African Journal of Hospitality, Tourism and Leisure 2025, Vol. 14 No. 4 pp. 694-703
ISSN: 2223-814X

Preference For Single-use Plastic Policy Alternatives Amongst Residents of Coastal Tourism Destinations

Issahaku ADAM
Department of Hospitality and Tourism Management, University of Cape Coast, Ghana, School of Tourism and Hospitality, University of Johannesburg
Email: issahaku.adam@ucc.edu.gh

Abstract

Tourism is noted to contribute to the generation of single-use plastic waste especially in coastal destinations. However, much of the policies enacted to manage single-use marine plastic pollution in coastal destinations have been conceived and implemented with little input from residents, leading to little buy-ins and resistance from them. Using the Rational Choice Theory, this paper examines the preference for single-use plastic (SUP) policy alternatives amongst residents of two coastal destinations: Accra and Cape Coast in Ghana. The study is based on survey data collected from 2,345 residents and analysed with the binary logistic regression. The findings revealed that two main policies, namely subsidies on reusable alternatives to SUPs, and public education campaigns on SUPs were the most preferred by the residents. Preference for taxes/levies on SUPs was underpinned by age, educational attainment, and monthly income while preference for legislative bans on SUPs was influenced by sex, marital status, educational attainment, type of community and awareness on the negative consequences of SUPs. Meanwhile, educational attainment influenced the residents' preference for public education campaigns and sex, age, and monthly income influenced the preference for subsidies on reusable alternatives to SUPs. The implications of these findings in terms of policy enactment and implementation towards the reduction of SUP marine plastic pollution are discussed.

Keywords environmental awareness; marine plastic pollution; plastic waste; policy; reusable alternatives

How to cite this article: Adam, I. (2025). Preference For Single-use Plastic Policy Alternatives Amongst Residents of Coastal Tourism Destinations. African Journal of Hospitality, Tourism and Leisure, 14(4):694-703. DOI: https://doi.org/10.46222/ajhtl.19770720.652

Introduction

Single-use plastics (SUPs) remain one of the most ever-present sources of marine plastic pollution including in coastal destinations (Chen et al., 2021; Dey et al., 2021). Single-use plastic products are plastic products that are intended to be used once and discarded (Chen et al., 2021). The increased production and consumption of SUPs have resulted in growing marine plastic pollution as SUP wastes are poorly managed and therefore mostly end up in inland water bodies and the ocean (Herweyers et al., 2023). Single-use plastic wastes continue to threaten both inland and ocean biodiversity including the sustainability of coastal destinations as well as the lives of residents of such destinations (Walker & McKay, 2021). About 80% of SUP wastes end up in the ocean and thereby threatening the sanctity of the world's oceans and the associated biodiversity, and sectors like tourism (Leissner & Ryan-Fogarty, 2019). Consequently, different policies and initiatives have been attempted to deal with the menace of SUP waste (Adam et al., 2020; Clayton et al., 2021). Globally, there have been different and varied responses in terms of when and how such policy initiatives are introduced (Adam et al., 2020; Xanthos & Walker, 2017). Tourism destinations especially coastal destinations have increasingly been threatened by marine plastic waste due to the high consumption of single-use plastic materials by tourists and the tourism industry, and residents and their subsequent accumulation in the marine environment including beaches (Raab et al., 2023). While tourism is known to contribute to marine plastic pollution, the tourism industry including coastal destinations are equally known to be victims of marine plastic pollution, thus making it a critical issue for such destinations (Khasawneh et al., 2025). Nonetheless, residents of such coastal destinations tend to suffer the consequences of marine plastic pollution (Adam, 2023; Khasawneh et al., 2025) which tends to influence their perceptions of the tourism industry as well as the sustainability of such destinations (Adam, 2022). Destinations and countries around the world have implemented different policies to deal with the problem of marine plastic pollution in order to protect marine life and ultimately ensure the sustainability of their destinations (Adam, 2022). However, despite remaining key partners in curbing marine plastic pollution, the process of initiating and implementing such policies have excluded residents of coastal destinations. This has often resulted in situations where residents do not support such policies thereby leading to policy failure, especially in developing countries (Adam et al., 2020). Single-use plastic policies are in different forms including market-based instruments, legislations (bans) and behaviour change approaches (Adam et al., 2020; Tan et al., 2021). Market-based instruments include taxes/levies on the production and consumption of SUPs (Tan et al., 2021). Legislative policies revolve around the formulation of laws that ban either the production, importation or consumption of SUPs (Adam et al., 2020; Xanthos & Walker, 2017). The behavioural approaches are focused on public education and awareness creation on the menace of SUP wastes and thus appeal to the psyche of consumers to reduce the consumption and generation of SUP wastes (Adam, 2022; Adam et al., 2021). Of the three, the most widely preferred policy tool by governments especially in Africa is legislative bans (Adam et al., 2020; Bezerra et al., 2021). Globally, laws are being enacted to ban the production, distribution and consumption of SUPs as a strategic means of ending marine plastic pollution (Adam et al., 2020; Xanthos & Walker, 2017). The Plastic Treaty being considered by the United Nations Environment Programme (UNEP) adds to the list of legislations that are aimed at ending plastic pollution.

Open Rubric

Despite the growing use of policies to end single-use marine plastic pollution, such policies are mostly enacted and implemented using a top-down approach without recourse to inputs from the populace (Adam et al., 2020; Bezerra et al., 2021; Clayton et al., 2021). In most tourism destinations, policies aimed at ending single-use marine plastic pollution are initiated and implemented by policy makers with little or no participation from the residents who remain key stakeholders in the generation and management of single-plastic waste (Adam et al., 2020; Bezerra et al., 2021; Clayton et al., 2021; Xanthos & Walker, 2017). This has resulted situations where such policies do not reflect the aspirations and concerns of the residents. Nonetheless, the involvement of residents is key given their knowledge of the destinations including their understanding of marine plastic pollution including what may work or not work. A review by Adam et al. (2020) on policies aimed at ending single-use marine plastic pollution in West Africa revealed that all the policies were designed and implemented using top-down approaches without inputs or involvement of the populace. Also, Bezerra et al. (2021) and Clayton et al. (2021) found that policies designed and implemented in the Southern Africa Development Region and Caribbean respectively were without inputs from the populace. Consequently, this study aims to: examine preference for policy tools for ending single-use marine plastic pollution amongst residents of coastal destinations and examine the determinants of residents' preferred policy tool(s) for ending SUP marine plastic pollution. In terms of its contribution to literature, the findings of this study will provide insights into coastal destinations' residents preferred policy tools for SUP waste reduction as well as the determinants of residents' preferred policy alternatives for dealing with SUP waste. These insights will enrich the literature as previous studies regarding policies for reducing SUPs in tourism destinations have mostly ignored the perspectives of residents despite being important stakeholders in policy formulation and implementation. Regarding the study's contribution to policy, the findings of this study would provide pointers to policy makers and destination managers in terms of residents' preferred policy alternatives in dealing with SUP waste as an environmental menace. In this regard, policy makers and destination managers can use the findings of this study in policy formulation to produce policies that are responsive to the needs of residents and thus garner their support towards the successful implementation of such policies.

Literature review

Single-use plastic marine pollution in coastal destinations

Single-use plastic wastes have become ever-present in almost all societies across the world (Kiessling et al., 2023; Varkey et al., 2021). The production and consumption of plastic products including SUPs are on the increase and thus resulting in increasing volume of SUP waste and marine plastic pollution in coastal destinations (Baxter et al., 2022). The ubiquity of SUPs as well as the convenience they offer consumers (residents and tourists) are contributing factors to the ever increasing presence of marine plastic pollution in coastal destinations (Chen et al., 2021; Kiessling et al., 2023). Also, SUPs are sold at a minimal cost and in most cases dished out for free in most African countries (Adam et al., 2020; Bezerra et al., 2021). On the other hand, producers find SUP packaging to be convenient and cost-effective and thus their increasing use of SUP packaging for consumer goods which further leads to the generation of high volumes of SUP waste (Rodríguez et al., 2023; Walker et al., 2021). Consequently, the problem of SUP waste has become pervasive in every ocean and marine ecosystem and thus negatively affecting tourism in coastal destinations (Rodríguez et al., 2023; Schnurr et al., 2018; Walker, 2018). Though SUP wastes are generated on land, most of it end up in the marine environment, polluting the ocean and threatening the marine ecosystem (Adam et al., 2020; Borrelle et al., 2017). Globally, plastic waste is projected to increase from 353 metric tons in 2019 to 1,014 metric tons by 2060 (OECD, 2022). Nonetheless, non-OECD countries are expected to contribute most to plastic waste production than OECD countries by 2060 with Africa and Asia recording the highest increases (OECD, 2022). Overall, non-OECD countries are expected to increase their contribution of plastic waste from 181 metric tons in 2019 to 657 metric tons by 2060 (OECD, 2022). It is estimated that about 8 million metric tons of SUP waste entered the ocean in 2010 (Krelling & Turra, 2019; Usanga et al., 2023). About 12.7 million metric tons of plastic debris enter the ocean environment on annual basis and this is estimated to be equivalent to a truckload of plastic debris being emptied into the ocean every minute (Krelling et al., 2017; Krelling & Turra, 2019). Fishes and other aquatic animals ingest SUP waste that enter the ocean which are in turn eaten by human beings (Krelling et al., 2017; Sun et al., 2022).

Policy tools for reducing SUPs in coastal destinations

The complexity of SUPs in relation to different sources and persistence have resulted in the implementation of different international, national and regional policies aimed at dealing with SUP waste (Adam et al., 2020; Bezerra et al., 2021). Also, due to the transboundary nature of SUP waste particularly in the marine environment, the policies adopted to deal with SUP waste have been multi-layered reflecting the different contexts that SUP marine plastic pollution occur including policies at the municipal, regional/state, national and international levels (Krelling et al., 2017; Xanthos & Walker, 2017). In view of this, policies aimed at dealing with SUP waste include general policies on marine plastic waste, environmental protection, and specific SUP reduction policies (Adam et al., 2020; Xanthos & Walker, 2017). Evidence from the literature indicates that the policies can be categorised into legislations (complete ban and partial ban), market-based instruments (taxes/levies), and behaviour change strategies (Adam et al., 2020; Clayton et al., 2021; Xanthos & Walker, 2017). Regarding legislations, two approaches have been reported in the literature namely complete and partial bans (Adam et al., 2020; Xanthos & Walker, 2017). Complete ban pertains to situations where the policies stipulate bans on the production and/or use of all categories of SUPs while partial ban relates to situations where the policies prohibit the production and/or use of certain types of SUP products (Bezerra et al., 2021; Xanthos & Walker, 2017). Legislations on complete and partial bans on SUPs remain the single most preferred policy tool by governments around the world (Kiessling et al., 2023). However, they have been received with mixed

feelings by residents and sometimes met with complete rejection and thereby making their implementation difficult and ineffective, particularly in Africa and other developing countries (Adam et al., 2020).

The market-based instruments impose taxes/levies on specific SUP products either at the production or consumption end of the plastic value chain (Dikgang, Ravat, & Mahabir, 2022; Mogomotsi et al., 2019). In some cases, taxes/levies are imposed on plastic raw materials with the aim of making the production expensive and thus discourage its production (Dikgang et al., 2022; Mogomotsi et al., 2019). In other instances, the taxes/levies are imposed on the final plastic product such as plastic carrier bags with the aim of making it expensive to the consumer and thereby discouraging its patronage (Mogomotsi et al., 2019). Recently, a third broad based policy strategy of public outreach has emerged (Adam, 2022). With this approach, governments and their partners use public education strategies to engage the public with the aim of raising awareness on the challenges posed by SUP waste and therefore promote the consumption of reusable alternatives to SUPs (Adam, 2022; Adam et al., 2021). The overall aim of this policy strategy is to cause behavioural change towards reducing the consumption of SUPs in favour of reusable alternatives (Adam, 2022).

Residents' preference for single-use plastic policy alternatives

Though there are limited insights into residents' preference of policy alternatives on SUPs, it can be gleaned from the literature that residents have preference for different policy alternatives based on certain background characteristics (Adam et al., 2021; Sujitha et al., 2019; Willis et al., 2018; Xu et al., 2022). Specifically, the extant literature points to potential relationship between socio-demographic characteristics and preference for policy alternatives in dealing with environmental menace such as SUP waste (Sujitha et al., 2019; Willis et al., 2018). Socio-demographic variables such as sex, age, educational attainment, income level as well as assumption of responsibility for SUP waste, and awareness of SUP hazards are link to residents' preference of policy alternatives on SUPs (Adam, 2022; Sujitha et al., 2019). In terms of sex, the literature points to females being more environmentally concern and conscious than their male counterparts (Adam, 2022; Adam et al., 2021). Females are known to be nature lovers and care for their surroundings (Desrochers et al., 2019; Sharma & Gupta, 2020). In this regard, it is anticipated that females will differ from males in their evaluation of the consequences of SUP waste and for that matter their choice of policy alternative to deal with SUP waste. Specifically, females are inclined to stricter environmental policies due to their love and care for the environment (Fredriksson & Wang, 2011). Females tend to favour policies that will help to protect the environment and thus are likely to support complete ban on SUP products (Fredriksson & Wang, 2011; Mavisakalyan & Tarverdi, 2019). On the other hand, males are noted to be easy going in relation to environmental crises such as SUP marine plastic pollution (Ramstetter & Habersack, 2020). Males prefer to adopt gradual and incremental policies that are geared at protecting the environment (Ramstetter & Habersack, 2020) hence may favour policies such as taxes, levies, public education or even partial bans. With regards to age, young people are more radical in their approaches and are generally impatient to see change (Prayag et al., 2022). This is especially the case with millennials and GenZs as they prefer immediate result on issues that are of concern to them (Gray et al., 2019; Prayag et al., 2022). Therefore, younger people may prefer environmental policies that are associated with immediate results such as taxes/levies and bans. Meanwhile, older people will prefer a more cautionary approach that is not sudden and thus may be inclined to public outreach.

Further, educational attainment can be linked to preference for policy alternative on SUPs. Formal education exposes individuals to a wide range of environmental issues including different perspectives on the causes and consequences of environmental problems such as SUP waste (Adam, 2022). Generally, the higher the level of education, the more and sustained the exposure to different perspectives on environmental issues (Adam, 2022; Dolnicar & Grün, 2009). Therefore, the opinions of individuals with high levels of education regarding policy solutions on SUPs will differ from those with lower levels of formal education as well as those without formal education (Adam et al., 2021). Specifically, the awareness of the consequences of SUP marine plastic pollution are minimal amongst people who are less educated and even worse amongst those who are not educated compared to those who are well educated (Adam et al., 2021). Another important variable is income level of residents. High income earners are generally less concerned about the payment of money to offset for their contribution to environmental problems (Li & Chen, 2018; Teoh & Gaur, 2019). As evidenced in the literature, rich people including nations prefer to pay for the environmental problems they cause than to be held legally liable (Teoh & Gaur, 2019). Consequently, high income earners are inclined to the imposition of taxes/levies than bans since they can easily pay the taxes/levies (Li & Chen, 2018; Teoh & Gaur, 2019). Further, people who feel a sense of responsibility for their actions on the environment tend to be conscious in their behaviour in relation to the environment (Adam, 2022; Adam et al., 2021). Such people do whatever they can to protect the environment (Adam et al., 2021). Those who feel a sense of responsibility prefer measures that will completely rid the environment of its menace and thus are inclined to stricter measures such as laws in the forms of bans on the sources of the environmental problems (Adam, 2022; Adam et al., 2021). Alternatively, those who do not feel responsible for their actions on the environment are less concerned about any form of policy tool that may be introduced to deal with the problem.

Theoretical framework

The Rational Choice Theory is chosen as the theoretical framework of this study. The Rational Choice Theory is widely applied in social psychology to explain the reasons why individuals make the choices they do (Boudon, 2003; Herfeld, 2020). The theory explains that individuals are driven by self-interest in their decision making (Carson et al., 2020; Herfeld, 2020). According to the theory, the preference for a course or action is based on self-evaluation of interests and therefore people consider the choices that stand to provide them with the greatest benefits. People evaluate their options regarding an action and make the choice they believe will serve their best interest. Therefore, a key assumption of the Rational Choice Theory is the fact that human beings are rational beings and therefore will always choose the option that will serve them best. Hence, choice is underpinned by the evaluation of costs, risks and benefits (Carson et al., 2020) and choices that appear irrational to one person may be rational to another person (Carson et al., 2020; Herfeld, 2020). In the context of this study, it is argued that the residents are rational beings and therefore will evaluate the various policy alternatives aimed at reducing SUP waste in terms of the costs and rewards of each policy. The cost could represent the inconvenience in having to abide by that policy when passed, loss of income thorough the taxes, levies they have to pay or even the potential fine or jail time associated with a policy as well as reduction in tourist numbers as a result of SUP waste. The rewards could be savings on SUPs, clean and hygienic environment, convenience in terms of how easy it may be to abide by a policy and enhancement of livelihood for those involved in tourism. Consequently, residents who perceive the rewards of a particular policy alternative to outweigh its costs may prefer that policy to others and vice versa.

Methodology

Two coastal destinations namely Accra and Cape Coast served as the study cities. Accra and Cape Coast are coastal destinations and represent the two most visited destinations in Ghana. Accra is the capital city of Ghana. It is the largest and most urbanised city in the country. Also, Accra is the most populated city in Ghana and has the most factories including SUP factories. Its vibrant nature as a coastal destination as well as booming night life contribute to the generation of SUP waste. Single-use plastic waste remains an ever-present sight in most parts of Accra especially in stormwater drains and at some of its beaches. Cape Coast is a heritage city that is dominated by tourism. It is famous for the Cape Coast Castle and its beaches even though a number of the beaches are polluted with SUP waste. The appeal of the city and its sandy beaches are being threatened by the increasing presence of SUP waste.

The data used in this paper is part of data collected for a large study on behavioural change communication on SUP pollution in Ghana. The data used in this paper came from two sections of the questionnaire used in the large study. One of the sections collected data on residents' preference for policy alternatives on SUPs and the other focused on the socio-demographic characteristics of the respondents. In terms of the policy alternatives, the respondents were provided with options based on the literature and asked to indicate the ones they would prefer. All the alternatives were presented to the respondents and with each option; a respondent was asked to indicate whether it is preferred or not preferred. This way, the respondents could indicate preference for multiple alternatives. The entire questionnaire was reviewed by two university lecturers with specialisation in tourism and one personnel from the Environmental Protection Agency in Cape Coast, Ghana. Also, these experts examined the face and content validity of the questionnaire items. Further, a pretesting of the questionnaire was undertaken in the town of Elmina and Kasoa because they have similar characteristics to Cape Coast and Accra respectively. Data were collected from the residents of Accra and Cape Coast at the same. The target population included residents of two randomly selected coastal suburbs with the highest intensity of visitation by tourists in Accra (Ga Mashie and Osu) and Cape Coast (Ola and Anaafo). Residents who were 18 years and above were included in the study. A systematic sampling procedure was used to reach the individual residents. In each of the four communities, the list of households was obtained from the Ghana Statistical Service. Based on this list, individual households were randomly selected using simple random sampling. The selected households were contacted and any member of the household who was present and a resident of the community for at least 5 years was included in the study. One person from each of the selected households was included in the study. In a situation where more than one member of a selected household expressed interest in the study, a simple random technique was used to select one. The use of the household list for the sampling was necessitated by the absence of a register of individuals living in each of the communities. The Kobo Toolbox was used as the data collection mask. It was deemed to be the most appropriate data collection platform because it functions online and offline and thus suited to the Ghanaian terrain. Overall, 2,345 questionnaires were completed by the respondents during the data collection period. Out of this number, 1283 of the questionnaires were administered in the two communities in Accra and 1,062 in the two communities in Cape Coast.

The binary logistic regression was used to predict the preference for each policy alternative amongst the residents. The suitability of the binary logistic regression was informed by the fact that the outcome variable (preference for SUP policy alternative) was measured in a dichotomous format – thus preferred and not preferred. Therefore, for each of the policy alternative, the cases of preference were recoded as one (1) while cases of non-preference were recoded as zero (0). Additionally, the independent variables were mostly categorial, further underscoring the suitability of the binary logistic regression since it accepts both categorical and continuous independent variables. Consistent with the four policy alternatives captured in the study, four binary logistic models were produced. The first model had taxes/levies as the outcome variable while the second model had bans as the outcome variable. The third model had public education as the outcome variable with the fourth model had subsidies on reusable alternatives as the outcome variable.

Findings

Profile of respondents

As shown in Table 1, a little over half of the respondents were males (50.2%) with the rest being females (49.8%). Also, 54.1% of the respondents were single and 38.1% were married. Regarding age, close to half of the respondents (45.9%) were within the age bracket of 21 to 30 years, followed by those in the age group of 31 to 40 years (31.1%). This suggest that most of the respondents are within their youth. In terms of educational attainment, 33.3% are basic education leavers with about half of them (45.1%) being senior high school leavers. Meanwhile, 18.6% have tertiary diploma or bachelor's degree and just 3% have postgraduate education. Regarding income, about one-third of the respondents earn less than the equivalent of US$90 per month and about half of them earn between US$90 to US$ 179 per month. Over half of the respondents live in households of one to five members (Table 1) with about one-third of them (32.5%) belonging to households constituted of six to ten members. A little over half of the sample (54.7%) resides in the city of Accra with the rest being residents of Cape Coast. A little over half of the respondents (51.7%) resides by the coast and the rest reside inland. However, majority of the respondents (84.6%) indicated that they were not aware of the consequences of marine plastic pollution with only 15.4% being aware of such consequences.

Table 1: Profile of the respondents

Socio-demographics	Frequency	Percent
Sex		
Male	1178	50.2
Female	1167	49.8
Marital status		
Unmarried	1451	61.9
Married	894	38.1
Age (years)		
≤20	185	7.9
21-30	1077	45.9
31-40	729	31.1
41-50	239	10.2
≥51	115	4.9
Educational attainment		
No formal education	537	22.9
Basic education	245	10.4
Senior High School	1057	45.1
Diploma/Undergraduate	435	18.6
Postgraduate	71	3.0
Monthly income (GHS)*		
≤500	679	29.0
501-1000	1190	50.7
1001-1500	243	10.4
1501-2000	138	5.9
2001+	95	4.1
Household size		
1-5	1448	61.7
6-10	761	32.5
11+	136	5.8
City (metropolis)		
Accra	1283	54.7
Cape Coast	1062	45.3
Type of community		
Coastal community	1213	51.7
Inland community	1132	48.3
Awareness of marine plastic pollution		
Aware	361	15.4
Not aware	1984	84.6

*exchange rate: 1 US$= 5.6 GHS

Preference for SUP policy alternative

The findings (Table 2) revealed that the most preferred policy alternative amongst the residents is the provision of subsidies on reusable alternatives to SUPs (88.9%) followed by public education on negative consequences of SUPs (82.8%). The least preferred policy tools amongst the residents are taxes/levies (17.3%) and bans (38.2%).

Table 2: Preference for policy alternatives (n=2,345)

Policy alternative	Preferred	Not preferred
Taxes/levies	17.3	82.7
Bans	38.2	61.8
Public education	82.8	17.1
Subsidies on reusable alternatives	88.9	11.1

Determinants of preference for SUP policy alternative

All the four models were good models as evidenced by the model fit indices for the model on taxes/levies: Omnibus Tests of Model Coefficients ($X^2_{(23)}$=154.52; P<0.010) and the Hosmer and Lemeshow Test ($X^2_{(6)}$=17.37; P>0.050), bans: Omnibus Tests of Model Coefficients ($X^2_{(25)}$=171.64; P<0.010) and the Hosmer and Lemeshow Test ($X^2_{(6)}$=18.67; P>0.050), public education: Omnibus Tests of Model Coefficients ($X^2_{(24)}$=189.72; P<0.010) and the Hosmer and Lemeshow Test ($X^2_{(86}$=18.99; P>0.050), and subsidies on reusable alternatives: Omnibus Tests of Model Coefficients ($X^2_{(27)}$=167.33; P<0.010) and the Hosmer and Lemeshow Test ($X^2_{(6)}$=18.69; P>0.050). The findings revealed that formal education, and monthly income were significant predictors of preference for taxes/levies as policy tool for reducing SUPs (Table 3). On formal educational attainment, it was revealed that residents with postgraduate qualification have the highest likelihood (4.50) of favouring taxes/levies as a policy tool for dealing with SUPs compared to those without formal education. Similarly, residents with diploma or undergraduate

degree were 2.22 times likely to prefer taxes/levies as a policy alternative to dealing with SUPs waste than those without formal education. Regarding monthly income, the finding showed that residents who earned more than GHS2000 have the highest likelihood of supporting the imposition of taxes/levies on SUPs compared to those who earned GHS500 or less in a month.

Table 3: Determinants of policy preference (taxes and bans)

Determinants	Taxes/levies					Bans				
	Odds	Std error	Z-stat	95% confidence interval		Odds	Std error	z-stat	95% confidence interval	
Sex										
Male (RC)										
Female	1.38	0.57	1.08	0.85	3.35	0.79	0.58	1.34	0.61	3.11
Marital status										
Unmarried	0.98	0.39	1.01	0.67	1.54	0.89	0.52	1.18	0.72	2.63
Married (RC)										
Age (years)										
≤20	1.14	1.02	0.87	0.01	4.77	0.89	0.78	1.33	0.87	3.13
21-30	1.39	1.05	0.76	0.67	3.87	0.93	1.02	1.39	0.86	4.21
31-40	1.03	0.89	1.12	0.88	3.56	1.05	0.98	1.19	0.93	5.01
41-50	1.21	0.67	1.17	0.67	3.67	1.12	1.04	1.10	0.81	4.31
≥51 (RC)										
Educational attainment										
No formal education (RC)										
Basic education	1.11	1.05	1.11	0.81	3.12	1.31	1.20	1.39	0.60	3.87
Senior High School	1.09	1.21	1.15	0.65	3.29	1.19	1.31	1.24	0.93	3.38
Diploma/Undergraduate	2.22*	0.83	2.95	0.89	3.06	1.03	0.87	1.20	0.81	4.76
Postgraduate	4.50**	1.24	5.91	2.35	8.36	2.63*	1.19	2.16	2.31	8.31
Monthly income (GHS)										
≤500 (RC)	1.17	0.92	1.23	0.52	3.21	1.01	0.76	1.33	0.51	3.33
501-1000	1.08	1.02	1.14	0.67	3.82	1.21	1.12	1.43	0.87	2.96
1001-1500	1.19	1.21	1.32	0.83	4.02	1.13	1.98	1.23	0.48	2.52
1501-2000	1.32	1.32	1.45	0.99	3.21	1.21	1.17	1.36	0.67	2.81
2001+	5.78**	1.42	4.21	3.42	9.83	1.31	0.98	1.42	0.83	3.22
Household size										
1-5 (RC)										
6-10	1.21	0.58	1.33	0.56	3.29	1.12	0.66	1.31	0.76	4.21
11+	1.19	0.87	1.30	0.47	2.68	1.17	0.82	1.15	0.56	3.67
City (metropolis)										
Accra	1.28	1.22	1.33	0.84	4.28	1.42	1.32	1.30	0.86	3.98
Cape Coast (RC)										
Type of community										
Coastal community	1.12	0.45	1.27	0.76	3.87	2.54*	0.88	2.41	0.74	4.32
Inland community (RC)										
Awareness of marine plastic pollution										
Aware	1.44	0.59	1.53	0.53	3.71	3.27**	0.89	3.73	0.89	3.38
Not aware (RC)										
Constant	1.26	0.20	2.90	0.56	2.92	1.46*	0.51	3.14	0.67	3.72

** P≤0.010; *P≤0.050

Further, the findings revealed that formal educational attainment, type of community and awareness of the negative consequences of SUPs significantly influenced the preference for bans as a policy tool for managing SUPs. The results show that residents with postgraduate qualification were 2.63 times likely to prefer ban on SUPs than those with no formal education. Residents who reside in coastal communities are 2.54 times more likely to prefer ban on SUPs than those who reside in inland communities. Also, residents who are aware of the negative consequences of SUPs were 3.27 times inclined to support ban than those who are not aware of the negative consequences of SUPs in the marine environment. Further, the results show that formal educational attainment and awareness of the negative consequences of marine plastic pollution significantly influenced preference for public education as a policy solution to SUPs waste (Table 4).

Table 4: Determinants of policy preference (public education and subsidies)

Determinants	Public education					Subsidies on reusables				
	Odds	Std error	Z-stat	95% confidence interval		Odds	Std error	z-stat	95% confidence interval	
Sex										
Male (RC)										
Female	1.29	0.68	1.21	0.76	4.03	1.03	0.89	1.04	0.83	3.83
Marital status										
Unmarried	1.22	0.82	1.23	0.73	4.65	0.89	0.52	1.28	0.72	2.63
Married (RC)										
Age (years)										
≤20	1.53	0.85	1.30	0.81	3.88	1.10	1.03	1.31	0.78	3.76
21-30	1.22	1.21	1.23	0.56	4.01	1.28	0.87	1.02	0.52	3.29
31-40	1.09	1.06	1.13	0.73	3.48	1.19	1.12	1.14	0.99	4.58
41-50	1.03	1.10	1.26	0.66	3.39	1.28	1.08	1.26	0.97	4.53
≥51 (RC)										
Educational attainment										
No formal education (RC)										
Basic education	3.51**	1.22	4.91	1.71	8.21	2.73*	1.54	3.01	1.32	6.32
Senior High School	1.32	0.52	1.34	0.88	2.69	1.03	1.17	1.41	0.81	3.21
Diploma/Undergraduate	1.21	1.02	1.31	0.59	3.56	1.41	1.11	1.40	0.71	4.77
Postgraduate	1.03	1.25	1.30	0.61	3.08	1.32	0.98	1.32	0.41	3.89
Monthly income (GHS)*										
≤500 (RC)										
501-1000	1.31	0.78	1.39	0.99	3.52	2.42*	0.47	2.87	0.67	3.65
1001-1500	1.29	0.49	1.28	0.56	3.44	2.31*	0.63	2.45	0.52	3.46
1501-2000	1.37	0.53	1.40	0.68	3.67	1.31	0.86	1.42	0.88	4.89
2001+	1.43	0.85	1.49	0.82	3.87	1.16	0.78	1.31	0.72	3.54
Household size										
1-5 (RC)										
6-10	1.21	0.78	1.27	0.76	4.51	1.19	0.88	1.37	0.92	4.16
11+	1.23	0.81	1.32	0.88	3.78	1.21	0.83	1.29	0.82	3.78
City (metropolis)										
Accra	1.02	0.94	1.22	0.83	3.76	1.12	1.01	1.25	0.87	4.01
Cape Coast (RC)										
Type of community										
Coastal community	1.11	1.04	1.20	1.01	4.82	1.19	0.84	1.03	0.97	4.21
Inland community (RC)										
Awareness of marine plastic pollution										
Aware	0.91	0.96	3.01*	0.57	3.21	0.95	1.02	1.21	0.83	3.98
Not aware (RC)										
Constant	1.86	0.10	2.59*	1.23	4.89	1.65	0.98	3.02*	1.07	5.87

** P≤0.010; *P≤0.050

In specific terms, basic education leavers were more likely (3.51 times) to prefer publication education than those without formal education. Residents who are aware of the negative consequences of SUPs were less likely (0.91 times) to prefer public

education on SUPs compared to those who are unaware. Also, the findings revealed that monthly earnings significantly influenced the preference of subsidies on reusable alternatives as a policy option for managing SUPs. Specifically, residents who earn between GHS 5001 to GHS1,000 a month were 2.42 times more likely to favour subsidies on reusable alternatives compared with those who earn less than GHS500 just as those who earn between GHS1,001 to GHS1,500.

Discussion

This study enriches the literature as it focuses on residents' preference for different policy alternatives for managing SUPs in coastal destinations. Previous studies have mostly focused on documenting the various policies that have been used to reduce SUPs (Adam et al., 2020; Bezerra et al., 2021; Clayton et al., 2021) and even so were not focused on tourism destinations. Also, policies aimed at reducing SUPs have mostly been introduced without inputs from the populace and thus such policies have mostly been met with resistance by the populace thereby making their implementation difficult and less successful, especially in Africa (Adam et al., 2020; Bezerra et al., 2021; Clayton et al., 2021). Even so, previous studies have failed to analyse residents' preference for different policy alternatives in managing SUPs. In this regard, this study adds to the literature on SUPs and marine plastic pollution by delving into residents' preference for policy alternatives in dealing with SUPs as well as the determinants of residents' preference for policy alternatives for managing SUPs. The findings of this study provide unique insights on which policy alternatives are preferred by residents and the reasons underlying the preference for each policy alternative. Also, the findings show the different shades of background identities of the residents that influence their preference for different policy tools and thus provide policy makers with insights on which policy tools to use in managing marine plastic pollution. In the context of the Rational Choice Theory that underpins this study, it is argued that the residents involved in this study are rational beings and thus evaluate the multiple policy alternatives and settle for policy options that stand to provide them with the greatest benefits and minimal costs (Carson et al., 2020; Herfeld, 2020). As revealed in the findings, the preference for one policy alternative over the other is based on the residents' assessment of their circumstances including how much they earn on monthly basis, formal educational attainment, age, sex, marital status and awareness of the negative consequences of SUPs waste. Therefore, different socio-demographic characteristics uniquely shape the rational decision making of the residents. For instance, for low-income earners, their rational evaluation of the additional financial burden to be imposed by taxes/levies on SUPs underpins their dislike for this policy while the high-income earners are in favour of it.

The findings further revealed that two policy alternatives on SUPs are popular amongst the residents namely provision of subsidies on reusable alternatives to SUPs and public education on the negative consequences of SUPs. On the provision of subsidies on reusable alternatives to SUPs, while there are locally available reusable alternatives in Ghana, they are relatively expensive in terms of their price in comparison to SUPs that are given out for free (Adam, 2022; Adam et al., 2021). This has made the use of local reusable alternatives unattractive and therefore less patronised. As a result, local reusable alternatives are in short supply as they are not produced in large quantities due to the low patronage. Regarding public education on the negative consequences of SUPs, the level of awareness on the negative consequences of SUPs amongst most Ghanaians is low (Adam, 2022; Adam et al., 2021). Most Ghanaians are unaware of the negative consequences of SUPs especially in the marine environment (Adam, 2022; Adam et al., 2021). In most cases, SUP waste is perceived to be like any type of solid waste and therefore handled just like any other solid waste without knowing the means and mechanisms through which they are transported into the ocean environment (Adam, 2022). Therefore, the desire to learn and understand the negative consequences of marine plastic pollution amongst the residents is based on the low awareness on the negative consequences of SUPs in the marine environment. Public education programmes will therefore enhance their awareness on the negative consequences of SUPs in the marine environment and may consequently trigger behaviour change towards reducing the consumption of SUPs or improve their acceptance or compliance with other policy interventions including bans. Formal educational attainment was found to be important in determining support for taxes/levies as a tool for managing SUPs. Postgraduate qualification and bachelor's/diploma holders are more inclined to taxes/levies as a policy tool for curbing SUP marine plastic pollution than those with no formal education. Education exposes individuals to different pathways of dealing with environmental problems including issues related to the importance of paying for waste management (Uralovich et al., 2023). Therefore, the preference of educated residents for taxes/levies is an indication of the role of education in exposing the residents to the need to make SUPs expensive and thus make it unattractive for patronage. Also, highly educated people are mostly high-income earners (Dong, Zhang, Zhang, & Bi, 2023) and in the case of Ghana constitute part of the middle class. People who graduate from universities are better placed to get jobs and thus earn salaries that put them in the middle-class of the country hence can afford to pay levies/taxes.

Additionally, monthly income was found to significantly determine the likelihood of preference for taxes/levies with high income earners being more inclined to taxes/levies than low-income earners. High income earners make enough to meet their needs and able to meet other obligations including tax commitments (Jacques, 2023). Also, high income earners are in a better financial position to afford the payment of additional taxes/levies on SUP products unlike low-income earners who barely earn enough to meet their needs and thus would feel the financial burden of taxes/levies on SUP products (Jacques, 2023). Therefore, the preference for taxes/levies by high income earners is based on the fact that such taxes/levies will not constitute a significant financial burden to them as compared to low-income earners who are highly sensitive to taxes/levies. Regarding preference for ban on SUPs, the findings indicate three significant predictors including higher educational qualification (postgraduate degree), residence in a coastal community and awareness on the negative consequences of SUPs. Residents with higher educational qualifications (postgraduate degree) have higher likelihood of preferring ban on SUPs than those without formal education. Formal education leads to enlightenment on the scope of the destruction caused by SUPs particularly in the

marine environment (Kilag et al., 2023). People who are highly educated are exposed to the full scale of the threats of SUPs (Kilag et al., 2023). Also, highly educated people tend to have a better appreciation and trust in laws as pathway to ensuring social order than those who are not educated (Adam, 2022; Adam et al., 2021). Regarding people who reside in coastal suburbs and their preference for ban on SUPs, residence of coastal communities are much privy to the detrimental consequences of SUPs in the marine environment, especially in Ghana (Adam, 2022; Adam et al., 2021). Even though much of SUP waste are generated inland, the ocean and its environment including the beaches serve as sinks for SUP waste (Xanthos & Walker, 2017). About 80% of land generated SUP waste are transported through storm water drains and inland water bodies into the ocean environment (Adam, 2022). In the case of Ghana, fishermen and residents of coastal communities constantly complaint about how SUP waste interfere with their daily lives including tourism activities (Adam et al., 2020).

Awareness of the negative consequences of SUP waste is an important tool in dealing the problem of SUP waste. Awareness of the negative consequences of SUP waste informs and empowers people about the detrimental effects of their actions on the environment (Herweyers et al., 2023). Therefore, people who are aware of the negative consequences of SUP waste will be open to more stringent and immediate solutions to the problem of SUP waste hence their inclination towards ban. Legislative bans are noted to be one of the tools with swifter results in terms of reducing the consumption of SUPs and its associated waste although its sustainability has been questioned especially in the context of African countries (Adam et al., 2020). Nonetheless, people who are informed about the negative consequences of SUPs perceive ban as viable policy alternative to dealing with the environmental challenges. Additional evidence from the findings shows that the preference for public education campaigns on SUPs and its consequences is underpinned by the formal educational attainment of the residents. Residents with lower levels of formal education such as basic school education preferred public educational campaigns on SUPs compared to those that highly educated. Formal education exposes people to the need for environmental conservation as well as good hygienic practices including proper handling of waste (Dong et al., 2023; Kilag et al., 2023). Also, formal education enlightens people on the negative consequences of littering including SUP waste on the environment (Uralovich et al., 2023). Therefore, people who have attained higher levels of formal education are mostly enlightened on the negative consequences of SUPs waste compared to those with low levels of formal education. For this reason, residents with low levels of education are likely to yearn for public education on the consequences of SUPs to fill the knowledge and awareness gap they possess.

Further, the findings revealed that residents who are aware of the negative consequences of SUPs have lower tendency of preferring public education. Amongst people who are aware of the negative consequences of SUPs, they have appreciable knowledge on the detrimental effects of SUPs and therefore may not desire publication education campaigns on the same subject (Kilag et al., 2023; Sujitha et al., 2019). Regarding preference for subsidies on reusable alternatives as policy tool for managing SUPs, the revelation shows that lower income earners are more inclined to subsidies than higher income earners. Reusable alternatives are few on the market and are expensive than SUPs (Adam et al., 2021; Bezerra et al., 2021). Therefore, most reusable alternatives are sometimes priced beyond the normal shopping budget of most Ghanaians especially the low-income earners (Adam et al., 2021). Meanwhile, SUPs including carrier plastic bags are offered for free to shoppers in Ghana (Adam et al., 2021). For these reasons, low-income earners perceive reusable alternatives as a drain on their income hence their preference for subsidies on them so that they can afford them.

Conclusion and implications

Based on the findings of the study, the following conclusions are drawn. The study concludes that there are two most preferred policy tools for managing SUPs amongst the residents. These are subsidies on reusable alternatives and public education campaigns on the negative consequences of SUPs. These two most preferred policy options are not amongst the popular tools that are implemented in Ghana and across Africa. This points to gap between the policy preference amongst residents and that of policy makers in managing SUPs. Further, it is concluded that preference for specific policy alternative is underpinned by different background characteristics of the residents. As demonstrated in the study, specific background variables uniquely influence the preference for each of the policy alternatives on SUPs. This suggests that the residents are heterogenous in terms of their preference for policy options regarding SUPs and not homogenous as have largely been approached by policy makers. Also, the study concludes that preference for taxes/levies on SUPs as a policy alternative for managing SUPs is based on age, formal educational attainment, and monthly income. These three variables influence the preference for the imposition of taxes/levies on SUPs as a means of reducing the consumption of SUPs and the associated waste. However, preference for legislative bans is determined by sex, marital status and formal educational attainment of the residents while the preference for public education campaigns on the negative consequences of SUPs is determined by formal educational attainment and awareness on the negative consequences of SUPs. Preference for reusable alternatives on SUPs is influenced by sex, marital status, and monthly income of the residents.

The findings of the study have several implications for the formulation and implementation of policies aimed at reducing SUP marine plastic pollution. The two most preferred policies have hardly been considered by policy makers mainly because the inputs of the residents are not taken into consideration in policy formulation. This finding implies that policy makers including the Environmental Protection Agency, Ghana Tourism Authority, and Ministry of Environment, Science and Technology should consider the two most preferred policies in future policy formulation on SUP waste management in coastal tourism destinations. Policy must be contextual and consider the specific conditions of the jurisdictions they are meant for hence the need for future policies to take into account the unique preference of the residents instead following the global trend. The findings further implies that there is no one size fit all policy approach to managing marine plastic pollution. This study

provides evidence that preference for different policy alternatives is based on socio-demographic characteristics. Therefore, there is the need for policies to be targeted instead of assuming that the population is homogenous and thus a single policy will work for everyone. Different policies should be tailored to people of different backgrounds. This will ensure that the complexity regarding the use of SUPs will be reflected in the range of policy tools and thus appeal to different segments of the population. The findings of this study further imply that there is the need for future policy formulation and implementation aimed at managing marine plastic pollution in coastal destinations to be consultative where the populace are consulted instead of the current situation where few elites participate in the policy formulation process (Adam et al., 2020). This is important to get the buy-ins of the residents and further ensure smooth implementation of such policies since such approach will take into account the views and concerns of the people. When the preferences of the residents are taken into consideration, the resultant policies will be welcomed by them, reduce resistance and implementation challenges and thereby leading to the effectiveness of such policies in reducing SUP marine plastic pollution.

Limitations and future research

Despite the vigorous scientific procedure employed in carrying out this study, there are a number of limitations that give opportunities to future research. Preference for environmental policy is influenced by a number of contextual factors including environmental, social, cultural, economic, political and technological factors (Varkey et al., 2021). However, this study did not assess the influence of these contextual factors on the preference of policy alternatives amongst the residents. Therefore, future studies could explore the influence of contextual factors on residents' preference for policy alternatives on SUPs. This will expand on the frontiers of knowledge on policy alternatives for managing SUPs and at the same time provide additional insights to enhance policy making on SUPs. Related to the above, the preference for policy alternatives for managing SUPs are based on the context the individual finds him/herself. Therefore, the Ghanian context would have largely influenced the policy preferences of the residents as recorded in this study. Consequently, the findings of this study may not necessarily apply in other jurisdictions with completely different contexts including legal, social, cultural and environmental contexts. Hence, there is the need for future studies to focus on other settings with different contexts to validate and extend the findings of this study. Future studies that are based on different contexts such as Western Europe or USA or Canada could help to extend knowledge on the subject. Further, this study focused on residents who are living in coastal destinations and not hinterlands, while most plastic waste end-up in the ocean, they are mostly generated inland (Xanthos & Walker, 2017). However, the consequences of SUP waste are much visible in coastal settlements were the residents have regular interaction with the ocean and its environment than in hinterland and this could lead to differences in the preference for policy options. Nonetheless, this study did not capture the preferences of people living in the hinterland. Consequently, future studies can focus on residents living in the hinterland and even in landlock countries to allow for comparison with the findings of this study.

Reference

Adam, I. (2022). Segments of Tourists' Behavioral Responses to Single-use Plastic Waste at Beaches. *Tourism in Marine Environments,* 17(1-2), 85-101. https://doi.org/10.3727/154427322X16548495694333

Adam, I. (2023). Rational and Moral Antecedents of Tourists' Intention to Use Reusable Alternatives to Single-use Plastics. *Journal of Travel Research,* 62(5), 949-968. https://doi.org/10.1177/00472875221105860

Adam, I., Walker, T. R., Bezerra, J. C. & Clayton, A. (2020). Policies to Reduce Single-use Plastic Marine Pollution in West Africa. *Marine Policy,* 116, 103928. https://doi.org/10.1016/j.marpol.2020.103928

Adam, I., Walker, T. R., Clayton, C. A. & Bezerra, J. C. (2021). Attitudinal and Behavioural Segments on Single-use Slastics in Ghana: Implications for Reducing Marine Plastic Pollution. *Environmental Challenges,* 4, 100185. https://doi.org/10.1016/j.envc.2021.100185

Baxter, L., Lucas, Z. & Walker, T. R. (2022). Evaluating Canada's Single-use Plastic Mitigation Policies Via Brand Audit and Beach Cleanup data to reduce plastic pollution. *Marine Pollution Bulletin,* 176, 113460. https://doi.org/10.1016/j.marpolbul.2022.113460

Bezerra, J. C., Walker, T. R., Clayton, C. A. & Adam, I. (2021). Single-use Plastic Bag Policies in the Southern African Development Community. *Environmental Challenges,* 3, 100029. https://doi.org/10.1016/j.envc.2021.100029

Borrelle, S. B., Rochman, C. M., Liboiron, M., Bond, A. L., Lusher, A., Bradshaw, H. & Provencher, J. F. (2017). Why We Need an International Agreement on Marine Plastic Pollution. *Proceedings of the National Academy of Sciences,* 114(38), 9994-9997. https://doi.org/10.1073/pnas.1714450114

Boudon, R. (2003). Beyond Rational Choice Theory. *Annual Review of Sociology,* 29(1), 1-21. https://doi.org/10.1146/annurev.soc.29.010202.100213

Carson, J. V., Dugan, L. & Yang, S.-M. (2020). A Comprehensive Application of Rational Choice Theory: How Costs Imposed Bby, and Benefits Derived From, the US Federal Government Affect Incidents Perpetrated by the Radical Eco-Movement. *Journal of Quantitative Criminology,* 36, 701-724. https://doi.org/10.1007/s10940-019-09427-8

Chen, Y., Awasthi, A. K., Wei, F., Tan, Q. & Li, J. (2021). Single-use Plastics: Production, Usage, Disposal, and Adverse Impacts. *Science of the Total Environment,* 752, 141772. https://doi.org/10.1016/j.scitotenv.2020.141772

Clayton, C. A., Walker, T. R., Bezerra, J. C. & Adam, I. (2021). Policy Responses to Reduce Single-Use Plastic Marine Pollution in the Caribbean. *Marine Pollution Bulletin,* 162, 111833. https://doi.org/10.1016/j.marpolbul.2020.111833

Desrochers, J. E., Albert, G., Milfont, T. L., Kelly, B. & Arnocky, S. (2019). Does Personality Mediate the Relationship Between Sex and Environmentalism? *Personality and individual differences,* 147, 204-213. https://doi.org/10.1016/j.paid.2019.04.026

Dey, A., Dhumal, C. V., Sengupta, P., Kumar, A., Pramanik, N. K. & Alam, T. (2021). Challenges and Possible Solutions to Mitigate the Problems of Single-Use Plastics Used for Packaging Food Items: A Review. *Journal of Food Science and Technology,* 58(9), 3251-3269. https://doi.org/10.1007/s13197-020-04885-6

Dikgang, J., Leiman, A., & Visser, M. (2012). Elasticity of Demand, Price and Time: Lessons From South Africa's Plastic-Bag Levy. *Applied Economics,* 44(26), 3339-3342. https://doi.org/10.1080/00036846.2011.572859

Dikgang, J., Ravat, Z. & Mahabir, J. (2022). Influences of Various Pricing Points: An Experimental Study of Plastic Bags in Johannesburg, South Africa. *Journal of Applied Economics,* 25(1), 1200-1218. https://doi.org/10.1080/15140326.2022.2124085

Dolnicar, S. & Grün, B. (2009). Environmentally Friendly Behavior: Can Heterogeneity Among Individuals and Contexts/Environments be Harvested for Improved Sustainable Management? *Environment and behavior,* 41(5), 693-714. https://doi.org/10.1177/0013916508319448

Dong, X., Zhang, X., Zhang, C. & Bi, C. (2023). Building Sustainability Education for Green Recovery in the Energy Resource Sector: A Cross-Country Analysis. *Resources Policy,* 81, 103385. https://doi.org/10.1016/j.resourpol.2023.103385

Fredriksson, P. G. & Wang, L. (2011). Sex and Environmental Policy in the US House of Representatives. *Economics Letters*, 113(3), 228-230. https://doi.org/10.1016/j.econlet.2011.07.019

Gray, S. G., Raimi, K. T., Wilson, R., & Árvai, J. (2019). Will Millennials Save The World? The Effect of Age and Generational Differences on Environmental Concern. *Journal of Environmental Management*, 242, 394-402. https://doi.org/10.1016/j.jenvman.2019.04.071

Herfeld, C. (2020). The diversity of rational choice theory: A review note. *Topoi*, *39*(2), 329-347. https://doi.org/10.1007/s11245-018-9588-7

Herweyers, L., Moons, I., Barbarossa, C., De Pelsmacker, P. & Du Bois, E. (2023). Understanding Who Avoids Single-Use Plastics and Why: A Cross-Country Mixed-Method Study. *Journal of Cleaner Production*, *414*, 137685. https://doi.org/10.1016/j.jclepro.2023.137685

Jacques, O. (2023). Explaining Willingness to Pay Taxes: The Role of Income, Education, Ideology. *Journal of European Social Policy*, 33(3), 267-284. https://doi.org/10.1177/09589287231164341

Khasawneh, N., Bader, M. & Hasan, A. A.-T. (2025). Strategies of Reducing Single-Use Plastics: A Plastic-Reducing Behavior Model (PRBM) Predicting Single-Use Plastic-Reduction Behaviors Among Coastal Tourists. *Journal of Hospitality and Tourism Insights*. https://doi.org/10.1108/JHTI-09-2024-0970

Kiessling, T., Hinzmann, M., Mederake, L., Dittmann, S., Brennecke, D., Böhm-Beck, M., Knickmeier, K. & Thiel, M. (2023). What Potential Does the EU Single-Use Plastics Directive Have for Reducing Plastic Pollution at Coastlines and Riversides? An Evaluation Based on Citizen Science Data. *Waste Management*, *164*, 106-118. https://doi.org/10.1016/j.wasman.2023.03.042

Kilag, O. K. T., Taboada, A. R. G., Zamora, M. B., Rabi, J. I. I. A., Calzada, J. R. D. & Manire, E. A. (2023). Exploring Effective Environmental Education Practices to Enhance Environmental Awareness and Education: A Navigational Study. *International Journal of Formal Education*, 2(6), 14-27.

Krelling, A. P., Souza, M. M., Williams, A. T. & Turra, A. (2017). Transboundary Movement of Marine Litter in an Estuarine Gradient: Evaluating Sources and Sinks Using Hydrodynamic Modelling and Ground Truthing Estimates. *Marine Pollution Bulletin*, 119(1), 48-63. https://doi.org/10.1016/j.marpolbul.2017.03.034

Krelling, A. P. & Turra, A. (2019). Influence of Oceanographic and Meteorological Events on the Quantity and Quality of Marine Debris Along an Estuarine Gradient. *Marine Pollution Bulletin*, 139, 282-298. https://doi.org/10.1016/j.marpolbul.2018.12.049

Leissner, S. & Ryan-Fogarty, Y. (2019). Challenges and Opportunities for Reduction of Single Use Plastics in Healthcare: A Case Study of Single Use Infant Formula Bottles in Two Irish Maternity Hospitals. *Resources, Conservation and Recycling*, 151, 104462. https://doi.org/10.1016/j.resconrec.2019.104462

Li, W. & Chen, N. (2018). Absolute Income, Relative Income and Environmental Concern: Evidence from Different Regions in China. *Journal of Cleaner Production*, 187, 9-17. https://doi.org/10.1016/j.jclepro.2018.03.171

Mavisakalyan, A. & Tarverdi, Y. (2019). Gender and Climate Change: Do Female Parliamentarians Make Difference? *European Journal of Political Economy*, 56, 151-164. https://doi.org/10.1016/j.ejpoleco.2018.08.001

Mogomotsi, P. K., Mogomotsi, G. E. & Phonchi, N. D. (2019). Plastic Bag Usage in a Taxed Environment: Investigation on the Deterrent Nature of Plastic Levy in Maun, Botswana. *Waste Management & Research*, 37(1), 20-25. https://doi.org/10.1177/0734242X18801495

OECD. (2022). *Global Plastics Outlook: Policy Scenarios to 2060*. Retrieved from Paris

Prayag, G., Aquino, R. S., Hall, C. M., Chen, N. & Fieger, P. (2022). Is Gen Z Really That Different? Environmental Attitudes, Travel Behaviours and Sustainability Practices of International Tourists to Canterbury, New Zealand. *Journal of Sustainable Tourism*, 1-22. https://doi.org/10.1080/09669582.2022.2131795

Raab, K., Wagner, R., Ertz, M. & Salem, M. (2023). When Marketing Discourages Consumption: Demarketing of Single-Use Plastics for City Tourism in Ottawa, Canada. *Journal of Ecotourism*, 22(3), 375-405. https://doi.org/10.1080/14724049.2022.2028794

Ramstetter, L. & Habersack, F. (2020). Do Women Make a Difference? Analysing Environmental Attitudes and Actions of Members of the European Parliament. *Environmental Politics*, 29(6), 1063-1084. https://doi.org/10.1080/09644016.2019.1609156

Rodríguez, Y., Silva, M. A., Pham, C. K. & Duncan, E. M. (2023). Cetaceans Playing with Single-Use Plastics (SUPs): A Widespread Interaction with Likely Severe Impacts. *Marine Pollution Bulletin*, 194, 115428. https://doi.org/10.1016/j.marpolbul.2023.115428

Schnurr, R. E., Alboiu, V., Chaudhary, M., Corbett, R. A., Quanz, M. E., Sankar, K., Srain, H.S., Thavarajah, V., Xanathos, D. & Walker, T. R. (2018). Reducing marine Pollution from Single-Use Plastics (SUPs): A Review. *Marine Pollution Bulletin, 137*, 157-171. https://doi.org/10.1016/j.marpolbul.2018.10.001

Sharma, R. & Gupta, A. (2020). Pro-environmental Behaviour Among Tourists Visiting National Parks: Application of Value-Belief-Norm Theory in an Emerging Economy Context. *Asia Pacific Journal of Tourism Research*, 25(8), 829-840. https://doi.org/10.1080/10941665.2020.1774784

Sujitha, P., Swetha, N. & Gopalakrishnan, S. (2019). Awareness, Acceptance and Practice of Plastic Ban Legislation Among Residents of an Urban Area in Kanchipuram District, Tamil Nadu: A Cross-Sectional Study. *International Journal of Community Medicine and Public Health, 7*(1), 256. https://doi.org/10.18203/2394-6040.ijcmph20195863

Sun, Y., Liu, S., Wang, P., Jian, X., Liao, X. & Chen, W.-Q. (2022). China's Roadmap to Plastic Waste Management and Associated Economic Costs. *Journal of Environmental Management*, 309, 114686. DOI: 10.1016/j.jenvman.2022.114686

Tan, W., Cui, D. & Xi, B. (2021). Moving Policy and Regulation Forward for Single-Use Plastic Alternatives. *Frontiers of Environmental Science & Engineering*, 15, 1-4. https://doi.org/10.1007/s11783-021-1423-5

Teoh, C. W. & Gaur, S. S. (2019). Environmental Concern: An Issue for Poor or Rich. *Management of Environmental Quality: An International Journal, 30*(1), 227-242. https://doi.org/10.1108/MEQ-02-2018-0046

Uralovich, K. S., Toshmamatovich, T. U., Kubayevich, K. F., Sapaev, I., Saylaubaevna, S. S., Beknazarova, Z. & Khurramov, A. (2023). A Primary Factor in Sustainable Development and Environmental Sustainability Is Environmental Education. *Caspian Journal of Environmental Sciences, 21*(4), 965-975. 10.22124/CJES.2023.7155

Usanga, I. N., Ikeagwuani, C. C. & Ambrose, E. E. (2023). Understanding the Effects of Plastic Fines as a Bitumen Modifier on the Performance Properties of Hot Mix Asphalt. *Engineering Proceedings*, 56(1), 55. https://doi.org/10.3390/ASEC2023-15394

Varkey, P. S., Walker, T. R. & Saunders, S. J. (2021). Identifying Barriers to Reducing Single-Use Plastic Use in a Coastal Metropolitan City in Canada. *Ocean & Coastal Management*, 210, 105663. https://doi.org/10.1016/j.ocecoaman.2021.105663

Walker, T. R. (2018). Drowning in Debris: Solutions for a Global Pervasive Marine Pollution Problem. *Marine Pollution Bulletin*, 126(338). https://doi.org/10.1016/j.marpolbul.2017.11.039

Walker, T. R., McGuinty, E., Charlebois, S. & Music, J. (2021). Single-use Plastic Packaging in the Canadian Food Industry: Consumer Behavior and Perceptions. *Humanities and Social Sciences Communications, 8*(1), 1-11. https://doi.org/10.1057/s41599-021-00747-4

Walker, T. R. & McKay, D. C. (2021). Comment on "Five Misperceptions Surrounding the Environmental Impacts of Single-Use Plastic". *Environmental Science & Technology*, 55(2), 1339-1340. https://doi.org/10.1021/acs.est.0c07842

Willis, K., Maureaud, C., Wilcox, C. & Hardesty, B. D. (2018). How Successful Are Waste Abatement Campaigns and Government Policies at Reducing Plastic Waste into the Marine Environment? *Marine Policy*, 96, 243-249. https://doi.org/10.1016/j.marpol.2017.11.037

Xanthos, D. & Walker, T. R. (2017). International Policies to Reduce Plastic Marine Pollution From Single-Use Plastics (Plastic Bags and Microbeads): A Review. *Marine Pollution Bulletin*, 118(1-2), 17-26. https://doi.org/10.1016/j.marpolbul.2017.02.048

Xu, L., Zhong, Y., He, X., Shi, X. & Song, Q. (2022). Perception and Behavioural Changes of Residents and Enterprises Under the Plastic Bag Restricting Law. *Sustainability*, 14(13), 7792. https://doi.org/10.3390/su14137792