Tourism Litter

Challenges and Solutions

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Contents

This research paper is designed to accompany the materials and messages designed through the Caru Cymru project. The purpose of the research paper is to gather, analyse and evaluate information in order to identify current evidence and practice. This provides a basis upon which to build our knowledge and policy work and is used to inform our positions on key issues relating to the topic.

Executive summary

Tourism plays a huge part in the Welsh economy, generating £6.2 billion in visitor expenditure every year, although this is not without challenges, notably for litter and waste management. Tourism generally correlates with an increasing prevalence of general litter, equipment litter, fly-camping, fly-tipping from holiday lets and misuse of public bins. The phenomenon of tourism-related litter has been well-studied through various means including perception surveys, correlations between beach visitor numbers or seasonal tourism influxes with litter levels, and beach visitor association with certain litter types like on-the-go food and drinks packaging. These issues have been enhanced by the coronavirus pandemic as domestic tourism increased as international travel restrictions were imposed, creating unprecedented concentrations of visitors in more rural destinations and a related increase in on-the-go food and drink consumption.

The study of visitor behaviour is known as 'holiday psychology' due to distinguishable differences to studies of behaviour in the home or work situation. The most influential behaviour principles on tourists are perceived behavioural control (the ease of an action), social and personal norms, incentives, and the 'spillover' effect (the reproduction of behaviours from other settings such as work or home). Perceived behavioural control is lower whilst on holiday (actions seem more burdensome) as the focus is on more 'hedonistic' desires rather than responsibilities. Hence, the consumption of cheap poor-quality items like equipment or packaging that may not be bought at home is increased, escalating visitor destination waste problems. In this situation, the phenomenon of 'moral licencing' permits people to act in less environmentally conscious ways than usual as they justify less environmentally responsible decisions on holiday with good pro-environmental behaviour at home.

There are numerous opportunities to address these issues at Welsh Government, local government, national park and business or industry level. These include techniques tried and tested elsewhere such as the introduction of a visitor levy which could support revenues for local services. Evidence from other destinations with visitor levies suggest this is best done through highly transparent means where the funding is clearly ringfenced for environmental and regenerative purposes. A charge of just one pound per person per night could generate up to £41 million in revenue for the whole of Wales. Marketing techniques that have been effective in European destinations involve advertising visible codes of conducts in national parks, and promoting messaging emphasising area nature designations and zoning policies. These can help communicate that anti-social behaviour is not acceptable and demonstrate responsible behaviours to new visitors who are not accustomed to visiting these areas of natural beauty.

Alongside current efforts, the Welsh Government is encouraged to pursue incentives for packaging reduction for businesses and customers through grants, tax reductions or packaging levies. This can facilitate the transition to normalising sustainable packaging even where it is more expensive than its unsustainable counterparts. Increasing responsibly managed camping capacity through aires (where campervans can stop for use of the most basic facilities such as waste disposal (refuse and bodily) and running water) and pop-up campsites can help respond to the surge in fly-camping which has been seen as a result of the COVID-19 pandemic, with Gwynedd planning to trial aires in 2023. It is noted that this growth in fly-camping may decrease naturally as international flight capacity recovers post-lockdowns. Holiday let uncertainty should also be investigated and more heavily regulated and monitored when it comes to waste as current guidelines do not state who the onus of proper waste disposal falls on (i.e. guests or hosts) and allow small businesses to be exempt from requiring trade waste agreements.

Smaller-scale opportunities could be trialled and expanded if successful, like voluntary smoking or plastic item bans, Adopt-a-beach / Coast Care schemes and binfrastructure for recycling equipment waste or borrowing items. Some of these recommendations will require specialist knowledge in determining how they will work in the Welsh or local contexts and how is best to implement them, therefore it is essential to work closely with tourism partners and stakeholders.

The COVID-19 pandemic and subsequent travel restrictions brought increased challenges for destination and visitor management as unprecedented numbers and a 'new' audience of visitor took domestic holidays. Litter and waste management is rarely a key feature in national tourism policy, yet it is being increasingly prioritised, especially in local and regional plans. Litter and waste have a twofold impact, not only putting a strain on the managing authority to deal with (often by diverting resources from elsewhere) but it also has a significant impact on visitor perception of an area (and their likelihood of making a return visit). It is suggested that litter and waste management should be allocated greater attention and resources which take into account seasonal pressures as it is seen as one of the most integral parts of visitor management which many councils and other duty bodies are struggling with. Waste management is a feature in many local and regional plans but has yet to be truly recognised in any national strategies from the sector or government.

Meanwhile tourism businesses are leading the way in terms of plastic and waste reduction through voluntary initiatives such as the Global Tourism Plastics Initiative and Green Key, these schemes have yet to extend to the 'private hosting' sectors which make up a significant percentage of Wales' accommodation offer and represent a missed opportunity to engage visitors.[1]

Key points:

- There is a correlation between visitor numbers and littering and waste management issues which puts a strain on local resources and service delivery.

- Visitors may be unfamiliar with waste practice in the area they visit, lack a 'connection' with the area or they may be driven by 'holiday psychology' factors which may result in less responsible waste behaviours.

- This research indicates that specific interventions, messaging and targeted awareness raising is required for visitors.

- Whilst litter and waste management are common in local tourism sustainability plans, it tends not to be recognised through more regional and national plans, despite the significant impact on resources and services.

- Whilst many tourism and hospitality businesses are increasingly adopting more responsible practices and standards, there is a significant gap in the requirements and initiatives within the private hosting sector.

- There are a number of policies and initiatives which could be considered to support visitor destinations in managing these issues more effectively and many examples of best practice.

- A Visitor Levy – ringfenced for environmental resources and services – would be one part of a solution to ensuring greater resource allocation in those areas that are both struggling to cope with demand but also rely on high environmental standards to attract return visits.

- Circular economy ambitions are essential parts of sustainable tourism. Reuse and repair initiatives, as well as overall waste reduction through businesses and local and national policies, will have an impact in lessening the problem and promoting positive behaviours.

- Communities are often already engaged in local tourism and waste management issues and their activities can be maximised with the support of local authorities and relevant non-governmental organisations (NGOs).

Recommendations

Please note that some recommendations can be achieved individually or through partnerships across different levels but have been presented only once in the table for clarity.

Welsh Government	**General tourism litter** • A tourism levy may help fund local authority waste management such as litter picking, and bin provision and collection as well as supporting regeneration and environmental improvement. • Business and / or government incentives to reduce non-biodegradable or single-use packaging such as expanded polystyrene for example chip trays and coffee cups.
	Equipment litter and fly-camping • Market restrictions or taxes on cheap poor-quality equipment.
	Fly-tipping and holiday residences • Determine who the legal onus of proper waste disposal falls to for holiday lets - guests or hosts. All types of holiday accommodation should come under Business Waste regulations for the sake of clarity and accountability. • Target holiday let booking sites such as AirBnb to establish a common guidance and waste management principles which lays out host and visitor responsibilities.
Local government and national park authorities	**General tourism litter** • Voluntary smoking bans on problem-beaches could be applied in some areas but should be subject to impact assessment. • Appropriate marketing for the area either through demarketing, nature conservation area signage or stressing codes of conduct in national parks and other popular areas. • Encourage an Adopt-a-beach / Coast Care scheme for out-of-season amenity beaches, or beaches not cleansed regularly by the local authority. • Highlight wherever possible the nature conservation value of an area and code of conduct through numerous information channels, especially in national parks and other exceptional land designations. • Focus on retaining repeat visitors who may develop place attachment more easily than one-off visitors.
	Equipment litter and fly-camping • Trialling pop-up campsites and aires located in areas seeking more visitors, so to spread financial benefits and reduce overcrowding in popular areas. • A broken equipment box to collect broken equipment for recycling.

	- Trials of enforced or casual zoning of areas to prevent some activities from occurring in naturally sensitive areas, while allowing space for this in less sensitive areas. - A 'beach toy / equipment library' where equipment can be placed for reuse by someone else, including buckets, spades, nets, parasols, bodyboards, hiking poles, waterproof ponchos etc.
	Fly-tipping and holiday residences - Send educational materials on waste management duties to the host or management company either when they move from domestic to business tax rates, or when holiday lets are granted a change of use class (pending consultation by Welsh Government). - Local authority bin audits should map holiday accommodation and should allocate bin provision and messaging accordingly. - Investigate the use of binfrastructure design as a deterrent of using public bins for domestic holiday let waste. - Promote the ease of pro-environmental behaviour (PEB) by referring back to people's behaviours at home regarding recycling and waste management.
Business and industry	**General tourism litter** - Public incentives to bring reusable containers / bottles through the application of financial levies or localised deposit return schemes. - Encourage the uptake of Litter Free Zones programme by businesses, especially in high footfall areas and visitor destinations. - Beach equipment hire schemes to minimise purchases of cheap poor-quality equipment. - Further expanding refill stations to tourist hotspots to reduce plastic bottle consumption.

1. Introduction

Tourism is a global occurrence defined by the United Nations World Tourism Organization (UNWTO) as "a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes[2]". It brings many direct and indirect benefits to the areas popular with the industry including economic growth, job creation, infrastructure development and connectivity with different cultures. Prior to the COVID-19 pandemic, the World Travel and Tourism Council (WTTC) estimated the tourist industry accounted for 10.4 percent of GDP and 10.6 percent of all jobs, globally[3].

Nonetheless, the tourism industry also comes with challenges associated with seasonal increases in population. A high concentration of visitors can strain local infrastructure and cause damage to the environment through congestion, parking difficulties, footpath erosion and anti-social behaviour including littering and other mismanagement of waste. Conversely, research finds litter levels can discourage tourism with 85 percent of visitors and residents in one study stating they would not visit a beach with more than 2 large items of litter per metre[4].

Between 2017-19, on average each year around 9.9 million and 1 million trips were taken to Wales by domestic (Great Britain) and international tourists, respectively, generating £6.2 billion in visitor expenditure[5]. About 140,000 international visits are from Ireland and 110,000 from Germany[6]. However, the issues mentioned above are still apparent. In 2019, Keep Wales Tidy, Marine Conservation Society (MCS) and Eunomia Consulting formed a partnership to investigate litter data and strategies in Wales[7]. Using Local Environmental Audit and Management System (LEAMS) and Beachwatch data they found stark relationships between tourism hotspots and litter levels. Usually, litter levels are correlated with population density, but in rural tourist hotspots like Yr Wyddfa (Mount Snowdon) in Gwynedd, drinks litter was found to be disproportionately high. Similarly, smoking litter on beaches should be representative of the smoking litter found inland, however, holiday destinations have considerably more smoking litter compared to resident populations and smoker numbers which suggests it is deposited in-situ.

Other aspects of this issue include the recent increase in domestic tourism due to coronavirus restrictions and uncertainty during the summers of 2020 and 2021[8] and the 'holiday psychology' body of research which suggests people behave differently away from home. This report will investigate the tourism-associated waste problems including littering, fly-camping (wild-campers that leave their waste in situ[9]) and fly-tipping from holiday lets / homes to understand the scale, seek to develop understanding of people's behaviour and suggest solutions.

2.Challenges

2.1 Scale of the problem

2.1.1 General litter

The extent of tourism-associated litter problems has been studied on all continents. Considerable research finds 'visitor', 'public' or 'recreational' sources to be the main source of beach pollution at their study sites. To determine if litter was dropped by local people or visitors, often, studies will include a perception survey or make assumptions based on correlations between number of beach visitors, season and litter levels, and litter types.

Through a perception survey, a study in Santa Marta, Colombian Caribbean found that the litter collected across its beaches during summer (average of 2–36 litter items m^{-2}) was perceived to be mainly from visitors, accounting for 70 percent, and outdoor food vendors and restaurants, plus overflowing bins making up the other 30 percent[10]. The same study also found a moderate-strong correlation between number of beach-users and litter. This relationship has also been found in Alicante, Spain[11], and between beach types in the Mediterranean with beaches more popular with tourists boasting 330 items/1000 m^2/day, the largest amount of litter compared to local and rural beaches[12].

This paper and further investigation in the Mediterranean[13,14] and studies from elsewhere like Qingdo, China[15] and Cornwall, UK[16] also considered beach litter type as a way of allocating it to a source. The items most frequently assigned items to visitors are smoking-related, fast food and drinks litter which are the most abundant litter source in the majority of the studies. This correlates with findings from the WTTC that in the top 10 single-use plastic products most likely to be littered from tourism accommodation are water bottles, plastic bags, food packaging, plastic cups, straws and cutlery, with cigarette butts, wet wipes, sanitary products noted as making up tourism-related litter not directly procured by tourism businesses[17].

Despite the lack of timely research and research in general into beach / marine litter in Wales specifically, a few studies support the findings from around the world regarding litter types assigned to visitors. A 2014 paper examining 41 Welsh beaches between 2000 and 2012[18] established the most frequently found identifiable litter types were recreational and fishing (food and drinks packaging, cigarette butts, plastics, fishing gear and dog fouling), noting sewage-related waste had decreased coinciding with the installation of new treatment plants. More recently, a 2017 study[19] of British beaches also supported that the 'public' source was the most persistent in the UK as a whole, but the Mid and North Wales coast had the highest proportion of litter from land-based activities (50 percent) in the UK. Additionally, South Wales had the highest mean abundance of litter (0.012 items collected $m^{-1} min^{-1} person^{-1}$), food and drink packaging and fishing gear in the UK.

In order to gather an up-to-date Wales-specific picture of beach litter, MCS Beachwatch data for 2018-20 was analysed. The data reinforced previous findings around litter composition from the following sources:

- Non-sourced litter made up 43 percent of items recorded on Wales' beaches and constituted mainly small unidentifiable pieces of plastic

- Public litter made up 35 percent of items, most commonly on-the-go food and drink packaging and cigarette butts

- Fishing litter accounted for 15 percent, mainly from fishing nets and rope

- Sewage and shipping sources made up 4 percent and 3 percent, respectively

Figure 1. Percentage source of Wales beach litter (MCS Beachwatch 2018-20)
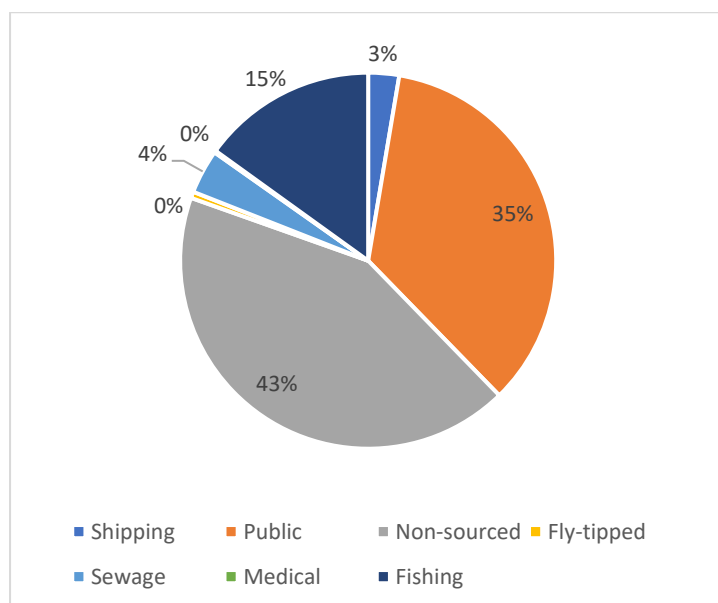
Nonetheless, it is not just beaches which tell this story. As previously stated, the levels of drinks litter found around Yr Wyddfa (Mount Snowdon) in Gwynedd, far exceed the amount expected to be produced from the local population alone. Building on this, a composition study[20] undertaken on Yr Wyddfa during the 2020 lockdown restrictions preventing travel discovered the most abundant litter were confectionary wrappers, drinks litter, dog fouling, food camping / picnic equipment, cigarette butts, route markers, clothing and hiking equipment. Research into microplastic levels in Eryri (Snowdonia) discovered they were highly concentrated around the railway lines and summit, revealing these are likely from visitor litter[21]. The report acknowledges visitors as sources of litter but also states that litter cannot be attributed to visitors alone, the responsibility is shared among residents and local businesses alike.

Becoming more evident as a problem is events-related litter. Yr Wyddfa events-related litter specifically refers to the signage and route markers left after organised events, as well as gel wrappers (presumably the high energy gel used for long distance sports events)[22]. Trash Free Trails has also found a disproportionate amount of energy drink litter on mountain biking trails[23].

Event organisers have a duty of care for the waste they produce and must follow the waste hierarchy[24]. This duty of care is easier to implement in contained settings like ticketed music or food festivals but can be more challenging on larger scales such as when events span whole towns or regions. Most of the rubbish associated with events is food and drinks packaging and cigarette butts[25] and there is already guidance in reducing and managing this. For now, it is clear that planning for waste and obtaining a waste contractor is essential for good management. Keep Wales Tidy has produced general litter at events guidance document.

The impact of the coronavirus pandemic on litter has not been fully researched yet but the implications for tourist-related litter are becoming apparent from vast anecdotal information. Although the UK's domestic tourism sector faced a 60% reduction in domestic holidays in 2020, a decrease in city breaks was converted to an increase in visits to coastal and rural destinations[26] named 'The Countryside Crush'. This concentration of visitors, some argue bordering on 'over-tourism', coupled with restrictions, apprehension and hospitality staff shortages creates the opportunity for vast amounts of waste to be generated. As well as the general increase seen over recent years of for food and drink 'on the go', the COVID-19 pandemic saw an additional increase in the purchase and disposal of these items as an alternative to eating at hospitality venues for reasons stated below:

- People wanted to consume their purchases outdoors and away from busy venues where coronavirus is less likely to spread

- There were reduced opportunities for customers to obtain tables to eat at hospitality venues because:

  - Staff shortages and coronavirus distancing restrictions reduced hospitality's capacity[27]

  - Additionally, the higher than average influx of visitors to rural areas meant demand for tables in hospitality venues far exceeded the supply

- There were more opportunities for people to obtain takeaway, on-the-go or fast food and its packaging because:

  - More businesses have established and continued takeaway services as these were permitted when indoor seating was restricted over previous lockdowns, they counteract the reduced seating capacity for eat-in meals and cater for the increased demand of people trying to avoid higher risk busy areas[28,29]

For example, in Saundersfoot (Pembrokeshire) in summer 2021 a business owner noted how visitors to the area had had to purchase 'a sandwich from the supermarket' and go back to their accommodation as they couldn't get a table. Other reports included decreases in taxi business as people preferred to order takeaways to their campsites than eat out[30]. Subsequently, more waste from the excess food packaging is likely to put strain on the local waste infrastructure and increases the potential for those items to become litter. Research finds overflowing bins encourage people to place their litter on the floor nearby as they think they are doing the right thing, but this facilitates the increase in litter as items become dislodged, windblown or accessed by pests[31]. However, demand for more bins or more frequent emptying of bins above the usual seasonal increase for local authorities isn't always viable, although some local authorities have invested in gull-proof public, business and domestic bin sacks[32]. Keep Wales Tidy has produced 'Binfrastructure' guidance to inform the principles and approach needed for the 'right bin in the right place' which is available on the Keep Wales Tidy Policy and Research website.

Another unique aspect of the Covid-19 pandemic on litter is the issue of personal protective equipment (PPE). PPE litter has increased globally since the onset of the pandemic, but in Wales specifically, the annual LEAMS survey reveals around 10,600 masks were present on Wales' streets every day in 2021-22. The MCS Beachwatch data for 2021 also found 32 percent of UK beaches had PPE litter[33]. Whether littering of PPE is an issue that will persist into the future is yet to be seen, but it's likely stocks already existing in the environment will take decades or centuries to biodegrade and pose a threat to wildlife in the meanwhile[34].

Recommendations:

- A tourism levy may help fund local authority waste management such as litter picking and bin provision and collection as well as supporting regeneration and environmental improvement.

- Voluntary smoking bans on problem-beaches could be applied in some areas but should be subject to impact assessment.

- Further expanding refill stations to tourist hotspots to reduce plastic bottle consumption.

- Business incentives to reduce non-biodegradable or single-use packaging such as expanded polystyrene for example chip trays and coffee cups.

- Public incentives to bring reusable containers / bottles through the application of financial levies or localised deposit return schemes.

- Encourage the uptake of Litter Free Zones programme by businesses, especially in high footfall areas and visitor destinations.

- Appropriate marketing for the area either through demarketing, nature conservation area signage or stressing codes of conduct in national parks and other popular areas.

- Encourage an Adopt-a-beach / Coast Care scheme for out-of-season amenity beaches, or beaches not cleansed regularly by the local authority.

- Promote the use of reusable facemasks instead of single use masks wherever possible.

2.1.2 Equipment litter and fly-camping

The camping, picnic, hiking, event equipment and clothing found amongst the most common littered items on Yr Wyddfa are further evidence of the tourism related litter issues. Globally, many types of tourist destinations are associated with holiday equipment, examples being the classic 'bucket and spade' beach holidays, hiking boots and poles for walking excursions, or camping equipment for festivals. This has created a niche market for cheap and poor-quality apparatus to act as single-use items. The benefits of having very little cost to replace if they break or are discarded compliments being able to avoid the inconvenience of transporting home or storing the equipment. Common coastal examples are plastic buckets, spades, crabbing lines and frisbees, although polystyrene bodyboards and inflatables are also an area of attention.

At St Annes on the Fylde Coast of the UK, over 3 months LOVEmyBEACH volunteers collected 133 beach toys that had been discarded, yet many were not broken[35]. In Croyde, North Devon, the Plastic Free North Devon Group claimed to have collected over 500 broken or abandoned inflatables in the summer of 2019 alone[36]. A further issue is that the items' plastic PVC material makes them difficult to recycle. In the wider area covering the Southwest of England, over summer 2021 as part of its Ocean Recovery Project, Keep Britain Tidy reported recovering 1,082 snapped plastic bodyboards from just 3 beaches[37], representing only a proportion of the total numbers. All discussions on the topic point to quality and price fuelling the demand for and disposal of these products.

Fly-camping is the term used to describe anti-social wild-camping (including in motorhomes) whereby damage to the environment occurs through fly-tipping. Fly-tipping is the illegal and unauthorised disposal of waste, starting at the size of one bin bag[38]. For context, wild-camping (camping in the 'wilderness', outside a designated campsite) is illegal across most of England, Wales and Ireland, unless permission from the landowner is obtained, but Scotland allows it on public land[39]. Welsh local authorities, Natural Resources Wales, national park authorities and some land-owning charities such as the National Trust have all reported significant increases in fly-camping and related waste issues as a direct result of the COVID-19 pandemic and restrictions on international travel.

The litter associated with fly-camping ranges from human waste and general litter, to equipment which includes the tents themselves, inflatable mattresses, sleeping bags and disposable barbecues. Festivals are perhaps the clearest example of the equipment litter problem associated with camping, with around 250,000 tents left at festivals every year in the UK[40]. The problem is attributed to the marketing of 'festival tents' and associated equipment as single-use items. Similarly to above, they can cost tens of pounds but can vary in terms of their quality and durability depending on intensity of use[41]. This idea of 'single-use' tents and related equipment transfers into rural and environmentally sensitive areas, leading to the equipment being left in-situ. Alongside the equipment, human waste litter is becoming increasingly common. The dangers of human waste are its potential to pollute nearby water courses and spread disease as well as the unpleasantness of coming across it[42].

Disposable barbecues have also been recognised for the danger they pose to people and wildlife when not disposed of properly. Reports of serious burns are commonplace in the UK each summer as not only are the barbecues themselves extremely hot, but they also heat the ground beneath or on top of them if buried[43]. In 2020, the number of accidental fires in Wales increased by 20 percent from the previous year, attributed mainly to campfires, cigarettes, barbecues and discarded glass[44]. The problems with fly-camping are exacerbated by the difficulty in cleansing such vast rural and remote regions such as our national parks.

News reports covering tourism during the pandemic reveal numerous national parks including Pembrokeshire, Brecon Beacons and Eryri (Snowdonia) are all facing increasing problems with fly-camping since the pandemic[45] with legal wild-camping even being banned for 27 days in Dartmoor National Park in Devon to allow the wildlife to recover[46]. Landowners at Dartmoor National Park have now won a court case that prevents wild-camping without permission on their land, partly due to the environmental impacts of fly-camping during the pandemic[47]. Sources suggest the numbers are growing as caravan and camping sites have reached their capacity[48] and many more people have purchased motorhomes or campervans (a 71 percent increase between 2019 and 2020)[49]. There is also speculation that due to receiving many first-time visitors over the pandemic, the tendency to fly-camp could be due to lack of knowledge on how to behave in the area.

Recommendations:

- Beach equipment hire schemes to minimise purchases of cheap poor-quality equipment.

- Bans of cheap poor-quality equipment.

- A 'beach toy library' where equipment can be placed for reuse by someone else, including buckets, spades, nets, parasols, bodyboards, hiking poles, waterproof ponchos etc.

- A broken equipment box to collect broken equipment for recycling.

- Trials of enforced or casual zoning of areas to prevent some activities from occurring in naturally sensitive areas, while allowing space for this in less sensitive areas.

- Trialling pop-up campsites and aires located in areas seeking more visitors, so to spread financial benefits and reduce overcrowding in popular areas.

2.1.3 Fly-tipping and holiday residences

Anecdotal evidence suggests fly-tipping associated with holiday lets is becoming an increasing problem. By law, as holiday lets are taxed through 'non-domestic' or 'business' rates instead of council tax, they do not qualify for refuse collection or use of municipal waste centres. As a business, they require a certified trade waste carrier to collect and process their waste with the charge based on quantity and type of waste[50]. However, as this is not compulsory, fly-tipping, use of public waste bins for domestic waste and unauthorised use of local authority waste collection services occurs[51].

Holiday let fly-tipping problems have been recognised across the UK ranging from Glasgow[52], Westminster[53], Manchester[54], Gwynedd[55] and more. One potential driving force behind the perceived increase in fly-tipping problems could be the growing number of second homes being converted to holiday lets to avoid the second home council tax premiums. Single holiday lets when moved to business rates often qualify for Small Business Rate Relief, which 'effectively means that owners end up paying no taxes at all into the public purse in Wales'[56], therefore providing an incentive which subsequently results in trade waste collection, and its charges, becoming optional. It must be noted that this is from only a very small proportion of holiday let hosts or guests behaving irresponsibly and this is an issue very little is known about, with all mentions of the issue being brief and without robust data.

In 2019, there were around 223,200 active listings in the UK on Airbnb alone, a well-known holiday let website[57]. Although there is no clear guidance on who the onus of holiday let waste disposal falls on, the host or the guest, Airbnb and other holiday property management firms suggest responsibility is mainly on the host, but guest involvement is conditional. Hosts should ensure they follow legislation by organising a formal trade waste carrier to collect and dispose of waste, and since the COVID-19 pandemic, have been asked to follow Airbnb's 5 step cleaning guide which involves rubbish removal[58]. However, guests can be asked to clear rubbish before they leave as part of 'house rules', which may or may not state if there is a designated day to put the bins out for trade waste collection[59]. The 'house rules' can be individual to each holiday let meaning there are no universal guidelines. Furthermore, there are informal reports of some holiday lets not supplying bins on the premises, forcing guests to find other methods of rubbish disposal[60] and some even asking that public street bins are used.

If guests are expected to remove all rubbish before they leave, or face receiving a bad review, without guidance on how to dispose of their waste they may end up fly-tipping or abusing domestic waste collection services. This may be a way for the host to avoid any trade waste charges (which are not compulsory, as mentioned above) and avoid any blame associated with the guests actions if they were to get caught improperly disposing of rubbish. Avoiding charges can also provide motivation for hosts to try these tactics themselves when dealing with left-over rubbish from guests.

Further issues stem from lack of visitor recycling efforts whilst on holiday. The 'Waste duty of care: code of practice' (2018) states businesses have a duty of care to separate items which can be recycled like glass, metal, cardboard, paper and plastic[61]. Recycling business waste often results in cheaper waste costs as landfill tax and disposal gate fees are avoided[62]. Not only are tourists less likely to recycle whilst on holiday (reasons discussed in 'Holiday Psychology' below), but the vast difference in recycling policy across a country can make the task complex and time consuming, reducing chances of guest compliance. Again, for concern of poor reviews, guests may resort to inappropriate waste disposal instead of taking the time to adhere to local recycling policy.

It is also worth noting that in the updated 2021 to 2026 Programme for Government the Government states plans to cap the number of second homes, bring more homes into common ownership and require holiday lets to be licenced[63]. There has also been a consultation on adding second homes and holiday lets as specific classes of use for premises, meaning conversion from other use classes to these will require planning permission, and increasing the number of days a holiday let must be rented out to achieve non-domestic rate status. This may help to mitigate the aforementioned issues, but its impact is yet unclear.

Recommendations:

- Determine who the legal onus of proper waste disposal falls to for holiday lets - guests or hosts. All types of holiday accommodation should come under Business Waste regulations for the sake of clarity and accountability.

- Target holiday let booking sites such as AirBnb to establish a common guidance and waste management principles which lays out host and visitor responsibilities.

- Send educational materials on waste management duties to the host or management company either when they move from domestic to business tax rates, or when holiday lets are granted a change of use class (pending consultation by Welsh Government).

- Local authority bin audits should map holiday accommodation and should allocate bin provision and messaging accordingly.

- Investigate the use of binfrastructure design as a deterrent of using public bins for domestic holiday let waste.

2.2 Understanding the problem
2.2.1 Holiday psychology

Holiday psychology is the body of research exploring people's minds and behaviour in holiday settings. It follows the day-to-day principles of psychology and applies them to situations away from home and work. The five main behaviour-affecting principles from the research are a person's attitude towards a behaviour, where attitude is the primary predecessor to intention, and intention the predecessor to action. However, there is often a 'value-action' gap where attitudes do not translate into the anticipated response.

Perceived behavioural control (PBC) refers to the perceived ease of an action, for example, walking 5 metres to a bin to deposit litter is creates a higher PBC than walking 10 metres. Norms can be social and personal, whereby a person subjectively uses other people's behaviour, or their own engrained norms, respectively, to assess how they think they should behave in a situation. Knowledge or awareness of a situation or the impact of a decision, can have profound effects on attitude, but not necessarily directly on intention. Incentives however, monetary or non-monetary, can influence intention but do not necessarily change attitude towards a behaviour.

Examining the availability of tourism-related litter studies, there were some tourist and litter-specific research papers although some investigated litter-picking instead of litter-dropping. Many other holiday psychology papers referred to pro-environmental behaviour (PEB) more generally, but still provide relevant insights into tourism litter, for example, one study found that despite awareness of the climate impacts of air travel, many people believe their PEB at home offset their obligations to use more sustainable transport whilst planning a holiday, a justification known as moral licencing[64]. This behavioural principle is likely to impact areas like recycling and binning efforts as well as any consumer choice habits which have been developed such as consumption of single-use packaging, which may be implemented more strictly at home.

A study that contains all the five main principles and presents general lessons in behavioural psychology was conducted in Huangshan National Park, China in 2018[65]. Similar to many mountainous tourist hotspots, the national park faces difficulty in getting visitors to bring their self-generated waste down the mountain which is essential as the terrain does not permit easy access for standard management techniques like providing bins and litter picking. The study used a survey to access which variables had the biggest impact on visitor behavioural intention, including attitude towards the behaviour, PCB, social norms, incentives, education and moderating variables (something that effects the outcome of a process).

- **Attitude toward the behaviour** – measured as a mediator of the other values on intention

- **PCB** – visitors were given degradable bin bags before entering the park to collect their rubbish as they walked

- **Social norms** – tested via the moderating variable

- **Education** – the survey collected data about education level

- **Incentives** – in return for bringing self-generated litter down the mountain in the bin bags provided, financial incentives included lower entrance and cable car ticket prices, non-financial incentives included free water bottles, postcards or a souvenir

- **Moderating variable** – travel companions were divided into two groups, family and non-family to determine the effect on intention

The results showed a significant positive impact on behavioural intention relating to attitude, PBC, social norms and incentives. Education also positively affected attitude towards the behaviour but did not affect intention. In more depth, economic incentives were more successful than material ones, and family groups as travel companions influenced behavioural intention more than non-family groups, although the study mentions how the influential power of different groups will be a factor of culture. Nevertheless, PBC had the largest impact and was determined by the route taken, time spent in the park and access to bags which all affect the ease of transporting litter. A Zero Waste Scotland report also notes 'icky' litter requires more effort to keep hold of[66], with potential for more items to be seen as 'icky' due to concerns about the spread of COVID-19. Lastly, the study found people were more likely to act responsibly in designated environmental protected areas, a finding also seen during tourist litter studies in Cristal beach, Santa Marta, Colombia which resides in the Tayrona National Park, attributed to increased awareness of conservation measures there[67].

It is from this lesson on the power of PBC that the reason on-the-go food and drink packaging and poor-quality equipment litter are so common. Purchasing raw ingredients, making a meal, washing the dishes and carrying baggage to a destination requires a lot more effort than purchasing a ready-made snack from the supermarket, a snack whose packaging can be disposed of immediately after use. Plus, although purchasing raw ingredients or reusable equipment has the financial incentive of being more cost efficient, as found in Huangshan National Park, ease of behaviour has the largest influence on intention out of all other predictors. Again, people also can feel they have a moral licence to exhibit less PEB on holiday because they feel they have 'earned' the right to by demonstrating PEB at home.

However, in Sorkh-e-Hesar National Park, Iran, a study evaluated the impact of personal and social norms, PBC and education on behavioural intention[68]. Unlike Huangshan National Park, China, it found personal norms had the strongest influence on binning behaviour, activated by social norms of other people's behaviour and awareness of the consequences of littering that affected people's attitudes towards the behaviour. Its influence exceeded that of PBC because even though the action was perceived as more difficult than littering, people stated they felt personal responsibility. Personal norms can therefore represent a spillover effect where behaviours from everyday life are transferred to other settings. This research is supported in Mt Field National Park, Tasmania, Australia, where messaging was tested to ascertain which encouraged people to pick up litter the most, "if not you, who?" and "what will you do when you see it?"[69]. 32 percent of groups picked up pre-positioned litter in front of the "what will you do when you see it?" sign and 37 percent did in front of the "if not you, who?" sign. The first sign asked sought people's commitment, whilst the second appealed to their personal norms, with 37 percent responding to the second sign saying they picked up the litter as they felt a sense of responsibility to set an example to those around them.

Both the Sorkh-e-Hesar and Mt Field National Park studies were suggestive of a link between urban and rural social norms around littering that influence behaviour. The reasoning being that urban areas tend to have lower litter standards and more cleansing resources than rural areas due to population density and funding, therefore having more litter under the social norm that it's more likely to be cleansed by the local authority. Therefore, urban littering behaviour faces a spillover effect when residents visit rural destinations, especially as people may chose rural holiday destinations for hedonistic reasons where they can shed urban stresses.

Holiday specific concepts help advance research into holiday psychology and how it influences littering. For example, place dependence is when a location is relied upon for an individually assigned purpose, whereby negatives of the place can be ignored as long as it serves the purpose[70]. For example, a behavioural study on visitors to the Lulworth Coast, Dorset, England, found PEB has a lower PBC despite visitors displaying positive attitudes about removing beach litter, meaning PEB is perceived to be more difficult when on holiday. This was likely to be caused by enhanced holiday hedonism and the fact that the place dependence had already been met, prompting no need to engage in PEB[71].

In this study, links between urban and rural litter social norms were disputed, but it did find relationships between people's litter picking behaviour, their age and their gender. Place dependence, hedonism and moral licencing can all prevent the spillover of domestic PEB, but place identity and attachment aids it[72]. Definitions of these terms are still being explored but in general terms, place attachment occurs when a person bonds with a place based on positive experiences of the people, location or processes associated with the place, and for more than just their reliance on what it can offer. This attachment can help develop place identity, where a location becomes part of a person's beliefs, symbols, ideas, values, behaviours, and practices. When these components develop, it corresponds with a growing sense of responsibility, therefore encouraging the spillover of PEBs into the holiday setting[73]. Hence, this feeling of responsibility is more easily cultivated in return-visitors than those who visit a place on a one-off, or habitually go to different locations each time they holiday.

Returning to the relevance of the COVID-19 pandemic on how people holiday, the Office for National Statistics reports on how lockdowns caused many people to become more engaged with nature, affecting their holiday habits[74]. It indicates that the isolation of lockdowns caused declining mental health in the population, but that with the extra free time, people were connecting more with nature, with over 40 percent stating nature had been even more important to their wellbeing over this period. However, people who lived far away from their nearest greenspace were less likely to visit it during lockdown than those nearby, but with restrictions lifted, this effect reversed, with those far away more likely to visit their nearest greenspace than those close by. This suggests a pent-up desire to engage with nature, which cities cannot always satisfy. Hence, during summer (restrictions lifted), rural and coastal areas saw an increase in use of their parks compared to before the pandemic and sales of outdoor equipment and camping holidays surged. As some speculate, the unwanted littering behaviour experienced during pandemic tourism seasons could be a result of tourists obtaining novel outdoor experiences without the understanding of what behaviours are acceptable[75]. As it is probably their first time in these situations, they are unlikely to have any place attachment to the area.

In summary, the main behavioural principles from the research are attitude towards the behaviour, PCB, subjective norms, knowledge and incentives, but other components include moderating variables, moral licencing, spillover effect, place dependence / hedonism, and place attachment and identity.

With research often examining PEB more generally than being binning-behaviour specific, it shows PBC, or the perceived ease of an action, as well as personal norms as spillover from everyday life, and social norms are the strongest influencers on whether a person intends to act in the interest of the environment. Financial incentives appeared to have the largest positive impact of any incentive on intention, whereas educating people on an issue tended to change their attitude towards their behaviour but didn't change their intentions. It was because of the high PCB of on-the-go food and drink packaging and poor-quality equipment that people opted for this choice, despite the financial incentive of cost-efficiency to buy raw ingredients or longer-lasting equipment.

It is suspected that urban vs rural perceptions of acceptable litter vary and that this impacts people's behaviour whilst on holiday, but people's hedonistic mentality whilst on holiday could also contribute to tourism littering behaviour. Visitors will overlook negatives of a location as long as it conforms to the purpose they have assigned it, however, if visitors can bond with a place through its physical, social or process properties, they can form place attachment and identity. People are more likely to develop these feelings if they are repeat visitors to an area, and with these feelings are more likely to act responsibly when they visit. Lastly, the COVID-19 pandemic lockdowns have helped re-establish people's connection with nature, creating demand for access to nature in rural and coastal area and through outdoor-type holidays and leisure. However, Travel Without Plastic & Share Impact's Plastic Free Yr Wyddfa (Snowdon) report[76] suspects this could have contributed to the litter levels seen post-lockdowns as new visitors were unacquainted with expected behaviour.

Recommendations:

- Highlight wherever possible the nature conservation value of an area and code of conduct through numerous information channels, especially in national parks and other exceptional land designations.

- Focus on retaining repeat visitors who may develop place attachment more easily than one-off visitors.

- Promote the ease of PEB by referring back to people's behaviours at home regarding recycling and waste management.

3. Opportunities
3.1 Welsh Government

An idea which has been repeatedly proposed over the years is the potential for a 'visitor levy' or 'tourism tax'. This is now something the Welsh Government wants to allow by passing legislation to give local authorities power to implement it. It is important to note the differences between a 'levy' and a 'tax'. Taxes are collected locally but managed by the Treasury, whereas levies are collected and managed locally, with both being statutory. These terms are often used interchangeably but most tourism taxes implemented in Europe are in the form of levies. As Welsh Government has released a consultation for the introduction of a Tourism Levy in September with plans for the revenue to be used locally, this paper will use the term 'levy' for reference to any future plans in Wales although it is worth noting that the framework has not yet been ratified at the time of writing. In many cases, the reasoning for the introduction of tourism levies is directly linked to the recognition of the increased costs of managing waste and litter in visitor destinations.

As a highly contested matter, there are a variety of perspectives on the introduction of Visitor Levies as a way of solving the tourism related issues. Proponents of the levy argue the money could be used to fund tourism-related services including infrastructure development, public transport improvement, increased cleansing and maintenance of existing facilities, nature conservation, all of which are currently paid for by local taxpayers. This may also help secure buy-in from local residents to support ongoing tourism development and improve Wales' current tourism offer for visitors and local people alike. In Wales, on average between 2017-19, around 41 million nights were spent by visitors[77], which would equate to £40 - 80 million if even a nominal £1 or £2 per night per person was charged. On the other hand, opponents suggest a tourism levy could make areas that implement it less competitive in the tourism market, especially considering reduced EU tourists post-Brexit. Nonetheless, 125 countries and 26 European countries have tourist taxes[78], but the UK's rate of VAT on accommodation is already one of the highest in Europe at 20 percent[79] and many accommodation providers argue that the sector is already taxed enough and that reduced competitiveness is a possibility. However, research suggests that the impacts of tourism taxes are marginal if an area has unique user experiences to offer as opposed to price sensitive attractions with multiple competitors like 'sun and beach'[80,81]. One concern about a Welsh visitor levy specifically is that Wales is in direct tourism competition with other UK nations which do not have the tax or levy and will subsequently offer cheaper holidays, although many other UK regions and nations have also voiced enthusiasm for a levy and Scotland has included the introduction of a discretionary visitor levy in their 2022-23 Programme for Government[82]. It is therefore important that unique selling points are part of Wales' tourism development and marketing.

It is also suggested without appropriate measures put in place to ensure a fair implementation a tax would have disproportionate impacts on poorer families, increase the cost of recruiting and training staff needing accommodation, portray to visitors that they are unwelcome, and cost Local Authorities to manage the collection system[83]. In addressing the fairness of a levy for those on lower incomes, this could be offset if the levy is a proportional or percentage charge of the cost (for example, 5% on the overall cost of a stay).

Also, from a behaviour change perspective, paying a visitor tax could be seen by visitors as moral licencing for irresponsible behaviour like littering, as they will have directly paid for the services

responding to this behaviour. This has been seen when people purchase voluntary carbon offsets, which presents perceived justification for unsustainable behaviour which sometimes even outweighs the benefits of the offsets[84].

Methods and cost vary between areas and countries, with some opting for set rates per person or per room each night, with others using a small percentage of the cost of accommodation (for example Bruges, Belgium) and a few charging on entry or exit of the country (e.g. Japan)[85]. Changeable rates are also common in Europe with significant differences of between 3 -10 Euros per night depending on the season and locations[86].

Statistics from Visit Britain show a 60 percent decrease in domestic holidays during 2020 which suggests the concentration of tourists at beauty hotspots is fuelling the environmental management problems, particularly after the start of the pandemic[87]. Placing a higher visitor tax on the most popular destinations and seasons could encourage people to holiday in quieter areas and times to spread the economic benefits and keep environmental impacts to a minimum. It is important that any revenue from a visitor tax is spent on addressing the tourism challenges of the area and that this should not act as a replacement within current local authority budgets, but as an additional revenue.

One suggestion in the UK is to reduce the 20% accommodation VAT by a certain percentage and replace this with a visitor levy. This would mean holidays would not be any more expensive than they are currently, but that the money will go directly to the local authority and spent locally. To equitably address the problems with overcrowding, the levy-VAT ratio could be a higher in busy areas / seasons and lower in quieter areas / seasons. However, VAT is not currently in the Welsh Government's powers to change and therefore does not offer a solution in the near future.

The options below are just a simple indication of how a levy could work and the minimum revenue that could be generated. It is worth noting that visitors are likely to be willing to pay more than a nominal sum if they can be reassured that it is going directly to supporting the environment and maintaining environmental standards.

Type of collection	Revenue generated	Comments
Per overnight visit (one-off payment on arrival at accommodation)	11 million visits At £1 = £11 million At £2 = £22 million At £3 = £33 million	Doesn't account for influx of day-trippers.
Per night (one-off payment on arrival at accommodation)	41 million nights At £1 = £41 million At £2 = £82 million At £3 = £123 million	Doesn't account for influx of day-trippers.
International visits only (external to GB) (one-off payment on airport arrival)	1 million visits At £1 = £1 million At £2 = £2 million	This accounts for less than 1/10 of visitors and may discourage foreign travellers by appearing xenophobic, especially post-Brexit.

International visits only (external to GB) (one-off payment on airport arrival)	At £3 = £3 million	
Charges at national parks only (not overnight) (charged via parking?)	12 million visits[88] At £1 = £12 million At £2 = £24 million At £3 = £36 million	Providing revenue in the areas that need it most to minimise damage. Difficult to find appropriate method of collecting levy as parking charges may affect local people yet not visitors that use public transport or find free parking. This also beckons the question of how far away classes as 'local'. Will help spread tourists to less popular places. Could be criticised as being unfair by 'pricing out' people with less disposable income from the 'best' areas. Acts as marketing of national parks as special and sensitive places. May also discourage car use and promote public transport.
Charges per overnight visit or per night at national parks (one-off payment on arrival at accommodation)	No statistics available.	Providing revenue in the areas that need it most to minimise damage. Will help spread tourists to less popular places. Acts as marketing of national parks as special and sensitive places. Could be criticised as being unfair by 'pricing out' people with less disposable income from the 'best' areas. Doesn't account for influx of day-trippers. Prevents locals from being affected by charges implemented at car parks (as above).
Percentage of accommodation costs (one-off payment on arrival at accommodation)	£65 per night per person[89] x 41 million nights = £2,665,000,000 1% = £26.7 million 2% = £53.4 million 3% = £80.1 million	The varying percentage costs could be used to reduce overcrowding by requiring only a 65p charge per night in less popular areas / times and almost £2 a night in busier areas / times. This is more complex to implement.

*Statistics from Welsh Government Tourism Profile 2017-2019 average data unless referenced otherwise.

In evaluating these figures, it's likely actual revenues may be slightly lower for three reasons. The overnight stay statistics include people who have stayed with family and friends so wouldn't pay the levy, the levy may have behavioural implications and cause people to avoid certain areas, and the average accommodation cost is based on hotel and guest house accommodation whereas other accommodation could be much cheaper. In order to capture data from all types of visitor accommodation, it would be critical to introduce statutory registration of accommodation providers.

Perhaps the most crucial parts of a visitor levy are how it is marketed. The options explored in the table below for small fees only for two main reasons. It is simply as an indicator of the potential revenue achievable with only a small levy, but also, it is questionable to charge people a substantial fee to access beautiful places within their own country, especially when green prescribing and involvement in nature are hugely influential on people's health. A larger fee would likely send a more poignant message about the impacts of tourism and the external costs on the natural environment, but this may create inequity in access to holidays, especially as it could be argued that domestic holidays are the escape of those who cannot afford to travel abroad. Therefore, it should be marketed as the cost of keeping the Welsh landscape beautiful for local people and tourists alike to enjoy sustainably for years to come focusing on regenerative and nature conservation purposes[90]. The funds should also seek to benefit visitors and encourage repeat visits by ensuring quality and longevity at Wales' tourism destinations. However, it is noted that revenue could also be spent on social resources for an area like public transport, emergency services, etc. These resources can then be used to facilitate behaviour change by making PEB easier and more convenient (creating a higher PBC), so the positive behavioural influence comes from both messaging and better facilities. Following this, transparency and coproduction with businesses and other stakeholders about how the revenue will be spent will make support for a levy more likely.

An example of best practice comes from the Balearic Islands which introduced the Balearic Islands Sustainable Tourism Tax in 2016 to raise funds for the Promotion of Sustainable Tourism Fund. So far, €250 million has been used to fund around 164 projects under the topics of sustainable tourism, environment, cultural heritage, scientific research, training and employment and social renting, with environmental projects being prioritised[91]. The Commission for the Promotion of Sustainable Tourism of the Balearic Islands was set up to analyse, assess and select the projects and consists of stakeholders from Government, business, workers unions, environmental groups etc[92]. The Sustainable Tourism Tax ranges from €4 per day in high season to €0.25 per day in low season[93]. It's also worth noting that tourist numbers have continued to increase since the introduction of the tax as has been observed in Iceland and Barcelona[94].

However, some believe visitor levies alone simply act to put a band aid on the problem rather than dealing with the cause. Explored below are potential solutions to the causes of unsustainable tourism in the context of waste management, including shifting the focus from growth to sustainability through demarketing, smart marketing through messaging and timed advertisement, and control/spreading of visitor numbers.

How an area is marketed can have a huge impact on how much antisocial behaviour it experiences. For example, Barcelona and Prague were facing issues including littering, vandalism and disorderly conduct from tourists. In Prague, a 10:00pm 'quiet time' curfew was launched, and Palma de Mallorca in Barcelona created civic laws preventing bathing suits being worn off the beach, littering and anti-social behaviour[95,96]. Introduction of these types of community-level laws are becoming commonplace in destinations facing overtourism. The aim was to overturn their associations as cheap party destinations and to attract a more responsible' type of tourist. This tactic is known as 'demarketing'; attracting smaller groups of higher-spending, low-impact tourists[97]. The logic is that these tourists will behave more respectfully as they have been willing to pay extra to experience the culture of a specific destination instead of opting for a destination because of its low prices. Therefore, areas that are facing problems with tourism litter and do not have the resources to address this directly could seek to market themselves to different audiences which are less likely to cause anti-social problems. This coincides with the results of the study in Huangshan National Park, China, where family group travel companions acted as a strong moderating variable to deter littering within their group. It is this type of tourist that could also be targeted for encouraged repeat visits so place attachment can be developed and the PEB associated with it can become commonplace each year.

Marketing could also be useful in exhibiting rural littering norms in comparison to urban ones. Through using strong influential social norms on behavioural intention, urban visitors can be informed what is acceptable in a rural environment. For example, the Countryside Code is a well-known code of practice first published in 1971 that has recently been revised to become more relevant[98]. In relation to waste this tells readers to take their litter home, to only have barbecues where signs say you can and bag and bin any dog fouling, but this does not differ markedly from the original guidance[99]. The difficulty comes when considering that most visitors will stay for 1 week or less, providing limited opportunity to insert cues of rural social norms. Thus, although holiday psychology suggests education significantly influences attitude but often did not influence intention, the destination marketing pre-holiday or through well-thought-out signage at the destination may prove useful to brief prospective tourists. Thus, marketing destinations, particularly national parks, as custodian-led, pristine places could normalise responsible waste disposal. Separate messaging targeting visitors and holiday let hosts could be trialled with regional focuses to ensure relevance and development of sense of place. This could be coupled with localised messaging about the circumstances of an area, for example, making clear that vast natural area will be unlikely to be cleansed regularly due to access issues in contrast to expectations in urban parks.

Furthermore, some studies and the experiences of European national parks[100] have found promoting an areas nature designations and environmental sensitivity can influence behaviour to reduce littering, although a study of English Marine Protected areas found it had no effect[101]. Although UK national parks tend to have very little signage to ensure an area looks as naturalised as possible[102], this relatively low-cost intervention has potential to maintain naturalised landscape scenes by reducing anthropogenic litter. Due to the need for the binning behaviour to be relatively easy for visitors to comply with, the marketing would likely work best for towns and villages with well-planned binfrastructure, with messaging focused in the most remote areas. Additionally, urban areas need to lead the way in encouraging responsible binning behaviour.

Lastly on this note, advertising of tourism destinations needs to be controlled in volume and timing to avoid excess strain on local authority waste infrastructure. For example, despite multiple reports of overcrowding in Tenby (Pembrokeshire) during 2021[103,104], news outlets including the Guardian[105] and Wales Online[106,107] were still releasing promotional material about holidaying in the area either just prior to or during peak season. Visit Wales and local / regional destination management organisations should ensure persistent advertisement of areas already likely to be facing large numbers of tourists should be averted, with the aim to spread tourists to quieter, less strained areas.

As tourism destinations have been demonstrated to create considerable demand for on-the-go food and drink, they should be prioritised in efforts to reduce consumption. Two highly applauded schemes are Welsh Governments partnership with Refill Cymru to populate the Wales Coast Path with water refill stations[108], a trend being followed by Pembrokeshire Coast National Park who have installed fountains at beachside public toilets[109]. These will provide visitors with free water refills which will discourage the purchase of plastic drinks bottles and normalise bringing a reusable bottle to the beach. The reusable bottles are less likely to be littered because of their higher quality and extra cost. Additionally, the incentive of obtaining water for no cost may even persuade people to opt for the refill fountain even if they originally wanted a different drink, further reducing plastic bottle consumption. The nature of these areas is perfect for the Refill scheme because tourist hotspots are especially orientated around on-the-go food and drink for ease, and the hot summer weather means beaches and walking trails nearby will provide a flow of people needing a drink due to the heat and their physical activities. Refill station installation should continue its momentum to other tourist hotspots across the country and be promoted before and during tourist season annually to remind people of the facilities.

Welsh Government could go further by supporting businesses in their transition away from single-use plastic through various means. The Government could extend the carrier bags levy to other items such as coffee cups, takeaway food and drinks containers and straws that can be replaced by customers bringing their own reusable equivalents. Refill Wales have guidance on how to manage reusable packaging safely during the coronavirus pandemic[110]. As with the plastic bag levy, the charge could start off small and increase over time as people become more accustomed to the change with the intention that it will be phased out completely as behaviour is changed, the materials become less and the recycling and disposal infrastructure increases. Additionally, Welsh Government could provide grants or business rate reductions to help businesses pay the extra costs of using sustainable takeaway packaging alternatives which are currently more expensive than the non-sustainable versions. This could apply to the transition from polystyrene 'clam shells' to cardboard ones, non-biodegradable coffee cups to biodegradable ones, or plastic bottles to cans (which can be recovered through recycling more efficiently than plastic).

Holiday let fly-tipping recommendations face uncertainty due to unanswered questions surrounding waste onus, house rules legality and education upon transferring to business rates. There has been no clear answer as to who the waste disposal onus of holiday lets falls to, guests or hosts, and it's for this reason Keep Wales Tidy recommends that this should be clarified. As is standard across hotels, hostels, campsites, caravan parks etc., the owner or host of the premises should be legally responsible for the correct disposal of waste. 'House rules' directing guests to dispose of the waste collected during their stay should be deemed unacceptable by holiday let platforms and their guidance (e.g. AirBnb) as they may encourage abuse of public bins or lead to fly-tipping.

To ensure hosts responsibilities are made clear, educational materials on their duty of care could be sent to them when they switch from domestic to non-domestic rates or when granted planning permission to change if the Welsh Government new change of use class proposal proceeds. This is likely to be more successful if specific to holiday lets and not just businesses in general as it could contain specialised information on best practice to get guests to use local recycling systems properly, for example, by nudging them to continue their PEB at home when on holiday. It would therefore need to be made relevant to each county's recycling system. This could also include a change in current guidance by making waste carrier agreements mandatory. In line with the mandatory digital waste tracking (DWT) service proposal by UK Government, the amount of waste produced by each holiday let would be recorded, creating suspicion where little or no waste is collected. Therefore, even where there is financial incentive to get rid of waste irresponsibly to reduce collection and disposal costs, this may be overshadowed by the enhanced risk of raising suspicion and facing investigation. Even if the DWT proposal was unsuccessful, having a mandatory waste carrier agreement will encourage hosts to use these services as it is a condition of their business, rather than an optional extra burden to set up. To check if holiday lets have a waste carrier agreement, they could be identified through records of premises not paying council tax and asked to produce their agreement.

3.2 Local government & national park authorities

Bins should always be made highly visible through bright colours and effective placement, as there is a direct correlation between their visibility and their use. At holiday destinations this should be even more so as there are many people unfamiliar with the area and where the bins are located. In many European national parks there are no, or very little bins present as the parks promote the 'take your litter home' message and as a way of reducing ranger workload. This appears to be largely effective as litter is less extensive than at other places with bins, with maybe some concentration around car parks and urban areas which make it easier to collect. Some parks are trialling removing existing bins in all but the busiest areas and finding an overall positive result[111]. Ham Hill Country Park in Somerset trialled removing all bins stating that their full bins were encouraging rubbish to be placed on the floor nearby, which was being distributed by the wildlife in the park. They asked people to take their litter home if their bins were full, but to no avail, and their recycling bins were always contaminated. After removing the bins, they advocated for visitors to bring litter home under the message that they cannot recycle materials binned at the park, but they can be recycled at home. Two years later the park has reduced its waste by 81 percent[112]. Therefore, national parks in Wales could trial the removal of bins at less popular sites and encourage people to take their litter home. In addition to this, where it is difficult to place and collect bins, such as mountainous regions or coastline, bin bags can be given out from points of visitor concentration like car parks, asking people to bag their rubbish and bring it home, or bring it back to areas with bins. This tactic was highly successful in Huangshan National Park, China, where it increased visitors PBC by providing a litter bag as a carrier receptacle for their rubbish. If many people adopt this behaviour, the practice may become a social norm when exploring the countryside.

This leads on to the use of area wardens to promote PEB. A study of European national parks noted an increase in litter and other antisocial behaviour like fires as park wardens became less visible due to redundancies[113]. With some Welsh local authorities and national parks already employing some form of wardens or 'visitor welcome teams' during busy seasons (Pembrokeshire[114] and Anglesey[115]), they can use visibility, education and behavioural psychology to influence people's actions. Many studies have found watching other people bin their own, or pick up other people's litter, coupled with verbal requests is effective in reducing litter by around 35 percent[116,117]. Therefore, if beach wardens (or wardens for other areas) demonstrated this positive behaviour, and / or handed out bin bags with personalised requests, litter could be greatly reduced.

Specifically for equipment litter, ideally, the manufacturing of cheap poor-quality equipment should be prevented through policy in a similar vein to plans to ban single use plastics, as the equipment sometimes only lasts for one time use. Higher quality products are likely to be more expensive which prompts for hire schemes to be used to ensure equal opportunities for all to access them. This is something that could be undertaken by businesses, so is discussed in the next section. In line with the shift to a circular economy, where this is not possible, the equipment should be produced using less environmentally persistent materials than plastic, or subsequently meet manufacturing standards of using recycled material. One equipment example from Keep Wales Tidy, who partnered with Gumdrop Ltd in 2018, was to trial converting used chewing gum into buckets and spades[118].

For the immediate future, binfrastructure for broken and unbroken equipment should be trialled in appropriate areas like beaches, campsites, festivals and popular car parks. These types of containers are appearing for buckets and spades across the UK, in Teignmouth, South Devon[119], Anchorsholme, Blackpool[120] and Barry Island, Vale of Glamorgan[121], although no monitoring of their success has been conducted to date. Clearly there is scope for the containers or 'beach toy libraries' to facilitate the reuse of more than just buckets and spades, whether it be wind breakers, bodyboards, sun hats, sun lotion for coastal areas or walking poles, sleeping bags, inflatable mattresses or tents for other areas. Furthermore, as cheap equipment litter also breaks very easily, secondary recycling bins for broken equipment could also be placed. For example, designated businesses could collect broken inflatables, paddling pools and airbeds that can be sent to a company such as Wyatt & Jack that makes bags from the discarded materials[122]. In 2020, the first crab line recycling scheme in the UK was launched in Cornwall through a designated recycling bin facility at Looe, a crabbing hotspot[123]. If the statistics on bodyboards, inflatables and buckets and spades in section '2.1.2 Equipment litter and fly-camping' are representative of many coastal areas, the yield from across Wales is likely to be large enough to create demand for facilities able to repair, reuse or recycle these products.

When looking at the differences between UK and European national parks and their management of litter, some clear distinctions arise. Bin provision has already been mentioned, but there are other aspects that could influence the reduced litter levels seen in European parks. The largest difference is the approach to land-use zoning[124]. In Europe, national parks frequently exercise 3 zone types: strict no-access zones for nature conservation, buffer zones and development / limited restriction zones. The percentage land cover of each of these varies between parks but often the strict no-access zones are the smallest and the development / limited restriction zones are the largest. Buffer zones are implemented differently between the parks, but often have some restrictions such as visitors being required to stick to designated paths, keep their dogs on leads, not forage, camp or have fires. The majority of restrictions are then lifted for the development zones.

This strategy may be of use in the UK as more damaging activities can be concentrated in less sensitive areas, meaning waste management efforts can also be concentrated here, reducing the burden of cleansing such vast areas. Nonetheless, many European national parks are different to the UK, here, national parks are worked in, lived in environments which makes placing restrictions in hindsight very difficult except in extreme circumstances. Where littering and fly-camping are of considerable impact on vulnerable areas zoning could be trialled, but what may be more applicable in other circumstances is utilising the messaging zoning gives. For example, in Estonia, Finland, Germany and Switzerland, signage commonly denotes zone types, with explanations of why an area is so ecologically important and the Codes of Conduct for that area. As UK parks often avoid signage to maintain the natural appearance of an area, this means Codes of Conduct and habitat information are limited in their range of communication channels and range of channels accessed by people from outside the area (i.e. visitors are unlikely to read local news) so many visitors may be unaware of behavioural expectations.

Primary research by Keep Wales Tidy has found that even by searching online, guidance on previously mentioned activities is not always easily accessible or clear, specifically regarding campfires, which may encourage people to camp. This is not helped by websites that promote these forbidden activities as being 'acceptable if managed responsibly' such as supporters of wild camping. In one Welsh national park the guidance on fires on the website is highly confusing:

"FIRES – No person shall so as to be likely to cause damage by fire to anything growing on the access land light any fire or place or throw or let fall any lighted match or any substance or thing in among or near to grass, fern, heather, bushes or trees on such land."

Therefore, clear and consistent messaging is needed across all national parks and must be communicated across channels that will reach visitors and act as the dominant information source to combat misinformation. With or without enforced zoning, Code of Conduct information boards can be used to promote voluntary bans on activities like camping and dogs in certain areas and provide access to the Countryside Code at the point where PEB is needed (messaging is most effective in the time frame immediately prior to the opportunity to behave). Although the access points to the UK's national parks are wide-spread, signage can be concentrated around high footfall areas like car parks, trail entrances and attractions.

A more dangerous equipment litter issue comes in the form of disposable barbecues. Welsh local authorities have noted two problems with these, the safety, and the litter aspects, which go hand in hand as uncertainty around safe cooling and disposal may lead to people leaving them in situ as a precaution. Reports of serious burns from barbecues and the ground underneath them[125], burning bins[126] and wildfires[127] in Wales aren't uncommon, especially at visitor hotspots during summer. This is a problem seen across the UK with different local authorities and businesses taking varying approaches. Fylde Council, Lancashire, undertook a large review of potential solutions with stakeholders including blanket bans and designated barbecue areas[128]. The most supported proposition was barbecue-free zones accompanied in close proximity to designated barbecue areas with Public Spaces Protection Orders being used for enforcement. This followed concerns that without designated areas, bans could push barbecue use into other secluded and ecologically vulnerable places. This relates to the suggestions of land-use zoning discussed above and could be done on a trial basis or by using appropriate signage to reinforce barbecue guidance. There is little information on whether these tactics have been successful where they have been used elsewhere, for example, Porthkerry, Barry[129] and Cambridge, Cambridgeshire[130].

An alternative approach from Plymouth City Council amounts to an awareness campaign through the use of posters containing safety information in barbecue hotspots with threat of a ban if misuse occurs[131]. It is important to recognise that the risks of having barbecuing banned in a certain area would be of no concern to one-time visitors and would only be detrimental to local communities and repeat visitors. In these instances where locations have been appointed for barbecuing, dedicated barbecue bins are also a common feature. These are specially designed bins to dispose of barbecues in safely as they contain no flammable material, thereby preventing bin fires. However, a quick internet search reveals many public barbecue bins also lack appropriate messaging on how to use them, stating only 'BARBECUE DISPOSAL, CAUTION HOT ASH'. Without messaging on the packaging or designated bins people may not know how to cool the barbecues (through dousing them with water) and safely transport them to the bin, meaning they may think they are doing the right thing by leaving the barbecues to cool naturally in situ or covering them with sand.

In 2021, launched with the support of the National Fire Chiefs Council (NFCC) and Greater Manchester Fire Service, Co-op started its 'Put Me Out' campaign to prevent wildfires associated with disposable barbecues. It had two main steps, banning the sale of disposal barbecues in any of its stores within a one-mile radius of a national park and printing clear instructions on barbecue packaging on how to safely put them out after use by dousing them with water[132]. It is perhaps surprising that this information isn't present on all disposal barbecue packaging. Nonetheless, the NFCC stated they didn't support complete bans on disposable barbecues as it might encourage people to create even more dangerous makeshift ones. Given the negative unintended consequences already mentioned (makeshift barbecues, people barbecuing in secluded areas or using open fires as a barbecue alternative), the first step in addressing the problem should be to promote appropriate disposal methods on the packaging to reduce littering and safety risk. If the issues persist post-intervention, then enforcement or casual zoning should also be considered. After the exceptional number of wildfires in the summer of 2022, the implementation of temporary disposable barbecue bans (either by retailers or local authorities) when the Met Office fire severity index proves fire risk is high, very high or exceptional may also be worth testing as even cautious use of barbecues could lead to a fire. It is hoped that under extreme heat conditions and with sufficient communication of the risk, the public would take personal responsibility and not seek to find dangerous alternatives such as open fires, alternative barbecue products or moving to secluded areas.

In addition to this, smoking bans are becoming a popular worldwide. A review of smoking bans on U.S. beaches[133] found public support for the bans is essential and beach clean data is a persuasive method of demonstrating the severity of the problem. In Sarasota, Florida, an education program and pocket ashtrays were initially trialled to inform people that cigarette butts are a form of pollution and discourage littering, but this was unsuccessful, so a ban was brought in. Alternative smoking areas were designated and although some penalties could be issued, the ban was largely enforced by peer pressure, proving so effective that it was implemented at other beaches in the area. It also must be made clear that the rationale for such bans is not smoking cessation (although this should be supported wherever possible) but inappropriate cigarette disposal on the beach is at a dangerously toxic level and needs to be discouraged. It's also important to note that some smokers disagree with these tactics as they feel it is taking away freedom they are entitled to, especially in outdoor areas. Impact assessments for bans should also consider any disproportionate impacts or restrictions which impact lower socio-economic status groups who are more likely to be smokers and much less likely to engage in public consultations.

So far, three Welsh beaches have implemented voluntary smoking bans, Little Haven in Pembrokeshire, and Caswell Bay and Langland Bay in Swansea and there are campaigns underway to expand this[134]. Originally a trial, these beaches plan to continue this ban indefinitely after finding reduced smoking related litter during summer checks[135,136]. Building on these successes, it would be reasonable to consider implementing this elsewhere where smoking litter is an issue although it is worth noting that this is to move smokers and smoking litter away from beaches where there is the potential for greater environmental harm, it does not address the actual behaviour of smoking litter itself and unless they are both done in tandem, any area bans may serve to move the problem rather than solve it.

Moving onto reactive responses instead of previously discussed prevention methods, Adopt-a-Beach is a programme title adopted around the world. In different places it has varying connotations ranging from regular beach litter picks and / or surveying, environmental monitoring, and awareness campaigns. Previously run by MCS in the UK, this programme consisted of four litter collections and surveys per year per beach adopted by volunteers or volunteer groups[137]. This information likely informed MCS's citizen science data for their Beachwatch campaign. Plastic Free Eastbourne are also using this heading to recruit volunteers through allocating a section of beachfront (divided into 94 parts by groynes) to those wanting to help. All sections have been adopted at present, with several having more than one adopter[138]. Keep Wales Tidy also previously ran a similar project called 'Coast Care'.

This example, coupled with findings from an analysis of litter data and strategies in Wales that revealed there is an unprecedented number of litter picking volunteers, demonstrates there is an opportunity for collaboration to reduce the strain on local authority services[139]. The same report also noted that beaches were the most popular litter picking areas for community groups of all public spaces suggesting implementation of a similar programme may see great uptake in coastal tourism destinations. Nonetheless, discontinued relationships or communication between community groups and local authorities was identified as a common issue caused by lack of continuity of staff and loss of knowledge and partnerships[140]. Local authorities should address this communication breakdown to ensure cleansing effort is not duplicated between themselves and volunteer groups. For example, the Code of Practice on Litter and Refuse (COPLAR) states "amenity beaches should be generally clear of all litter and refuse between 1 May and 30 September" and non-amenity beaches cleansing frequency is at the discretion of local authorities based on cleanliness levels and resources[141]. Therefore, volunteer groups could be recruited and coordinated to 'adopt-a-beach' for out-of-season amenity beaches, or non-amenity beaches not frequently cleansed by Local Authorities with a minimum cleaning target over a set period of time. In return, similar to the Adopt-a-Highway scheme which is also globally well-known but started in Texas in 1985[142], the volunteer group could receive all required equipment and publicity through public signage and social media. Coupled with 'beach toy libraries' and containers for recycling broken equipment, Wales' beaches could be cleansed for relatively little cost, help prevent items entering the waste stream, and where they do, ensure they are repaired or recycled.

In response to the fly-camping epidemic seen in summers since the start of the pandemic, some campaigners have requested that wild camping be made legal[143]. These calls came in response to campsites being fully booked over the summer months, forcing those who wanted a camping or motorhome break to do it illegally.

The premise is that many people wild camp responsibly, but those who fly-camp can be managed by a warden scheme or be educated through organisational openness on the topic. Landowners like the Wildlife Trust worry managing irresponsible camping would redirect the resources they should be using on conservation. However, examples of where allowing wild camping has become successful is for some small private landowners. Many of these campsites give a 'nearly' or 'almost' wild camping experience, provide minimal amenities and charge a small fee for the pitch. One site in North Wales enforces the 'leave no trace' message by requesting before, during and after videos of guests pitches which must be returned to satisfactory condition for a security deposit to be returned[144]. Although already established campsites like these would have been part of the sites where demand exceeded supply, they could act to provide new wild-campers with the experience they desire whilst using monetary penalties to encourage and educate people about responsible camping.

A different approach would be to open pop-up amenity camp sites when demand requires it with adequate bin and toilet facilities. From 2020 pop-up campsites were permitted to be in place for 56 days, rather than the usual 28, to help meet demand and offset negative impacts of the pandemic on businesses[145], with campaigners asking for this to be further extended. As foreign travel becomes more popular again the camping staycation demand may reduce, however, for now, pop-up sites could reduce fly-camping by increasing the supply of properly managed campsites. As previously noted, as tourist concentration is seen to be part of the issue around litter and waste, these pop-up camp sites should be carefully located to reduce demand in peak areas and spread the benefits to others.

Nonetheless, with the rise in campervan and motorhome purchases, many people may be looking for different experiences to campsites. Motorhomes and campervans allow people to stay overnight for free or little charge, take spontaneous trips without the need to book, avoid busy areas, and travel to multiple locations in a relatively short space of time. Traditional campsites don't cater for this market, meaning the motorhome fly-camping seen during the pandemic is likely to continue if not addressed. Pressure has been exerted on local authorities to provide European-style aires where campervans can stop for use of the most basic facilities such as waste disposal (refuse and bodily) and running water. Despite some resistance, many argue these will not take income from local businesses as they are already over-capacity and do not cater for the niche requirements. In 2023 Gwynedd will be piloting six aires sites in the hope of preventing fly-camping and illegal parking, and to try and encourage motorhome visitors to stay in or near to towns and villages where they can contribute to the economy[146]. Careful planning of pop-up campsite and aires location could be used to divert visitors from overcrowded areas to those where the benefits would be felt more.

Lastly, in dealing with holiday let fly-tipping in the short term, binfrastructure design should be investigated as a deterrent. Local authorities and national park authorities, in conjunction with Keep Wales Tidy could further trial the public bin design and placement as a way of discouraging their use for domestic and holiday let waste. Throughout the 2020-2023 Caru Cymru project, Keep Wales Tidy has worked with local authorities to trial innovative approaches to bins and to gather evidence to inform best practice which may be applied to this context. Key considerations would be to ensure the problem is not displaced from taking up room in public bins, to being placed directly by the side which has its own problems around fly-tipping, windblown litter and encouraging pests.
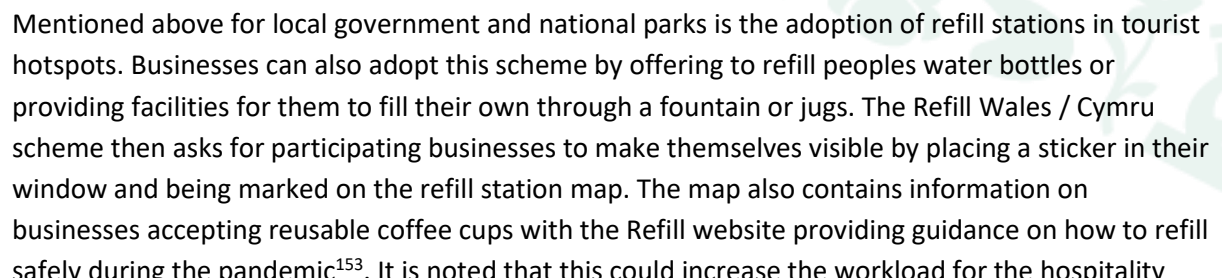
3.3 Business and industry

Businesses and industry play a huge part in the food and drink packaging, and equipment supplied to the general public so also bear the responsibility of dealing with it. On a larger scale this is being investigated for packaging through Extended Producer Responsibility (EPR) and Deposit Return Schemes (DRSs) expected to be in place by 2025. On a smaller scale, and as part of their corporate social responsibility (CSR), businesses have the potential to make a huge difference.

At the least, responsive actions from businesses can remove litter from around their premises. Keep Wales Tidy launched its Litter Free Zones programme in January 2022 whereby businesses are asked to pledge to clean up their immediate vicinity regularly with the litter picking equipment provided and fill in data on the Epicollect app. In return the businesses can display the Litter Free Zone marketing stickers in their windows and become part of the Keep Wales Tidy map of Litter Free Zones[147]. A report to Zero Waste Scotland found indirect costs of litter on businesses in Scotland were a reduction in brand value due to branded litter and a potential loss of investment[148]. Therefore, this scheme would have a multifaceted benefit on businesses and local environmental quality.

However, there is also scope for more ambitious projects and partnerships between businesses with the potential to span whole towns. For example, hospitality businesses in Hemsby, Norfolk, have come together to offer a reusable homogenous hot drinks cup at all premises. Along with project funding, businesses worked together in this joint purchase project to select suitable cups. A small deposit of £2 is paid by the customer when purchasing a hot drink which can be refunded at any participating business where the cup is returned, washed and used again. In response to the overflowing public bins filled with bulky takeaway packaging, the pilot has found a slight reduction of single-use plastic cups in its first year, and it is hoped this can be improved on as the project develops[149].

A more proactive approach has already been mentioned when discussing equipment manufacturing requirements in regards to the circular economy. In the context of businesses, an equipment hire scheme is suggested with bans on the sale of any cheap and cheerful equipment, swapping these for better quality alternatives. This has already been implemented in Cornwall to reduce the use of polystyrene bodyboards and is spreading to other destinations too. In 2021, Keep Britain Tidy trialled a £1 bodyboard hire scheme at 3 locations in Cornwall as part of their '#WaveOfWaste' campaign. The cheap hire price ensures everyone has access, outcompetes the cheap alternatives which are usually around £10, and the money goes to local charitable causes[150]. Comments from those involved suggest it was highly successful and raised over £900. Similarly, Surf Wood for Good is a campaign that provides sustainable wooden bodyboards for hire free of charge to local surf shops. In 2021 they partnered with shops in St Ives, Perranporth, Newquay, Mawgan Porth and Bude in Cornwall, and individual shops in Devon, East Sussex and Pembrokeshire[151]. This could be expanded to all manner of equipment from buckets and spades, parasols, crabbing lines, hiking poles, tents, waterproof clothing (instead of single-use plastic ponchos) and more. Benthyg, Wales' network of 'Library of Things' now also rents out camping equipment for as little as £5 per week, reducing the need for people to buy their own and to buy poor quality[152]. Businesses could also facilitate the display of 'beach toy libraries' and equipment recycling collections in partnership with, or independent of, local councils, which many businesses are already doing.

Mentioned above for local government and national parks is the adoption of refill stations in tourist hotspots. Businesses can also adopt this scheme by offering to refill peoples water bottles or providing facilities for them to fill their own through a fountain or jugs. The Refill Wales / Cymru scheme then asks for participating businesses to make themselves visible by placing a sticker in their window and being marked on the refill station map. The map also contains information on businesses accepting reusable coffee cups with the Refill website providing guidance on how to refill safely during the pandemic[153]. It is noted that this could increase the workload for the hospitality industry that is already facing staff shortages, but with collaboration between businesses and the local authorities, the Refill responsibility can be spread across many hands.

4. Conclusions

Despite the focus on tourism-related litter throughout this research paper, it is important to remember two things; firstly, it is not just tourists that generate litter during tourism seasons but local people who use areas for recreation as well, and secondly, tourism brings huge benefits to areas which would otherwise have less job opportunities available for local people. The issue is therefore finding a way to enhance the benefits and manage the disadvantages on the path to sustainable tourism.

There are a multitude of tools available to tackle general litter, fly-camping and holiday let fly-tipping but it's potentially only since the extreme 'countryside crush' of staycationers during the coronavirus pandemic that the demand for solutions to these problems have become so urgent. Holiday psychology indicates why people behave differently on holiday and the behaviour concepts can be used to devise ideas that will be the most positively influential on the holiday brain. At the highest level, the Welsh Government is using its powers to tackle these issues directly and indirectly. Already they have utilised the plastic bag levy and it is hoped this can be applied to more items, they have populated the Wales Coast Path with water refill stations to reduce plastic bottle use, with this spreading to more areas all the time. The Welsh Government is proposing a single-use plastics ban, consulting on a visitor levy, and making changes to how holiday lets are regulated. However, new and complex legislation can take years to finalise and waste management may not always be the core focus. It is in the meanwhile that local and national park authorities, business and industry must step in.

First of all, local authorities can influence destination marketing to prevent overcrowding through timely advertisements of an area outside of peak times and using demarketing tactics to attract more responsible tourists. Messaging used on-site like Codes of Conduct in national parks or sensitive areas can nudge people at point of action to take their litter home. As in European national parks, Codes of Conduct could vary through the use of zoning, allowing and simultaneously banning certain activities from taking place in certain areas to manage workload and damage. As in any location, binfrastructure should be well-planned and used effectively. This could mean putting more bins in some of the busiest areas whilst removing them from others and promoting the 'take your litter home' message. Where bins cannot be placed for access reasons, the use of 'information' or 'welcome' wardens in high footfall areas like car parks to hand out bin bags may increase the ease of taking litter home for visitors and prompt the behaviour due to the personal request. Ideally in the future, cheap poor-quality equipment will be banned through legislation, but more immediately shops could create voluntary bans on these products, switching to more durable ones instead to sell or for a hire scheme. Following the waste hierarchy, where bans may be a long way off, recycling bins for broken equipment at hotspots are very likely to create enough similar waste for recycling demand. Even more desirable would be the implementation of 'beach toy libraries' where unbroken equipment could be placed ready for reuse by someone else. These waste hierarchy containers are already present elsewhere but have not undergone monitoring and evaluation of the success of their use. In a similar vein, voluntary smoking bans have been fruitful in Wales and elsewhere, paving the way for expansion to other areas. Lastly, responsive litter removal strategies like Adopt-a-beach and Litter Free Zones have the potential for volunteers and private businesses to help reduce the litter cleansing burden on local authorities.

5. Policy context

The COVID-19 pandemic saw restrictions on international travel across the world to reduce the spread of the infection. Holidaymakers sought out domestic destinations and many of Wales's beauty spots saw a historic number of tourists in the 2020-2021 period. Although this represented a much needed boon for businesses and local economics who had suffered the effects of enforced closures, many authorities reported a 'different type of visitor' to the countryside and reported a number of associated problems with managing such large influxes of people.

There is little doubt that tourism needs to be managed as it puts extra demands on local resources, particularly around waste management and other associated issues such as parking and traffic. Despite this, there is no recognition of additional waste management requirements in the current Welsh Government Visitor Economy Strategy (2020 -2025) although environmental sustainability is a key theme.

Part of Wales' tourism offer is our outstanding landscapes and beauty spots but it is important for both Local And National Strategies to recognise the resources required to maintain these areas. If managed well, tourism can be a driving force for protecting natural and cultural assets and preserving them for future generations.

Whilst there is a need for the tourism industry to recover after the COVID-19 pandemic, there is also an opportunity to rebuild our visitor offer which is synonymous with environmental principles and sustainability. Litter management is the most tangible service that local authorities (and other landowners provide) and a littered environment will not encourage the repeat tourism that is needed to foster and promote environmental behaviours away from home.

It is telling that local plans will often address litter and waste issues, such as Eryri (Snowdonia) National Park Authority's recent proposal for a 'Plastic Free Yr Wyddfa (Snowdon)' and other Local Action and Destination Management Plans but that national strategy has yet to address this. With tourism patterns changing and the nature of visitors, the requirement for a national approach to tourism related issues (as well as tourism promotion) is needed.

"These are the 'nuts and bolts' of destination management – the life support for frontline tourism businesses and the visitor experience. Beach management, toilets, parking, waste management, environmental maintenance, waymarking, food standards, licensing, events planning and support are 'unsung heroes' – often unregarded until they go wrong or go missing. They do not in themselves drive visits but can strongly influence reputation, visitor spend and dwell-time. The burden of delivery inevitably falls largely on the public sector while resources to underwrite them continue to diminish."

– Pembrokeshire Coast National Park Authority, Destination Management Plan, 2020-2025

Meanwhile, tourism businesses are leading the way in terms of plastic and waste reduction through voluntary initiatives such as the **Global Tourism Plastics Initiative** and **Green Key** but these schemes have yet to extend to the 'private hosting' sectors which make up a significant percentage of Wales' accommodation offer and represent a significant missed opportunity to engage visitors.[154] Furthermore, this sector requires a significant review of responsibility for waste management which is currently not considered in current regulation.

Appendices

Messaging language for tourists

On average each year 1 million trips are taken to Wales by international tourists (outside of Great Britain). Around 140,000 of these are from Ireland and therefore are likely to speak English, with the next largest contributor being Germany at 110,000 visitors a year, followed by the USA, France and the Netherlands[155]. English-speaking visitors make up for about 24 percent of international visitors, with the remaining 76 percent being a mixture of mainly European languages. Unless there are particularly high concentrations of a given foreign language in tourist areas of Wales (mainly the Southeast where 50 percent of international tourists base their visit), messaging in Welsh and English would be most suitable. Alternatively, images and visual stimuli can work across many different languages.

References

[1] https://gov.wales/sites/default/files/statistics-and-research/2021-01/wales-accommodation-occupancy-survey-2019_0.pdf

[2] UNWTO. (n.d.). *Glossary of tourism terms.* Available: https://www.unwto.org/glossary-tourism-terms. Last accessed 15th Dec 2021.

[3] WTTC. (2021). *Economic Impact Reports.* Available: https://wttc.org/Research/Economic-Impact. Last accessed 15th Dec 2021.

[4] Ballance, A., Ryan, P., Turpie, J. K. (2000). How much is a clean beach worth? The impact of litter on beach users in the Cape Peninsula, South Africa. *S Afr J Sci*, 96, pp. 210-213. DOI: https://doi.org/10.1016/j.marpol.2013.01.024. Last accessed 21st Dec 2021.

[5] Velu, J. (2021). *Tourism Profile – North Wales 2017 - 2019.* Available: https://gov.wales/sites/default/files/statistics-and-research/2021-03/tourism-profile-north-wales-2017-2019.pdf, pp.6. Last accessed 15th Dec 2021.

[6] Velu, J. (2021). *Tourism Profile – South West Wales 2017- 2019 Summary*. Available: https://gov.wales/sites/default/files/statistics-and-research/2021-03/tourism-profile-south-west-wales-2017-2019-summary.pdf. Last accessed 4th Feb 2022.

[7] Keep Wales Tidy, Marine Conservation Society and Eunomia Consulting. (2019). *Litter management in Wales: An analysis of litter data and strategies.* Available: https://businesswales.gov.wales/marineandfisheries/sites/marineandfisheries/files/litter-management-in-wales-an-analysis-of-litter-data-and-strategies.pdf. Last accessed 15th Dec 2021.

[8] Flint, R. (2021). *Wales' tourist image 'could be harmed' by overloaded infrastructure.* Available: https://www.bbc.co.uk/news/uk-wales-57898837 . Last accessed 15th Dec 2021.

[9] McCarthy, J. & Flint, R. (2021). *'Open land for wild camping in Wales', say campaigners.* Available: https://www.bbc.co.uk/news/uk-wales-57440636. Last accessed 15th Dec 2021.

[10] Garcés-Ordóñez, O. et al. (2020). The impact of tourism on marine litter pollution on Santa Marta beaches, Colombian Caribbean. *Marine Pollution Buletin*. 160 (1), 111558. DOI: 10.1016/j.marpolbul.2020.111558. Last accessed 15th Dec 2021.

[11] Asensio-Montesinos, F. et al . (2019). Seasonal comparison of beach litter on Mediterranean coastal sites (Alicante, SE Spain). *Ocean and Coastal Management*. 180 (1), 104914. DOI: https://doi.org/10.1016/j.ocecoaman.2019.104914. Last accessed 15th Dec 2021.

[12] Grelaud, M. & Zeveri, P. (2020). The generation of marine litter in Mediterranean island beaches as an effect of tourism and its mitigation. *Scientific Reports*. 10 (1), 20326. DOI: https://doi.org/10.1038/s41598-020-77225-5. Last accessed 15th Dec 2021.

[13] UNEP-MAP. (2015). *Marine Litter Assessment In The Mediterranean .* Available: https://wedocs.unep.org/bitstream/handle/20.500.11822/7098/MarineLitterEng.pdf?sequence=1&isAllowed=y. Last accessed 15th Dec 2021.

[14] Alessi, E. et al. (2018). *Out of the plastic trap: saving the Mediterranean from plastic pollution*. Available: a4_plastics_med_web_08june_new.pdf (panda.org). Last accessed 15th Dec 2021.

[15] Pervez, R. et al. (2020). The analysis of the accumulation of solid waste debris in the summer season along the Shilaoren Beach Qingdao, China. *Regional Studies in Marine Science*. 34 (1), 101041. DOI: https://doi.org/10.1016/j.rsma.2020.101041 . Last accessed 15th Dec 2021.

[16] Watts, A. J. R. et al. (2007). Through the sands of time: Beach litter trends from nine cleaned north cornish beaches. *Environmental Pollution*, 228, pp.416-424. DOI: http://dx.doi.org/10.1016/j.envpol.2017.05.016. Last accessed 15th Dec 2021.

[17] WTTC. (2021). *Rethinking Single-Use Plastic Products In Travel & Tourism*. Available: https://wedocs.unep.org/bitstream/handle/20.500.11822/36324/RSUP.pdf. Last accessed 4th Jan 2022.

[18] Williams, A. T, Randerson, P and Alharbi, O. A. (2014). From a millennium base line to 2012: Beach litter changes in Wales. *Marine pollution bulletin*, 84 (1-2), pp. 17–26. DOI: 10.1016/j.marpolbul.2014.05.017. Last accessed 17th Dec 2021.

[19] Nelms, S. E. et al. (2017.) Marine anthropogenic litter on British beaches: a 10-year nationwide assessment using citizen science data. *Science of the Total Environment*. 579, pp.1399-1409. DOI: https://doi.org/10.1016/j.scitotenv.2016.11.137. Last accessed 17 Dec 2021.

[20] Porter, B. (2020). Wildlife in Lockdown. Available: https://issuu.com/parccenedlaetholeryri/docs/wildlifeinlockdown_001. Last accessed 3rd May 2022.

[21] Travel Without Plastic & Share Impact (2021) *Plastic Free Yr Wyddfa (Snowdon)*.

[22] Travel Without Plastic & Share Impact (2021) *Plastic Free Yr Wyddfa (Snowdon)*.

[23] Bangor University. (2022). *Mapping the Litter Problem with Social Media*. Available: https://www.bangor.ac.uk/news/mapping-the-litter-problem-with-social-media-0. Last accessed 24th Feb 2022.

[24] NRW. (2021). *Waste duty of care for organisations*. Available: https://naturalresources.wales/guidance-and-advice/environmental-topics/waste-management/waste-duty-of-care/?lang=en#. Last accessed 24th Feb 2022.

[25] Zero Waste Scotland. (n.d.). *Litter prevention checklist: Your guide to litter-free events*. Available: https://www.zerowastescotland.org.uk/sites/default/files/ZWS%20guide%20booklet_Events_Checklist_AW2.pdf. Last accessed 24th Feb 2022.

[26] Chapman, A. (2021). *How the pandemic has changed holidaymaking in Britain*. Available: https://theconversation.com/how-the-pandemic-has-changed-holidaymaking-in-britain-168409. Last accessed 24th Dec 2021.

[27] Flint, R. (2021). *Wales' tourist image 'could be harmed' by overloaded infrastructure*. Available: https://www.bbc.co.uk/news/uk-wales-57898837. Last accessed 24th Dec 2021.

[28] Chapman, C. & Bromford, K. (2020). *Litter in lockdown: A study of litter in the time of coronavirus*. Available: https://www.cpre.org.uk/wp-content/uploads/2020/12/Litter-in-lockdown-full-report-December-2020.pdf . Last accessed 24th Dec 2021.

[29] Mahy, E. (2021). *Taste for takeaways outlasts Covid lockdowns*. Available: https://www.bbc.co.uk/news/business-57489195. Last accessed 24th Dec 2021.

[30] Flint, R. (2021). *Wales' tourist image 'could be harmed' by overloaded infrastructure*. Available: https://www.bbc.co.uk/news/uk-wales-57898837. Last accessed 24th Dec 2021.

[31] Zero Waste Scotland. (2012). *Rapid Evidence Review of Littering Behaviour and Anti-Litter Policies*. Available: https://www.zerowastescotland.org.uk/sites/default/files/Rapid%20Evidence%20Review%20of%20Littering%20Behaviour%20and%20Anti-Litter%20Policies.pdf. Last accessed 24th Dec 2021.

[32] BBC. (2014). *Tenby seagulls thwarted by bird-proof rubbish bags*. Available: https://www.bbc.co.uk/news/uk-wales-south-west-wales-28467446. Last accessed 24th Jan 2022.

[33] MCS. (2021). *Great British Beach Clean results*: *UK*. Available: https://www.mcsuk.org/news/great-british-beach-clean-results-uk/. Last accessed 24th Dec 2021.

[34] Roberts, K. et al. (2020). *Coronavirus face masks: an environmental disaster that might last generations.* Available: https://theconversation.com/coronavirus-face-masks-an-environmental-disaster-that-might-last-generations-144328. Last accessed 24th Dec 2021.

[35] Keep Britain Tidy. (2020). *Families urged to take beach toys home by St Anne's volunteers.* Available: https://www.inyourarea.co.uk/news/families-urged-to-take-toys-home-by-st-annes-lovemybeach-volunteers/. Last accessed 21st Dec 2021.

[36] Shearing, H. (2019). *Plastic waste: What to do with your inflatable when it goes pop.* Available: https://www.bbc.co.uk/news/uk-49488120 . Last accessed 21st Dec 2021.

[37] Keep Britain Tidy. (2021). *Keep Britain Tidy fights back against polluting bodyboard 'Wave of Waste'*. Available: https://www.keepbritaintidy.org/news/keep-britain-tidy-fights-back-against-polluting-bodyboard-wave-waste. Last accessed 21st Dec 2021.

[38] DEFRA. (2019). *Code of Practice on Litter and Refuse*. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/834331/pb11577b-cop-litter1.pdf. Last accessed 10th Jan 2022.

[39] McCarthy, J. & Flint, R. (2021). *Open land for wild camping in Wales', say campaigners*. Available: https://www.bbc.co.uk/news/uk-wales-57440636. Last accessed 21st Dec 2021.

[40] Association of Independent Festivals. (2019). *Independent festivals say no to single-use tents*. Available: https://aiforg.com/independent-festivals-say-no-to-single-use-tents/. Last accessed 21st Dec 2021.

[41] Gray, R. (2019). *The people fighting the war on waste at music festivals*. Available: https://www.bbc.com/culture/article/20190627-the-people-fighting-the-war-on-waste-at-music-festivals. Last accessed 21st Dec 2021.

[42] Leave No Trace. (2021). *Principle 3: Dispose of Waste Properly*. Available: https://lnt.org/why/7-principles/dispose-of-waste-properly/. Last accessed 21st Dec 2021.

[43] Armstrong, P. (2021). *Gyllyngvase Beach, Falmouth rubbish and fires left on beach*. Available: https://www.falmouthpacket.co.uk/news/19209853.gyllyngvase-beach-falmouth-rubbish-fires-left-beach/. Last accessed 21st Dec 2021.

[44] Ceredigion County Council. (2021). *Supporting campaign to reduce grass fires*. Available: https://www.ceredigion.gov.uk/resident/news/supporting-campaign-to-reduce-grass-fires/. Last accessed 24th Dec 2021.

[45] Flint, R. (2021). *Wales' tourist image 'could be harmed' by overloaded infrastructure*. Available: https://www.bbc.co.uk/news/uk-wales-57898837. Last accessed 24th Dec 2021.

[46] BBC. (2020). *Dartmoor camping ban over 'littering, human waste and fires'*. Available: https://www.bbc.co.uk/news/uk-england-devon-53664374. Last accessed 24th Dec 2021.

[47] Marshall, C. (2023). *Historic wild camping tradition restricted on Dartmoor*. Available: https://www.bbc.co.uk/news/science-environment-64238116. Last accessed 20th Jan 2023.

[48] Williams, G. (2021). *Planned motorhome 'aires' not designed to hit existing caravan parks, claim councillors*. Available: https://www.cambrian-news.co.uk/article.cfm?id=138008. Last accessed 24th Dec 2021.

[49] BBC. (2021). *Gwynedd: Campervan overnight sites considered by council.* Available: https://www.bbc.co.uk/news/uk-wales-59132472. Last accessed 24th Dec 2021.

[50] Lavington, M. (2018). *Disposing of holiday home waste – your obligations*. Available: https://www.boshers.co.uk/blog/holiday-home-letting-2/disposing-of-holiday-home-waste-your-obligations/. Last accessed 10th Jan 2022.

[51] Anglesey and Gwynedd Joint Policy Planning Service. (2020). *Managing the use of dwellings as holiday homes*. Available: https://democracy.gwynedd.llyw.cymru/documents/s27926/Appendix%202.pdf. Last accessed 4th Jan 2022.

[52] Lennon, H. (2018). *Airbnb boosts Glasgow economy by £57.9 million despite backlash*. Available: https://www.glasgowtimes.co.uk/news/16296809.airbnb-boosts-glasgow-economy-57-9-million-despite-backlash/. Last accessed 4th Jan 2022.

[53] Westminster County Council. (2020). *DAILY DUMP outside 92 Warwick Way by Airbnb guests*. Available: https://report.westminster.gov.uk/report/1963797. Last accessed 4th Jan 2022.

[54] Manchester City County. (2018). *Neighbourhoods and Environment Scrutiny Committee*. Available: https://democracy.manchester.gov.uk/documents/g264/Public%20reports%20pack%2010th-Oct-2018%2010.00%20Neighbourhoods%20and%20Environment%20Scrutiny%20Committee.pdf?T=10. Last accessed 4th Jan 2022.

[55] Anglesey and Gwynedd Joint Policy Planning Service. (2020). *Managing the use of dwellings as holiday homes*. Available: https://democracy.gwynedd.llyw.cymru/documents/s27926/Appendix%202.pdf. Last accessed 4th Jan 2022.

[56] Brooks, S. (2021). *Second homes: Developing new policies in Wales*. Available: https://gov.wales/sites/default/files/publications/2021-03/second-homes-developing-new-policies-in-wales.pdf. Last accessed 12th Jan 2022.

[57] Airbnb. Inc. (2018). *Airbnb UK Insights Report*. Available: https://www.airbnbcitizen.com/wp-content/uploads/2018/10/AirbnbUKInsightsReport_2018.pdf. Last accessed 5th Jan 2022.

[58] Airbnb Inc. (2020). *The Airbnb Cleaning Protocol Handbook.* Available: https://www.mwtcymru.co.uk/uploads/1/0/6/4/106417241/theairbnbcleaninghandbook_en-gb.pdf. Last accessed 5th Jan 2022.

[59] Price, J. (2021). *Holiday Home Waste Management Guide*. Available: https://www.sykescottages.co.uk/blog/holiday-home-waste-management-guide/. Last accessed 4th Jan 2022.

[60] Evans, P. (2021). *Holiday lets need 'reminding of legal obligations' on waste disposal - state Tenby councillors*. Available: https://www.tenby-today.co.uk/article.cfm?id=131660&headline=Holiday%20lets%20need%20%27reminding%20of%20legal%20obligations%27%20on%20waste%20disposal%20-%20state%20Tenby%20councillors&sectionIs=news&searchyear=2021. Last accessed 5th Jan 2022.

[61] DEFRA. (2018). *Statutory Guidance: Waste duty of care: code of practice*. Available: https://www.gov.uk/government/publications/waste-duty-of-care-code-of-practice/waste-duty-of-care-code-of-practice. Last accessed 5th Jan 2022.

[62] CheaperWaste. (2021). *Business Recycling: The Ultimate 2021 Guide*. Available: https://www.cheaperwaste.co.uk/blog/business-recycling-the-ultimate-2020-guide/#The_Cost_of_Recycling. Last accessed 10th Jan 2022.

[63] Welsh Government. (2021). *Welsh Government Programme for government: update*. Available: https://gov.wales/programme-for-government-2021-to-2026-html. Last accessed 5th Jan 2022.

[64] Barr, S., Shaw, G., Coles, T. and Prillwitz, J. (2010). 'A holiday is a holiday': Practicing sustainability, home and away. *Journal of Transport Geography*, 18(3), pp.474-481. DOI: https://doi.org/10.1016/j.jtrangeo.2009.08.007. Last accessed 5th Jan 2022.

[65] Hu, H., Zhang, J., Chu, G., Yang, J. and Yu, P. (2018). Factors influencing tourists' litter management behavior in mountainous tourism areas in China. *Waste Management*, 79, pp.273-286. DOI: https://doi.org/10.1016/j.wasman.2018.07.047. Last accessed 6th Jan 2022.

[66] Zero Waste Scotland. (2012). *Rapid Evidence Review of Littering Behaviour and Anti-Litter Policies.* Available: https://www.zerowastescotland.org.uk/sites/default/files/Rapid%20Evidence%20Review%20of%20Littering%20Behaviour%20and%20Anti-Litter%20Policies.pdf. Last accessed 31st May 2022.

67 Garcés-Ordóñez, et al. (2020). The impact of tourism on marine litter pollution on Santa Marta beaches, Colombian Caribbean. *Marine pollution bulletin*, 160, pp. 111558–111558. DOI: 10.1016/j.marpolbul.2020.111558. Last accessed 21st July 2021.

68 Esfandiar, K., Dowling, R., Pearce, J. and Goh, E. (2020). Personal norms and the adoption of pro-environmental binning behaviour in national parks: An integrated structural model approach. *Journal of Sustainable Tourism*, 28(1), pp.10-32. DOI: https://doi.org/10.1080/09669582.2019.1663203. Last accessed 6th Jan 2022.

69 Brown, T. J., Ham, S. H. and Hughes, M. (2010). Picking up litter: An application of theory-based communication to influence tourist behaviour in protected areas. *Journal of Sustainable Tourism*, 18(7), pp.879-900. DOI: https://doi.org/10.1080/09669581003721281. Last accessed 6th Jan 2022.

70 Budeanu, A. (2007). Sustainable tourist behaviour–a discussion of opportunities for change. *International Journal of Consumer Studies*, 31(5), pp.499-508. DOI: 10.1111/j.1470-6431.2007.00606.x. Last accessed 6th Jan 2022.

71 Kim, A. K. (2012). Determinants of tourist behaviour in coastal environmental protection. *Tourism Geographies*, 14(1), pp.26-49. Available: https://www.tandfonline.com/doi/abs/10.1080/14616688.2011.597774. Last accessed 6th Jan 2022.

72 Xu, F., Huang, L., and Whitmarsh, L. (2020). Home and away: cross-contextual consistency in tourists' pro-environmental behavior. *Journal of Sustainable Tourism*, 28(10), pp.1443-1459. DOI: 10.1080/09669582.2020.1741596. Last accessed 6th Jan 2022.

73 Tonge, J., Ryan, M. M., Moore, S.A. and Beckley, L.E. (2015). The effect of place attachment on pro-environment behavioral intentions of visitors to coastal natural area tourist destinations. *Journal of Travel Research*, 54(6), pp.730-743. Available: https://researchrepository.murdoch.edu.au/id/eprint/28745/1/effect_of_place_attachment_on_pro-environment_behavior.pdf. Last accessed 6th Jan 2022.

74 ONS. (2021). *How has lockdown changed our relationship with nature?.* Available: https://www.ons.gov.uk/economy/environmentalaccounts/articles/howhaslockdownchangedourrelationshipwithnature/2021-04-26. Last accessed 6th Jan 2022.

76 Travel Without Plastic & Share Impact (2021) *Plastic Free Yr Wyddfa (Snowdon)*.

77 Velu, J. (2021). *Tourism Profile – North Wales 2017 - 2019.* Available: https://gov.wales/sites/default/files/statistics-and-research/2021-03/tourism-profile-north-wales-2017-2019.pdf . Last accessed 15th Dec 2021.

78 Dickon, G. (2020). *Welcome to 2020, the year of the tourist tax*. Available: https://www.telegraph.co.uk/travel/news/tourist-tax-amsterdam-venice/. Last accessed 7th Jan 2022.

79 Scottish Government. (2019). *Tourism tax: messages from the national discussion*. Available: https://www.gov.scot/publications/tourist-taxes-scotland-messages-national-discussion/pages/1/. Last accessed 7th Jan 2022.

80 Group NAO and Global Destination Sustainability Movement. (2020). *Tourism Taxes by Design*. Available: https://groupnao.com/wp-content/uploads/2020/11/TOURISM-TAXES-BY-DESIGN-NOV12-2020_rettet-compressed-2.pdf. Last accessed 03/05/2022.

81 Welsh Government. (2022). Consultation Document: Consultation on proposals for a discretionary Visitor Levy for local authorities Partial Regulatory Impact Assessment (PRIA). Available: https://gov.wales/sites/default/files/consultations/2022-09/visitor-levy-partial-regulatory-impact-assessment-4.pdf. Last accessed 1st November 2022.

82 Scottish Government. (2022). *A stronger and more resilient Scotland: the Programme for Government 2022 to 2023*. Available: https://www.gov.scot/publications/stronger-more-resilient-scotland-programme-government-2022-23/pages/5/. Last accessed 1st November 2022.

83 Warberg, J., Fromeyer, B., Koch, J., Gerdt, S-O. & Schewe, G. (2021). Voluntary carbon offsetting and consumer choices for environmentally critical products—An experimental study, *Business strategy and the environment*, 30(7), pp. 3009–3024. DOI:10.1002/bse.2785. Last accessed 31st Jan 2022.

84 Warberg, J., Fromeyer, B., Koch, J., Gerdt, S-O. & Schewe, G. (2021). Voluntary carbon offsetting and consumer choices for environmentally critical products—An experimental study, *Business strategy and the environment*, 30(7), pp. 3009–3024. DOI:10.1002/bse.2785. Last accessed 31st Jan 2022.

85 Christine, T. (2019). *41 countries around the world that charge a tourist tax*. Available: https://www.insider.com/countries-that-require-a-tourist-tax-2019-2. Last accessed 7th Jan 2022.

86 Group NAO and Global Destination Sustainability Movement. (2020). *Tourism Taxes by Design*. Available: https://groupnao.com/wp-content/uploads/2020/11/TOURISM-TAXES-BY-DESIGN-NOV12-2020_rettet-compressed-2.pdf. Last accessed 03/05/2022.

[87] Chapman, A. (2021). *How the pandemic has changed holidaymaking in Britain*. Available: https://theconversation.com/how-the-pandemic-has-changed-holidaymaking-in-britain-168409. Last accessed 24th Dec 2021.

[88] Welsh Local Government Association. (2021). *National Parks*. Available: https://www.wlga.wales/national-parks. Last accessed 4th Feb 2022.

[89] Budget Your Trip. (2022). *Budget your trip for Wales*. Available: https://www.budgetyourtrip.com/united-kingdom/wales#category-1. Last accessed 4th Feb 2022.

[90] Group NAO and Global Destination Sustainability Movement. (2020). *Tourism Taxes by Design*. Available: https://groupnao.com/wp-content/uploads/2020/11/TOURISM-TAXES-BY-DESIGN-NOV12-2020_rettet-compressed-2.pdf. Last accessed 03/05/2022.

[91] Sustainable Balearic Islands. (2022). *Sustainable Tourism Tax*.
Available: http://www.illessostenibles.travel/en/home-en. Accessed 20/09/2022.

[92] Sustainable Balearic Islands. (2022). *What is
the ITS?*. Available: http://www.illessostenibles.travel/en/sustainable-tourism-tax/what-is-its. Accessed 20/09/2022.

[93] Sustainable Balearic Islands. (2022). *Rates and Exemptions*.
Available: http://www.illessostenibles.travel/en/sustainable-tourism-tax/tax-amount-and-exemptions. Accessed 20/09/2022.

[94] Group NAO and Global Destination Sustainability Movement. (2020). *Tourism Taxes by Design*. Available: https://groupnao.com/wp-content/uploads/2020/11/TOURISM-TAXES-BY-DESIGN-NOV12-2020_rettet-compressed-2.pdf. Last accessed 03/05/2022.

[95] Kassam, A. (2014). *Barcelona's tourism booms, swelling its coffers and littering its beaches*. Available: https://www.theguardian.com/travel/2014/jun/15/barcelona-tourism-boom-economy-residents. Last accessed 7th Jan 2022.

[96] Diamond, M. and Olito, F. (2019). *20 places around the world that are being ruined by tourism*. Available: https://www.insider.com/cities-hurt-by-tourism-2017-12. Last accessed 7th Jan 2022.

[97] Milano, C., Cheer, J. M. and Novelli, M. (2018). *Overtourism: a growing global problem*. Available: https://theconversation.com/overtourism-a-growing-global-problem-100029. Last accessed 7th Jan 2022.

[98] Natural England, Natural Resources Wales, Department for Environment, Food & Rural Affairs, and Lord Gardiner of Kimble. (2021). *New Countryside Code launched to help people enjoy the outdoors.* Available: https://www.gov.uk/government/news/new-countryside-code-launched-to-help-people-enjoy-the-outdoors. Last accessed 31st Jan 2022.

[99] Natural England & Natural Resources Wales. (2021). *Statutory guidance The Countryside Code: advice for countryside visitors*. Available: https://www.gov.uk/government/publications/the-countryside-code/the-countryside-code-advice-for-countryside-visitors#protect-the-environment. Last accessed 3rd Feb 2022.

[100] Slaymaker, B. (2016). *Visitor behaviour and best practice visitor services in
European protected areas*. Available: https://www.europarc.org/wp-content/uploads/2017/12/REPORT_Visitors-in-European-protected-areas.pdf. Last accessed 14th Feb 2022.

[101] Nelms, et al. (2020). Investigating the distribution and regional occurrence of anthropogenic litter in English marine protected areas using 25 years of citizen-science beach clean data. *Environmental Pollution*, 263(b), 114365. Available: https://www.sciencedirect.com/science/article/pii/S0269749119358361. Last accessed 24th Jan 2022.

[102] Slaymaker, B. (2016). *Visitor behaviour and best practice visitor services in
European protected areas*. Available: https://www.europarc.org/wp-content/uploads/2017/12/REPORT_Visitors-in-European-protected-areas.pdf. Last accessed 14th Feb 2022.

[103] Flint, R. (2021). *Wales' tourist image 'could be harmed' by overloaded infrastructure*. Available: https://www.bbc.co.uk/news/uk-wales-57898837. Last accessed 24th Dec 2021.

[104] Street, F. (2021). *UK destinations take steps to avoid tourist pandemonium*. Available: https://edition.cnn.com/travel/article/uk-destinations-tourism-return/index.html. Last accessed 4th Feb 2022.

[105] Rushby, K. (2021). *A holiday in Tenby still makes me giddy with boyhood excitement*. Available: https://www.theguardian.com/travel/2021/jun/19/tenby-holiday-trip-still-makes-me-giddy-with-boyhood-excitement. Last accessed 4th Feb 2022.

[106] Williams, K. (2021). *Tenby beach names one of the most beautiful in the world*. Available: https://www.walesonline.co.uk/whats-on/travel/tenby-beach-named-one-most-20871923. Last accessed 4th Feb 2022.

[107] Nisbet, M. (2021). *Tenby named second prettiest town in the UK*. Available: https://www.walesonline.co.uk/whats-on/travel/tenby-beach-named-one-most-20871923. Last accessed 4th Feb 2022.

[108] Welsh Government. (2018). *Free drinking water along Wales Coast path to tackle plastic pollution*. Available: https://gov.wales/free-drinking-water-along-wales-coast-path-tackle-plastic-pollution. Last accessed 24th Jan 2022.

[109] Pembrokeshire Coast National Park. (2022). *NEW NATIONAL PARK WATER REFILL STATIONS LAUNCHED IN A BID TO CUT SINGLE-USE PLASTIC*. Available: https://www.pembrokeshirecoast.wales/news/new-national-park-water-refill-stations-launched-in-a-bid-to-cut-single-use-plastic/. Last accessed 8th Feb 2022.

[110] Refill. (2020). *Your Guide to All Things Refill*. Available: https://www.refill.org.uk/resources/. Last accessed 16th Feb 2022.

[111] Slaymaker, B. (2016). *Visitor behaviour and best practice visitor services in European protected areas*. Available: https://www.europarc.org/wp-content/uploads/2017/12/REPORT_Visitors-in-European-protected-areas.pdf. Last accessed 14th Feb 2022.

[112] South Somerset District Council. (2021). *Why litter bins are not always the answer*. Available: https://www.southsomerset.gov.uk/news/2021/7/why-litter-bins-are-not-always-the-answer/. Last accessed 15th Feb 2021.

[113] Slaymaker, B. (2016). *Visitor behaviour and best practice visitor services in European protected areas*. Available: https://www.europarc.org/wp-content/uploads/2017/12/REPORT_Visitors-in-European-protected-areas.pdf. Last accessed 14th Feb 2022.

[114] Pembrokeshire County Council. (2020). *Outdoors*. Available: https://www.pembrokeshire.gov.uk/leisure-outdoors. Last accessed 25th Jan 2022.

[115] Forgrave, A. (2021). *Wardens wanted to spend the summer on Anglesey beaches for £10 an hour.* Available: https://www.dailypost.co.uk/news/north-wales-news/wardens-wanted-spend-summer-anglesey-20683770. Last accessed 25th Jan 2022.

[116] Cingolani, A. M., Barberá, I., Renison, D. & Barri, F. R. (2016). Can persuasive and demonstrative messages to visitors reduce littering in river beaches?. *Waste Management*, 58, pp.34-40. Available: https://doi-org.libezproxy.open.ac.uk/10.1016/j.wasman.2016.08.028. Last accessed 25th Jan 2022.

[117] Wagstaff, M.C. & Wilson, B.E. (1988). The evaluation of litter behavior modification in a river environment. *The Journal of Environmental Education*, 20(1), pp.39-44. Available: https://doi.org/10.1080/00958964.1988.9942779. Last accessed 25th Jan 2022.

[118] Gregory, R. (2018). *Products made entirely from chewing gum launched by Keep Wales Tidy*. Available: https://www.wales247.co.uk/products-made-entirely-from-chewing-gum-launched-by-keep-wales-tidy. Last accessed 25th Jan 2022.

[119] Teignbridge Lesiure. (2021). *Here is our new 'bucket and spade bin' at Teignmouth!.* Available https://www.facebook.com/teignbridgeleisure/photos/4836330126381981. Last accessed 25th Jan 2022.

[120] Beardsmore, R. (2021). *New 'bucket and spade trade' frog bin installed at Anchorsholme Park*. Available: https://www.blackpoolgazette.co.uk/news/environment/new-bucket-and-spade-trade-frog-bin-installed-at-anchorsholme-park-3235797. Last accessed 25th Jan 2022.

[121] Vale of Glamorgan Council. (2019). *Bucket and Spade Bin launched at Barry Island to tackle single use plastic*. Available: https://www.valeofglamorgan.gov.uk/en/our_council/press_and_communications/latest_news/2019/August/Bucket-and-Spade-Bin-launched-at-Barry-Island-to-tackle-single-use-plastic.aspx. Last accessed 25th Jan 2022.

[122] Wyatt & Jack. (2022). *FAQ's / Inflatable Amnesty*. Available: https://www.wyattandjack.com/pages/faqs. Last accessed 25th Jan 2022.

[123] Cornish Times. (2020). *Crab line stations to recycle plastic waste*. Available: https://www.cornish-times.co.uk/article.cfm?id=127786&headline=Crab%20line%20stations%20to%20recycle%20plastic%20waste&sectionIs=news&searchyear=2020. Last accessed 4th Feb 2022.

[124] Slaymaker, B. (2016). *Visitor behaviour and best practice visitor services in European protected areas*. Available: https://www.europarc.org/wp-content/uploads/2017/12/REPORT_Visitors-in-European-protected-areas.pdf. Last accessed 14th Feb 2022.

[125] BBC News. (2018). *Swansea beach BBQ burns skin off feet of boy aged two*. Available: https://www.bbc.co.uk/news/uk-wales-south-west-wales-44723306. Last accessed 3rd Feb 2022.

[126] David, C. (2021). Warning over disposable BBQs after fire service called to bin fire in Porthcawl. Available: https://www.walesonline.co.uk/news/wales-news/bin-fire-barbeque-porthcawl-beach-21091270. Last accessed 3rd Feb 2022.

[127] Pembrokeshire County Council. (2021). *Council supports campaign to reduce grass fires*. Available: https://www.pembrokeshire.gov.uk/newsroom/council-supports-campaign-to-reduce-grass-fires. Last accessed 3rd Feb 2022.

128 Fylde Council. (2018). *Decision Item*. Available:
https://fylde.cmis.uk.com/fylde/Document.ashx?czJKcaeAi5tUFL1DTL2UE4zNRBcoShgo=aYxZSPhQzqaMVwjv7%2BbCu2OX8OL4Kofp33UeN%2BBE5SOHZRr89OlGMw%3D%3D&rUzwRPf%2BZ3zd4E7Ikn8Lyw%3D%3D=pwRE6AGJFLDNlh225F5QMaQWCtPHwdhUfCZ%2FLUQzgA2uL5jNRG4jdQ%3D%3D&mCTIbCubSFfXsDGW9IXnlg%3D%3D=hFflUdN3100%3D&kCx1AnS9%2FpWZQ40DXFvdEw%3D%3D=hFflUdN3100%3D&uJovDxwdjMPoYv%2BAJvYtyA%3D%3D=ctNJFf55vVA%3D&FgPlIEJYlotS%2BYGoBi5olA%3D%3D=NHdURQburHA%3D&d9Qjj0ag1Pd993jsyOJqFvmyB7X0CSQK=ctNJFf55vVA%3D&WGewmoAfeNR9xqBux0r1Q8Za60lavYmz=ctNJFf55vVA%3D&WGewmoAfeNQ16B2MHuCpMRKZMwaG1PaO=ctNJFf55vVA%3D. Last accessed 3rd Feb 2022.

129 Visit Wales. (2022). *Sizzling spots for a beach barbecue*. Available: https://www.visitwales.com/things-do/nature-and-landscapes/beaches/great-beaches-barbecue-wales. Last accessed 3rd Feb 2022.

130 Cambridge City Council. (n.d.) *Barbecues on open spaces*. Available:
https://www.cambridge.gov.uk/barbecues-on-open-spaces. Last accessed 3rd Feb 2022.

131 Plymouth City Council. (n.d.). *Parks and Waterfront BBQ Guidelines*. Available:
https://www.plymouth.gov.uk/sites/default/files/PCC%20BBQ%20guidelines%20A4%20v3.pdf. Last accessed 3rd Feb 2022.

132 Swansea Bay News. (2021). *Co-op removes instant BBQs from sale in National Parks to prevent wildfires.*
Available: https://swanseabaynews.com/2021/06/22/co-op-removes-instant-bbqs-from-sale-in-national-parks-to-prevent-wildfires/. Last accessed 3rd Feb 2022.

133 Ariza, E. Leatherman, S. P. (2012). No-smoking policies and their outcomes on U.S. beaches. *Journal of Coastal Research*, 28(1a), pp.143-147. Available: https://www.jstor.org/stable/41332059. Last accessed 25th Jan 2022.

134 Action on Smoking and Health Wales Cymru. (n.d.) *Smoke free beaches*. Available:
https://ash.wales/campaign/beaches/. Last accessed 25th Jan 2022.

135 BBC. (2017). *Little Haven beach smoking ban to last indefinitely*. Available:
https://www.bbc.co.uk/news/uk-wales-south-west-wales-39737871. Last accessed 25th Jan 2022.

136 Dalling, R. (2018). *Langland Bay beach is going smoke-free*. Available:
https://www.walesonline.co.uk/news/wales-news/gower-beach-going-smoke-free-14858117. Last accessed 25th Jan 2022.

137 Wooltorton, S. & Marinova, D.. (2006). Chapter 26: 'Adopt a Beach': Educational Praxis for Sustainability. In: *Sharing wisdom for our future. Environmental education in action: Proceedings of the 2006 Conference of the Australian Association of Environmental Education*. E. Bunbury WA: Australian Association for Environmental Education.. pp.239-249. Available:
https://researchrepository.murdoch.edu.au/id/eprint/4941/1/adopt_a_beach.pdf. Last accessed 2nd Feb 2022.

138 Plastic Free Eastbourne. (2021). *How to get involved*. Available:
https://www.plasticfreeeastbourne.co.uk/adopt-a-beach. Last accessed 2nd Feb 2022.

139 EMFF. (2019*). Litter management in Wales: An analysis of litter data and strategies*.
Available: https://keepwalestidy.cymru/caru-cymru/wp-content/uploads/sites/3/2021/09/Litter-Management-in-Wales-min.pdf. Last accessed 27th Jan 2022.

140 EMFF. (2019*). Litter management in Wales: An analysis of litter data and strategies*.
Available: https://keepwalestidy.cymru/caru-cymru/wp-content/uploads/sites/3/2021/09/Litter-Management-in-Wales-min.pdf. Last accessed 27th Jan 2022.

141 DEFRA. (2019). Code of Practice on Litter and Refuse. Available:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/834331/pb11577b-cop-litter1.pdf. Last accessed 2nd Feb 2022.

142 Texas Department of Transportation. (2022). *Adopt-a-Highway*. Available: https://www.txdot.gov/inside-txdot/get-involved/volunteer/adopt-a-highway.html. Last accessed 2nd Feb 2022.

143 McCarthy, J. & Flint, R. (2021). '*Open land for wild camping in Wales', say campaigners*. Available:
https://www.bbc.co.uk/news/uk-wales-57440636. Last accessed 3rd Jan 2022.

144 Mynydd Derwydd Wild Camping. (2021). *10 Simple Rules*. Available: https://wildcampingwales.co.uk/10-simple-rules/. Last accessed 23rd Feb 2022.

145 Wearn, R. (2021). *Calls for more 'pop-up' campsites as demand surges*. Available:
https://www.bbc.co.uk/news/business-57408045. Last accessed 3rd Feb 2022.

146 BBC News. (2021). *Gwynedd: Campervan overnight sites considered by council*. Available:
https://www.bbc.co.uk/news/uk-wales-59132472. Last accessed 3rd Feb 2022.

147 Keep Wales Tidy. (2021). *Litter Free Zones Information Toolkit*. Available:
https://online.flipbuilder.com/keepwalestidy/nchd/. Last accessed 3rd Feb 2022.

148 Eunomia. (2015). *Exploring the Indirect Costs of Litter in Scotland*. Available:
https://www.zerowastescotland.org.uk/sites/default/files/Exploring%20the%20Indirect%20Costs%20of%20Litter%20in%20Scotland.pdf. Last accessed 3rd Feb 2022.

[149] Circular. (2022). *Reusable cup scheme in Norfolk's seaside town of Hemsby*. Available: https://www.circularonline.co.uk/insight/case-study-reusable-cup-scheme-in-norfolks-seaside-town-of-hemsby/. Last accessed 20th Jan 2023.

[150] Keep Britain Tidy. (2021). *Keep Britain Tidy fights back against polluting bodyboard 'Wave of Waste'*. Available: https://www.keepbritaintidy.org/news/keep-britain-tidy-fights-back-against-polluting-bodyboard-wave-waste. Last accessed 4th Feb 2022.

[151] Dick Pearce & Friends. (2021). *Surf Wood for Good*. Available: https://dickpearce.com/blogs/news/surf-wood-for-good. Last accessed 4th Feb 2022.

[152] Benthyg Cymru. (2023). *Tent*. Available: http://benthygcymru.lend-engine-app.com/product/1500. Last accessed 20th Jan 2023.

[153] Refill. (2020). *Your Guide to All Things Refill*. Available: https://www.refill.org.uk/resources/. Last accessed 16th Feb 2022.

[154] https://gov.wales/sites/default/files/statistics-and-research/2021-01/wales-accommodation-occupancy-survey-2019_0.pdf

[155] Velu, J. (2021). *Tourism Profile – South West Wales 2017- 2019 Summary*. Available: https://gov.wales/sites/default/files/statistics-and-research/2021-03/tourism-profile-south-west-wales-2017-2019-summary.pdf. Last accessed 16th Feb 2022.