Reducing Waste in Abingdon: A Review of Residents' Actions and the Wider International Context

An environmental survey report by Gabriele Lukoseviciute and Wesley Lam



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Introduction

The declaration of a climate emergency by the Abingdon Town Council (ATC) in March 2019 was not without precedent: awareness of environmental concerns had been steadily growing, from the 1997 Kyoto Protocol to the 2015 Paris Agreement.[1] However, so much still needs to be done with increasing urgency, as our technologies and policies race to solve the worsening climate crisis. As the United Kingdom aims to fulfil its international obligations by reaching net zero carbon emissions by 2050,[2] local communities and residents have an important role to play, maintaining political pressure on the government and big businesses, while contributing in our own capacity towards specific environmental objectives.

Abingdon Carbon Cutters (ACC) is a Community Action Group aiming to bring together the residents of Abingdon in reducing carbon emissions, taking care of the environment, and living sustainably and healthily.[3] One Planet Abingdon Climate Emergency Centre (OPACEC) is a community hub aiming to raise awareness and encourage action regarding environmental issues, while providing a physical space for gatherings and activities. Among other joint collaborations, ACC and OPACEC ran a survey from February to March 2024 on the attitudes and behaviours of Abingdon residents towards waste and waste reduction, receiving a total of 234 responses.[4]

ACC's surveys are part of a model adopted for the Abingdon Green Forum, where a new theme is introduced every 3 months in an ongoing process of environmental action. These surveys are intended to better understand the attitudes and behaviours of Abingdon residents, which in turn allows ACC, OPACEC, the ATC, and other environmental groups to better recommend and advocate for policies and reforms within Abingdon and the United Kingdom as a whole.

This report will analyse, evaluate, and comment on that survey, linking our findings to issues and solutions in the wider national and environmental context. We will begin with two chapters covering the design of the survey's questions and an assessment of the responses collected. Drawing from the four themes covered in the survey, we will then discuss the survey's results and further explain the background behind

[1] For further reading, please see https://unfccc.int/kyoto_protocol and https://www.un.org/en/climatechange/marking-kyoto-protocol's-25th-anniversary

[2] For further reading, please see https://www.gov.uk/government/publications/net-zero-strategy

[3] For further information, please see https://abingdoncarboncutters.org.uk/

[4] The survey was published at https://oneplanetabingdon.org/green-forum/waste-reduction/ and can be viewed at https://docs.google.com/forms/d/e/1FAIpQLSenva-YKJJsf0XtdP_UQ77I8N7v7TYvzT2TqZLNVhUGAfnT9A/viewform

fashion, electrical, food, and plastic waste, before providing considerations and suggestions for future improvements and interventions.

Methodology and Limitations

Most of these surveys are drafted among some volunteer members of ACC, then their results are analysed and evaluated by a few students from the University of Oxford. ACC has limited staffing resources, thus the conduction of each survey partly depends on the availability of contributions from Oxford students. Some questions were added incrementally: a standalone question on single-use vapes and another question on respondents' ages were included late.

The availability of demographic information was limited. While the ages of respondents were collected in the survey, we do not have access to demographic data on Abingdon's residents: this prevents us from adjusting the representation of age groups. In our sample, we had 6 respondents who were under-18s but 119 respondents who were over-55s. If we can similarly assess the proportions of under-18s to over-55s in Abingdon's overall population, we can then compare both of these "ratios" to determine how much of the difference in respondents is due to Abingdon having more over-55s versus Abingdon's over-55s being more likely to respond to the survey. There was no information on the income and wealth of respondents: this is important as financial ability affects spending habits, where wealthier consumers have less incentives to adopt labour-intensive behaviours. For example, a person with an hourly wage of £50 will find it more efficient to work for an hour to buy a new shirt, compared to someone else with an hourly wage of £10 who would spend an hour repairing an old shirt instead. Here, drawing a hypothetical correlation between fast fashion consumption and income can thus help us better understand our obstacles in discouraging fast fashion consumption among wealthier consumers.

Many questions had poor options or scales, such as having 3 options or 10 options. The former does not provide sufficient increments to choose between, thus providing overgeneralised data of limited value, while the latter excessively splits up the sample size, where unconcentrated data makes analysis more difficult. 7 options may be most suitable in balancing between these attributes (Taherdoost, 2019). Some questions should also have asked for how often respondents would undertake an action, rather than a Boolean yes-no dichotomy. For example, someone who attended a clothes swap once in their life should be treated very differently from another who attends a clothes swap once a month, but "yes" options do not account for that frequency of behaviour.

Results were self-reported: widespread research has shown that this limits the usefulness of responses as they are less likely to be accurate or reliable (Brenner & DeLamater, 2016). However, while respondents cannot know how aware they truly are based on their existing awareness, but such questions can still be useful for assessing how aware those respondents perceive themselves to be. This is worsened as most questions did not provide links or sources for further reading

regarding that topic or issue. Similarly, other questions that asked for respondents' opinions (e.g. "would you be in favour of…") were more informative on such attitudes and perceptions. The survey may have collected more useful data with a greater focus on such questions.

Other questions were designed more for engaging or educating respondents rather than collecting data. For example, a question on cotton shirt production gave 3 options of different volumes of water, and respondents were expected to research and learn the correct answer themselves. While quizzes can help with learning (Cheong, Cheong, & Filippou, 2013; Nuci, Tahir, Wang, & Imran, 2021), this intention was not communicated or immediately clear to respondents. Mixing engagement-type (to teach respondents via guessing) and collection-type (to test and check respondents' knowledge without guessing) questions within the same survey would likely have caused respondents to be unaware of such differences. This could have resulted in significant noise in the collected responses, as many respondents would have guessed one of the 3 options. There was also no information provided to respondents of the correct answer and explanation for how this volume is calculated (and varies depending on circumstances).

The phrasing and inaccuracies of survey questions risked causing misinformation or undesired influences among respondents. Many questions ran on problematic assumptions, such as the false notion that we should necessarily use less plastic packaging for food. This may not be true, as wrapped fresh produce can reduce spoilage and thus waste, but that question implied to respondents that unwrapped produce is always better for the environment (White & Lockyer, 2020; Lieb, 2022). Similarly, oil-based artificial fibres are not a homogenous category and can be made of recycled materials, while "natural" materials such as leather still use artificial/chemical treatments during manufacture (European Environment Agency, 2023). In Page 9, Question 1 should have asked how much plastic packaging respondents still used, rather than how much had been reduced. Such an emphasis on the continued remainder of plastics would seem worse than measuring one's success of reduction, spurring respondents to realise that they have further room for improvement.

Some of such questions also did not explain or clarify their premises. In Page 2, there was no explanation for why it is important to identify an item's country of manufacture, and no caution that "organic" is a politicised buzzword and ambiguous category. Along with a lack of explanation on the downsides of organic production and the troubles of buying cotton clothes, the question's set of options thus results in the selective and partial education of respondents. A later question does not specify any differences between real or fake leather, especially when the latter is more common yet difficult to distinguish (Kanigel, 2007; Watanabe & Horiuchi, 2021). In Page 7, Question 1 assumes that vegetable waste occurs on a daily basis, without examining any other types of food. It is unclear to respondents why these specific

questions were asked, and the survey should have better allowed respondents to understand this.

The survey was distributed via email blast to the mailing lists of ACC and OPACEC. The survey was sent to several schools in Abingdon, although only one school distributed the survey within their newsletter for parents and staff. The survey was sent to the ATC's councillors and staff, and sent to a neighbourhood WhatsApp group chat with approximately 100 residents. The survey was not posted to social media, not swapped with other charities, and not distributed to any religious, hobbyist, or other communities.

Within OPACEC, volunteer staff on duty encouraged visitors to complete the survey online. Visitors to OPACEC tend to be middle-class, as residents of Abingdon generally are. There may have been some visitors hailing from outside Abingdon, as OPACEC is located in the Abingdon County Hall Museum. Some paper copies were printed for visitors to the OPACEC, although this was focused on raising awareness rather than collecting responses.

Likely limitations of the survey design include its length and completion time. Research suggests that surveys which are excessively long may cause respondents to gradually become more impatient and potentially abandon their submission (Wigmore, 2022) or be more likely to provide improper and inaccurate answers (Krosnick & Alwin, 1987). The survey does not provide an estimated completion time, which would allow respondents to have suitable expectations. An aggravating factor may be the fashion section on page 2, which is relatively longer than most other pages: a respondent with an impression that all subsequent pages would be approximately as long may pre-emptively abandon the survey without realising that pages towards the end would have been much shorter. Most questions were also made compulsory to answer, which could similarly have increased respondents' dropout rates or worsened the quality of their answers (Sischka, Décieux, Mergener, Neufang, & Schmidt, 2020).

These are some examples of issues which may have worsened the survey's data quality and noise and/or deterred respondents from completing the survey. Respondents who dropped out of the survey before completion would not have any of their responses submitted and recorded. Dropouts are not only problematic as they result in a reduced sample size of respondents, but also as they cause a greater extent of survivorship bias in the demographics and traits of that sample size. For example, respondents were mostly from older generations, with a slim majority of over-55s. A potential reason may be that retirees have a greater amount of free time to fill in surveys compared to students and working professionals who may drop out due to their frustration of the survey's lengths and compulsory questions. There were very few responses regarding the completion of waste reduction challenges.

Theme A: Fashion

We begin with the survey results on fashion: particularly regarding awareness of its environmental impacts. The fashion industry generally has a poor environmental reputation. Fast fashion often promotes trends and mass sales, with low emphasis on durability or sustainability. Online shopping compounds this by adding additional element of instant gratification, especially next day delivery, not needing to leave the house to obtain new clothes/accessories (Joy, Sherry, Venkatesh, Wang, & Chan, 2015).

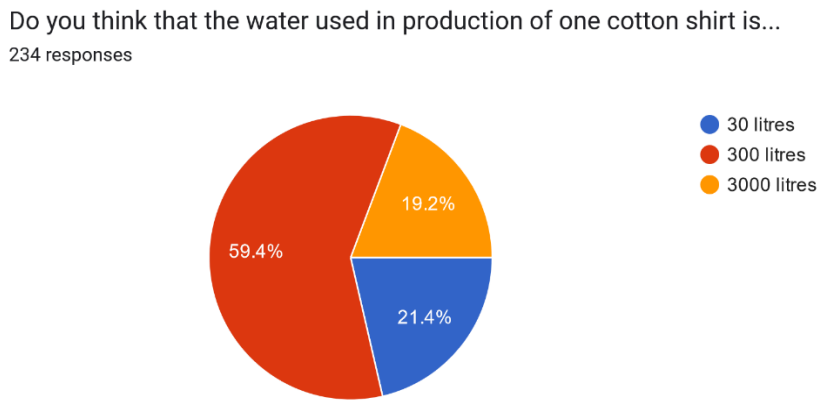
While most people are aware that fast fashion has multiple negative impacts on the climate and environment, it is less clear, even to researchers, what exactly those impacts are and their extent. A majority of clothing fabrics are now synthetic and non-biodegradable, emitting carbon during manufacture and unable to decay when disposed in landfills, but natural textiles such as cotton and leather are not necessarily more environmentally-friendly due to the large volumes of water used in their production (Niinimäki, et al., 2020; Blankenau, 2020). Other costs include chemical pollution, unused or discarded clothes that are no longer wanted, and carbon emissions from the transport of intermediate or finished fashion goods, especially as supply chains are often globally decentralised (Marcketti & Karpova, 2020; McDonald, Hung, & Akbari, 2020).

Fashion contributes to environmental damage on numerous levels, throughout the entirety of the manufacturing, distribution, and end of life processes (Opperskalski, Franz, Patanè, Siew, & Tan, 2022). For example, the cultivation of natural fibres (e.g. cotton, wool) or the derivation of synthetic materials from petrochemicals (e.g. polyester, fake leather), have considerable carbon footprints, as well as generating substantial amounts of waste products. Cotton requires extensive irrigation and pesticide use in most areas, whilst rearing sheep will produce excess greenhouse gas emissions. The processing of the raw materials into usable textiles likewise requires labour and machinery, as well as energy in the form of heat. Consumers are often less aware of the sheer amount of water used in garment production, such as for washing, dying and printing processes (The Ellen MacArthur Foundation, n.d.).

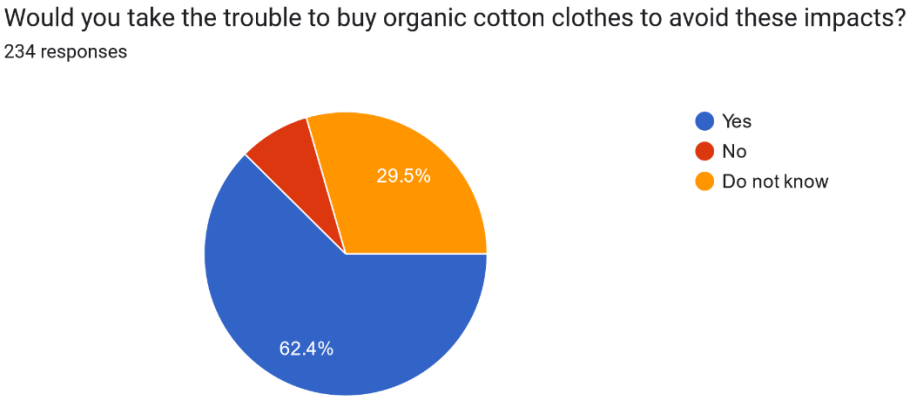
The plastic and cardboard used for packaging clothing is often overlooked, with many consumers being unaware that garments are often delivered individually packaged in plastic, which is removed prior to placement on the shop floor. Emissions from logistics and transport should also be considered, particularly as garments are often produced in stages, with factories specialising in different aspects of the process. The garments are then worn, washed, and worn again, using additional water, and releasing microfibres or plastics. However, the ‘end of life’ stage of a garment is particularly problematic. The incineration of waste, whilst a fast and efficient way to dispose of it, results in the release of harmful gases and compounds (Stefan, Bosomoiu, & Stefan, 2022).

Cotton cultivation requires substantial use of irrigation, fertiliser, and pesticides. Comparatively few (~20%) respondents correctly answered the volume of water required to produce a cotton t-shirt, but awareness of pesticide use, water use, and chlorine for bleaching was high across respondents (56.8%, 73.9% and 59.8% respectively). However, fewer people reported awareness of harmful impacts of the printing and dying fabric (23.1% and 18.8%). 62.4% of respondents stated that they would buy organic cotton to reduce these impacts. This suggests that the respondents of the survey feel some obligation to mitigate environmental damage, through what they may consider ‘responsible consumerism’.

However, it should be considered that the definition of ‘organic’ itself is subjective. Additionally, the decreased use of pesticides in Bt cotton (a genetically modified crop comprising the majority of global cotton production), and its high yields would be considered beneficial. Due to the genetically modified nature of the plant, it is not considered organic. The trade-offs of transgenic crops vs management options such as pesticides and herbicides is still debated. New concerns about the efficacy of Bt cotton, given the emergence of resistant insects, further affects the future security of crop yields (Zafar, et al., 2020). The ‘organic’ debate is even more significant when reviewing food crops. Whilst respondents may believe that by ‘buying organic’, they are acting as a ‘force for good’, the unfortunate reality is that the minor increases in biodiversity resulting from organic farming are insufficient to offset the reduced yields observed. Lower yields mean that more agricultural expansion would be required to meet growing calorie demands, resulting in severe biodiversity loss and increased carbon emissions resulting from land use change (Smith, Kirk, Jones, & Williams, 2019).



Water use in the textile industry (Rather, et al., 2019)



Self-reported awareness of the lifecycle effects of different fibres/textiles (1-10 scale) varied slightly, though the majority of respondents admitted a low level of knowledge. Wool had the lowest awareness rating on average (3.05), followed by leather (3.54), with oil-based fibres having the highest knowledge ratings (4.48). This could reflect an increased awareness of oil and plastic, or simply the decline in the use of wool and real leather in conventional clothing in recent decades (Doyle, Preston, McGregor, & Hynd, 2021; Eurostat Unit G2, 2009). The increased use of plastic, or 'vegan' alternatives to leather may reduce the accuracy of people's perceptions, as the alternatives can be difficult to distinguish. There is still debate as to whether real or 'vegan' leather is worse for the environment, especially as vegan leathers vary greatly by composition, ranging from PVC (polyvinyl chloride) and PU (polyurethane) to a mixture of natural and synthetic polymers. For example, pineapple, cork or apple-based fibres can be combined with polyurethane, to form materials that mimic the feel and appearance of leather, whilst being comprised predominantly of natural fibres. However, the extent of biodegradability is limited (especially for PVC based leathers), so the 'lifecycle' environmental impact of vegan leathers may be greater, despite the emissions saved from not raising cattle (Jones, Gandia, John, & Bismarck, 2021).

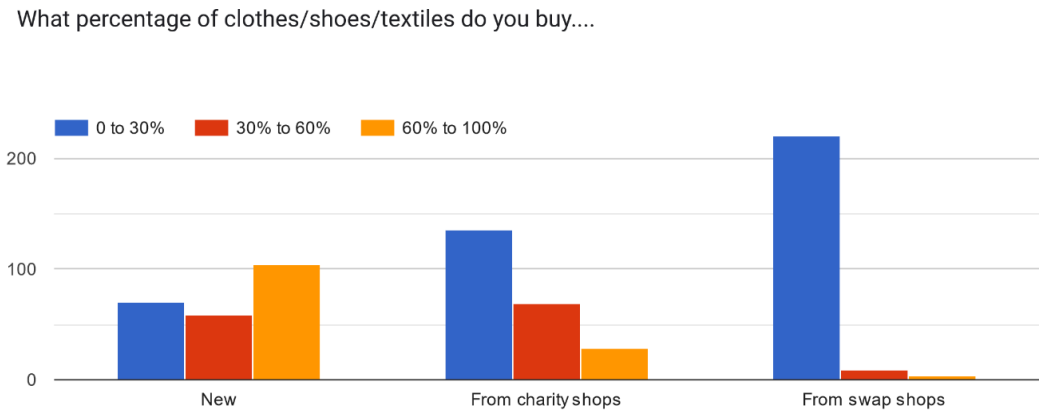
Similarly to the food industry, the terms 'vegan' and 'eco-friendly' cannot be used interchangeably in fashion as, while 'vegan' leather made from PVC may avoid the implications of animal use and cruelty that real leather does, it will likely contribute more to environmental pollution post-disposal, than real leather that has been tanned using traditional methods, is both longer lasting, and is biodegradable (Jones, Gandia, John, & Bismarck, 2021). Likewise, cattle rearing is responsible for a large proportion of leather's carbon footprint, but PVC and PU are derived from petrochemicals, meaning they are reliant on fossil fuels for production.

A further consideration is that leather is predominantly tanned from the hides of cattle slaughtered for meat. It is a co-product of the meat industry, so the entirety of cattle carbon emissions cannot be exclusively attributed to leather production. Bones

and hooves comprise a significant portion of cattle by weight (~12-15% weight per animal) and are used for glue and gelatine production. Despite their bovine origin, these are not usually regarded as ‘unsustainable’ (Kanagaraj, Senthilvelan, Panda, & Kavitha, 2015; Jones, Gandia, John, & Bismarck, 2021).

From a waste perspective, there are additional concerns over the durability of PVC and PU leathers, as they are more prone to cracking, less durable, and generally have a shorter lifespan than real leather products (Jones, Gandia, John, & Bismarck, 2021). These may lead to more replacement items being bought, and less scope for repairing existing possessions, contributing to textile waste globally.

The survey results indicated a very high incidence of donating clothes to charity shops (89.7% of respondents), as well as a higher use of charity shops to buy clothing, in comparison to swap shops.



This is favourable, as ~95% of clothing donated to charity shops is recycled or reused, diverting it from landfill: an estimated 331000 tonnes of textiles in the UK, 2015/16 (Osterley & Williams, 2019). In comparison, there was little utilisation of swap shops reported. As such, we suggest supporting Abingdon’s charity shops (as they appear widely used and contribute greatly to reducing textile waste nationally). Discussing the most optimal ways of supporting each charity shop should be discussed with the individuals running it, and the suggestions made known across the town (i.e. informing people on local forums that there is a shortage of a particular item type, or volunteers).

Additional options could be to advertise potential clothes swaps in the charity shops themselves (as they are likely to reach people who would be interested in ‘preloved’ items), or to organise joint clothes swaps/mass sales in the town centre. This could aid shops in coping with a surplus of donations that they are unable to process at the time (e.g. after busy seasonal periods). Charity shops often lack volunteers, which affect opening hours, and the number of donations that can be processed. Promoting

available positions across public information spaces (such as forums), may aid in recruitment. Secondary schools involved in the Duke of Edinburgh award scheme could likewise promote charity shops as a volunteering option for the programme.

Additionally, 21% of respondents reported selling items through sites such as Vinted and eBay (also effectively reusing them), and 47% gave items away to family members. In comparison, only 9.8% of respondents put clothing in general waste, 39.8% placed it outside in bags, and 21.4% took it to household waste recycling centres. This suggests that (if the respondents are representative of the general Abingdon population), the town's residents are fairly effective in their use and disposal of textiles.

Of those who completed the Fashion Challenge, 81.2% reported an increased awareness of the impacts of the fast fashion industry, with 72.7% stating they would consider buying more preloved clothing items over new. This suggests that similar 'challenges' or educational interventions could be introduced to effect behavioural changes across Abingdon. Our recommendations would be to implement these strategies across organisations such as religious groups and schools. Raising awareness of environmental consequences arising from fast fashion could be particularly effective in shaping future behaviours across the youth at current. This could be achieved by integrating similar challenges in PSHE or Geography lessons. Regardless of whether the students are successfully able to impact their parents' spending decisions, the challenge would hopefully influence their spending choices in the future.

Unfortunately, most survey respondents reported not completing the Fashion Challenge. To increase awareness in Abingdon, perhaps smaller 'information campaigns' or 'clear out challenges' could be introduced, as smaller commitments and minor behavioural changes are often easier to adhere to, and people more willing to trial them.

Theme B: General / Electrical

From electric cars to light bulbs, electrical and electronic devices are a rapidly-growing environmental concern (Kiddee, Naidu, & Wong, 2013). From the resource and energy usage involved in manufacturing and operating such equipment, to the accessibility and feasibility of repairs and reuse of damaged and broken items, the global impact of electrical appliances is complex (Babu, Parande, & Basha, 2007). The mining and disposal of key materials used in such devices is especially harmful to both the local and global environment (Widmer, Oswald-Krapf, Sinha-Khetriwal, Schnellmann, & Böni, 2005).

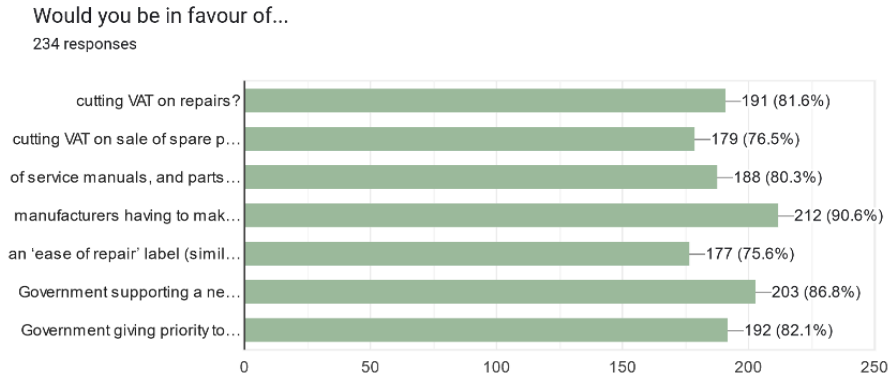
Common examples within a household include dishwashers and washing machines. Dishwashers tend to use less water than through handwashing while saving the user time and effort (Richter, 2011), yet this has to be compared against the lifespan and impacts of the machine.

A right to repair for devices, especially high-cost appliances, will ideally allow consumers to save money while reducing resources and waste. This especially applies to advanced and complex items such as smartphones and computers. Currently, many companies such as Apple and Tesla require customers to repair their devices at officially-approved centres, and third-party repairs may be more troublesome or cause insurance difficulties. Repairs are further limited in feasibility as they can often cost more than the price of the device itself, especially where parts are required by the manufacturer's policies to be installed together: e.g. replacing a cracked screen involves replacing a weak battery as well.

End-of-life disposal involves additional problems, especially for major electrical appliances. Once spoilt, such devices often cannot be reused for other purposes. Using landfills can cause toxic chemicals and metals to leak into soils and groundwater. However, second-hand markets for electronic devices (instead of buying new) are often rare and unknown.

Awareness of right to repair is fairly evenly split (44.4% aware, 56.6% unaware). However, knowledge of how to access this is far lower (only 9.8% aware). Repairing items would benefit both the environment and respondents: this suggests greater information promotion would be beneficial. Some suggestion of ways to do this can include notices on recycling bins or retailers' websites.

A majority of responses seem in favour of interventions/legislation changes associated with increasing ease/financial viability of repairing items. However, the question did not state any downsides to supporting a right to repair, so it is unlikely that respondents would oppose such a proposal.



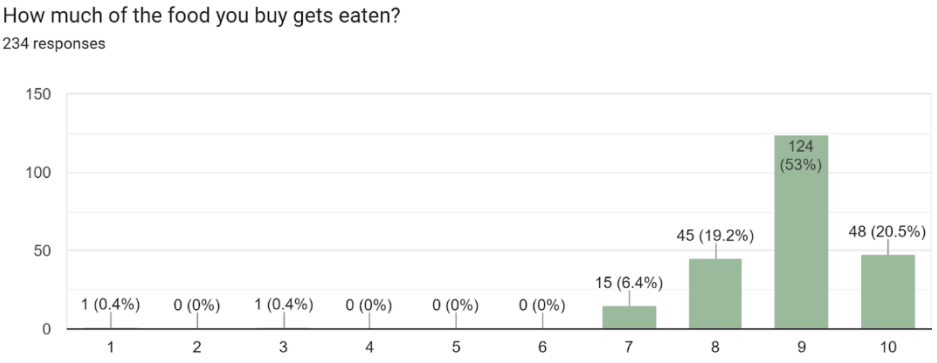
Numerous respondents chose to ‘rehome’/resell/find items online, with Freecycle and Facebook listed as the main sites. (42.7%, 39.7% respectively). This is beneficial, both diverting perfectly usable items from landfill, and reducing the incidence of ‘new’ products being bought. Street collection was utilised by ~26.1% of respondents. Such avenues could be supported by town council, or managed in a more sustainable/suitable way. Only 3.4% of responses indicated not buying/finding/rehoming items at all, which is a very low proportion of respondents (8/234 responses).

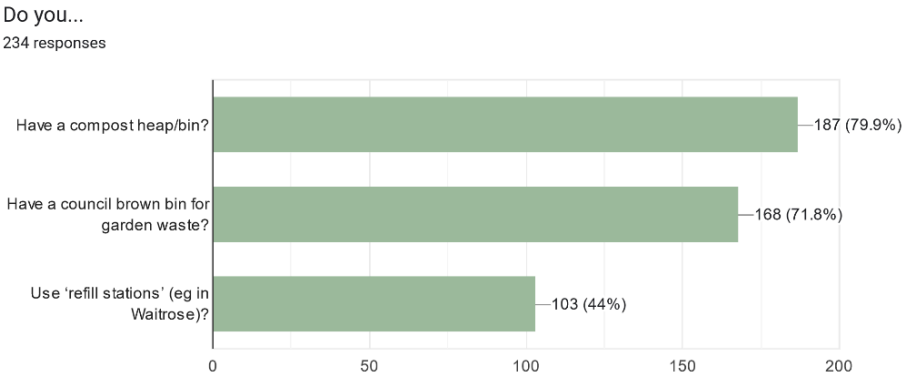
Slightly more respondents (15 vs 11) completed the general waste reduction challenge than the Fashion Challenge, but this is still a very small proportion of respondents (<10%). No particular statistics stand out as important or significant from the respondents who completed the general waste challenge

Theme C: Food

In 2018, the UK produced around 9.5 million tonnes of food waste, 70% of which (6.6 million tonnes) came from households (Dray, 2021). Split across its approximately estimated population of 66,436,000 in mid-2018 (Park, 2019), this would average out to 99.34 kg of food wasted per person over that year. As cooking and food preparation at home is relatively common compared to eating out or taking away (Adams, et al., 2015; Wunsch, 2023), households thus have a significant responsibility in reducing their food waste: governmental policies and targets cannot be achieved without individual participation.

Self-reported food waste appears favourable, with the majority (53%) of respondents rating a 9/10, and 99% of answers rating 7 or above out of 10. Responses also seem quite favourable regarding food waste and disposal.

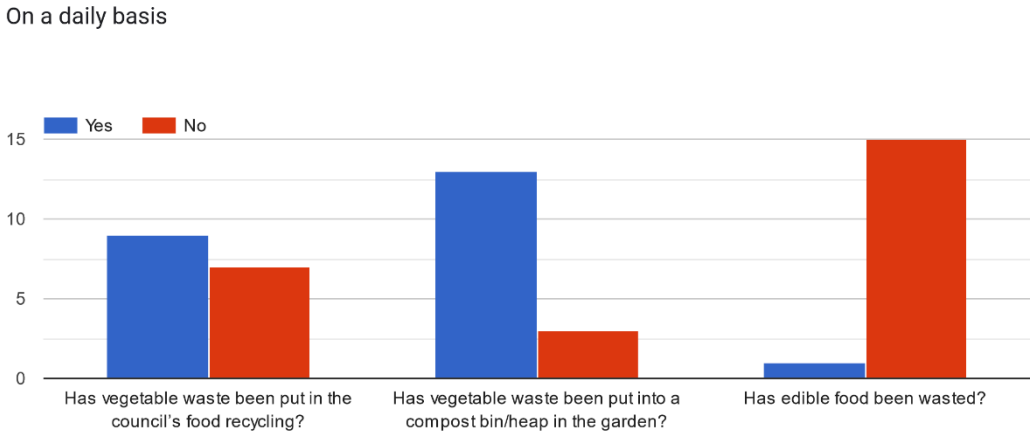




There is a high proportion of respondents with garden waste and compost heaps, which increases biodegradable/composting capacity. These may also replace the use of commercial fertilisers in gardens. However, a lower proportion of respondents are using refill stations (44%), which may be due to the demographic captured by the

survey. For example, Waitrose products are considered more expensive/luxurious than other shops such as Aldi or Lidl. The fact that refill stations are only present in more expensive mainstream shops (as well as specialist ‘organic’ and ‘eco’ shops and cafes) makes them less accessible to lower income families, students, or other demographics.

This is reflected in the following question, asking how to improve refill stations to made them ‘more attractive’. 64% of responses selected ‘more competitive pricing’ as a prominent way to improve the accessibility of refill stations, while a better range of options, and more convenient locations were also often referenced (47.9% and 44.4% respectively). There were also suggestions to the local council for perhaps supporting local businesses that promote refill stations or similar.



Not many respondents completed the food waste challenge, but of those who did, the outcomes appear favourable, with little food waste reported, and a greater extent of vegetable waste recycling (see above). ACC and OPACEC may wish to promote more food waste reduction challenges, perhaps through the council itself. There were additional favourable outcomes from having taken part in the food waste challenge: e.g. learning how to make soup from leftovers, using meal plans to reduce waste, and reducing consumption of ultra processed foods.

For the question on dog poo, 25.6% respondents responded as having a dog, and similar proportions placed dog poo bags in council and grey bins (66.7% and 70% respectively).

Food waste issues have a global impact: not only contributing to greenhouse emissions via decomposition in landfill, but also adding to the pressure for increased agricultural expansion into existing biodiverse systems. This especially comes as developing countries with large, increasing populations are changing their dietary preferences towards increased intakes of meat, dairy, wheat, and vegetable oils (Zhang, Li, Jin, Wu, & Monaco, 2022).

Agricultural expansion is required not only to fuel the growing global population but also to sustain less energy efficient food sources. For example, the production of a kilogram of protein from beef will produce 1250 kg of CO2, whilst the equivalent for poultry and pork will produce 110 kg and 150 kg of CO2 respectively. This is due to the inefficiency of the ruminant digestive system (cows, sheep, goats, horses), in comparison to that of monogastric (i.e. pigs). However, the growth of plant protein for direct human consumption is even more efficient, with a kilogram of soy protein producing just 17 kg of CO2. For those who are climate conscious but find it difficult to eliminate meat consumption completely, promoting the differences in carbon emissions from beef consumption in comparison to other meats may be useful in reducing their overall footprint. Likewise, respondents who are vegetarian for the purpose of reducing their carbon footprint, but instead compensate by consuming copious amounts of dairy produce, could be made aware of the relative emissions of ruminant dairy products vs monogastric meats.

Carbon costs of major crop and livestock products

	COC[a] (kg CO_2 per kg fresh weight)	PEMs (kg CO_2e per kg fresh weight)	Total (kg CO_2e per kg fresh weight)	Total (g CO_2e per kcal[c])	Total (kg CO_2e per kg protein)
Maize	2.1	0.46	2.6	0.82	29
Rice (rough)	2.6	2.17	4.8	2.0	69
Wheat	1.9	0.69	2.6	0.9	23
Cassava	1.7	0.04	1.7	1.6	160
Potato	0.6	0.09	0.7	1.1	38
Soybeans	5.9	0.26	6.1	1.5	17
Pulses	10.5	0.55	11	3.1	47
Vegetable oils	9.7	1.3	11	1.2	Not applicable
Beef[b]	144	44	188	102	1,250
Cow milk	6.2	2.3	8.4	13.1	260
Pork	14	5.5	20	9.4	150
Poultry meat	11	3.7	14	8.4	110

(Searchinger, Wirsenius, Beringer, & Dumas, 2018)

WRAP's food waste report indicates that the majority (~70%) of food waste in the UK is from households, with much of it still being edible (i.e. not spoiled or dangerous to consume) (Bajzelj, McManus, & Parry, 2019).

Some suggestions for reducing food waste in Abingdon include the promotion of apps such as 'Too Good to Go' and 'Olio'. These are aimed at reducing food waste across businesses, enabling the purchase of short dated food products at a lower price. This decreases financial losses to the businesses, enables people to access food for less cost, and reduces food waste.[5] Alternatively, the promotion of meal

[5] For further information, please see https://www.toogoodtogo.com/en-ca and https://olioapp.com/en/getting-started-on-olio/what-is-olio/

planning (van Rooijen, Gerdessen, Claassen, & de Leeuw, 2024), such as a potential programme subsidised or sponsored by the Town Council, or in conjunction with local schools and families. This can be done in a similar style to ‘HelloFresh’ or ‘gusto’ - meal plan boxes with recipes and guides on how to use the ingredients inside. For example, a free trial box to families or individuals (with a focus on quick, nutritious meals) to potentially inspire behavioural change – both waste reduction and healthy eating. Another concept is a market ‘Oddbox’, where ACC, OPACEC, and/or the Town Council liaises with local farmers to buy/sell/distribute produce that does not meet the cosmetic standards of general sales to mainstream shops. This can especially be sold at a reduced price to incentivise people to buy, but also to prevent total loss from alternatively shaped/sized produce from the farmer’s perspective.

A high proportion of compost bins are already used: further improvements could potentially involve liaising with local farmers/allotments to collaborate with households for compost collection, or usage for a household’s own vegetable growth/plant pots if feasible with time/space constraints.

Organising groups/forums for individuals trying to ‘grow their own’ could foster community spirit. This can include food ‘sharing’, donation groups, and group chats. For example, neighbours flagging up that they have surplus vegetables/fruit/products that need to be used up, and to promote collection (e.g. in a box outside the door) of surplus products that other people can use so that they are not wasted.

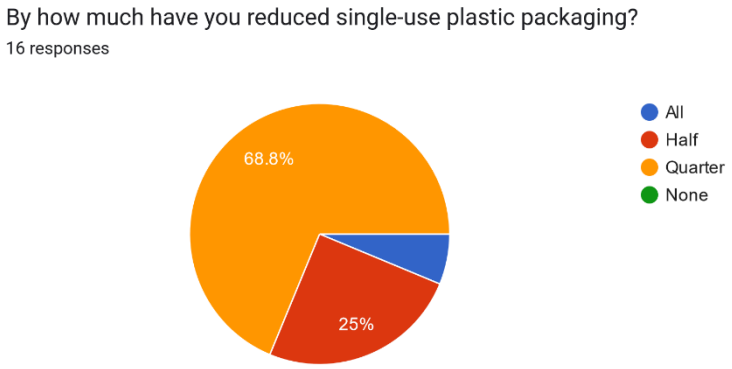
Collaborating with local schools and organisations could promote skills/knowledge based improvements, such as the ‘leftovers soup’ referenced in the survey. This can involve school challenges for rewards such as house points or extra break times. Setting up of online forums/websites/groups that promote the use of local ingredients (or those found in refill stations) can facilitate creativity, but also foster elements of sharing and a community spirit (i.e. people posting their own recipes for ideas, or photos of meals created using recipes listed on the site).

Theme D: Plastics

Beyond single-use items, plastics can be found everywhere, where even paper cups and wooden tables often use some plastics for water resistance and structural

rigidity (Nowell, 2024; Hiziroglu, 2016). Plastics are heavily involved in other environmental concerns: perishable foods are commonly wrapped and packaged when sold in supermarkets, while plastic-based nylon and polyester shirts contribute to marine microplastic pollution (European Environment Agency, 2023). Delivery boxes use polystyrene foam and bubble wrap to cushion products, which are wasteful but especially common with express home deliveries (Chowdhury & Kabir, 2023).

From the survey, refillable water bottles have a high usage. However, it would have been useful to have a control group, as we currently cannot compare respondents who completed the challenge against those who did not.



The United Kingdom has a single-use plastic ban that went into action from October 2023, with additional phases introduced in 2024.[6] While its impacts have only recently set in, Abingdon is already doing well to support the use of refillable water bottles, such as having a water refill station in the town centre.

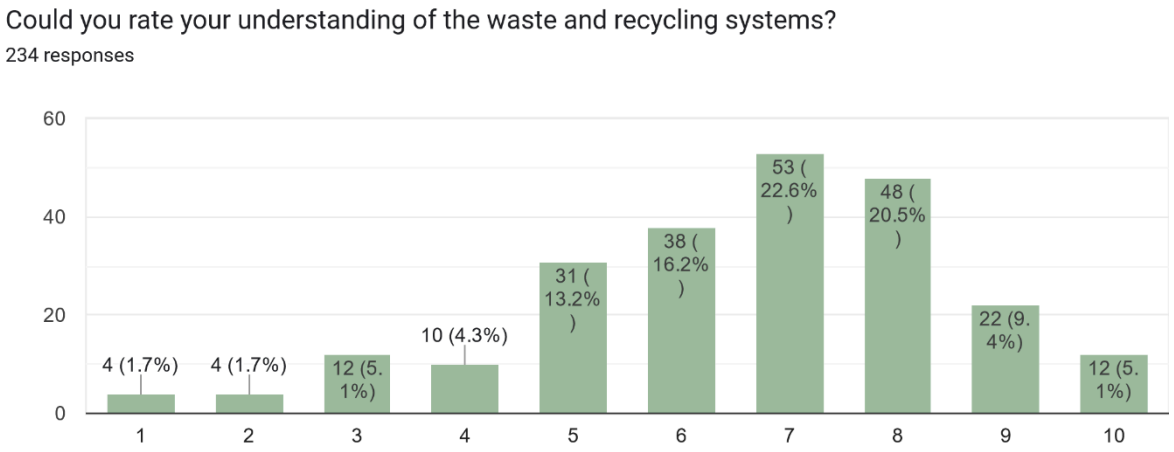
Additional actions could involve promoting more businesses to offer free tap water refills for walk-ins (especially in the summer/during hot weather), which will incentivise the carrying of refillable water bottles, and reduce reliance/use of single-use plastics. This should be accompanied by increased public toilet facilities. If not feasible for more to be built/made public, then attempts can be made to liaise/subsidise local businesses (i.e. cover costs of toilet paper and cleaning products) to encourage them to join a community toilet scheme – i.e. where non-customers are able to use the toilets in a cafe/restaurant.

0.9% of respondents reported using single-use vapes. While we do not have data on the prevalence of vape usage in Abingdon, actual vape usage is also likely to be representative of age and socioeconomic demographic of Abingdon residents: i.e. more common in 16-30 year olds than in over 55s (Smith, MacKintosh, Ford, &

[6] For further information, please see https://www.gov.uk/government/news/far-reaching-ban-on-single-use-plastics-in-england and https://www.gov.uk/guidance/single-use-plastics-bans-and-restrictions

Hilton, 2023). Thus, the demographic captured by the survey is limited in understanding vape users. While vapes were included in the ‘Food’ section of the survey, we believe it would be more suitable under ‘Plastic’ (as single-use) or under General/Electrical (as an electrical device).

Increasing awareness of environmental and current health impacts of vapes needs to consider the perspectives of youths and the reasons for their use of vapes. Action can be particularly taken in pre-tertiary schools. Environmental consequences are especially damaging as vapes are a single-use electronic product, harming plant growth (Green, Boots, Olah-Kovacs, & Palma-Diogo, 2023) and wasting valuable yet harmful metals (Gutterman, 2023).



There seems to be a high extent of self-reported awareness of waste and recycling. While this cannot point to an actual high level of knowledge, it suggests that respondents perceive themselves to be knowledgeable upon personal reflection.

Conclusion

Waste contributes greatly to environmental issues: the emissions associated with energy production, agriculture, textiles, logistics, and more, along with increasing demand due to the extent things are produced but not utilised, causes shortfalls in

the rest of the sector and increased expansion of production/manufacture to compensate.

In addition to the carbon emissions caused by upscaled production, the ‘end of life’ protocol for an object determines the extent that it contributes to global pollution. The comparison of biodegradable materials vs single-use plastics is one key example.

Whilst there were extensive limitations to the survey data, due to the design, and demographic captured, we nonetheless hope to propose numerous interventions to further improve sustainability in Abingdon. Concurrently, we hope that the topics discussed will increase awareness, and promote behavioural change across the general public.

Overall, these topics cannot be overlooked in their importance: our individual actions do matter for the wider environment. Moreover, as residents of a wealthier developed country, we have a greater ability and responsibility to do our part for the global environment.

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