
Research Article

Plastic Littering and Waste Management in Pietermaritzburg, South Africa: Exploring the Snack-Food Consumer Littering and Responsibility towards the Environment.

¹Pheyiye Mapungwana (PhD), ²Felix Okoye (PhD)

¹BSc. Agric Eng. (degree); M. Ed, Post-graduate Certificate in Education (PGCE) Master of Education (M. Ed)

²DIRAP: Directorate for Institutional Research and Academic Planning University of the Free State, South Africa

Abstract:

The study is located in the discipline of environmental ethics as it explores the snack-food (or plastic) littering and consumer responsibility towards the environment. The theory of consequentialism and Stewardship were used to provide ethical perspectives and background for the reconstruction of the consumers' social and moral responsibility towards the environment. The study applies mixed research approach. Focus group, interviews and questionnaire were used to collect data; whereas thematic and statistical analysis were used for data analysis. The study finding shows (1) an increased plastic littering in the Pietermaritzburg city; (2) consumers' indifference towards plastic littering and shifting of cleaning responsibility to the government; and (3) the household plastic-littering consumers indifference towards the consequences of plastic littering to the environment, and the escalating government expenditure towards environmental management. The study recommends an intensified civic responsibility campaign, and anti-littering strategies that can ethically (in)form consumer consciousness and responsibility towards the environment. It also recommends the government to develop a robust policy to control plastic littering. The government must promote a shared sense of responsibility towards the environment by integrating the plastic-producing industries and business dealers into the overall waste management plan. Encouraging plastic recycling businesses must also be recommended.

Keywords: environment, packaging, plastic, littering, moral, ethics, responsibility, urban, nonbiodegradable, waste, conservation, cities

1. Introduction

South Africa, like many other developing countries of the world, is facing numerous environmental problems such as littering, and lack of proper waste management system. Brown et al. (2018) affirm that ecological problems, such as increasing annual average temperatures, pollution, and the extinction of fauna and habitat loss are rising in Africa, of which is a global concern. Quinn (2012) asserts that the littering impacts on the ecosystem include but are not limited to the changing climate, global warming and natural disaster. Doan (2014), agreeing with Quinn (2012), indicates that globally, people are beginning to be affected by regional and global environmental changes. Thus, the communities are now overwhelmed with many odds regarding the recurrent and strong climatological events (high-temperature waves, abnormally low temperature, and hurricanes), ecological disturbances (melting glaciers, growing oceanic water levels, floods, droughts, and wildfires), pressures to transform out-of-date agronomic practices, food and water security crisis (Brown et al., 2018). The current rate of species loss, including primates to which humankind belongs, is estimated at 100 to 1,000 times more than what is regarded natural and has likely exceeded a planetary boundary in which species provide ecosystem resilience (Quinn, 2012). The United States spends over \$11.5 billion annually to clean-up littering, and to avert the threat it has on the environment (Perrault et al., 2015). The question that arises is *what the individual African nations would do in this regard*. This study intends to evaluate the extent to which snack-food consumer littering contribute to littering as an environmental crisis in Pietermaritzburg city of South Africa and to suggest improvement strategies. This would enable the researcher to explore an ethical framework that can be adopted to improve conservation in the city of Pietermaritzburg.

Meanwhile, the problem the study intended to solve emanated from the fact that (1) the plastic packaging used by snack-food consumer industry in South Africa has increased exponentially in the recent years; (2) over 1.5 million tons of plastics are consumed in South Africa annually (Nhamo, 2016). Thus this hint was corroborated by the World-Wide Fund for Nature of 2019 that the plastic annual usage per person in South Africa is around thirty to fifty kilograms per individual; (3) the plastic packaging is mostly manufactured in South Africa with some imports from India or China, and these disposable plastics are not only popular in the food industry but also wantonly discarded with no reuse nor recycling prospects; and (4) Pietermaritzburg city remains one

of the South African cities in which littering has become a serious concern (Naidoo, 2009; Nhamo, 2016). For instance, Khanyile (2018) highlighted that in Pietermaritzburg the drivers and commuters are often seen roll down their window, hold out litter and drop on the street, freeway and then speed off. Thus, due to such littering, the Pietermaritzburg's roads and drainage systems are swamped and spill especially when it rains (Priyanka & Dey, 2018). Littering also affect the hydrographic environment and tourism in Pietermaritzburg considering the amount of littering found at the banks of Msunduzi River (Naidoo, 2009). Whilst the works of Chitotombe (2014), Tanyanyiwa (2016), Hansmann and Steimer (2016), Furusa (2015), Ongungbemi (2018), Khan and Gouri (2011), Roper and Parker (2012) and Eastman et al. (2013) highlight the increasing environmental and economic concerns of littering in most developing nations such as South Africa.

However, the government expenditure on waste management, in most cases, escalates unnecessarily due to consumer's indifference towards littering and environment. Nhamo (2016) lamented that this environmental issue of plastic littering is most likely to be ignored or talk about as the consumers remain unsensitized. The South African consumers often shift the responsibility to the government. The available literature on this topic shows the existence of an ethical gap in the consumer psychology regarding littering. Even the above-mentioned scholars failed to explore the consumers' moral and social responsibility on littering of snack-food packaging (Eastman et al. 2013). In order to address this lacuna, the study poses a key research question of: *what are the social and moral responsibilities of snack food consumers in Pietermaritzburg towards the environment?* In order to adequately answer the key question, the following sub-questions were thus developed: (1) what is the extent of the environmental crisis in Pietermaritzburg? (2) how are the snack-food consumers contributing to the environmental problems? (3) what (ethical) framework can be adopted to respond to the environmental issue (or littering which is) caused by snack food consumption?

2. Literature review

The environmental crisis such as pollution, littering, waste management, poaching and deforestation are the most distressing challenges for the planet earth in 21st century (Ogungbemi, 2018). The environmental crisis is now a universal experience and hardly any civilization is invulnerable to the risks and hazards which it puts to humankind and other members of the bionetwork (Ojomo, 2011). Apparently, the ecological issues are of international concerns, as such there is an increasing importance that the environmental ethics must go beyond the Western horizon to include Africa. Despite Africa's enormous vastness of territory adorned with resources of all categories, the breadth of the global environmental crisis in the landmass has an unusual character (Ogungbemi, 2018). Ogungbemi (2018) in his article titled 'An African perspective on the environmental crisis' deliberates on the landscape of the conservational catastrophe in the south of the Sahara. In Africa, poaching, littering and pollution are the ecological catastrophe facing not just concern Africa but he world at large. According to Ogungbemi (2018), the reasons behind ecological contamination and dilapidation, ecological injustice, absence of proper managing and administration tactics in mitigating the ecological crisis, and non-existence of environmental ethics that mitigate environmental crisis in Africa, need to be further investigated. Tangwa (2004) in the paper titled 'Some African reflections on Biomedical and Environmental ethics,' elaborates on the relations of people and the environment in an African way. Tangwa (2004) describes the Western worldview as being predominantly anthropocentric and individualistic compare to African lifestyle where morality, structuring and social ethics are not taken less seriously. Tangwa (2004) asserts that to get Africa modernized, there is an increasing need to interrogate its environmental crisis from an African perspective especially littering. Hence, there is need to contextualize African situation within the African lifestyle.

Meanwhile, most published work from science, psychology, business and management point at the increasing plastic littering as an outcome of a growing snack food consumption and manufacturing in African cities. For instance, Hansmann and Steimer (2016), as well as Chitotombe (2014) link the growing trend of snack food consumption in Southern Africa to plastic littering of which South Africa is not an exception. Thus, the cumulative turnover in all classes of snack foods in South Africa has increased recently including the rate of turnover for noodles, chocolate snack bars and plastic-packaging food items have rose by more than forty percent between the year 2005 and 2015 (Hansmann & Steimer, 2016). In other words, in all food-processing plants in South Africa, snack-food processing plants have the highest turnover in sale volumes compared to others (Chitotombe, 2014).

Nevertheless, Naidoo (2009) states that littering is apparently common in South Africa and particularly in Pietermaritzburg. Hence, it is becoming financially a challenging task for the government to maintain tidiness in the city. Furusa (2015) from an African perspective supports the above assertions that littering and consumer behavior in South Africa are of serious concern. Littering remains a major contributor to visual pollution; thus, littering can be responsible for the security and ecological risks in an African society (Khan & Ghouri, 2011; Perrault et al., 2015). The typhoid and cholera epidemic which occurred in Zimbabwe during 2011 and 2012 was linked to consumer-city littering (Tanyanyiwa, 2015). In other word, an uncontrolled littering poses a serious threat to city economies (Tanyanyiwa, 2015).

2.1 Possible consequences of littering:

Tanyanyiwa (2015) highlighted that burnt littering breeds toxic compounds such as dioxins, embers, and hydrocarbons like carbon monoxide which result in health-related problems to the human health. For instance, the health effects of littering are visible in

various forms of carbon monoxide which causes dizziness, confusion, weakness, and difficulty in breathing. Given that littering in Southern Africa has been fueled by the growing trend of consumption of plastic-packaged food (which includes snacks) the littering ends up in the rivers and dams which indirectly endangering aquatic lives and human lives (Chitotombe, 2014). The Section 24 of the Bill of Rights in the South African Constitution grants every person in South African a chance to live in an environment that conforms to acceptable standards (Furusa, 2015). Unfortunately, plastic littering continues to remain an overlooked environmental issue that undermines the purpose of Section 24 of South African constitution (Torgler et al., 2008). The plastic littering begins with the cast-offs in spaces like streets, highways, tracks, estates, coffee shops, or other community structures. The objects such as bottles, cigarettes, and other vessels, plastics, bags, tissues, take-away food packages, and other forms of packages are thrown down in places which end up causing extreme harm to the environment (Torgler et al. 2008). For instance, the consequences for human reluctance towards the preservation of earth as an anthropological home has exacerbated natural disaster such as global warming, disease outbreak, earthquake and tsunami yet humans still do not care.

Meanwhile, the consequences of littering are diverse (Fergusson, 2018). First, littering interferes with rain overland flow and storm water drainage. Thus, littering blocks streams, tunnels and other water ways thereby causing swamping such that plastic litter creates lethal fumes and bad smelling scents. Tanyanyiwa (2015) added that litter attracts bugs besides providing suitable conditions for the multiplication of disease-causing microbes. Armour (2018) further mentions that runoff water from dumped litter contaminates streams, lakes, wells, groundwater, and drinking supplies. Thus, the litter that is carried to the local water reservoirs can spoil the city's water quality which would indeed become a concern. The point remains that whether we know or choose not to know does not overturn the possible consequences. Tanyanyiwa (2015) in commenting on different dimension of human behavior, asserts that accumulated litter attracts more litter such that people tend to litter already littered environments. Perrault et al. (2015) corroborate the Tanyanyiwa's assertions by explaining how a sheer availability of litter in attracts a custom of higher litter tolerance levels, such that individuals are enticed to further the littering.

littering costs government, a lot of money since a higher municipal rate is needed to employ more cleaning workers. Chitotombe (2014) mentions that littering reduces the artistic worth of the normal place or setting which results in an unwarranted cleanup cost, as well as reduce tourism prospects (Perrault et al., 2015). Banerjee and Srivastava (2012) state that the plastics discarded into pits or covered with sand become mummified and remain there for a long time as pollution. The non-biodegradable plastic never degenerates. Whereas burning of the waste disposal exposes people to health risks leading to pollution and environmental dilapidation (Banerjee & Srivastava, 2012). Naidoo (2009) states that as cities grow, residents begin to increasingly adopt the attitude and behavior of western consumer lifestyle where pre-packaged food is favoured above open markets and unpackaged foods. The consumers prefer fast food for its convenience over and above the cost (Naidoo, 2009). For instance, prepackaged food items are convenient to the time-strapped Pietermaritzburg residents despite its causing plastic littering in the city.

2.2 Unyielding control of plastic littering:

Bateson et al. (2013) asserts that littering is exponentially expensive to management but can be controlled at a lesser cost and through inexpensive alternatives such as redirecting the consumer thinking and behaviour. Saidin et al. (2016) affirms that littering has significantly increased in most cities and urban places in developing nations and it cost has also increased yet littering continue to remain an issue. Plastics are extensively used in wrapping by businesses because it is relatively cheap, not heavy, strong enough for their intended purposes, and an attractive art can be easily inscribed on it (Saidin et al., 2016). This however makes it more difficult to discourage or control the use and production of plastics since plastic packaging is assumed to be cost effective. This raises the question of whether the cheapness is not illusive when consider its adverse effects on the environment. There have been several 'failed' campaigns carried out in various nations to decrease extreme use of plastics, protect the ecosystem, and stimulate the consumer's behavior change (Saidin et al., 2016). These endeavors failed and its guidelines abandoned due to hostility and lobbying from the businesses who cannot forfeit the proceeds accrued from plastic trades. The legal and voluntary answers can be considered and employed to address litter in the first world communities and countries but not in Africa (Chitotombe, 2014). For instance, enforcing fines reduced littering in Australia, but that cannot be said for South Africa. There was banning of plastic bag usage in places like Dhakar and San Francisco unlike in most developing nations (Smith & Lourie, 2019). Hansmann and Steimer (2016) blamed the ongoing drift or shift in eating pattern in the communities and cities of developing nations for the growing uncleanness and littering. Similarly, Chitotombe (2014) also blames the conspicuous snack-food consumption, pre-packaged food or goods, and the 'eat-and-throw-away' culture that is ongoing in developing countries. Despite the legislation on packaging and littering which clearly inform the masses (through pictorial depiction) to 'put the rubbish in bins' yet people tend to ignore the instructions (Chitotombe, 2014). This implies that Africans still lack the desire not to litter.

2.3 Economy and environment:

Humans have always been dependent on the natural resources on earth despite their nonchalant attitude that threatens the environment (Brown et al., 2018; Quinn, 2012). Berry (2012) emphasizes that good environment is tantamount to good economy. The preservation of the earth requires unselfish caring, none-egocentric manipulation, litter-free aggressiveness, and charity towards the forthcoming generations White & Heckenberg, 2015). The human sustainability and maintenance of the food web are dependent on the environmental wellness (Smith & Lourie, 2019). Thompson (2015) demonstrates that over two hundred types of

animals (including humans) that swallow plastic litter end up having health related problems such as eating problems, reduced procreative throughput, intestine cuts, and in general health demise. The North Sea coasts birds and animals reportedly had considerable levels of plastic in their guts by feeding in the water (Ryan 2017; Wagner & Oehlmann et al., 2009). The burning of plastic pieces contributes high volume ratio to the emission of carbon in the atmosphere which exacerbate the Ozon layer depletion. Most authors mentioned how plastics are harmful to plants, wildlife and humans either through the toxins, choking, digestion problems or otherwise (Thompson, 2015; White & Heckenberg, 2014). What does this mean for the agricultural sector, natural resources such as mining, and the country's source of income? The issue of littering is a crucial environmental concern that draws resources that can be diverted for other development causes. Whenever you mess with the environment you have not just messed up with human lives, but you have also messed with the the economy and the entire ecosystem.

3. Theoretical framework

The study applied Consequentialism and Stewardship as its ethical theories

(i) Consequentialism:

The ethical theory of consequentialism upholds that deeds are ethically right, unjust, or unsocial due to their consequences (Driver, 2011). It is typically a normative virtuous theories. Thus, normative theory promotes norms that are not only common and also helpful to humans as it guides their action such that the evaluation of such action depends on whether the total outcome is the best alternative. This is the simple form of consequentialism, and there are many variations. According to Seidel (2018), there are four types of consequentialism namely rule consequentialism, utilitarianism, act-consequentialism, and indirect consequentialism. The utilitarianism states that the rightness or wrongness of an action is realized through the goodness or badness of the products (Driver 2011). Thus, the higher the pleasure the act gives the more right it becomes. Seidel (2018) states that Act-consequentialism encompasses consideration of a sequence of actions and then picking up an act that would produce the best consequences whilst the rule consequentialism follows certain guidelines to realize the best consequences. Indirect consequentialism holds that the moral qualities of something depend on the consequences of something else (Seidel, 2018). Thus, consequentialism as a moral doctrine stresses that an act is right if only it has no better-outcome alternative and wrong (Andrić & Tanyi, 2015). Mulgan (2015) describes consequentialism as an ethical theory that is influential in inspiring actions that produce the best consequence. Consequentialism hence remains a rational ethical theory since it inspires people to make the best use of resources in their activities (Mulgan, 2015). In this case, it is not enough being worried about state of the environmental; one must be worried about several human activities that exacerbate the situation in the presence of better alternative and preventive measures.

However, this study uses consequentialism as a perceptive lenses to evaluate how 'value' is considered by people in relation to their contribution to the environmental problems facing the ecosystem. Amongst the weaknesses of consequentialism is that it allows actions, decisions, and ought to be moral choices that are neither mandatory nor prohibited, and it is based on feeling of happiness or pleasure which is normative such that the outcomes cannot be guaranteed (Holland, 2016; Ogan, 2018). The theory tends to be agent-neutral and agent-relative (Scheffler, 1988). Thus, the emphasis on happiness and pleasure makes an individual agent becomes an instrument through which the majority thrives (Crisp, 2018; Hiller & Kahn, 2013). Consequentialism remains useful for this study despite its critiques because whatever action is taken there would always be consequences. Thus, consequentialism provides a clear measure to determine whether the consumers' act of plastic littering is justifiable. It also provides background to the descriptions and analysis of the consumer behaviour towards the environmental.

(ii) Stewardship:

Douglas John Halls' theology of Stewardship (an ethical theory) is used as one of the theoretical frameworks in this study. The theory presents humans as the steward of the planet Earth (Chirisa, 2011). Simply put, stewardship denotes the practice of managing something on behalf of others as it places upon human shoulder the moral obligation to be in charge and to care for the entire ecosystem (Douma, 2015). The environmental ethicists agree that stewardship involves spreading ethical care to nonhumans (i.e., animals, plants, ecosystems). This theory is relevant to this study because it delves into the chief area of discussion which is the ethical responsibilities that humans have to other things. Le Roux and Cheryl (2017) assert that the environmental responsibility is at the core of the scripture and at the heart of Christianity, and it demands every individual to take up the task. The term stewardship is used within the wider vision of the community caring for its environment which is described as environmental stewardship (Hall, 2004). The concepts of environmental stewardship and theology of stewardship are utilized to conceptualize, reflect and prescribe the way forward towards restoring consumer sense of responsibility in reducing plastic littering. Alan (2018) argues that the onus makes humans ethical beings. Hence, humans are ethically and religiously the guardians of nature. Whilst Alokwu (2009) emphasizes the philosophical themes such as eco-theology, and Oikothology. Hence, Oikothology remains an endeavour to fortify the shortcomings of Christian thinking regarding the environment (i.e., moving from the scriptural term 'dominion' to eco-philosophy and friendliness). Eco-philosophical stimulates the idea that makes humans responsible for thinking out the best human activity that gratify the beauty of the environment (Alokwu, 2009). In this study, the concepts of environmental stewardship, citizenship, and eco-theology does not only provide background that allows the researcher

to broaden the discussion on environmental responsibility. Whereas the concepts of environmental responsibility, ecological citizenship, social responsibility, and moral responsibility were used to emphasize the notion of environmental responsibility as a prerequisite for civic privileges and rights.

4. Methodology

The study was based in Pietermaritzburg, KwaZulu-Natal province of South Africa. The study is located in the discipline of environmental ethics. It requires a mixed method to ensure that the key research question was adequately answered. The research design combines qualitative and quantitative research methods. Creswell and Clark (2011) described the advantage of using both qualitative and quantitative methods in a solitary enquiry or a sequence of enquiries. The use of both methods offers an improved comprehension of the research problem, ensure that sufficient and relevant information was gathered. Hence, the focus group discussion, individual interviews and a questionnaire were applied such that thematic and statistical analysis were utilized respectively to ensure clarity and succinctness in analyzing and presenting the study results (Leedy & Omnrod, 2010). Purposive and/or non-probability sampling was used (Babbie & Mouton 2008). In order to protect the characteristics of the research participants pseudo names were formulated. Ethical approval was secured through the University research ethics unit. In terms of data collection, seventy-five (75) were targeted for survey, but sixty-five (65) responded. Whilst twenty-nine (29) participants were interviewed, three (3) focus groups of five (5) participants average for each group were orchestrated. The members of the focus groups consist of the consumers, environmental officers and waste collection workers, and the following findings were obtained.

5. Findings:

The study results are arranged according to the sub-research questions of the study. (a) *What is the extent of the environmental crisis in Pietermaritzburg? (The interview)* Synonymously, the participants confirm the increased plastic littering by the Pietermaritzburg city residents. The interviewee V3 stated that:

The killing of animals, the killing of people, climate change, burning of fossil fuels, acid rain, throwing of litter, wasting of water in situations where there are not supposed to, for example opening taps and leaving them open for example, and we end up with no water in South Africa.

The interviewee V8 thus added that:

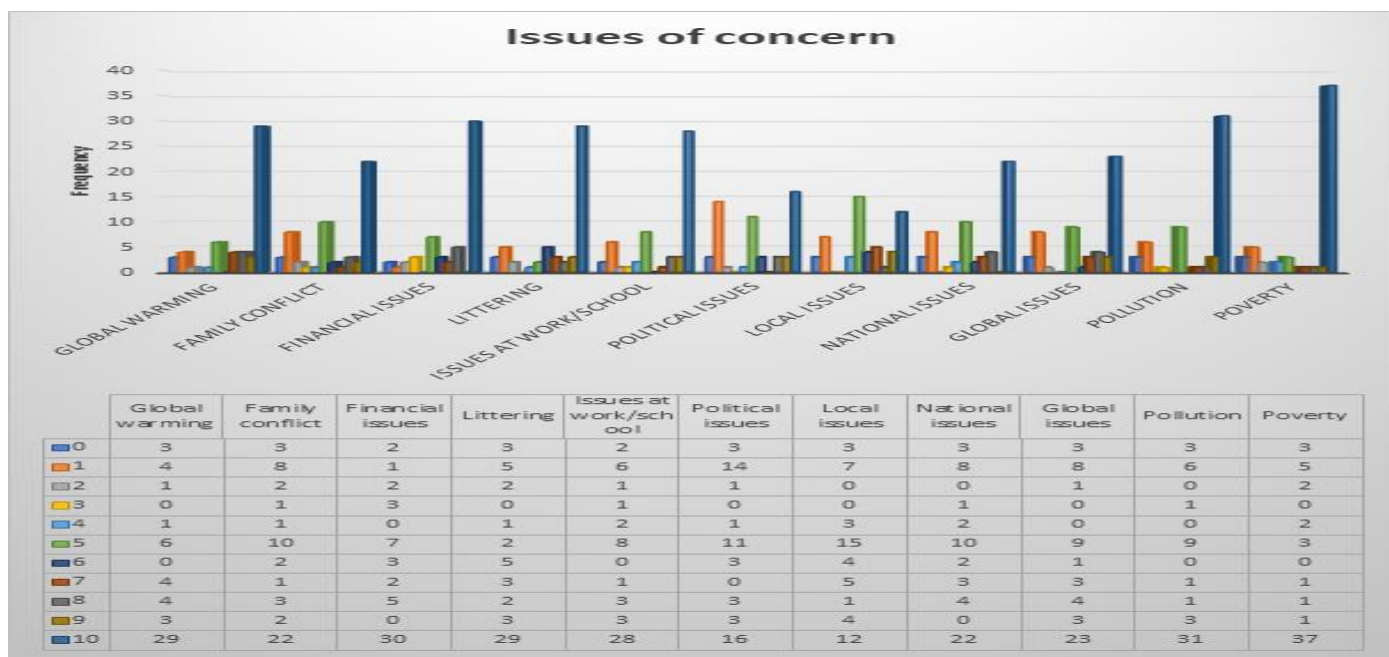
I can talk of pollution. Whenever we talk about pollution, there are so many types of pollution; water, air.

In that same regards the interviewee V9, exclaimed that:

You see that they eat the chips (or snacks). In certain places, there are places where they should dispose of the plastic, but they do not dispose in correct places.

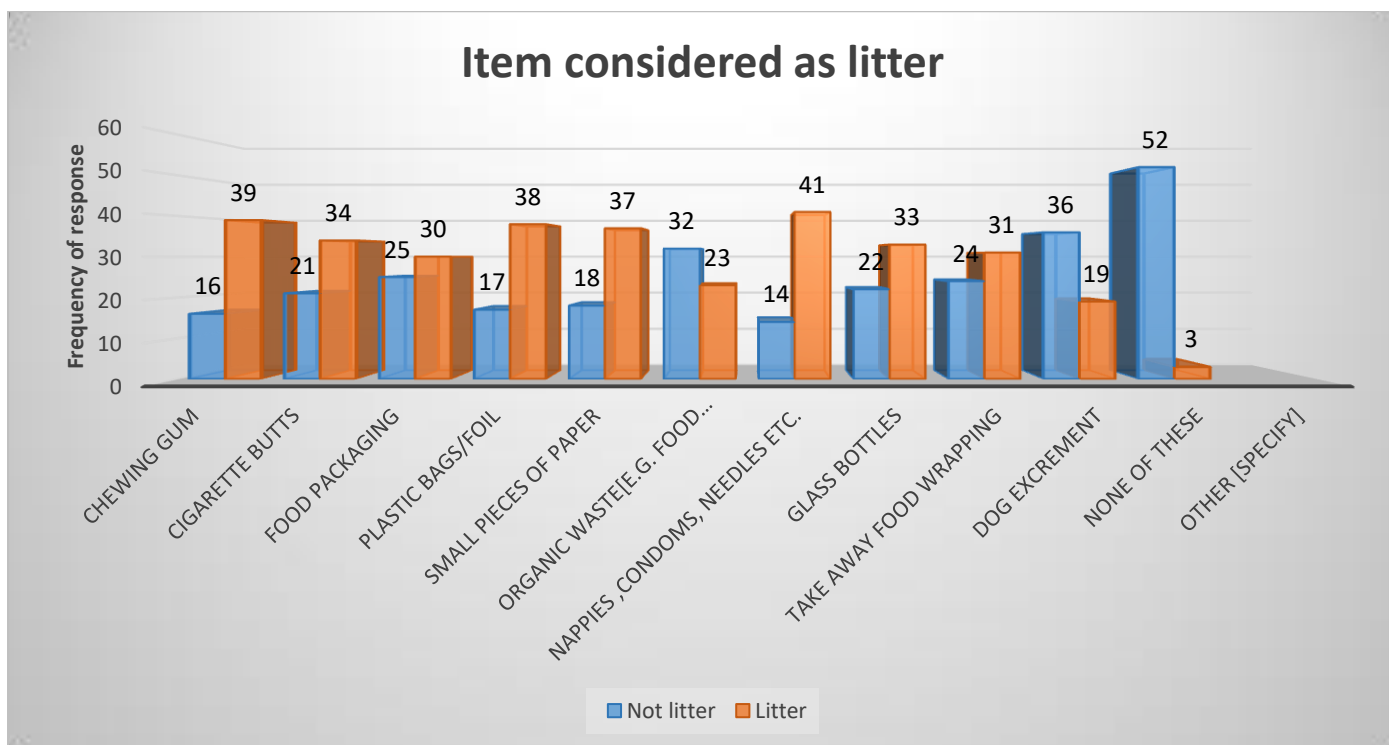
(Survey): In terms of the questionnaire respondents 42% were very extremely concerned about littering; 44% were neutral; 9% were not concerned.

Figure 5.1



The 71% of respondents considered chewing gum as litter, 75% considered nappies, condoms, needles and other things as litter. Our main concern, food packaging, had percentages ranging from 50%-69% of respondents considering them as litter, as well as plastic bags and foil. Only 35% considered dog excrement as litter, and 42% considered organic waste as litter.

Figure 5.2



The consumers are aware of what constitute ‘plastic’ littering, and very much aware of the distinction between various kinds of waste materials. This result also shows that what constitute plastic littering are common to the people which raises the question on whether the consumers are aware of how the plastic waste should be dispersed.

Table 5.2.1

	Not litter	Litter	Percentage regarding as litter
Chewing gum	16	39	71%
Cigarette butts	21	34	62%
Food packaging	25	30	55%
Plastic bags/Foil	17	38	69%
Small pieces of paper	18	37	67%
Organic waste [e.g. food scraps]	32	23	42%
Nappies, condoms, needles etc.	14	41	75%
Glass bottles	22	33	60%
Take away food wrapping	24	31	56%
Dog excrement	36	19	35%
None of these	52	3	5%

(b) What are the effects of litter? (Interview responses)

When the question on what is considered the effects of littering the interviewee V1 in agreement with other participants responded:

...when the litter drop on the floor and the rubbish ends up being burnt. Some litter we throw away and it becomes garbage. Litter that goes to the dump causes problems. Litter that goes downstream pollutes the water. You also see that animals in the river are also affected.

The interviewee V3 however added the:

Health wise snack food consumers end up having diseases, like diabetes, heart diseases etc. On the environment snack food consumers end up throwing away paper and so on.

In agreement with others, the interviewee V8 emphasized that:

The problem is that they eat and throw away everywhere. They do not put in bins...such that the area would look like a pigsty. Just like a pig’s place, a place with papers, a littered place. During this time, all the papers that we throw away, we must not do that, we must not throw away. Sometimes we eat the contents and go on to lick papers and throw them to the ground and they are littering and dirtying our places. We should put them in the bins.

The interviewee V6 said:

According to me litter make the environment dirty. Dirtiness affect the environment

(Focus group responses) The group members unanimously agreed that people must always clean because dirtiness can contribute to disease. People must try to keep their environment clean.

(c) How Do Litter Make You Feel? (interview responses)

The interviewee V8 highlighted that:

Just seeing the dirty is unpleasant. It starts at the eye and goes to your heart, you ask yourself, where I will start. So, what will I do? It demotivates you. It removes your confidence. It's just liked a child goes to a crèche and there is a child who is coughing. Children do not understand that they should put a hand to block their mouth when coughing. So, the others can get sick through the others. It's almost the same way with a dirty place. I do not know what can be done because even rivers and dams are drying. I think this is a governmental problem.

(Focus group responses) When probed regarding what they think would happen if people continued to litter, a focus group participants agreeing with others nicely put it:

... besides being a direct threat to the environment, for example, plastic is a threat to the aquatic life, someone has to hire someone to clean and that translates to an expense as well, and that money is going to come from the taxpayer as well. It increases jobs. There is a whole industry that is based on cleaning, and recycling. In a sense that is one of the major threats....

(d) How are Snack-Food Consumers Contributing Towards the Environmental Crisis?

The interviewee V4 mentioned:

Yeah, somehow, they contribute because when they eat those snacks, they leave those plastics, what do we call them, everywhere. Yes, they contribute in a way that is negative to the environment....

Furthermore, a probing question was asked on

(e) What are the Responsibilities of Snack Food Consumers Towards the Environment? The interviewee V1 answered:

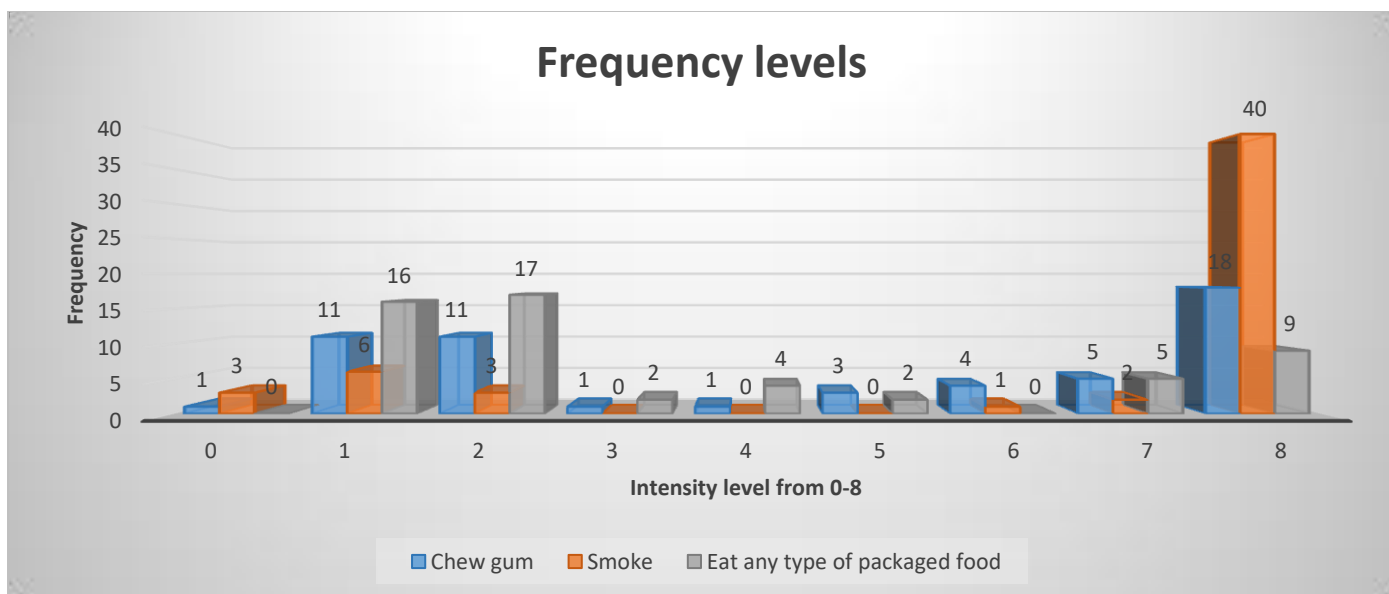
People do not care about the environment. People just do things without thinking. It is wrong. Another thing is that if they see someone doing it, they also do it. In town, you find that rubbish bins are very far apart, people feel lazy to walk to the rubbish bin. Like what I said earlier, it depends on what you were taught. It shows how you were brought up. For me I was taught that you may not go around throwing away paper. These things must be taught to children that they may not go around and throw litter anyhow.

Whilst the interviewee V4 added that:

... Let's say I bought a packet of chips and I finish eating it where there is no bin around, I will just toss it. The other reason is that yeah, it is either of the two, either they are careless or there is nowhere to place litter. The reason of carelessness comes in, let's say, there is a bin there, he chooses to throw out of the bin. When somebody does something careless, it has something to do with ethics, because he doesn't care. So, somebody with five senses and the sixth one knows. The other reason is the reason of ignorance. Ignorance of the consequences of what one is doing.

(Survey responses) the respondents were asked how frequently they chew bubble gum, smoke or eat any type of packaged food, on a level from 0 to 8.

Figure 5.3



A significant number (14) eat any type of packaged food at the highest intensity level of 7 and 8. Majority (33) eat any type of packaged food at the lowest level, whereas 6 eat any type of packaged food at the second level.

Table 5.3.1

	Every time	Sometimes	Rarely	Never	Don't know/NA
Chewing gum	3	18	7	24	3
Cigarette butts	6	5	4	35	5
Food packaging	6	23	7	15	4
Plastic bags	6	27	4	13	5
Small pieces of paper/tickets	4	20	5	14	12
Organic waste e.g. food scraps	4	9	5	17	5
Nappies, condoms, needles etc.	2	18	1	28	6
Glass bottles	0	20	3	23	9
Takeaway food wrapping	2	21	10	14	8

When asked about how frequently the participants litter items, 23 participants noted that they sometimes litter food packaging items and 27 people mentioned plastics, whereas 18 participants revealed that they sometimes discard chewing gum.

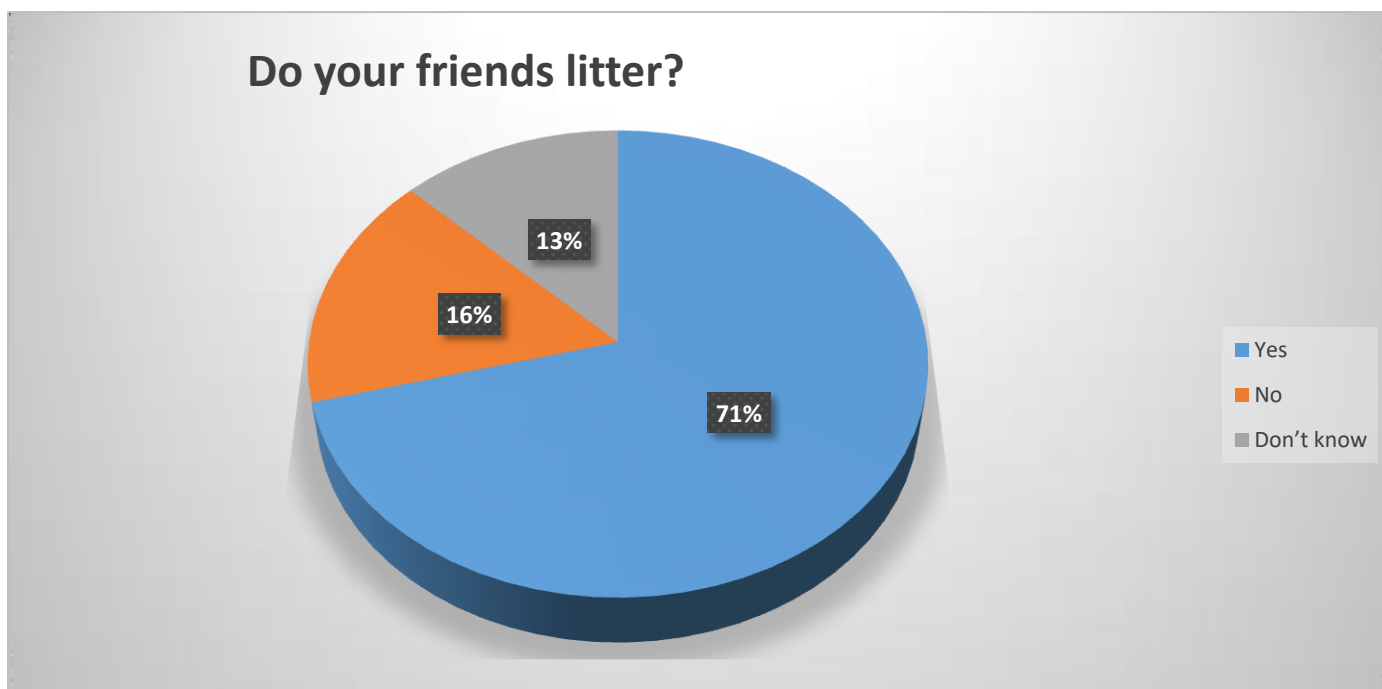
In probing further on the problem under study and to understand the nature of these littering behaviors, participants were asked when they normally litter.

Table 5.3.2

	Mainly nighttime	Mainly daytime	Both day and night	Don't know/NA
Chewing gum	3	3	22	27
Cigarette butts	2	1	13	29
Food packaging	3	2	25	16
Plastic bags	5	2	22	26
Small pieces of paper/tickets	2	1	21	31
Organic waste e.g. food scraps	1	6	15	33
Nappies, condoms, needles etc.	5	13	10	27
Glass bottles	2	3	24	26
Takeaway food wrapping	2	1	29	23

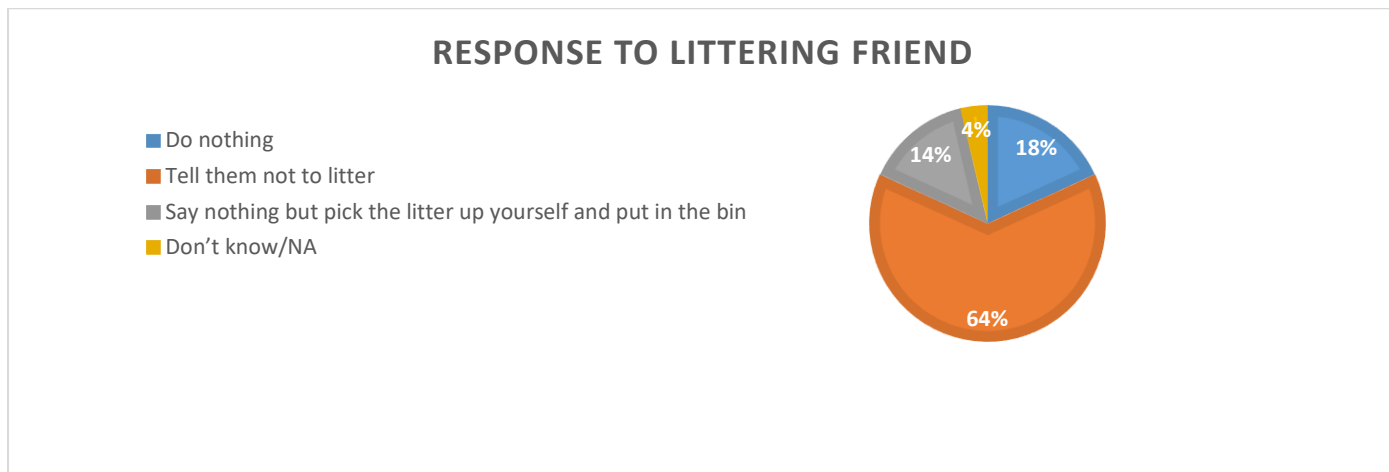
Further probing inquires whether their friends do litter.

Figure 5.4



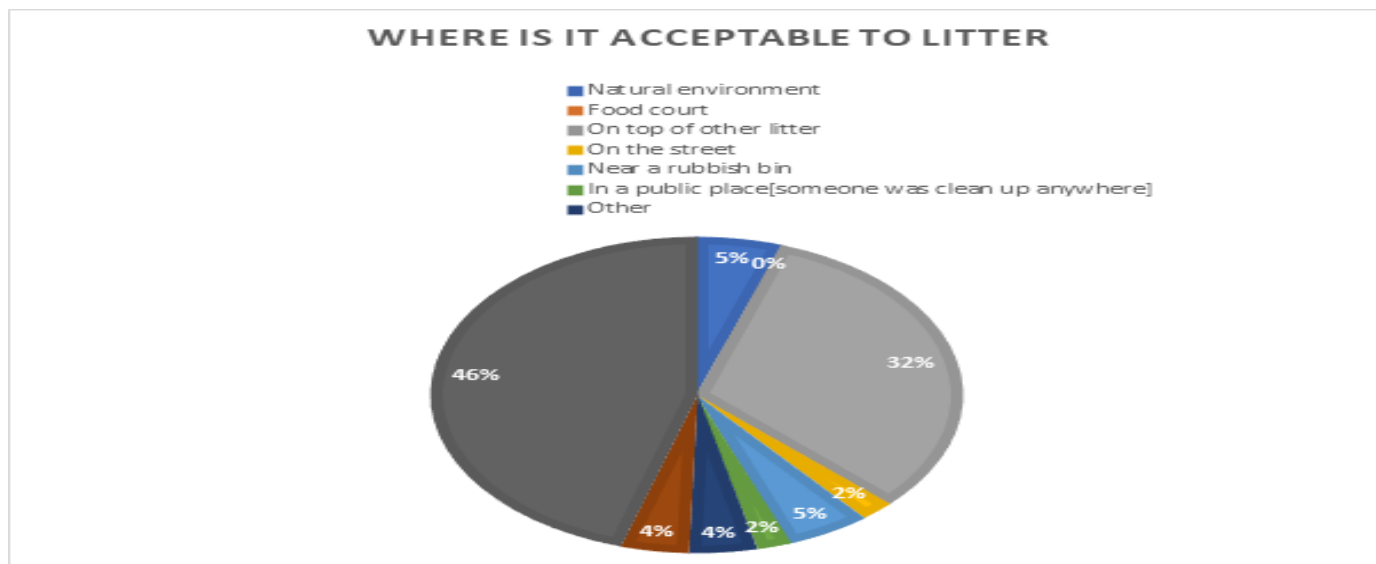
This is a clear indication that people are aware of their nonchalant littering behaviour but with hope that government would clear the litter. However, individual drive to take the responsibility is still lacking.

Figure 5:5, A probing question on what action the respondents would take towards a littering friend shows that:



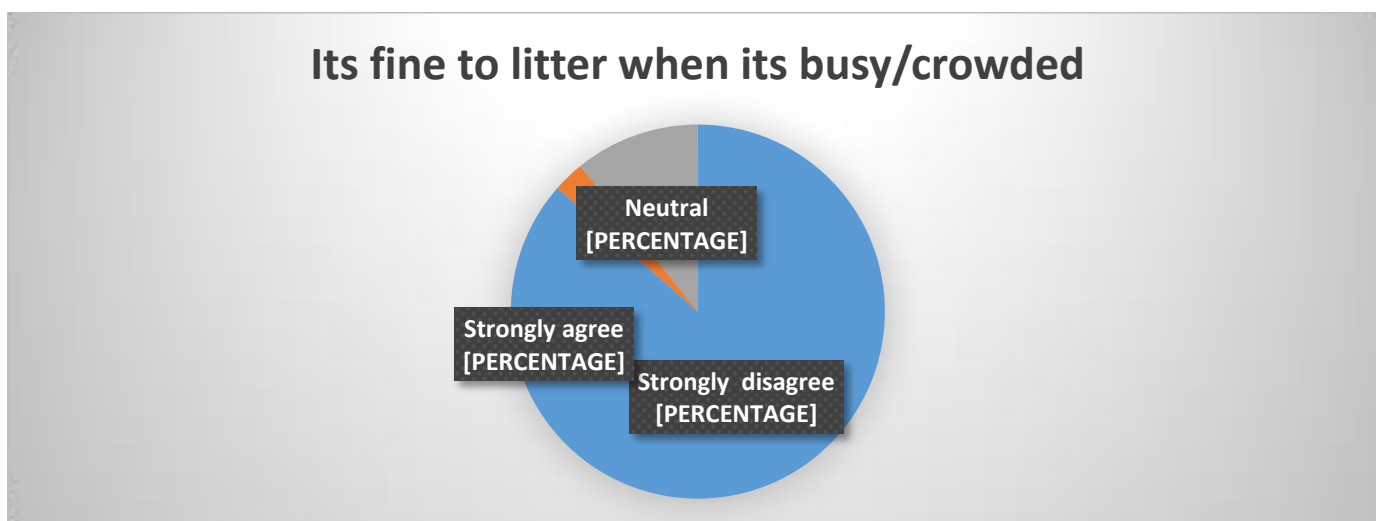
18% of the responses indicated that they would do absolutely nothing to a littering friend, whilst only 14% would say nothing but pick up the litter themselves and throw it into the bin. Meanwhile, 64% would tell their friends not to litter. But would that be enough?

In testing to know whether people know the existing social norms or rules regarding littering: **Figure 5.6**



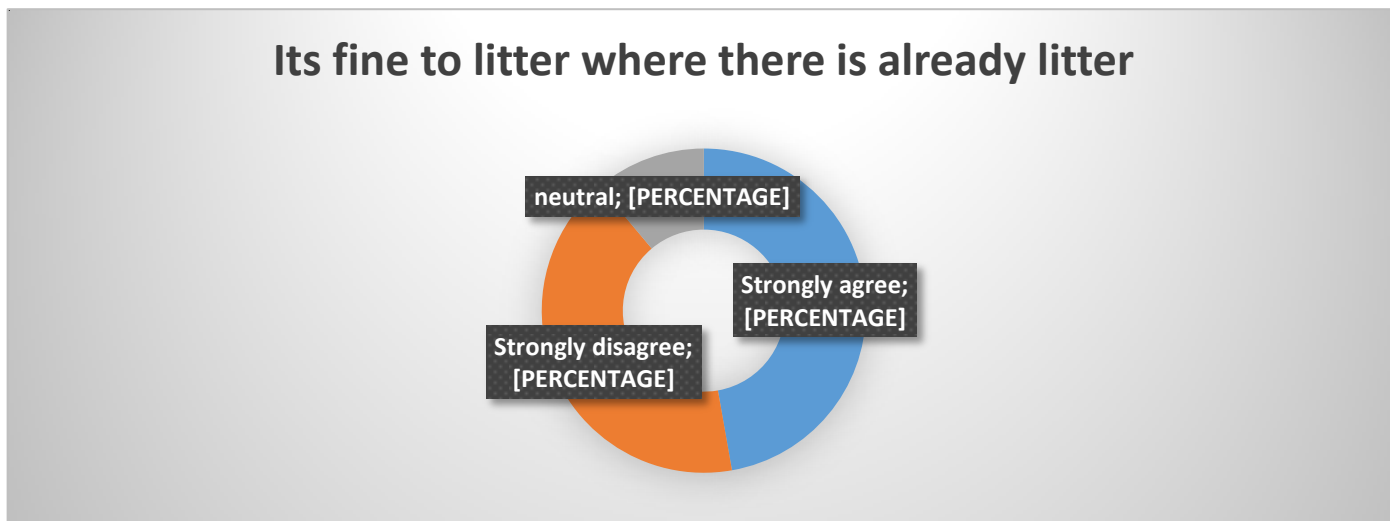
while 46% believes it is never acceptable to litter, 32% believes littering is permitted especially when there are no bins available.

Figure 5.7



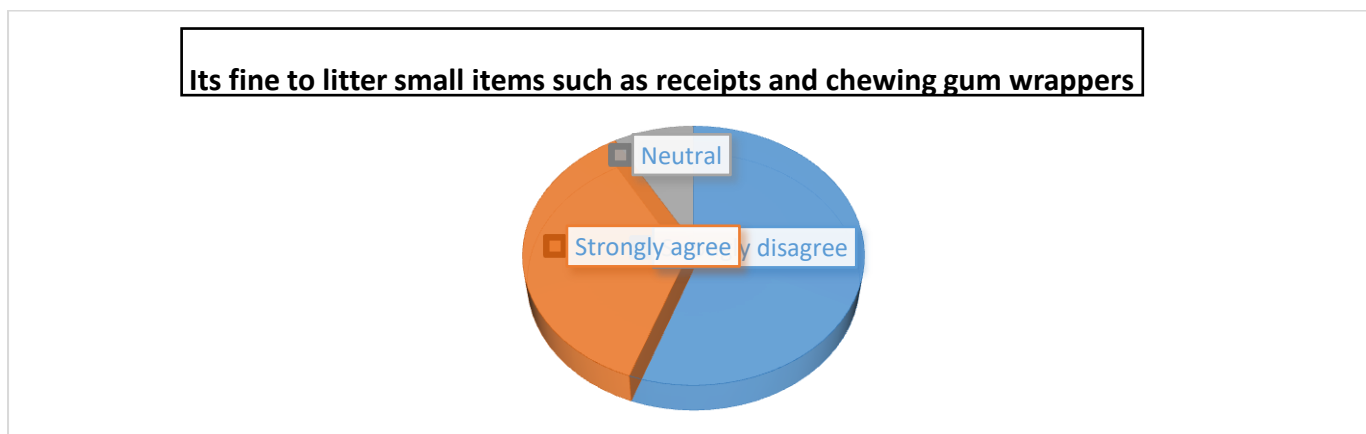
The majority (86%) consciously dismissed the statement that it is ok to litter when it is crowded, while 11% were neutral and 1% thought that it was fine. The question remains though: how useful would one's conscious belief be in the absence of the corresponding practice(s)?

Figure 5.8



Over 45% of the respondents agreed with the statement that it was ok to litter where there is already litter, 42% disagreed with the statement, and 11% were neutral. The social psychology has been that the government would always clear the litter especially if found in excess.

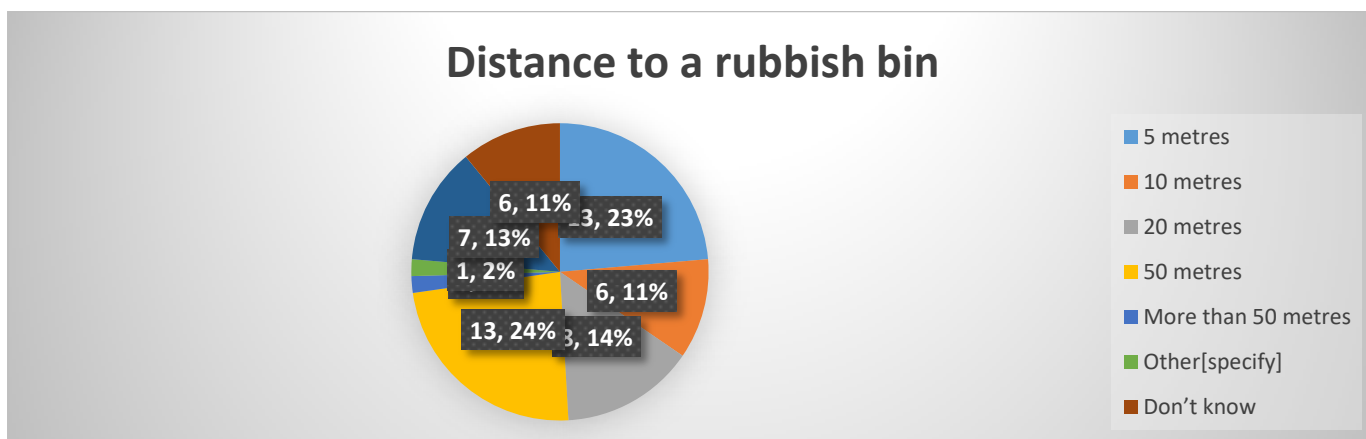
Figure 5.9 (Most respondents seems to believe it is okay to litter with ‘small’ items)



Over half (56%) of the participants strongly disagreed with the notion that it was fine to litter small items such as receipts and chewing gum, 36 % strongly agreed and 8% were neutral.

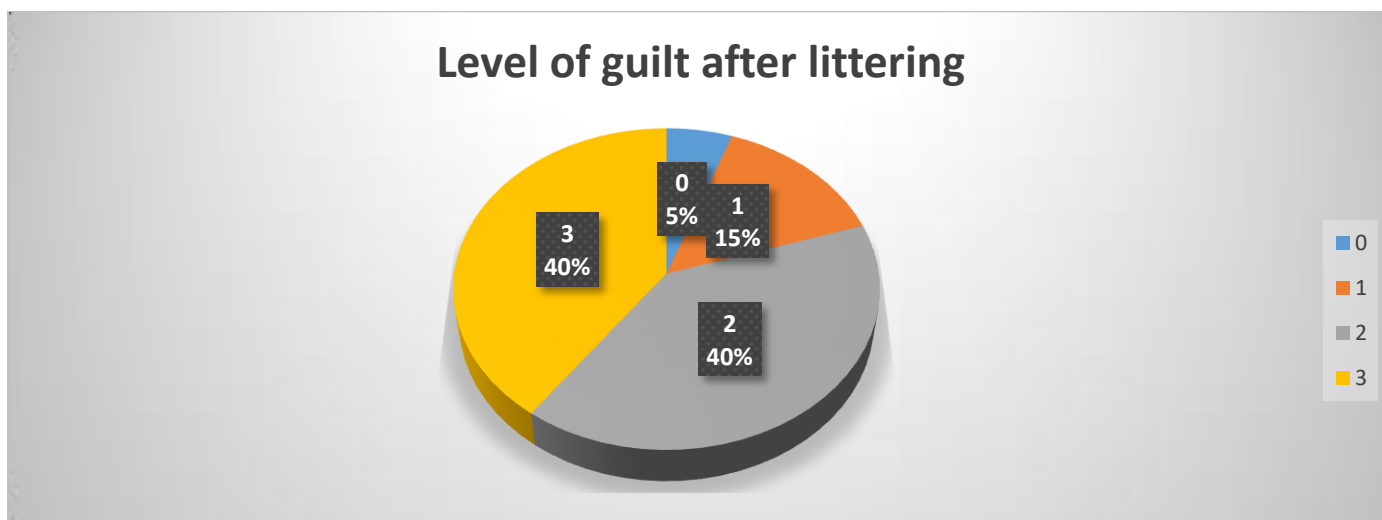
Interestingly, in probing whether availing more bins would help, 23% indicated that they are prepared to walk for only 5 meters; 11%, 10 meters; 14%, 20meters; 24%, 50 meters; 2%, more than 50 meters; and 28%, don't know. This shows that most participants are prepared to walk for less than 20 meters, indicating a shift towards laziness or an orientation to litter less where there is more infrastructure.

Figure 5.10



The probing question to measure the guilt people felt after littering, using a scale of 1 to 10. Where (1) is not at all guilty, (2) is neutral and (3) is extremely guilty.

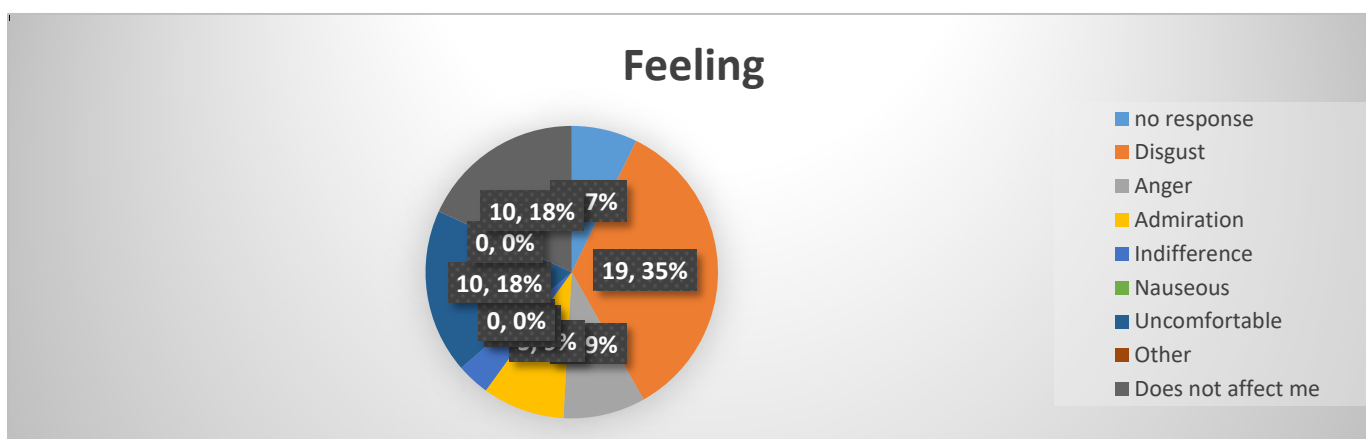
Figure 5:11 (Do respondents feel guilty after littering?)



According to the responses, 40% feel extremely guilty after littering. Another 40 % were neutral, 15% indicated that they would not feel guilty, and 5% gave no response.

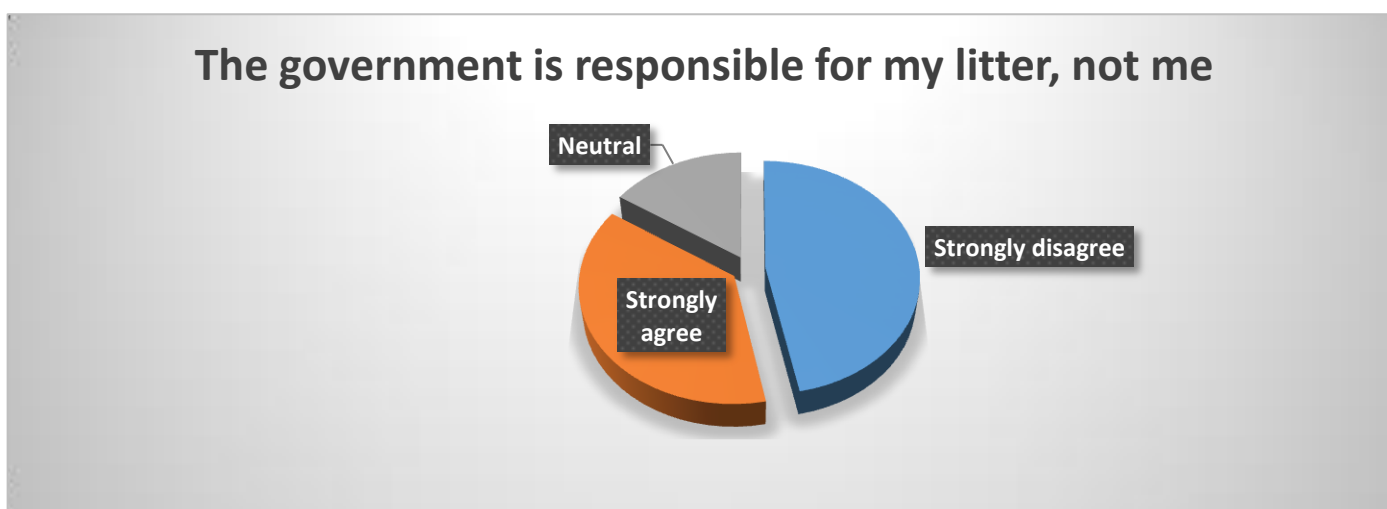
A question was posed on how the behaviours / practices they had just selected make them feel. The effect of litter on personal emotions or how they feel about litter.

Figure 5.12



In the response, 35% above indicated disgust, 18% indicated that litter does not affect them, 18% felt uncomfortable, 9% indicated admiration as their choice, and 7% said they would be angry about it.

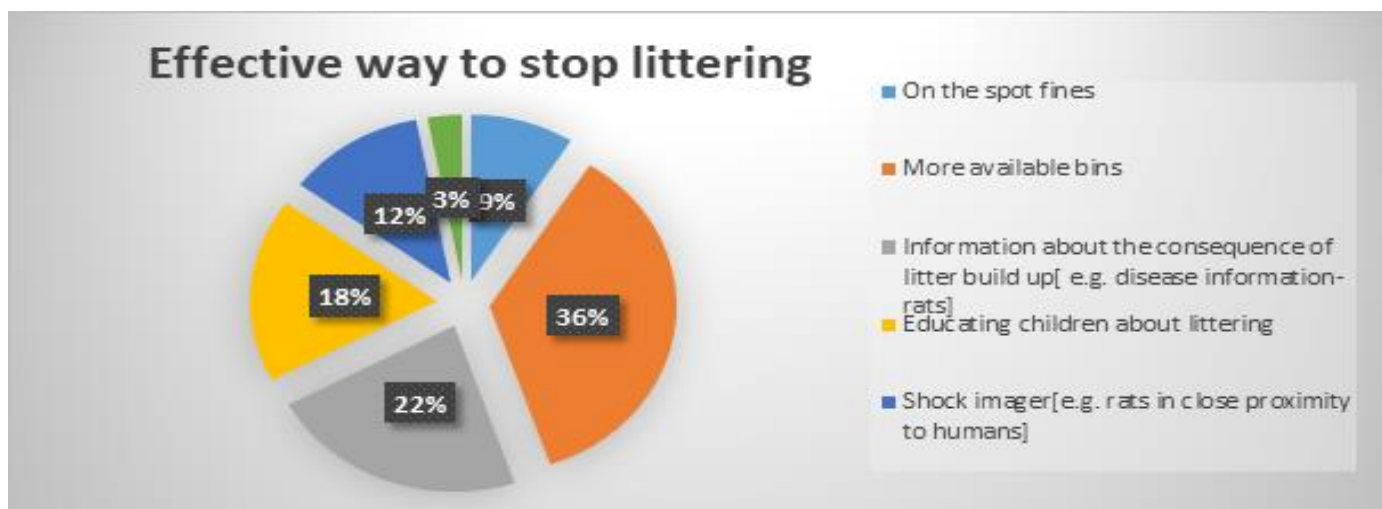
Figure 5.13: Do people blame the government for their littering behaviour?



The 47% of the respondents strongly disagreed with the statement that the government was responsible for their litter, 38% thought that the government was responsible for their litter and not them, and 16% were neutral.

The participants were further asked about the effective ways that could stop them from littering

Figure 5.14



Most participants thought that availing more bins would be effective, but we already have that in the city. The 3% did not know, 18% thought that educating children about littering is effective, 22% thought providing information about littering would be effective, 9% revealed that on-the-spot fines will be effective, and 12% thought shock imagery will be effective.

(Table 5.5) The question on the way forward results in the following outcomes.

	Would make me stop littering completely	It would make me stop littering sometimes	It would make me think about littering but not stop doing it	It would have no impact on me	Don't know
If I put litter into a bin it would save me money in fines.	(32)	(2)	(0)	(6)	(3)
Throw your litter on the ground and you'll cop a fine.	(21)	(7)	(2)	(4)	(5)
Litter sucks.	(18)	(1)	(2)	(6)	(7)
Smart people put their litter in the bin.	(15)	(2)	(1)	(4)	(9)
If you litter, you're lazy.	(14)	(5)	(1)	(1)	(12)
Litter harms wildlife.	(14)	(3)	(1)	(2)	(11)
If I get seen littering, I look like an idiot.	(16)	(2)	(1)	(3)	(11)
Litter spreads disease.	(20)	(3)	(1)	(4)	(9)
I feel good if I put my litter in a bin.	(10)	(3)	(3)	(6)	(9)
If everybody threw their litter on the ground the place would be a disgusting mess.	(14)	(6)	(3)	(4)	(10)
Litter makes our taxes higher.	(22)	(5)	(1)	(4)	(5)

6. Summary of Findings:

The study finding reveals (1) an increased plastic littering in the Pietermaritzburg city; (2) the consumers consciously aware of what constitute litter(ing), different types, why littering happens and its consequences to the environment; and (3) however that most consumers choose to remain indifferent by nonchalantly shifting the responsibility to the government.

The government whose waste management expenditure skyrockets seems complacent with environmental education. Thus, the House hold plastic-littering consumers' indifference towards littering and environmental health calls for consumer behavior change. There is also need for inclusive waste management policy to ensue.

6.1 Conclusion:

It is imperative that for an effective anti-littering campaign, education and policies should emerge. The responsibility to the environment health must be shared among the relevant stakeholders which include plastic, fast-food, snack-food producers, and consumers. Hence, must be ethical principles that would promote and enhance a harmonious responsibility towards environmental cleanliness. This study which is located in the discipline of environmental ethics suggest that the litter-free enduring stinginess that seemed religiously engrained in the snack-food consumers can be changed through ideological transformation. The government in addition to her devoted efforts towards waste management must inspire the people to take responsibility of their environment rather than shifting it to the government. Hiller et al. (2014), assert that fundamentally the health of both the environment and people represents a true development of the economy. This study hence proposes the following recommendations.

6.1 .1 Recommendations:

- The study recommends a paradigm shift from the traditional (or existing) method, which is to remove the litter by the government, to an ecological-thought formation of the consumer psychology towards littering. Hence, the South African government must create and intensify comprehensive environmental education strategies.
- The environmentalists, ethicist and government must partner to design littering-free strategies that can appeal to the moral faculty of the snack-food consumers. This approach would boost the ethical behavior guiding environmental human conduct in the cities.
- There should be vigilant monitoring of manufacturing projects and their products' impacts on the environment by the National Environmental Management Authority (NEMA).
- The government needs to develop and enforce a robust public policy in controlling plastic packaging and disposal mechanisms. For instance, recycling initiatives, and plastic-disposal laws must be encouraged.
- The government needs to Recognize the role of Special Groups in Environmental Conservation. Thus, the government must create environmental awareness across all groups in society in order to coordinate a concerted effort towards environmental cleanliness and protection.
- The government must consider their needs to promote anti-littering consciousness in the cities. The media can be used extensively for this purpose.

References:

1. Abdi, A., Ellis, L., & Shizha, E. (2005). Democratic development and the role of citizenship education in sub-Saharan Africa focusing on Zambia. Department of Educational Policy Studies, Brooks: University of Albert
2. Ahrens, C., & Henson, R. (2016). Essentials of Metrology: An invitation to the atmosphere. Mexico: Cengage Learning.
3. Alokwu, C.O. (2009). The Anglican Church, Environment and Poverty: Nigerian Indigenous Oikothology (Unpublished doctoral Dessertation) University of KwaZulu-Natal, South Africa.
4. Andrić, V., & Tanyi, A. (2016) Multi-dimensional consequentialism and degrees of rightness. *Philos Stud*, 173, 711–731. <https://doi.org/10.1007/s11098-015-0515-0>
5. Armour, L. (2018). In *Idealism. 'Ethical citizenship' in Ethical citizenship; British idealism and politics of recognition*. Brooks: The Palgrave Macmillan.
6. Babbie, E., & Mouton, J. (2008). *The Practice of Social Research*. Cape Town: Oxford University Press.
7. Banerjee, T. & Srivastava, R. (2012). Plastic waste management and resource recovery in India. *International Journal of Environment and waste management*, 10(1), 90-111.
8. Barry, J. (2002). Towards a concrete Utopian Model of Green Political Economy: From economic growth and Economical Modernisation to economic Security, *Post Autistic Economics*, 36(24). [https://doi.org/10.1108/S2041-806X\(2007\)0000001007](https://doi.org/10.1108/S2041-806X(2007)0000001007).
9. Bateson, M., Callow, L., Holmes, J. R., Redmond Roche M. L., Nettle, D. (2013). Do Images of 'Watching Eyes' Induce Behaviour That Is More Pro-Social or More Normative? A Field Experiment on Littering. *PLoS ONE*, 8(12), 20-55.
10. Berry, R. J. (Ed.). (2012). *Environmental Stewardship: Critical Perspectives – Past and Present*. London: T & T Publicaation.
11. Brown, T., Lemay, E., Burstein, B., Murphy, C., Woodward, P., & Stoltzfus, G. (2018). *Chemistry: The Central Science*, Pearson New International Edition. London: Pearson.
12. Chirisa, I. (2011). An Analysis of the Environmental Stewardship Concept and its Applicability in Peri-Urban Towns: Lessons from Epworth in Zimbabwe. *Journal of Sustainable Development in Africa*, 12(4), 41-57.
13. Chitombe, J.W. (2014). Interrogating Factors Associated with Littering along Road Servitudes on Zimbabwean Highway. *Environmental Management and Sustainable Development ER*, 22 (7), 47-57.

14. Creswell, J., and Clark, L. (2011). *Designing and Conducting Mixed Methods Research*. New York: Sage Publications.
15. Doan, M. (2014). Climate change and complacency. *Hypatia*, 29(3), 21-24.
16. Douma, J. (2015). *Environmental Stewardship*. Oregon: Lurcena Crts Publications.
17. Driver, E. (2011). *Consequentialism*. London: Routledge.
18. Etzioni, A. (2009). *The Common Good and Rights: A Neo-Communitarian Approach: Law and Ethics*. *Georgetown Journal of International Affairs*, 113-119.
19. Guglielmo, S. (2015). *Frontiers/Moral Judgement as the Information Processing on the Integrative Review*. Sat Paul: Department of Psychology Macalaste College.
20. Hall, D. (2009). *Ecotheology: Voices from the South and North*. New York: World Council of Churches Publications.
21. Hall, J. D. (2004). *Imaging God Dominion as Stewardship*. Oregon: Wipf Stock Publishers.
22. Hansman, R., & Steimer, R. (2016). Conceptualizing and measuring consumer social responsibility: a neglected aspect of consumer research. *Environmental Research, Engineering and Management*, 72(1), 34-43.
23. Hiller, A. (2011). *Climate Change and Individual Responsibility Ethics, Policy, and Environment*. London: Sage Publications.
24. Hiller, A., Ilea R. and Kahn, L. (2014). *Consequentialism and Environmental Ethics*. New York and London: Routledge.
25. Holland, A. (2014). On Some Limitations of Consequentialism in the Sphere of Environmental Ethics. In: A. Hiller, R. Ilea, and L. Kahn, (Eds.). *Consequentialism and Environmental Ethics*. London: Sage Publications.
26. Igumbo, U., Sanders, D., Puoane, R., Tsokelile, L., Schwarz, C., & Purdy, C. (2012). Big food, the consumer environment, Health and Policy Response in South Africa. *PLoS Med*, 9(7), 12-20.
27. Irwin, A. (2013). *Sociology and the Environment; A Critical Introduction to Society, Nature*. London: Wiley Publishers.
28. Kay, J. (2015). *Moral and Social Responsibility*. London: Sage Publications.
29. Kernohan, A. (2012). *Environmental Ethics: An Interactive Introduction*. New York: Buffalo.
30. Khan, M. A., & Ghouri, A. M. (2011). Environmental pollution: Its effects on life and remedies. *Journal of Arts, Science and Commerce*, 2(2), 276-285.
31. Khanyile, N. (2018, May 22). Litter free City, The Witness, Pietermaritzburg.
32. Le Roux, P., & Cheryl, S. (2017). How environmental stewardship is viewed and evidenced in the Uniting Reformed Church of Southern Africa: An Appraisal of Students; Lecturers' and ministers' perceptions. *Stellenbosch Theological Journal*, 3(1), 205-225. <http://dx.doi.org/10.17570/stj.2017.v3n1.a10>.
33. Leedy, P. & Omrod, J. (2010). *Practical Research Planning and Design*. Pearson: University of Northern Colorado.
34. Lovarelli, D., Bacenetti, J., & Fiala, M. (2016). Water Footprint of crop productions. *Total Environment*, 548-549. <https://doi.org/10.1016/j.scitotenv.2016.01.022>.
35. Mulgan, T. (2015). *Understanding Utilitarianism*. Oxford: Clarendon Press.
36. Naidoo, K. (2009). *An Analysis of Municipal Waste Management in South Africa Using Msunduzi Municipality as a Case study, Pietermaritzburg (Unpublished doctoral dissertation) University of KwaZulu Natal*.
37. National Research Council. (2008). *Tackling Marine Debris in the 21st century. Committee on the Effectiveness of International and National Measures to Prevent and Reduce Marine Debris and its Impacts*. Washington, DC: The National Academies Press.
38. Oehlmann, J., Schulte, U., Kloas, W., Jagnytsch, O., Lutz, I., Kusk, K., Wollenberger, L., Santos, E., Paull, G. C., Van Look, K., & Tyler, C. (2009). A Critical Analysis of the Biological Impacts of Plasticizers on Wildlife. *Phil. Trans. R. Soc.* <http://rstb.royalsocietypublishing.org>.
39. Ogungbemi, S. (2018). An African perspective on the Environmental crisis. In Pojman, J. Louis (Ed.), *Environmental Ethics, Readings in Theory and Application*, (2nd ed.). Belmont. C.A: Wadsworth Publishing Company.
40. Ojomo, P. (2011). An African understanding of Environmental Ethics. *Journal of the Philosophical Association of Kenya*, (2)10, 43-64.
41. Perrault, E., Silk, K., Sheff, Ahn, J., Hoffman, A., & Totzkay, D. (2015). Testing the Identifiable Victim Effect with Both Animal and Human Victims in Anti-Littering Messages. *Communication Research Reports*, (32)4, 294-303.
42. Priyanka, M., & Dey, S. (2018). Ruminal impaction due to plastic materials-An increasing threat to ruminants and its impact on human health in developing countries. *Vet world*, (34)17, 1307-1315. <https://doi: 10.14202/vetworld.2018. PMCID PMC6200578>.
43. Quinn, E. (2012). *Studies on Critical Thinking for Environmental Ethics*. Nebraska: University of Nebraska.
44. Saidin, M., Linah, M., Ansour & Saidan.H., (2016). Management of Plastic Bags Waste: An assessment of Scenarios in Jordan. *Journal of Chemical Technology and Metallurgy*, (52)1, 148-150.
45. Seidel, C. (2018). *Consequentialism, New Directions, New Problems*. London: Oxford Press.
46. Smith, R., & Lourie, B. (2019). *Slow Death by Rubber Duck Fully Expanded. How Toxicity of Everyday Life Affects Out Health*. Ottawa: Knopf.
47. Tangwa, G. (2004). Some African Reflection on Biomedical and Environmental Ethics. In W. Kwasu (Ed.), *A Companion to African Philosophy*. Oxford: Blackwell Publishers.
48. Tanyanyiwa, V. (2015). Motivational Factors Influencing Littering in Harare's Central Business. *Journal of Humanities and Social Science (IOSR-JHSS)*, (20)2, 2279-0837. www.iosrjournals.org.

49. Thompson, R. C. (2015). Microplastics in the Marine Environment Sources, Consequences and Solutions. *Marine Anthropogenic litter*, 319-165. https://DOI: 10.1007/938-3-319-16510-3_8.
50. Thompson, R. C. (2015). Plastics, the Environment and Human Health *Phil. Trans. R.*, 17 (24), 18-28. <http://rstb.royalsocietypublishing.org>.
51. Torgler, B. F, S & Clevo W, (2009). Environmental & Pro-Social norms: Evidence on Littering. *Journal of Economic Analysis and Policy*, (9)1, 18-20.
52. Torgler, B., García-Valinas, M., and Macintyre, A. (2008). Justifiability of Littering: total estrogenic burden and migration from plastic bottles. *Environ. Sci. Pollut.*, 16 (1), 278–286.
53. Wagner, M., & Oehlmann, J. (2009). Endocrine disruptors in bottled mineral water: total estrogenic burden and migration from plastic bottles. *Environ. Sci. Pollut.* 16, 278–286.
54. White, D., & Heckenberg, J. (2014). *Green Criminology: An Introduction to the Study of Environmental Harm*. New York: Routledge.