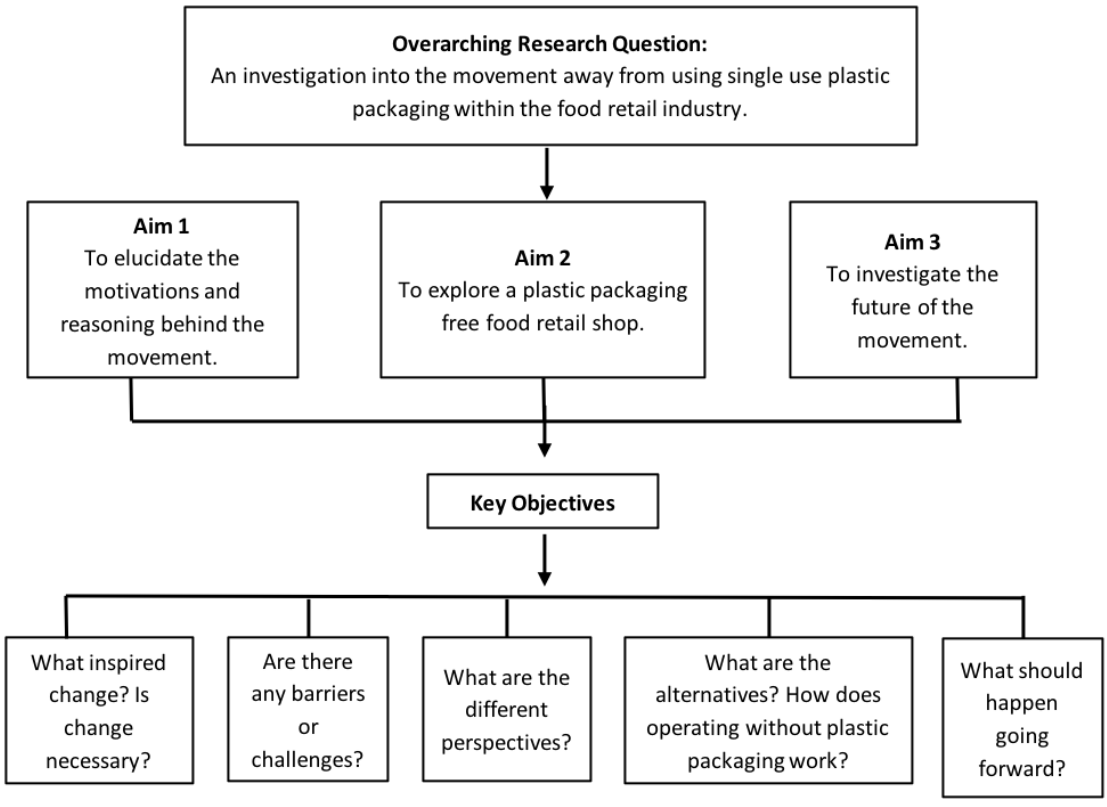

Figure 1: The overarching research question, central aims, and corresponding and overlapping objectives.

Geographical research is often inspired by developments within society whereby the researcher sees and questions changes in everyday life and notes these as an interesting point of research. In this case, on the 11th of March 2016, the sight of plastic food packaging irresponsibly disposed of in an agricultural field behind a small convenience store (Figure 2) sparked considerable interest, outrage and concern, arguably subconsciously influencing the author's decision to research the movement away from plastic packaging within the food retail industry.

Figure 2: Plastic packaging irresponsibly disposed of outside of a small supermarket convenience store (Bendall, 2016).

A variety of factors can influence research of which one of the most profound is the positionality of the researcher and therefore it is important to be reflexive and acknowledge this (Bryman, 2016; Cook, 2005). Positionality can significantly impact the choice of the research topic, the specific research focus and the interpretation of the data (Bryman, 2016). There are arguments to suggest that throughout research it is important to remain impersonal and detached (England, 1994) although others, including Cook (2005, p. 22) maintain that it is 'impossible to be impartial' since the research emerges from and is tainted by personal values (Bryman, 2016). For the purpose of this research the positionality of the researcher has been continually considered and personal views were never explicitly shared with participants.

This research begins by exploring the existing literature and research relating to the movement away from plastic packaging, in particular, global concerns, growing consumer pressure and awareness, and business and government perspectives. A justification of the research design and methodology is followed by analysis and critical evaluation of the results which are discussed in the context of the contemporary literature. Recommendations for future research are made in the concluding paragraphs.

Literature review

Academics argue that packaging is essential within today's fast-paced society as it helps facilitate our everyday convenience-driven mobile lives (Beitzen-Heineke *et al.,* 2016; Robertson, 2012; Coles, 2011; Steenis *et al.,* 2017 and Shah *et al.,* 2008; Larson *et al.*, 2006). Plastic, a key material used within the packaging industry, is versatile and disposable enabling greater on-the-go convenience (Ertz *et al.*, 2017).

The global production of plastic has risen remarkably from the mid twentieth century to the present day (Figure 3) (Statista, 2018). According to Luijsterburg and Goossens (2013) 39% of the demand for plastic in Europe is for packaging and Xanthos and Walker (2017) state that approximately 50% of the 335 million metric tonnes of plastic produced is disposed of after one use.

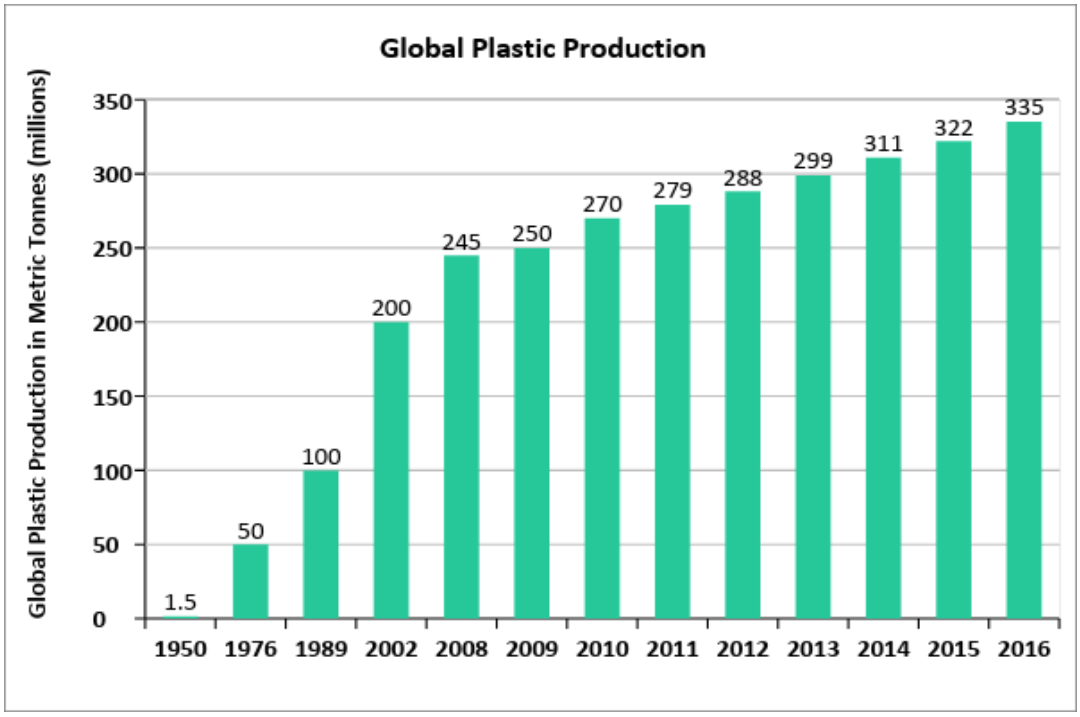

Figure 3: Global plastic production in metric tonnes from 1950 to 2016 (Statista, 2018).

The durability and resistant properties of plastic mean that it can take hundreds of years to disintegrate (Science for Environment Policy Report, 2011; Barboza and Gimenez, 2015) and it 'ensures that wherever it is, it does not 'go away'' (Barnes *et al.*, 2009, p. 1986). The majority of plastic waste globally is packaging; one of the most environmentally pervasive forms of pollution (Li *et al.,* 2016; Shah *et al.,* 2008; Mathalon and Hill, 2014; Hopewell *et al.,* 2009). Anthropogenic activities such as littering, poor waste management or illegal disposal of waste alongside natural processes such as wind can cause SUP packaging to pollute the environment (Eriksen *et al.*, 2013; Li *et al.,* 2016; Derraik, 2002; Surfers Against Sewage, 2018; Avio *et al*., 2017; Tibbetts, 2015). In addition, ocean circulations and gyres (rotating ocean currents) redistribute plastic waste and create immense masses of plastic (Howell *et al.*, 2012; NOAA, 2017.

There is an estimated 12.7 million tonnes of plastic litter within the world's oceans, the wider environmental impact of polluted plastic and its potential contribution to additional sustainability concerns such as ocean acidification are uncertain (Cheung *et al.,* 2018; Löhr *et al.*, 2017; Avio *et al.,* 2017). However, the presence of plastic packaging within marine and land environments can entangle and be ingested by wildlife causing 'starvation, suffocation, laceration, infection… and mortality' (Xanthos and Walker, 2017, p. 17).

The majority of plastic used for packaging within the food retail industry is single use (*i.e.* packaging that is only used once before it is disposed of, incinerated or recycled) because (i) it is convenient and practical (Hopewell *et al.*, 2009; Licciardello, 2017), (ii) it can provide information, branding and can market food items more easily (Hawkins, 2012) and (iii) it can provide a protective atmosphere, preventing contamination and ensuring maximum hygiene for perishables (Claudio, 2012; Souza and Fernando, 2016). However, Hunt (2017) argues that food items such as fruit and vegetables do not require SUP packaging but instead a more sustainable alternative may be used or no packaging at all.

As society revolves around conspicuous consumption and increasingly mobile and fast-paced lifestyles, plastic's versatility and disposability enables greater convenience (Larson *et al.,* 2006; Hopewell *et al.,* 2009; Licciardello, 2017). The growing perception of time shortage means that food consumption increasingly involves disposable plastic packaging to allow time efficiency and on-the-go convenience (Ertz *et al*., 2017).

The food waste discourse is complex, with wide discussion as to whether packaging contributes more or less to environmental pollution than food waste itself (Aschemann-Witzel *et al.*, 2015). One argument suggests that reducing packaging in turn reduces food waste as consumers can self-select portion sizes (Beitzen-Heineke *et al.,* 2016). However, a counter-argument suggests that packaging is required to reduce food waste (Verghese *et al.,* 2015, cited in Beitzen-Heineke *et al.,* 2016). Coles (2011), Licciardello (2017) and Hawkins (2012) all acknowledge that packaging enables the shelf life of a product to be extended and preserved in an appropriate controlled environment which reduces food waste as the product is more likely to be consumed. However, Aschemann-Witzel *et al.* (2015) argue that food waste also entails consumer behaviour, causing wider concerns regarding consumer habits within a consumption and convenience driven society that needs to change.

Awareness of the health and environmental impacts of using SUP food packaging has increased due to more prominent media attention regarding environmental issues (Castrechini *et al.*, 2014; Cohen, 2015) and as a result of increased global interconnections, access to information is both quicker and easier (Sparke, 2013). The growing societal focus on health and wellbeing has fuelled media coverage of negative health impacts of plastic food packaging (Cohen, 2015) and, in addition, numerous campaigns relating to plastic packaging (for example, A Plastic Planet, Sky Ocean Rescue, Surfers Against Sewage and BBC Blue Planet) are raising awareness and making impacts such as marine pollution more visible (Castrechini *et al.*, 2014; Cohen, 2015).

This increased awareness is also shown through the grassroots activism currently unfolding, for example, the recent removal of plastic packaging by twenty-five individuals at a large supermarket chain in protest at the amount of plastic used (BBC, 2018). Research has shown that consumers are aware of and care about environmental issues related to SUP food packaging. Klaiman *et al.* (2016) and Rokka and Uusitalo (2008) found that over a third of their participants would choose environmentally packaged items as the most important consideration whilst shopping.

However, whilst consumers may profess these attitudes they do not correspond with their behaviours in reality and factors such as price, choice and convenience interfere with the consumer's ability to apply their attitudes to their actions (WRAP, 2013; Rokka and Uusitalo, 2008; Yamaguchi and Takeuchi, 2016).

The use of disposable plastic packaging has become a considerable concern for businesses and governments due to increased consumer awareness (Lunardo and Saintives, 2013; Adam and Raisborough, 2010), growing pressure for business transparency and responsibility (Bryne, 2017), and the increasing political pressure to act (Coles, 2011). Cohen (2015, p. 1) agrees arguing that 'governments and corporations are being pushed from within and by outside activists and consumers to pay more attention' to the issues associated with SUP packaging. Akenji (2014) highlights that governmental policy documentation was previously deemed a sovereign domain and not for public involvement. However, over recent decades environmental policy has increasingly responded to public concerns and this can be evidenced by the recently released 25 Year Environment Plan concerning plastic packaging (DEFRA, 2018).

Despite the perceived improvements in policy and practice, room for improvement remains, for example, several key British supermarkets' Corporate Social Responsibility (CSR) reports emphasise recycling rather than reducing disposable plastic (Xanthos and Walker, 2017; Beitzen-Heineke *et al.*, 2016; Klaiman *et al.*, 2016). This does not represent the current consumer campaigns for a reduction in plastic packaging.

Over the past year there has been growing pressure for supermarkets to adopt a plastic free aisle. The campaign group, A Plastic Planet, and the former boss of Asda, Andy Clarke, are among many in providing support. Clarke, along with academics, argues that focusing on recycling does not break the cycle of plastic consumption and demand (Laville, 2017). A Populus survey (2017) found that 81% of the population are concerned about the amount of plastic disposed of in the UK and 91% would support the introduction of a plastic free aisle in supermarkets.

There is an argument that supermarkets should encourage consumers to shop by their values and therefore should promote more sustainable options (Rokka and Uusitalo, 2008; Adams and Raisborough, 2010; Laville, 2017). Similarly, Beitzen-Heineke *et al.* (2016) and Xanthos and Walker (2017) argue that supermarkets in comparison to small independent retailers have the purchasing power to directly work with suppliers and therefore have the right to create positive change.

Whilst supermarkets are currently responding to the public pressure to reduce or eliminate disposable plastic packaging, over recent months there has been a rise in the amount of small independent retailers operating a zero plastic packaging policy. As highlighted by Beitzen-Heineke *et al.* (2016) these stores operate by ensuring that consumers are educated and informed about the sustainable environmentally friendly options available and are given the option to shop this way (Beitzen-Heineke *et al.*, 2016).

It is clear from the literature that SUP packaging plays a prominent role within today's convenience-driven society (Ertz *et al*., 2017). However, it is evident that the scale of plastic consumption is detrimentally impacting the environment and causing a concern to public health and therefore requires reduction or elimination. The increasing awareness of these implications along with consumer pressure for businesses and the government to act presents a real opportunity to reduce SUP proliferation.

Methodology

The research was carried out using semi-structured interviews, whereby the researcher conducts an interview using predetermined questions and asks additional questions for further depth and clarification where necessary (Secor, 2010). Semi-structured interviews were chosen as they enable an in-depth discussion, are a useful method for eliciting participants' honest perspectives, and whilst each interview is similar semi-structured interviews allows for uniqueness (Valentine, 2005, Secor, 2010 and Vaughn and Turner, 2016). However, the limitations include the need for the researcher to familiarise with the data collection method to produce effective research (Irvine *et al.*, 2013) and that interviews are often representative of the views of one individual or organisation and therefore can be difficult to generalise. However, this is not a significant concern as qualitative research seeks to explore a topic of study rather than represent it.

A total of six semi-structured interviews were conducted however only four participants provided consent for their data to be shared. The interviews were conducted across three key categories that represent the past, present and future of the movement (Table 1). The interviews were conducted with an underwater TV cameraman and activist, proprietors of a plastic free shop, a representative from a supermarket, and the co-founder of a sustainable

food retail business (SFRB hereafter). To ensure anonymity the interviewees will be consistently referred to by these descriptors.

Table 1: Research participants and categories.

	AIM 1	**AIM 2**	**AIM 3**
	To investigate the motivations and reasoning behind the change.	To explore a zero plastic packaging food retail shop.	To investigate the future of the movement away from SUP packaging in the food retail industry.
Method	Semi-Structured Interview Set 1.	Semi-Structured Interview Set 2.	Semi-Structured Interview Set 3.
Participant Category	Key campaigners and activists.	Plastic free shop owners.	Supermarkets. Sustainable food retail business.
Participant	Underwater TV cameraman and activist.	Plastic free shop proprietors.	Supermarket representative. Co-founder of a sustainable food retail business.

Source: Bendall, 2018

Purposive sampling was employed to ensure the central actors within this movement were represented and that participants were appropriate (Table 2) (Secor, 2010; Bryman, 2016). Participants were recruited by email and to increase the likelihood of participation, participants were informed that the interview could be conducted face-to-face, by telephone, Skype or lastly by email.

Table 2: Brief description of all participants.

Participant	Description
Key Campaigners and Activists:	**TV cameraman and activist:** One of the world's leading underwater TV cameramen and activist. This participant has actively worked on a range of high-profile documentaries exploring the impact of plastic pollution on our environment.
Plastic Free Shop	**Plastic free shop proprietors:** Owners of a small plastic free shop which aims to provide individuals with the ability to shop plastic free. They stock many household items including grains and pulses, cleaning products and sanitary items.
Supermarkets and Sustainable Business Organisation	**Supermarket representative:** A representative from a leading UK supermarket. This supermarket has pledged many actions to help reduce the amount of plastic packaging used in the food retail industry. **Co-founder of a sustainable food retail business (SFRB):** The SFRB aims to produce food products which tackle both food waste and the use of plastic packaging within the food retail industry.

Source: Bendall, 2018

Each set of interview questions varied in the amount of questions asked and the time required in order to increase the likelihood of participation and to maintain the focus and attention of the researcher and interviewee (Irvine *et al.*, 2013). The style of questioning was

informal to enable participants to feel comfortable and questions were worded using interrogative words to provoke thought and an in-depth response (Secor, 2010).

Ethical concerns were minimal as the research was not deceptive, covert nor did it involve any vulnerable individuals. Participants were provided with the appropriate information sheet detailing the purpose of the research, the specific data collection procedure and an ethics statement. Individuals were asked to complete a consent form to gather informed consent for all aspects of the research and debriefed after data collection. All participants had the option to request anonymity whereby an unidentifiable term such as Supermarket A could be employed.

All interviews were recorded using a tablet device and then transcribed. Transcription is viewed as a physical process that involves transforming the recording to text to represent all of what was said, who said it, how they said it and any non-verbal or verbal actions (Davidson, 2009).

The transcription data was analysed through Thematic Analysis (TA). TA involved systematically engaging with the transcription to analyse the data for key themes (Secor, 2010; Braun and Clarke, 2016). Key quotes were kept alongside additional speech to retain the context of the argument and frequency coding to gather themes enabled the prominent discussion points to be explored and arguably limits the influence of the researcher's positionality (Baxter and Eyles, 1997).

Results and discussion

The semi-structured interviews collected in-depth responses from participants regarding their perspectives of using SUP packaging in the food retail industry and frequency coding of the TA enabled key themes to be established. This chapter presents and critically evaluates the research findings in relation to the literature and the methodological approach taken. The key themes include plastic packaging being beneficial, the motivations and awareness behind the movement away from using it, discussion surrounding the concept of change, the wider system concerns and the future.

A key theme identified was that plastic as a food packaging material has many benefits, which should not be ignored.

> *'Plastic is massively useful, its functionality has been proven by the utter ubiquity of it across the food system as it clearly has a very powerful function in terms of being low cost, good at preserving food and a low material weight*' – Co-founder of the SFRB

The co-founder of the SFRB reinforces Robertson (2012), Steenis *et al.* (2017) and Souza and Fernando's (2016) arguments that plastic is heavily used within the packaging industry due to its convenience, ability to be easily transported and ability to store items securely.

A central aim of this research was to understand the motivations and reasoning behind the movement and therefore a key question was to ask what inspired or motivated participants to reduce plastic packaging:

> *'The environmental impact of plastic is right across the spectrum… what are we doing to our planet?'* – TV cameraman

> *'As the use of plastic has risen exponentially over time the corresponding impact on the environment is and has grown massively… we're now moving to a point where we're not able to ignore the environmental impact anymore'* – Co-founder of SFRB

The TV cameraman describes the severe impact plastic debris can have on ocean wildlife. He reflects on noticing that 'something's seriously wrong' having witnessed shearwater birds walk down to the sea knowing they have to fly but lack the strength to do so having ingested large quantities of plastic. This recollection reinforces the sheer impact plastic packaging is having upon the environment and in particular wildlife. Cheung *et al.* (2018) state that there is an estimated 12.7 million tonnes of plastic litter within the world's oceans. This quantity of plastic debris floating in the single largest biome in the world is extremely unhealthy and can cause harm to wildlife through ingestion and entanglement (Xanthos and Walker, 2017).

An additional concern regarding plastic is its contamination with the food chain. The supermarket representative commented that there is a threat to consumers 'as microplastics find their way into the human food chain'. These concerns echo Rochman *et al*.'s (2015) findings that approximately 20-25% of the fish they studied had plastic within

their flesh. Similarly, Cheung *et al.* (2018) found traces of microplastics in 60% of the fish they studied and Cauwenberghe and Janssen (2014) discovered microplastics within the soft tissue of blue mussels and pacific oysters which are frequently consumed.

Interviewees' positionality is likely to influence their motivations to campaign or support this social movement. The TV cameraman, plastic free shop proprietors and the co-founder of the SFRB all share environmental backgrounds therefore this will influence their worldview and awareness (Cook, 2005) whilst the supermarket arguably has a moral obligation to do the right thing as a leading retailer. However, the supermarket representative states that their proposals to reduce SUP packaging are largely due to their managing director's passion for the environment and experience of surfing amongst packaging waste. Therefore, whilst the supermarket may share environmental concerns they're also influenced by growing pressure for retailers to be transparent, take responsibility and the opportunity to seek a corporate advantage point (Bryne, 2017; Cohen, 2015).

A further topic discussed was the awareness and visibility of the impact plastic packaging can have upon the environment.

> *'You see it [plastic pollution] on the TV in far flung places...it's so much more visible'* – Plastic free shop proprietors

The plastic free shop proprietors draw upon the role of the media and suggest that the visibility of the issue is increasing due to the presence of cameras and media attention (Castrechini *et al.*, 2014; Cohen, 2015).

> *'When you get someone like Sir David Attenborough speaking you know it doesn't matter you can be 90 years old or 9 years old his words have great impact'* – TV cameraman

The supermarket representative also states that the segment dedicated to plastic pollution on BBC's Blue Planet II 'massively increased public awareness'. This supports the research claiming that members of the public heavily rely upon media outlets such as television programmes to provide information and share knowledge (Castrechini *et al.*, 2014).

However, some of the academic literature provides an interesting counter-argument that media outlets are often hypocritical. Balmford *et al*. (2017) highlight that many conservationists and environmental campaigners are frequently hypocritical by undertaking harmful activities whilst campaigning for pro-environmental behaviour. For example, to produce and distribute the Blue Planet II DVD harmful polluting activities such as transportation would have taken place and the DVD is sold in plastic packaging (Balmford *et al.,* 2017).

Furthermore, the TV cameraman reinforces this argument:

> *'A photographer that I worked with said "I don't want to dive in that ocean which has got plastic in, I want to dive in the ocean which is clean", well that doesn't apply anymore because even if you can't see it [the plastic], it's there'* – TV cameraman

This recollection emphasises the sheer scale of plastic pollution. Moreover, Auta *et al.* (2017) report that over two days approximately two billion microplastic fragments entered the North Pacific Ocean from the California coast alone.

Another core theme raised during the research was that of the need for change. The key points raised revolve around consumer lifestyles and behaviour changes as well as the consideration of alternatives.

> *'Do we need cocktail sticks? Do we need plastic straws?... We've got to think of other things now. You've just got to break a habit!*' – TV cameraman

According to the supermarket representative, consumers support change:

> *'We did undertake some consumer research before making our announcement [to be plastic free across own range label] and found that 80% would endorse a supermarket's move to go plastic free, and 91% would be more inclined to encourage family and friends to shop there as a result'* – Supermarket representative

Rokka and Uusitalo (2008) and Klaiman *et al.* (2016) both support this as they found that over a third of their participants would prefer to purchase environmentally packaged items. However, WRAP (2013), Rokka and Uusitalo (2008) and Yamaguchi and Takeuchi (2016) found that whilst consumers have positive environmental attitudes they find it difficult to shop accordingly. This raises concerns that other factors such as price, availability and alternatives are interfering (WRAP, 2013; Rokka and Uusitalo, 2008; Martin *et al.*, 2017).

Alternatives to plastic

As part of the discussion regarding change the need for alternatives was raised:

> *'There isn't choice, there's not somewhere else you can go and get it, for most people you get it in plastic or you don't get it'* – Plastic free shop proprietors

Here, the plastic free shop proprietor's comments appear to support Martin *et al.* (2017), WRAP (2013) and Rokka and Uusitalo's (2008) argument that factors such as availability can act as a barrier to individuals shopping by their values. The suggested alternatives mentioned by the participants include the use of paper-based trays, cardboard, string (instead of pallet wrap), biodegradable materials and natural packaging that has been grown from mushrooms, coffee and seaweed.

However, there are concerns regarding alternatives to SUP still being plastic, the cost and upheaval of changing systems, and that for significant change to occur the government needs to act.

> *'Bioplastics are not made from finite reserves of fossil fuels, which seems like a move in the right direction, but they are made from crops on land which might be better employed for food production. More importantly, they are still plastic: so they will still last for 500 years, entangle and choke marine life, and break down into damaging microplastics.'* – Supermarket representative

Cecchini (2017) and Bardhan *et al.* (2015) support that whilst bioplastics are not reliant on finite fossil fuels they often rely on vegetables, microbial or animal matter. The reliance upon vegetable crop by-products such as cornstarch to create bioplastic containers poses

concern to global food security and Cecchini (2017) argues that going forward there is a need to create innovative mechanisms for using food waste rather than crops. However, Cecchini (2017) adds that changing from plastic packaging created by fossil fuels to biological materials is more sustainable despite concerns.

The cost and upheaval of changing packaging systems is an additional issue. The TV cameraman comments that 'if we stop making plastic tonight the world wouldn't stop it would carry on quite happily' whereas the supermarket representative and the co-founder of the SFRB argue that a move away from plastic packaging is costly and relies upon large scale challenging technological changes.

The supermarket representative comments that changing the highly technical 'plastic modified atmosphere packs used for chilled meat, poultry and plastic bottles' is difficult as suppliers 'have a completely integrated manufacturing process' which would require a significant change. Whereas, the plastic free shop proprietors contest that the 'slow progress' being made is due to it being a 'money game' as 'supermarkets are quite driven by cost'. Nonetheless, they passionately state that it is a necessary change to make. However:

> *'There's not going to be a change in supermarket's behaviour or big producers until there is some sort of regulation, so whether it is a tax or something, I think that goes for consumers too...there's lots of people struggling for money and if they can choose something cheaper that's wrapped in plastic to feed their family then why not*' – Plastic free shop proprietors

Creating change

The plastic free shop proprietors feel strongly that there must be government intervention to create change. Ritch *et al*. (2009) argue that historically the UK government has been tentative with enforcing legislation that modifies consumer behaviour however in recent years this is becoming more apparent. The success of the plastic bag charge introduced in England in 2015 supports the argument that for large scale change to occur legislation must be enforced. According to Poortinga *et al.* (2016) prior to the introduction of this charge fifty percent of shoppers used plastic bags whereas this fell to only seventeen percent after the charge was introduced, demonstrating legislation can create significant change.

The wider system concerns, particularly food waste and the current recycling infrastructure in the UK were also discussed during the research interviews. The co-founder of the SFRB claims that at present 'the public attention is massively on plastic' however 'food waste is still a massively important issue' that cannot be ignored. Aschemann-Witzel *et al.* (2015) support that food waste is a serious global concern whilst Coles (2011), Licciardello (2017) and Hawkins (2012) reinforce that plastic packaging is used as it has the ability to extend the shelf life of an item and therefore increase the likelihood that the food will be consumed rather than wasted.

The supermarket, who have pledged to remove all plastic from their own brand food range by 2023, support that as alternatives are considered and introduced 'the unintended consequence' of food waste needs to be monitored, according to their representative. Arguably if the movement away from plastic packaging continues to progress there is a need for consumer consumption habits and behaviours in today's convenience driven society to change (Aschemann-Witzel *et al*., 2015).

Recycling and waste management

An additional theme elicited from the TA was that of wider system concerns, particularly recycling and waste management in the UK. The main points surround confusion and that the current system is poor and unequipped to manage innovative alternatives.

> *'It takes a lot of energy to recycle and oh my goodness I put that in there and they're not going to recycle any of it because that one thing isn't recyclable'* – Plastic free shop proprietors

The plastic free shop proprietors argue that there is confusion within the current recycling system. This is supported by Opsomer (cited in Boyd, 2017) who states that whilst the introduction of bioplastics is beneficial the associated labelling of food items as biodegradable, bio-based or compostable will cause confusion. A specific concern is that consumers may believe that bio-based packages are biodegradable when they are not as they are chemically similar to fossil fuel based packages. The supermarket representative suggests that alterations are necessary to the UK's recycling and waste management infrastructure in order to reduce the misunderstandings. They suggest that there needs to

be improved public information and guidance as well as uniform standards for all local authorities to create more consistency.

The final theme identified aligns closely to the third aim: the future of this movement.

> *'You can't keep pointing fingers and blaming people. We all have a role to play, we've all got to act'* – TV cameraman

It is clear from the interviews, particularly with the TV cameraman, that the premise is on working collaboratively and that every individual has a role to play. Going forward, there is 'real momentum behind the movement' according to the supermarket representative, with the TV cameraman also arguing that the passion, dedication and commitment of the individuals pushing this movement is invaluable. This is hugely important considering that plastic production is set to increase (Löhr *et al.*, 2017) following its considerable growth over the past few decades (Statista, 2018).

Despite concerns regarding plastic's growth the plastic free shop proprietors and the co-founder of the SFRB are determined for this movement not to lose pace:

> *'I think it's just going from strength to strength...I'm just really hoping that it is going to continue to grow rather than be a fad that ends'* – Plastic free shop proprietors

> *'We're in a moment of transition...the big challenge is that...obviously everyone has different vested interests and different perspectives on how things will come through but it's important that we continue to have the conversation*' - Co-founder of the SFRB

To summarise, it is clear that all participants believe that for substantial change to occur there needs to be a united effort among the public, businesses, organisations and the government (Seltenrich, 2015). All participants strongly express concern for the environmental impacts of SUP packaging as well as the food chain implications, however the answer of how to overcome this is not obvious. There is a clear need for the current recycling infrastructure in the UK to be developed in order to welcome new innovative

packaging alternatives and reduce confusion. Similarly, the findings reinforce the concern regarding food waste and therefore going forward this needs to be monitored.

Conclusion

It is clear from the review of the literature and the research findings that SUP food packaging is beneficial within today's convenience-driven modern society due to its ability to contain, protect and preserve food items. However, as society resolves around conspicuous consumption and living fast-paced lifestyles the throwaway culture whereby items are consumed to be disposed of is unsustainable and poses significant concerns to public health and the environment. As a result of increased awareness amongst the public there has been a rapidly developing campaign for members of the public, businesses and the government to take action.

A key aim of this research was to investigate the motivations and reasoning behind this movement. It can be concluded that the inspiration behind campaigning for change comes from environmental and health concerns. SUP food packaging pollutes the environment, causes danger to wildlife and interferes with the food chain through ingestion and chemical contamination. These detrimental impacts were echoed as the motivations and reasoning for campaigning to reduce plastic food packaging within the findings.

The second aim sought to explore a plastic free shop, specifically investigating their inspiration for establishing, the logistics of operating and the challenges faced. It is clear that, alongside the other participants, the plastic free shop proprietors were inspired by the environmental concerns of plastic packaging and believe that there is great momentum going forward. The main challenges faced by the plastic free shop concern the logistics of ensuring they operate entirely plastic free. The findings demonstrate that the proprietors are urging more legislation and urgency in reducing the use of SUP within the wider supply chain as this is an area of difficulty for them when ordering items to sell plastic free. However, the supermarket representative clearly highlights that overcoming these logistical challenges requires a highly technical and extensive system change throughout the supply chain which would be costly and time consuming.

Lastly, the final aim of this research was to investigate the future of the movement away from plastic packaging. The findings were almost unanimously clear; all participants feel passionately that change needs to happen and progress requires a combined effort amongst

the public, businesses and the government (Seltenrich, 2015). The plastic free shop proprietors and the co-founder of the SFRB argue that there is significant momentum and the scale and success of the movement is promising.

Going forward there are a wealth of possible research developments. The recommendations provided below reflect research development for this specific project and possible future research projects based on this topic. The recommendations are as follows:

- Longitudinal or ethnographic research could be conducted to explore the movement away from plastic packaging in more detail. Current developments are occurring extremely quickly with businesses pledging to make changes and government's introducing legislation such as the 25 Year Environment Plan. A longitudinal study could be beneficial in mapping these changes and tracking development.

- It would be beneficial to hear the views of MPs, suppliers or plastic packaging manufacturers as the research generated discussion regarding the government's responsibility to act and introduce legislation as well as the difficulty involved with changing manufacturing and supply systems. This is particularly interesting given the fast-paced nature of this movement as since the dissertation research took place more supermarket chains and businesses are making considerable pledges to reduce SUP packaging.

- A comparative study of the UK's progress in reducing SUP packaging in the food retail industry, focusing on regional and international comparisons.

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References:

Adams, M. and Raisborough, J. 2010: Making a difference: ethical consumption and the everyday. *The British Journal of Sociology* 61 (2), 256-274.

Akenji, L. 2014: Consumer scapegoatism and limits to green consumerism. *Journal of Cleaner Production* 63, 13-23.

Aschemann-Witzel, J., de Hooge, I., Amani, P., Bech-Larsen, T. and Oostindjer, M. 2015: Consumer related food waste: causes and potential for action. *Sustainability* 7 (6), 6457-6477.

Auta, H. S., Emenike, C. U. and Fauziah, S. H. 2017: Distribution and importance of microplastics in the marine environment: A review of the sources, fate, effects, and potential solutions. *Environment International* 102, 165-176.

Avio, C. G., Gorbi, S. and Regoli, F. 2017: Plastics and microplastics in the oceans: from emerging pollutants to emerged threat. *Marine Environmental Research* 128, 2-11.

Balmford, A., Cole, L., Sandbrook, C. and Fisher, B. 2017: The environmental footprints of conservationists, economists and medics compared. *Biological conservation* 21 (4), 260-269.

Barboza, L. G. A. and Gimenez, B. C. G. 2015: Microplastics in the marine environment: current trends and future perspectives. *Marine Pollution Bulletin* 97 (1/2), 5-12.

Bardhan, S. K., Gupta, S., Gorman, M. E. and Haider, M. A. 2015: Biorenewable chemicals: Feedstocks, technologies and the conflict with food production. *Renewable and Sustainable Energy* 51, 506-520.

Barnes, D. K. A., Galgani, F., Thompson, R. C. and Barlaz, M. 2009: Accumulation and fragmentation of plastic debris in global environments. *Philosophical Transactions of The Royal Society B* 364, 1985-1998.

Baxter, J. and Eyles, J. 1997: Evaluating qualitative research in social geography: establishing 'rigour' in interview analysis. *Transactions of the Institute of British Geographers* 22 (4), 505-525.

BBC 2018: 'Plastic attack' packaging protesters hit Tesco near Bath [online] (https://www.bbc.co.uk/news/uk-england-bristol-43559636) Accessed 28/03/18.

Beitzen-Heineke, E. F., Balta-Ozkan, N. and Reefke, H. 2016: The prospects of zero-packaging grocery stores to improve the social and environmental impacts of the food supply chain. *Journal of Cleaner Production* 140, 1528-1541.

Boyd, O. 2017: The plastics problem: are natural alternatives doing more harm than good? [online] (https://www.theguardian.com/business-to-business/2017/oct/31/the-plastics-problem-are-natural-alternatives-doing-more-harm-than-good) Accessed 20/04/18.

Braun, V. and Clarke, V. 2016: (Mis)conceptualising themes, thematic analysis, and other problems with Fugard and Potts' (2015) sample-size tool for thematic analysis. *International Journal of Social Research Methodology* 19(6), 739-743.

Bryman, A. 2016: Social Research Methods, Oxford University Press, Oxford.

Bryne, S. 2017: Purposeful packaging: global trends in sustainable packaging confirm that consumers support brands that reflect their values and preferences. *Brand Packaging* 21 (5), 22-25.

Castrechini, A., Pol, E. and Guàrdia-Olmos, J. 2014: Media representations of environmental issues: From scientific to political discourse. *European Review of Applied Psychology* 64 (5), 213-220.

Cauwenberghe, L. V. and Janssen, C. R. 2014: Microplastics in bivalves cultured for human consumption. *Environmental Pollution* 193, 65-70.

Cecchini, C. 2017: Bioplastics made from up-cycled food waste: Prospects for their use in the field of design. *The Design Journal* 20 (1), 1596-1610.

Cheung, L. T. O., Lui, C. Y. and Fok, L. 2018: Microplastic contamination of wild and captive flathead grey mullet (mugil cephalus). *International Journal of Environmental Research and Public Health* 15 (4), 597.

Claudio, L. 2012: Our food: packaging & public health. *Environmental Health Perspectives* 120 (6), 232-237.

Cohen, S. 2015: The Growing Level of Environmental Awareness [online] (https://www.huffingtonpost.com/steven-cohen/the-growing-level-of-envi_b_6390054.html) Accessed 08/12/17.

Coles, R. (2011) 'Introduction', in Coles, R. and Kirwan, M. (ed.) *Food and Beverage Packaging Technology*. Chichester: Wiley-Blackwell, pp. 1-33.

Cook, I. 2005: Positionality/Situated Knowledge. In Atkinson, D., Jackson, P., Sibley, D. and Washbourne, N. (ed.): *Cultural Geography: A critical dictionary of key ideas*. London: IB Tauris, 16-26.

Davidson, C. 2009: Transcription: Imperatives for qualitative research. *International Journal of Qualitative Methods* 8 (2), 35-52.

DEFRA 2018: 25 Year Environment Plan [online] (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf) Accessed 3/04/18.

Derraik, J. G. B. 2002: The pollution of the marine environment by plastic debris: review. *Marine Pollution Bulletin* 44 (9), 842-852.

England, K. V. L. 1994: Getting Personal: Reflexivity, Positionality, and Feminist Research. *Professional Geographer* 46 (1), 80-89.

Eriksen, M., Maximenko, N., Thiel, M., Cummins, A., Lattin, G., Wilson, S., Hafner, J., Zellers, A. and Rifman, S. 2013: Plastic pollution in the South Pacific subtropical gyre. *Marine Pollution Bulletin* 68, 71-76.

Ertz, M., Huang, R., Jo, MS., Karakas, F. and Sarigöllū. 2017: From single-use to multi-use: study of consumers behavior toward consumption of reusable containers. *Journal of Environmental Management* 193, 333-344.

Hawkins, G. 2012: The performativity of food packaging: market devices, waste crisis and recycling. *Sociological Review Monograph* 60 (2), 66-83.

Hopewell, J., Dvorak, R. and Kosior, E. 2009: Plastics recycling: challenges and opportunities. *Philosophical Transactions of The Royal Society B* 364, 2115-2126.

Howell, E. A., Bograd, S. J., Morishige, C., Seki, M. P. and Polovina, J. J. 2012: On North Pacific circulation and associated marine debris concentration. *Marine Pollution Bulletin* 65, 16-22.

Hunt, T. 2017: Fruit and veg come in their own natural wrapping. Why do we smother them in plastic? The Guardian [online] (https://www.theguardian.com/sustainable-business/2017/jun/28/fruit-vegetables-plastic-packaging-food-relationship-pollution) Accessed 6/12/17.

Irvine, A., Drew, P. and Sainsbury, R. 2013: Am I not answering your questions properly? Clarification, adequacy and responsiveness in semi-structured telephone and face-to-face interviews. *Qualitative Research* 13 (1), 87-106.

Klaiman, K., Ortega, D. L. and Garnache, C. 2016: Consumer preferences and demand for packaging material and recyclability. *Resources, Conservation and Recycling* 115, 1-8.

Larson, J., Urry, J. and Axhausen, K. 2006: Mobilities, Networks, Geographies, Ashgate Publishing Limited, Hampshire.

Laville, S. 2017: Supermarkets must stop using plastic packaging, says form Asda boss The Guardian [online] (https://www.theguardian.com/environment/2017/oct/12/supermarkets-stop-using-plastic-packaging-former-asda-boss-andy-clarke) Accessed 8/12/17.

Li, W. C., Tse, H. F. and Fok, L. 2016: Plastic waste in the marine environment: a review of sources, occurrence and effects. *Science of the Total Environment* 566-567, 333-349.

Licciardello, F. 2017: Packaging, blessing in disguise. Review on its diverse contribution to food sustainability. *Trends in Food Science and Technology* 65, 32-39.

Löhr, A., Savelli, H., Beunen, R., Kalz, M., Ragas, A. and Belleghem, F. V. 2017: Solutions for global marine litter pollution. *Current Opinion in Environmental Sustainability* 28, 90-99.

Luijsterburg, B. and Goossens, H. 2013: Assessment of plastic packaging waste: Material origin, methods, properties. *Resources, Conservation and Recycling* 85, 88-97.

Lunardo, R. and Saintives, C. 2013: The effect of naturalness claims on perceptions of food product naturalness in the point of purchase. *Journal of Retailing and Consumer Services* 20, 529-537.

Martin, V. Y., Weller, B., Reis, A., Dimmock, K. and Scherrer, P. 2017: Do the right thing: How social science can help foster pro-environmental behaviour change in marine protected areas. *Marine Policy* 81, 236-246.

Mathalon, A. and Hill, P. 2014: Microplastic fibers in the intertidal ecosystem surrounding Halifax Harbor, Nova Scotia. *Marine Pollution Bulletin* 81, 69-79.

NOAA 2017: Currents *[online]* (https://oceanservice.noaa.gov/education/kits/currents/05currents3.html) Accessed 19/02/18.

Poortinga, W., Sautkina, E., Thomas, G. O. and Wolstenholme, E. 2016: The English Plastic Bag Charge: Changes in attitudes and behaviour, Cardiff: Welsh School of Architecture/School of Psychology, Cardiff University.

Populus 2017: Polls: Plastic Packaging Survey [online] (http://www.populus.co.uk/polls/?search=plastic&poll-s-year) Accessed 08/12/17.

Ritch, E., Brennan, C. and MacLeod, C. 2009: Plastic bag politics: Modifying consumer behaviour for sustainable development. *International Journal of Consumer Studies* 33 (2), 168-174.

Robertson, G. L. 2012: Food Packaging: Principles and Practice, CRC Press, Boca Raton, FL.

Rochman, C. M., Tahir, A., Williams, S. L., Baxa, D. V., Lam, R., Miller, J. T., Teh, F. C., Werorilangi, S. and Teh, S. J. 2015: Anthropogenic debris in seafood: Plastic debris and fibres from textiles in fish and bivalves sold for human consumption. *Scientific Reports* 5, 1-10.

Rokka, J. and Uusitalo, L. 2008: Preference for green packaging in consumer product choices - Do consumers care?'. *International Journal of Consumer Studies* 32 (5), 516-525.

Science for Environment Policy 2011: Plastic Waste: Ecological and Human Health Impacts [online] (http://ec.europa.eu/environment/integration/research/newsalert/pdf/IR1_en.pdf) Accessed 7/12/17.

Secor, A. J. 2010: Social Surveys, Interviews, and Focus Groups. In Gomez, B. and Jones, J. P. (ed.): *Research Methods in Geography: A Critical Introduction*, Chichester: Wiley-Blackwell, 194-205.

Seltenrich, N. 2015: New Link in the Food Chain?. *Environmental Health Perspectives* 123 (2), 34-41.

Shah, A. A., Hasan, F., Hameed, A. and Ahmed, S. 2008: Biological degradation of plastics: A comprehensive review. *Biotechnology Advances* 26, 246-265.

Souza, V. G. L., Fernando, A. L. 2016: Nanoparticles in food packaging: biodegradability and potential migration to food: a review. *Food Packaging and Shelf Life* 8, 63-70.

Sparke, M. 2013: Introducing Globalisation: ties, tensions and uneven integration, Wiley-Blackwell, Oxford.

Statista 2018: Global Plastic Production from 1950 to 2016 [online] (https://www.statista.com/statistics/282732/global-production-of-plastics-since-1950/#0) Accessed 6/04/18.

Steenis, N. D., van Herpen, E., van der Lans, I. A., Ligthart, T. N. and van Trijp, H. C. M. 2017: Consumer response to packaging design: The role of packaging materials and graphics in sustainability perceptions and product evaluations. *Journal of Cleaner Production* 162, 286-298.

Surfers Against Sewage 2018: Plastic Pollution: Facts and Figures [online] (https://www.sas.org.uk/our-work/plastic-pollution/plastic-pollution-facts-figures/) Accessed 28/03/18.

Tibbetts, J. H. 2015: Managing Marine Plastic Pollution. *Environmental Health Perspectives* 123 (4), 90-93.

Valentine, G. 2005: Tell me about...: using interviews as a research methodology. In Flowerdew, R. and Martin, D. (ed.) *Methods in Human Geography: A guide for students doing a research project*. Essex: Parson Education Limited, 110-128.

Vaughn, P. and Turner, C. 2016: Decoding via Coding: Analysing Qualitative Text Data Through Thematic Coding and Survey Methodologies. *Journal of Library Administration* 56 (1), 41-51.

WRAP 2013: Consumer Attitudes to Food Waste and Food Packaging [online] (http://www.wrap.org.uk/sites/files/wrap/Report%20-%20Consumer%20attitudes%20to%20food%20waste%20and%20packaging_0.pdf) Accessed 5/12/17.

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

Yamaguchi, K. and Takeuchi, K. 2016: Consumer preferences for reduced packaging under economic instruments and recycling policy. *Waste Management* 48, 540-547.