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Regulating single-use plastic marine pollution: a case study of Nigeria

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REGULATING SINGLE-USE PLASTIC MARINE POLLUTION: A CASE STUDY OF NIGERIA

By

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Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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(Date): **20th September 2022**

Supervised by: **.....**

Supervisor's affiliation**.....**

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Abstract

Title of Dissertation: **Regulating Single-Use Plastic Marine Pollution: A Case Study of Nigeria**

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This study is aimed at identifying a robust, holistic, bottom-up and multi-tiered policy and legal strategy for tackling SUPs in Nigeria by examining Nigeria's regulatory approach on single-use plastics (SUPs). It also examined the motivations for the use of SUPs and its environmental concerns, notably its marine pollution challenge. Finally, this study examined international and regional hard and soft laws as well as domestic regimes in Kenya and the United Kingdom for regulating SUPs.

The study utilised socio-legal method that combined doctrinal and qualitative analysis. It utilised online survey questionnaire for collating primary data on SurveyMonkey from 403 random participants for evaluation. Primary data was also collected from primary legislation for further investigation. The data was analysed using Survey Monkey's Data Analysis tool, an artificial intelligence-based feature.

This study found that there is bad plastic disposal behaviour in Nigeria, attributable to the lack of waste management infrastructure and values, culture, and knowledge of Nigerians. The findings from this study demonstrated that the circular economy, which lessens resource waste, is a good governance model for addressing SUPs. Global, regional, and national policies and laws or governance structures as well as self-regulatory or industry-based, market/economic-based and community-led initiatives will regulate SUPs, provided there is political and public will and cooperation.

This study concluded that it is crucial that these policies, laws and initiatives are informed by scientific data and best available information when addressing SUPs. Consumers also need to follow "reduce, recycle, and reuse" (3Rs) strategy of circular economy by reducing SUPs via alternatives, reusing and recycling SUPs. Public awareness programmes must educate consumers on the risks of plastics to influence behavioural changes of habits and attitudes.

Keywords: Marine, Nigeria, Single, Use, Plastics, Pollution

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List of Abbreviations

3Rs	-	Reduce, Recycle, And Reuse
AI	-	Artificial Intelligence
ASEAN	-	Association of Southeast Nations
CSR	-	Corporate Social Responsibility
DEFRA	-	Department for Environment, Food and Rural Affairs
EPR	-	Extended Producer Responsibility
EU	-	European Union
GIVO	-	Garbage In Value Out
GPA	-	Global Programme of Action
GPML	-	Global Partnership of Marine Litter
HELCOM	-	Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area
LBT	-	Legally Binding Treaty
MARPOL	-	1973 International Convention for the Prevention of Pollution from Ships

MSFD	-	Marine Strategy Framework Directive
MPP	-	Marine Plastic Pollution
NEMA	-	National Environmental Management Authority
NESREA	-	National Environmental Standards and Regulations Enforcement Agency
NOWPAP	-	Action Plan for the Protection, Management, and Development of the Marine and Coastal Environment of the Northwest Pacific Region
OSPAR	-	Convention for the Protection of the Marine Environment of the North-East Atlantic
PIC	-	Prior Informed Consent
RAP	-	Regional Action Plan
RAPMaLi	-	Regional Action Plan on Marine Litter for the Wider Caribbean Region
SAPEA	-	Transdisciplinary Science Advice for Policy by European Academies
SDG	-	Sustainable Development Goals
SIDS	-	Small Islands Developing States

SUP	-	Single-Use Plastic
UK	-	United Kingdom
UN	-	United Nations
UNCLOS	-	United Nations Convention on the Law of the Sea
UNEA	-	United Nations Environment Assembly
UNGA	-	United Nations General Assembly
WHO	-	World Health Organisation

Chapter 1. Introduction

Chapter 1.1. Introduction

Plastic bags, also called nylon bags, are prevalent in Nigeria. Nigerians utilise single use plastic (SUP) bags for shopping, packing, and school supplies. SUP plastics are produced from petrochemicals and meant for one-time use (Landon-Lane, 2018; PlasticsEurope, 2019). Common examples include the takeout bag, straw, and candy bar wrapper which are constantly discarded after usage; medical gloves and straws for disabled people also make up a small part of SUP (ibid).

SUP endangers the oceans, animals, and health. Our waterways are in greater danger from SUP garbage than our roadways. Plastic manufacturing and consumption are rising, worsening marine trash (Goodman et al., 2020). Plastic waste dominates marine contamination, which is caused by countries without proper waste disposal infrastructure, especially in Africa.

Nigeria, a significant African player with a massive population and market, has severe SUP marine pollution problems (Aziegbe, 2007). A study of SUP use in Nigeria is needed to suggest legal and non-legal methods for controlling the problem.

Chapter 1.2. Background and Problem Statement

Population expansion in Africa causes 4.4 million metric tonnes of unmanaged trash due to infrastructural inadequacy (Livni, 2019). Nigerians use plastic products daily (Vince and Stoett, 2018). Lack of potable water causes more reliance on sachet or plastic drinking water, contributing to marine pollution (Borrelle et al., 2017). 70% of Nigerians drink a sachet of water daily, which equals 60 million plastic bottles (Babatunde and Biala, 2010). 4.8 to 12.7 million metric tonnes of land-based SUP enter the oceans yearly (Derraik, 2002). SUP waste clogs drain, hurts aquatic life, and increases marine pollution (ibid).

Twenty coastal countries, including Nigeria, pollute with plastic. Nigeria's primary concerns are plastic pollution and SUP waste management (Elenwo and Akankali, 2015). Nigeria generates 2.7% of Sub-Saharan Africa's unmanaged plastic waste (ibid). The country produces 32 million metric tonnes of trash annually, with Lagos State producing 10,000 tonnes every day (Clapp and Swanston, 2009). Plastic garbage predominates (Sindiku and Osibanjo, 2011). In the 1960s, Nigeria had 50 plastic manufacturing enterprises; by 2013, there were over 3,000 with an annual production of over 100,000 tonnes (ibid).

Nigeria's Imo, Cross, and Kwa Ibo rivers account for 67% of global plastic pollution (also known as the Quai Ibo River). The Cross River has an annual tonnage of 40,300 (33,800–65,100), the Imo River has 21,500 (17,500–35,100), and the Kwa Ibo River has 11,900 (9,300–20,800). (UNEP, 2009). Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Ogun, Ondo, and Rivers are particularly vulnerable to plastic pollution. These states' rivers dump plastics into the Atlantic Ocean. Nigeria's overflowing slums, cities, and drainage canals, which gather garbage from the country's rivers, all add to the plastic waste that ends up in the ocean during the rainy season (Bashir, 2013).

The above has hurt Nigeria's marine ecology; 83% of tap water includes microplastics, which kill many marine animals every year (Elenwo and Akankali, 2015). Plastic components can withstand natural disintegration for decades or centuries in aquatic environments (ibid). Furthermore, SUPs affect marine and terrestrial ecosystems; thus, governments have enacted a number of policies. Due to their transboundary character, attempts to deal with marine plastic pollution, especially SUPs, are multi-tiered. To this purpose, global instruments, regional marine debris action programmes, and product bans have been adopted (Vince and Hardesty, 2016; Prata et al., 2019; Jambeck et al., 2018). Many countries, especially coastal ones, have utilised legislative measures to fight plastic trash (Schnurr et al., 2018). These include fines of up to US$40,000 and prison sentences of up to four years for anyone who imports, produces, or consumes SUP bags, the world's strongest plastic bag ban (Jambeck et al., 2015). Nigeria's Lower House has passed a bill to ban plastic bags, but it hasn't been signed (Asadu, 2019). Nigeria, Africa's most populous country and greatest economy, does not have a well-articulated and holistic plastic bag reduction regime (ibid). Despite interest in minimising SUPs in Nigeria, few studies have examined these methods. To manage SUP maritime pollution effectively, its causes, breadth, and dangers must be

investigated. As the impact of plastics on the Nigerian environment is well-known, this research analysed Nigeria's policies and regulatory framework to determine their appropriateness in combating SUP marine pollution.

Chapter 1.3. Research Question(s)

The study aims to address the following question: How can Nigeria regulate single-use plastic marine pollution?

Chapter 1.4. Aim and Objectives

This study examined Nigeria's present regulatory approach to SUP marine pollution in order to identify a robust solution. This study sought to address the following research objectives to achieve its goal:

1. Understand SUP's environmental concerns, notably maritime pollution.
2. Explore worldwide and regional SUP pollution policies.
3. Identify the various regulatory methods domestic governments have taken in regulating SUP, notably SUP marine pollution.
4. Understand international and domestic policies or soft law measures to combat SUP marine pollution.
5. Understand the many motivations for SUP usage in Nigeria and governmental approaches to address these.

Chapter 1.5. Scope, Limits, and Assumptions

This paper examined worldwide, regional, and domestic SUP reduction strategies and laws. It also involved analysing the motivations for SUP use in Nigeria to identify non-legal strategies to combat SUP marine pollution. This study assumed that policy and legal measures will not be enough to combat SUP marine pollution in Nigeria. Despite existing measures, it is predicted that dealing with SUP marine pollution will require recognising other associated issues.

The study's data collection approach was a weakness. Social media use in Nigeria excludes many who lack internet connection. The research would have benefited from interviews with significant plastic sector stakeholders such as regulators and commercial firms involved in the manufacture, importation, and selling of plastics in Nigeria.

Chapter 1.6. Significance of the Study

The study has academic and practical (policy and legal) relevance. SUP have produced environmental problems in Nigeria, particularly marine pollution. Combating SUP maritime pollution will help Nigeria's marine ecology. Reduced garbage output will free drains of plastic litter. Plastic waste won't harm fish or drinking water. This will ultimately improve human, animal, and plant life or health. The study's evidence-based results will define Nigeria's future regulatory response to SUP marine pollution. Nigeria has international, regional, and domestic human rights commitments to maintain a clean and healthy environment for its inhabitants by combating SUP marine pollution. This means Nigeria must employ innovation, alternatives, awareness, etc. to promote ecologically sustainable development.

This study is notable academically because, to the researcher's knowledge, it is one of the first policy and legal studies to handle SUP marine pollution in Nigeria by also investigating non-legal factors. This aims to provide a bottom-up, multi-layered model for combating SUP marine pollution. Previous research on plastic litter and marine contamination took different methodologies. Nwafor et al. (2018) examined Nigeria's Plastic Bag Prohibition Bill, 2019, using largely legal analysis.

Chapter 1.7. Structure of the Study

This study is structured in five distinct chapters. Chapter 1 introduces the pending issues serving as rationale for studying this particular topic and importance of this research. Chapter 2 reviews academic and grey literature on plastics and waste management to understand the sources, causes, and effects of plastic contamination. The literature reviewed market-based and normative

approaches to plastic pollution (soft and hard law mechanisms). This non-legal and legal assessment aims to establish the need for a holistic approach to combating plastic pollution in Nigeria. Chapter 3 describes the study's approach to achieving its goal. It explains data collecting, analysis, and ethical considerations. Chapter 4 covers the research findings and outcomes based on collected and analysed data, a literature analysis, and several techniques for managing marine plastic pollution. In Chapter 5, the research is concluded with a synthesis of the results and implications for policy and legislative paths for managing plastic pollution in Nigeria and academic literature.

Chapter 2. Literature Review

Chapter 2.1. Introduction

This chapter reviewed empirical and grey literature on Nigerian plastic pollution. The chapter also discussed plastic pollution in Nigeria's sources, causes, and impacts. Scholarly literatures were evaluated to examine how to manage plastic contamination in Nigeria's marine environment. The analysis of literature focused on the whole lifecycle of plastics beyond marine plastic pollution because policy and regulations must target plastics' life cycle governance. The review identified gaps in the literature on plastic contamination, notably in Nigeria to aid the understanding of how this research aimed to fill existing gaps in policy and knowledge.

Chapter 2.2. Plastic History

Plastic has long been used as an unintentional hydrocarbon breakthrough everywhere; Since the 1970s, plastic bag consumption has consistently increased (Williamson, 2003). Since the 1950s, 8300Mt of virgin polymers have been produced (Mahmood et al., 2020). Figure 1 demonstrates plastic production's exponential growth in recent decades.

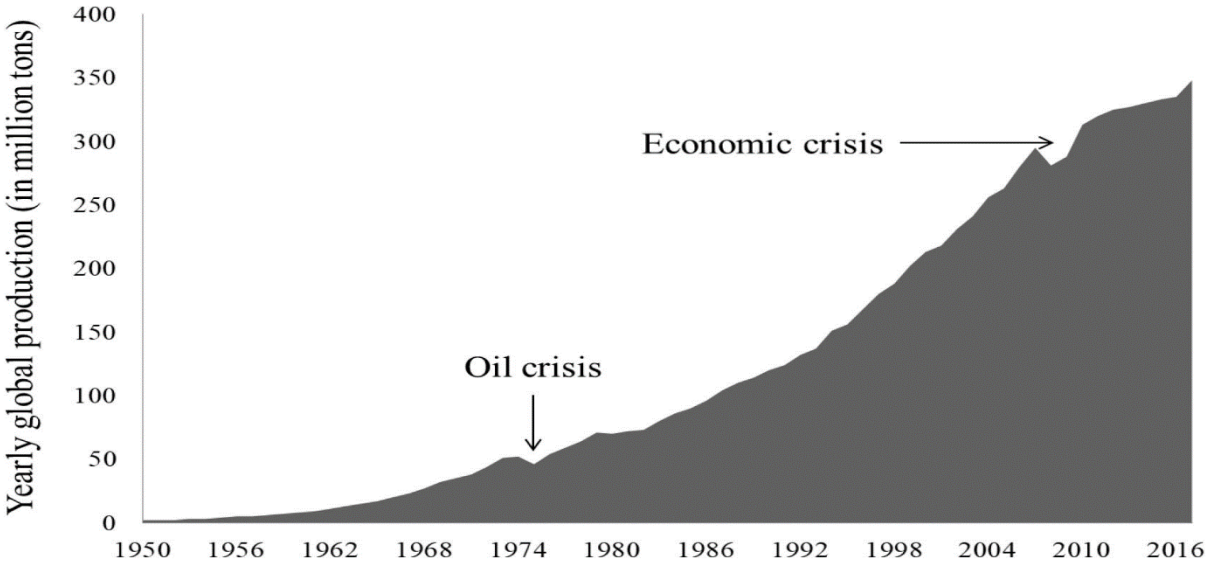

Figure 1 Plastics production worldwide, 1950-2017 (Schlanger, 2018)

The 20th century saw widespread use of plastics (Sugii, 2008). It was an inexpensive, versatile, and durable resource used in appliance bodies and SUP bags. After one use, most bags are tossed (Moharam and Maqtari, 2014). Western Europe promoted plastic bag production after the United States of America's petrochemical sector (Clapp and Swanston, 2009). Users first ignored its harmful effects because it was a comfortable and inexpensive material (Mulder, 2013). No one alerted the public about the risks of plastic until environmentalists saw broad ramifications (ibid). In recent times, it has become harder to encourage people to stop using it and use alternatives (Abbas, 2020). Kumar (2018) says more nations are employing these things without considering their environmental impact. Plastic has many benefits, but the current system presents environmental issues while production and consumption patterns have gotten little attention (Imran and Abbas, 2020). 85% of plastic grocery bags are carelessly thrown away while plastic bottles, plastic-lined food containers, and other trash contaminate groundwater and harm wildlife (Kumar, 2018).

Chapter 2.3. Plastics Pollution

Chapter 2.3.1. Global Context

Increased use and manufacture have increased global plastic pollution with plastics contributing up to 80% of marine waste (Jambeck et al., 2015). Plastics of up 380 million tonnes were produced globally in 2018 (Karbalaei et al., 2018). The volume of plastic cannot be recycled.; As at 2015, 320 million tonnes of plastic rubbish were thrown in the environment and burned (Geyer et al., 2017). Plastic pollution is on land, in the water (especially beaches), and on the ocean floor (Goodman et al., 2020). Plastics in the marine environment are a global concern due to their persistence and harmful impacts on seas, aquatic life, and people (Karbalaei et al., 2018). 80% of ocean plastic comes from land, 20% from sea (Jambeck et al., 2015). 4.8 to 12.7 million metric tonnes of land-based plastic trash enter waters annually (Li et al., 2016). Scholars have noted how difficult it is and will be to clean up spilled trash, which might reach 53 million tonnes by 2030 (Borrelle et al., 2017). Stopping the flow of plastic into the economy and ocean is the only long-

term answer which is why plastic's detrimental effects on oceans are currently undergoing regular investigations (Dauvergne, 2018).

Chapter 2.3.2. Nigerian Context

Plastic bags, often called polybags or nylon bags, are crucial in Nigeria; Nigerian households, companies, shops, markets, and schools utilise plastic bags for packing and shopping as SUP demand climbed 20% between 2012 and 2017. (Saibuatrong et al., 2017). 20 coastal nations, including Nigeria, produce most plastic pollution while Nigeria ranks 8th in plastic pollution and rubbish management (Jambeck et al., 2015). Nigeria produces 32 million metric tonnes of trash, largely plastic, annually with its most commercial state (Lagos) producing 10,000 metric tonnes of trash daily (Anichebe, 2019). Over 30% of Nigeria's 32 million tonnes of solid trash is plastic, or 7.5 kg per person (Rigasa, 2018). By 2013, approximately 3,000 plastic companies in Nigeria had a 100,000-tonne-per-year capacity (Sindiku and Osibanjo, 2011). Nigeria's marine habitat is in a sufferable state with plastics killing marine animals annually while 83% of tap water contain microplastics (Hanafi, 2018). Lagos, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Ogun, Ondo, and Rivers are prone to plastic pollution because several rivers in these states dump plastics into the Atlantic Ocean (Jambeck et al., 2015). Plastic particles linger in the aquatic environment for decades or centuries because they resist natural breakdown (Prata et al., 2019; Nicholls, 2022). Stormwater discharges, sewer overflows, littering, industrial activity, and landfills are land-based sources. Nigeria generates 2.7% of Sub-Saharan Africa's plastic waste (Jambeck et al., 2018). Inability of Federal and State governments to provide basic services to rising population contributes to plastic pollution in Nigeria where heavy rains regularly transport plastic debris from major city centres, slums, and drainage canals into the ocean (Omofonmwan and Osa-Edoh, 2008). Onitsha, Kaduna, Aba, and Umuahia were among World Health Organisation (WHO)'s 20 most polluted cities in 2016 (WHO, 2016). 90% of ocean trash comes from ten rivers two of which are in Africa (Nile and Niger) and eight in Asia (Schmidt, 2017).

Chapter 2.4. Nigerian Plastic Pollution Causes and Effects

Many Western societies are aware of "plastic pollution's" environmental and health consequences (Lotze et al., 2018). Marine plastic pollution has gotten more media attention (Carrington, 2016; Poulter and Hoare, 2016). Despite rising awareness of plastic pollution (on land and marine ecosystems) in the Global North, little is known about microplastics and nano-plastics worldwide (SAPEA, 2019). The methods and language for using these phrases are not standardised. The Transdisciplinary Science Advice for Policy by European Academies (SAPEA) working group determined that "microplastics" are "plastic particles of mixed forms prevalent in air, soil, freshwater and seas, in biota, and in several components of human diet" and are less than 5 mm in size (SAPEA, 2019, p.7). Nano-plastics are "inadvertently generated (from the fabrication and degradation of plastic products) colloidal particles between 1e1000 nm" (Gigault et al., 2018).

Because most study has focused on land-based (macro) plastic contamination, less is known about marine microplastics in Africa. Southern Africa's few microplastic contamination studies (Khan et al., 2018; Nel and Froneman, 2015). In Nigeria, scholars focus on solid waste management concerns (Anyanwu and Adefila, 2014). In Nigeria, there has been no research on marine plastics despite many studies noting how poor waste management enables plastic pollution (Babatunde and Arinze, 2018; Elenwo and Akankali, 2015).

Chapter 2.4.1 Bottled and Sachet water

Nigerians utilise plastic bags, straws, glasses, and utensils, but sachet-packaged drinking water is a distinguishing feature. Nigeria packages drinking water in 500-mL plastic sachets (Aziegbe,2007; Omole et al., 2015). Plastic sachet water bags are a regular sight and well accepted in Nigeria, where polyethylene (cellophane) is often used for packaging and marketing products (Aziegbe,2007). Sachet water, also termed clean water in Nigeria (Muhammad and Dansabo, 2018; Murdock, 2013), was produced in 1990 by Mrs. Victoria Bolanle Oginni (Babatunde and Biala, 2010; Azuh, 2015).

Sachet water, which historically cost 10 naira ($0.028), is an important water source in Nigeria; In a study of sachet water use in Nsukka (a city in South-eastern Nigeria hosting the University of Nigeria), Ezeokpube and Obiora (2014) found that the University ward had the highest consumption (72%), with 53% of the population consuming it. sachet water (23%) was second to borehole water in a city, according to Nnaji et al. (2013). (64 per cent). Rainwater (7%), tap water (3%), and bottled water (2%). (Nnaji et al., 2013, p. 127). Multiple brands of sachet water are popular due to their low cost and supposed "purity" (Omole et al., 2015).

70% of Nigerians consume sachet water, according to Edoga et al. (2008). Daily consumption of 60 million plastic sachets. Nonbiodegradable plastic sachets hurt the environment by not degrading. Plastic garbage fragments into microscopic toxic components that contaminate soil and waterways, clog drains, and cause water and sewage to overflow, according to Akinola et al (2014). Burning plastic sachets, a common practise in Nigeria, causes drainage blockage, water pollution, and air pollution, according to another study (Ezeokpube et al., 2014).

Nigeria produces 42 million tonnes of solid garbage annually (Nnaji, 2014; Ike et al, 2014). Nigeria's solid trash is 20% plastic (Akinola et al, 2014). In six Abuja districts analysed by Imam et al. (2018), plastic waste ranked second after food waste. Abuja produced 5357.687,800 tonnes of plastic and 9257.822,800 tonnes of sachet water waste in 2012. Nigeria ranked 10th globally in waterway and marine environment pollution in 2015, contributing 0.13 to 0.34 million tonnes of plastic waste (Nwannekanma, 2018). Lagos contributes 450,000 tonnes of plastic rubbish to the ocean each year, according to the Lagos State Commissioner for the Environment (Olowoopejo, 2018).

Salami (2018) concerns pollution (particularly plastics) in Nigeria and says plastic bags are a sign of waste and decadence. The author further stated that plastic bags are not the only source of pollution in Nigeria, but they are the most visible because they clog waterways, hinder drainage systems, litter streets, and wind up in sewage banks. Lagos produces 9000 tonnes of trash daily, 86% of which is plastic bottles and bags. Without an adequate waste management system, all trash ends up in rivers and oceans (Olowoopejo, 2018).

Chapter 2.4.2 Careless Disposal

Since many governments have failed to provide safe drinking water, plastic water in cellophane sachets has helped reduce the country's water deficit (Edema et al., 2011). Polythene bags help commercial transactions (Okeke and Mudashir, 2018). Carelessly discarded Single-use plastics (Olabode and Lawrence, 2018). They contribute greatly to plastic pollution (Nnaji, 2014). In Nigeria, mounds of plastic garbage are common (Adegboye, 2018).

Daniel and Ibok (2013) found that student housing locations in Uyo, Southern Nigeria, had more litter than non-student housing areas. Poor hygiene and trash disposal were blamed (Daniel and Ibok, 2013). Plastic waste (12%) ranked third in environmental toxins, after food (38%) and paper (36%). Plastic can't biodegrade like paper and food (Nnaji, 2014). Locals and students dump trash in bushes, causing plastic pollution (Daniel and Ibok, 2013). Daniel and Ibok (2013) say values, culture, and indigenous knowledge influence pupils' plastic disposal behaviour. Many lack hygiene instruction. Poor waste management of Nigerian students contrasts with that of their Philippine counterparts, who "always practised waste segregation by sorting their solid wastes such as plastic, paper, and vegetables" (Dolipas et al, 2018, p.213).

Other Nigerian customs could aggravate plastic pollution. Under bridges and along busy roadways, rubbish is dumped (Ike et al., 2018; Imam et al, 2008). Nigerian cities use open dumpsites. 50% of Maiduguri and Ughelli inhabitants dump their trash in open dumps, according to Nnaji (2014, p. 53). Most dumpsites are illegal or unregulated. 81% of the 72 dumpsites he visited in Nsukka were illegal (Nnaji, 2014). Many factors contribute to littering, including a shortage of litter facilities (waste bins) and the belief that people are more likely to litter if a site is already littered (Schultz et al., 2013). This may explain why illegal open dumpsites are so frequent in Nigeria.

Plastic garbage bags and other containers are used to store domestic waste, which is then thrown in culverts and drainage channels (gutter) during rainfall (Adegboye, 2018; Olukanni et al., 2014; Imam et al., 2008). Lack of waste management knowledge drives these behaviours (Adegboye, 2018). Nigeria's hygiene and sanitation are poor. According to Asase et al. (2009), a lack of social

will or a rising “I-don’t-care” attitude contributes to indiscriminate rubbish disposal and may worsen plastic pollution in Nigeria.

Chapter 2.4.3 Understanding, Principles, and Waste Management

Poor waste management may result from a lack of understanding of the harm unclean waste behaviours do (Ike et al., 2018). Ifegbesan et al. (2017) evaluated Nigerian students' solid waste management attitudes. They noticed littering, open garbage disposal, and uncollected waste on campus. Despite widespread problems, "40.5% of pupils were concerned about solid waste" (Ifegbesan et al., 2017, p.1244).

Individual, cultural, and environmental views influence "environmental attitudes and behaviour" Consciousness, knowledge, beliefs, attitudes, and personal and societal conventions (SAPEA, 2019). These characteristics may motivate action but limit behaviour change (ibid). Before an individual or organisation can take actions to reduce plastic litter, they must be aware of it (i.e., toward solving the problem). To reduce plastic pollution, Nigerians must be informed. Information alone cannot change behaviour, studies reveal (Nisbet and Gick, 2008). Environmental psychologists say caring about the environment will minimise plastic pollution (Steg et al., 2015). Given how handy plastic items are in Nigeria, it may be claimed that using plastic sachet water bags is definitely helpful and there would be no public support for controls or prohibitions. Environmental psychologists say people's values affect how they react to plastic pollution (van den Broek et al, 2017). These values affect whether people favour or reject plastic pollution regulation (van den Broek et al, 2017).

Chapter 2.4.4. Plastic Pollution and Waste Management

Waste management and clean-up are important governance solutions (Mendenhall, 2018). Sub-Saharan Africa lacks recycling infrastructure, skilled labour, and other variables, causing a waste management dilemma (Asase et al., 2009). Nnaji (2014) defines waste management as "production, storage, collection, transfer, sorting, treatment, material recovery, and disposal."

Nigeria lacks infrastructure, skill, and will. Nigeria lacks plastic and non-plastic waste recycling facilities (Salami, 2018).

Since Lagos' waste management system is weak and ineffectual, "more than half of the rubbish is uncollected," Kofoworola (2007, p.113) says. According to Ogwueleka (2009), 30-60% of the nation's solid garbage is not collected. Plastic trash decomposes into microplastics. Nnaji (2014) observed that 80% of people in other Nigerian cities, towns, and villages do not receive waste collection services. According to DFID (2004), Abuja's garbage collection agency serves 56% of its residents. Most waste management organisations and infrastructure are dysfunctional, which affects plastic contamination (Nnaji, 2014). Not privatising garbage collection and management contributes to Nigeria's pollution problem. Instead, it's mostly controlled by government agencies with inadequate waste management facilities (Ike et al., 2018). This worsens plastic pollution. The institution's garbage management lacks funding, people, and trucks, according to Akeh and Shehu (2018).

Because Nigeria lacks infrastructure like a good road system, garbage collectors must confine their services to easily accessible areas (Nnaji, 2014). Unattended households are common. Locals that need them turn to unauthorised open trash sites. Lack of waste management understanding hinders individuals from using them in limited places (Babayemi and Dauda, 2009).

Chapter 2.5. Combating Marine Plastic Pollution

Chapter 2.5.1. Market-Based Incentives

Third party certifications and a "Plastic Stewardship Council" are argued to provide impactful policies that are not solely self-regulated, so long as it is industry endorsed with multiple studies identifying industry licencing with EPR schemes as vital in upcoming agreements (Borrelle et al., 2017; Chen, 2015; Forrest et al., 2019; Landon-Lane, 2018; Schröder and Chillcott, 2019). Monroe says these programmes could force businesses to pay for plastic clean-up and recovery, but they must also hold producers accountable for earlier pollution (2013). Plastic lobbying impedes efforts to enact these policies. Schröder and Chillcott (2019) examine plastic manufacturers' efforts to

stop EPR and virgin polymer levies. Economies of change should include binding agreements to stop fossil fuel subsidies (Borrelle et al., 2017), which might raise the price of virgin plastic and enhance the recycled plastic market.

Despite efforts to support bottom-up governance, plastic rubbish globalisation is increasing environmental costs (Dauvergne, 2018). Marine plastic waste might cost the globe $13 billion yearly. Today, this expenditure is near 2 trillion USD yearly (Schröder and Chillcott, 2019). Additionally, changing economic conditions have necessitated the need for international aid for countries with weak trash and recycling systems, like the climate fund (Borrelle et al., 2017).

Chapter 2.5.2 Normative Frameworks

Chapter 2.5.2.1. Soft Law

In addition to basic waste management, "soft law" announcements from UN conferences, the UN General Assembly, and other authoritative international forums are also essential. Soft law instruments can't be enforced, but they have benefits. Having oral force; they express the consensus opinion of the international community; they offer direction on how to interpret "hard law" Conventions; they may be employed in customary law concerns. UNGA Resolution 2749, World Charter for Nature, UN Conference on the Human Environment Declaration, Agenda 21 (Chapter 17), Honolulu Strategy, Stockholm Declaration, Rio Declaration, and Sustainable Development Goals (SDG).

National, international, and industrial regulations are poorly enforced. Due to absence of responsibility, soft law (non-binding agreements) dominates plastic government (Vince and Hardesty, 2018). UNCLOS (1982) uses phrases like "…Nations shall endeavour" or "best practical means…" but fails to address responsibilities and financial implications (Gold et al., 2014).

Chapter 2.5.2.2. International Treaty

Plastic pollution is a global issue that no single government can manage (Dauvergne, 2018). According to experts, rules and laws, such as a Legally Binding Treaty (LBT) or globally binding agreement are probable effective solutions to tackling plastic pollution (Raubenheimer and McIlgorm, 2018).

The study examined the possibilities for international law to coerce or persuade countries and private enterprises to minimise marine plastic pollution. International and regional agreements limit marine plastic pollution. United Nations Convention on the Law of the Sea (UNCLOS), London Convention, 1973 International Convention for the Prevention of Pollution from Ships (MARPOL), and Basel Convention are international treaties. Regional accords include Africa's Bamako Convention, the EU's Waste Framework Directive, and the Water Framework Directive. Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) (North Atlantic), Cartagena (Caribbean), Helsinki (Baltic Sea), and Barcelona (Mediterranean Sea).

Table 1 highlights current international legislation and their impediments to addressing the global plastic problem (Haward, 2018; Landon-Lane, 2018; Raubenheimer and McIlgorm, 2018).

Table 1 International law's shortcomings on marine plastic pollution

International Law	Shortcomings
UNEA 5.2 Resolution towards Plastic Treaty	A non-binding resolution; the time-consuming nature of negotiating treaties; and what approach the treaty should take
Basel Convention including 2019 amendments on plastics	All plastics are yet to be declared hazardous; and implementation failures
Law of the Sea Convention	Contains no specific provisions on marine litter, including penalties
Stockholm Convention	It covers only a fraction of hazardous plastic additives or chemicals; over 1500 chemicals used in plastic production have been identified as harmful yet not prohibited.
MARPOL 73/78, Annex V	It lacks monitoring and enforcement capabilities
London Protocol	It fails at enforcement and monitoring
UNEA Regional Seas Programmes	Programmes related to plastics are mere guidelines (non-binding).
Honolulu Strategy	Volunteer-supported; and not legally binding

Global initiatives to regulate plastics began decades ago, but leadership is still needed. Present agreements don't recognise that 80% of marine plastic garbage comes from land (Simon and Schulte, 2017; Landon-Lane, 2018). Global plastic governance issues were revealed. Our current international norms and treaties fall short of plastic pollution's extent and severity (Chen, 2015; Dauvergne, 2018; Haward, 2018; Schröder and Chillcott, 2019).

The UN has approved a treaty to combat plastic pollution. The United Nations Environment Assembly's fifth session ended on March 2, 2022 with the United Nations Environment Assembly (UNEA)-5.2 Resolution, which advocates for the eradication of plastic waste and the development

of a legally enforceable worldwide agreement by 2024. (United Nations, 2022). This is important since it considers plastics' whole lifespan. Chapter 4 delves further.

Chapter 2.5.2.3. Nigerian Law

Some governments are still creating legislation, but others have banned polythene. UN 2018 report: 127 nations have banned plastic bags (Mahmood et al., 2014). Nigeria's Federal House of Representatives passed a measure that may put plastic bag violators in jail and placed a ban on commercial and household plastic bag use, production, import, and sale; This protects seas, rivers, lakes, forests, and wildlife from landfills and waste management systems (Asadu, 2019). Prohibitions, fines, bag fees and other measures are used domestically to prevent marine plastic pollution. Chapter 4 explores normative strategies to combat marine plastic pollution (soft and hard laws).

Chapter 2.6. Conclusion

The chapter reviewed academic and grey literature to understand plastic pollution's sources, causes, and impacts. It identified measures or ideas for combating plastic pollution in Nigeria to aid policy and legal reforms. Marine pollution is a global problem that endangers humans, animals, plants, and the ecosystem. It shows that market-based techniques and normative frameworks can be used to combat plastic pollution. Despite their promise to reduce plastic pollution, these strategies are flawed. Finally, The literature review identified the lack of a holistic approach to managing plastic pollution, especially in Nigeria.

Chapter 3. Methodology

Chapter 3.1. Introduction

This chapter describes the research method. It explains the research methodologies and philosophy. It explains the study's ethical considerations and research methods. A research methodology involves collecting data, analysing and interpreting it, and drawing conclusions from it (Surbhi, 2018; Murthy and Bhojanna, 2009). A research endeavour entails more than collecting and analysing data; it also requires answering the researcher's research questions to discover new things (Claybaugh, 2020). To be accepted, new knowledge must be shown valid. Research technique determines a thesis's validity (Opoku et al, 2016; Walker, 2006). Holden and Lynch (2004) stated that study's methods should be appropriate to the phenomenon being examined and the researcher's philosophy. Research methods should reflect the researcher's beliefs (Goulding, 2002). The research technique combines doctrinal analysis with qualitative research as described in the remaining sections of this chapter.

Chapter 3.2. Doctrinal Analysis

This socio-legal study combines doctrinal analysis with qualitative investigation. Combining legal research approaches is increasingly standard. Doctrinal legal analysis focuses on case law, laws, and other legal sources (Dale, 1988; Wendel. 2010). It examines the law as it is, not as it should be or its effect, as the natural law school does and can provide a beginning point for legal research, as with this study. Sociolegal studies go beyond merely positivist doctrinal methods (ibid). This is because positivist doctrinal analysis can be detached from reality by ignoring a law's meanings or impacts and focusing only on internal normative or legal consistency (Ellis et al., 2009). This research used doctrinal legal analysis to examine SUP prevalence and the regulatory (law, regulations, and institutional) framework governing SUP manufacture, import, use, and disposal.

Chapter 3.3. Qualitative Method

Research methodologies include quantitative, qualitative, and combined (Gammelgaard, 2017). Quantitative researchers collect numerical data systematically and analyse it objectively (Haq, 2014; Macdonald and Headlam, 2008). The qualitative technique describes the researcher's observations in detail (Kothari, 2004). It explains the data. Qualitative approaches are subjective, while quantitative methods are objective (Choy, 2014). Qualitative research collects non-numerical data from participants using interviews, surveys, questionnaires and participant observations (Bryman and Bell, 2011). Combining quantitative and qualitative techniques developed hybrid approaches. It allows researchers to employ both methodologies in a single study to better understand social interactions and pinpoint their flaws (Brannen and Moss, 2012).

This study chose qualitative research since it analysed non-numerical data to understand human experiences, concepts, and viewpoints (Denscombe, 2014). Thus, utilising a qualitative approach to meet the study's research aims is regarded to be effective (Buchanan and Bryman, 2007).

Chapter 3.4. Data Collection

Surveys collect comments, opinions, critiques, and ideas (Hinkin, 1998; Couper, 2008). The study collected data via an online survey; the online survey questions were built on Survey Monkey (Nagalakhmi and Trivedi, 2015; Symonds, 2011). In the past, participants received printed surveys (Boyer et al, 2002). Internet surveys have made data collection much easier by removing the human element (Best and Harrison, 2009). Furthermore, online survey is a cheaper, faster, and can collect data from a large group (Adamson, et.al., 2004). The English-language poll was distributed to random Nigerians with internet connection. The survey was performed online due of the global epidemic.

The survey questions varied; The online survey questionnaire asked about participants' state of origin, age, gender, education level, occupation, and household description. Questions were open-

ended, closed-ended, multiple choice, matrix/rating scale, and ranking. Researchers now use social media frequently, which has shaped research; social media has several benefits, including the ability to collect data from a large number of individuals (Mayr and Weller, 2017). 25 million Nigerians utilise social media (Statista, 2021), which is enough for the research. This study used Facebook and WhatsApp to spread the survey and obtain lots of responses. The link to the survey was sent to participants by internet, email, or social media. Primary and secondary data were obtained for this study. 403 random participants were surveyed to obtain primary data based on perceptions of Nigerians. For the legal aspect of this study, primary data included statutes and case laws, domestic, regional, and international legislation. which were acquired via Law Pavilion and LexisNexis. Primary legal data sources were important for legal research since they establish the current legislation on the legal topic. The study also collected secondary data from books, journal articles and reports. It used Mendeley and Google Scholar to find global and Nigerian plastics literature. These papers provided secondary data on global and Nigerian plastic pollution. Non-legal and legal secondary data were obtained and used to explain or interpret legal concepts or describe the current state of the law.

Chapter 3.5. Analysis

The data collected was analysed using Survey Monkey's Data Analysis Tool, which uses machine learning, natural language processing, and text analysis; This paid feature included Sentiment Analysis and Word Cloud (Abd Halim et al., 2018). Sentiment Analysis automatically categorises text replies and shows responder sentiment (Best et al., 2009). This textual analysis exposes underlying sentiment as it can read, analyse, and filter thousands of open-ended comments (Adamson et al., 2004). Word Cloud shows the most frequent terms and phrases without manually classifying or labelling data; Sentiment Analysis and Word Cloud use NLP and machine learning to analyse and visualise data (Ramshaw, 2022). As respondents completed surveys, real-time data analysis and results are provided. The survey results and data can be downloaded. Unlike machine learning and NLP, qualitative research uses the researcher's perceptions to analyse data, making it subjective (Choy, 2014). This study used interpretivism since it relies on the interpretation of the searcher about the facts to measure a phenomenon (Darby et al, 2019; Collis and Hussey, 2014).

Chapter 3.6. Scope and Assumptions

This study reviewed international, regional, and domestic plastic reduction initiatives and laws. It also required analysing the incentives for plastic use in Nigeria to identify non-legal strategies to combat marine plastic pollution. This study assumed that policy and legal measures will not be sufficient to combat marine plastic pollution in Nigeria and that dealing with marine plastic pollution will need recognising other causes contributing for the increase of SUP despite present restrictions.

Chapter 3.7. Ethical Considerations

This research only proceeded upon obtaining the prior approval of the Research Ethics Committee of the World Maritime University (WMU) because the research involved human participants. Furthermore, the research complied with the *Belmont Report on Ethical Principles and Guidelines for the Protection of Human Subjects of Research* (NCPHSBBR, 1979). Accordingly, the research adopted international norms regarding the ethical treatment of the research participants and the data gathered. This means that the researcher respected the participants and treated them as autonomous persons capable of making informed decisions where sufficient information is provided to them. Participants were informed of the purpose of the study, who is undertaking it and why it is being undertaken. Thus, they were given the opportunity for informed consent to participate in the study without any coercion or undue pressure and made to know they can withdraw their consent to participate at any time. Furthermore, the anonymity of the participants was preserved and their information were kept confidential and participants were well informed about the risks and benefits of the study to them and Nigeria as a country.

Chapter 4. Findings and Results

Chapter 4.1. Introduction

In this chapter, the results and findings of the study are presented reflecting the method that was adopted in undertaking the research. This socio-legal method comprising of a qualitative approach and doctrinal analysis ensures that the results of both approaches are analysed and presented. The qualitative data collected via Survey Monkey are analysed and presented. Furthermore, a doctrinal analysis is also undertaken of the applicable laws, including case law. The aim is to provide non-legal and legal approaches for tackling the plastic bag challenge. The non-legal approaches for combating single-use plastics (SUPs) are gleaned from the responses of research participants. This study will also consider the non-legal measures that have been undertaken in various parts of the globe. The chapter will also explore the legal measures for achieving the same objective by focusing on soft and hard international, regional, and domestic regimes. Various community-led initiatives and self-regulatory and market-based measures will also be discussed. Importantly, the chapter will examine Nigeria's legal regime with a view to assessing its suitability for addressing the plastic problem in Nigeria. The chapter will seek to provide a holistic, bottom-up strategy for tackling SUPs in Nigeria aimed at ensuring the protection of the marine environment.

Chapter 4.2. Results from the Qualitative Analysis

Chapter 4.2.1. Background to Survey Questionnaire

The survey questionnaire gathered data for a study on the regulation of SUPs in Nigeria. This survey questionnaire sought to determine the public's current use and disposal of SUPs and show their understanding of the environmental impacts of the use of SUPs in Nigeria. It was aimed at identifying the factors that shape the use of SUPs and understanding their perception of the ban on the use of SUPs. The survey also sought to understand the challenges preventing the use of reusable bags or alternatives and to identify measures on how to holistically tackle the challenges of the use

of SUPs. As noted, the outcome of the survey is to design a holistic framework for curbing the problems of SUPs aimed at the protection of the marine environment.

The respondents to the survey questionnaire participated because they are Nigerians who are 18 years old and above and are citizens and/or residents of Nigeria with access to the internet. Respondents' participation was entirely anonymous and voluntary.

Chapter 4.2.2. Demographics

The survey questionnaire received a total response of 403 respondents from different locations in Nigeria. The completion rate of the survey was 100% at a time of 10 minutes, and 27 seconds. In terms of demographics, the respondents come from various states in Nigeria as shown in Table 2 below.

Table 2 Respondents by the state of origin

State	**Respondents**	**%**
Lagos	89	22.19%
Edo	60	14.96%
Delta	39	9.73%
Anambra	28	6.98%
Imo	19	4.74%
Enugu	15	3.74%
Rivers	14	3.50%
Ogun	14	3.49%
Bayelsa	13	3.24%
Kwara	11	2.74%
Niger	10	2.50%
Abuja	9	1.90%
Abia, Kaduna and Kogi	8 each	2.00% each

Osun	7	1.75%
Akwa Ibom, Cross River and Ondo	6 each	1.50% each
Plateau	4	1.00%
Benue, Ekiti, Gombe, Kebbi and Oyo	3 each	0.75%
Adamawa, Bauchi and Kano	2 each	0.50%
Ebonyi, Jigawa and Nasawara	1 each	0.25%
Borno, Sokoto, Taraba, Yobe and Zamfara	0	0.00%

The respondents were male (49.50%) and female (50.00%) at various age brackets as shown in figure 4.1. The highest age bracket of respondents was 30-40 (55.22%) with 222 respondents.

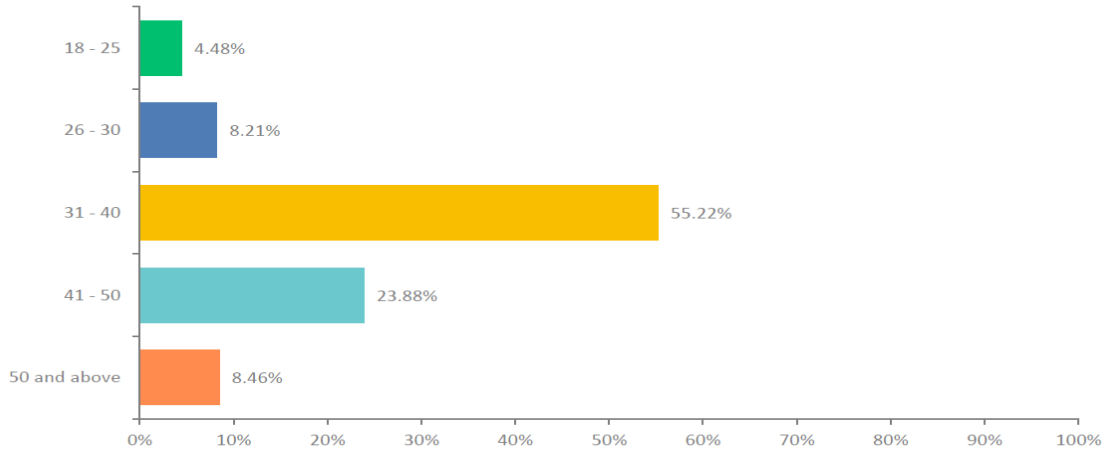

Figure 2 Age of respondents

The results also show that in terms of education or vocational skills, respondents with a postgraduate degree stood at 211 out of 403 (52.62%) as the highest followed by those with a

university degree (42.89%). This indicates that most of the respondents are highly educated people. It may seem understandable because those with access to the internet and who can answer the survey questions must be educated. Those with primary education were the lowest respondents at 0.25% while those with secondary education and vocational skills followed with 0.75%. Occupation data show that the highest number of respondents are educated (64.84%), which may confirm the fact that they are highly educated people. The least number of respondents were apprentices (0.25%) and unemployed (0.25%). Household data show that 59.10% of respondents (237 out of 403) have families with children, followed by those in single households (31.42%).

Chapter 4.2.3. Plastic Behavioural Patterns

The data on plastic behaviour seems interesting. It shows that a high volume of plastics is used in the country. Between 0-9 plastic bags are utilised daily by individual respondents. It revealed that 4.48% of respondents (18 out of 403) utilise up to 10 plastic bags daily while 6.97% of respondents (28 out of 403) use between 7-10 plastic bags every day. The high incidence of the use of plastic bags in Nigeria is further shown in Table 4.2 with 82.59% (332 out of 403) stating that they always requested bags whenever they are making a new purchase in a shop or at the market. Interestingly, this high volume of the use of plastic bags is indicated with about 90.55% of respondents stating that they use plastic bags provided by the retailer to carry their shopping content. Only 9.45% (38) respondents say they bring their reusable plastic bags to carry their shopping contents.

Table 3 Requests for new plastic bags on purchases

ANSWER CHOICES	RESPONSES	
Yes	82.59%	332
No	17.66%	71
TOTAL		403

The result from the qualitative study indicates that plastic bags are requested from various places such as supermarkets (88.06%), open markets (56.97%), pharmacies (54.48%) convenience stores (53.23%), street/corner shops (48.01%) and restaurants or eateries (44.28%). As to frequency or

how often they visit these places, 53.73% say they visit once or twice weekly while 21.14% visit 3-5 times per week. Daily visits to these places were at 9.45% (38 out of 403) of the respondents. Interestingly, when it came to whether they will avoid stores or retailers that do not provide plastic bags to customers, the result shows that respondents are almost divided into two. While 39.05% were in the affirmative, 36.32% would not avoid such retailers. The data also showed that over 80% of respondents kept their plastic bags for reuse after they have removed the items bought with the plastic bags. This seems rather odd considering that the earlier results indicate high use of plastic bags. Most respondents had previously indicated that they requested new plastic bags whenever they went shopping. About 26% (108) of respondents say they throw their plastic bags in the dumpster or dustbin. This seems to agree with earlier data on the high use of plastic bags. Only a fraction of 3.48% of respondents recycles their plastic bags.

Respondents provided the various reasons why they use plastic bags and "convenience" (73.07%) is at the top of the list of reasons with "availability" (54.86%) as the next on the list. Other stated reasons as shown in figure 4.2 are cheapness and durability. Interestingly, the data show that one of the key reasons for the use of plastic bags is the lack of reliable alternatives (44.14%).

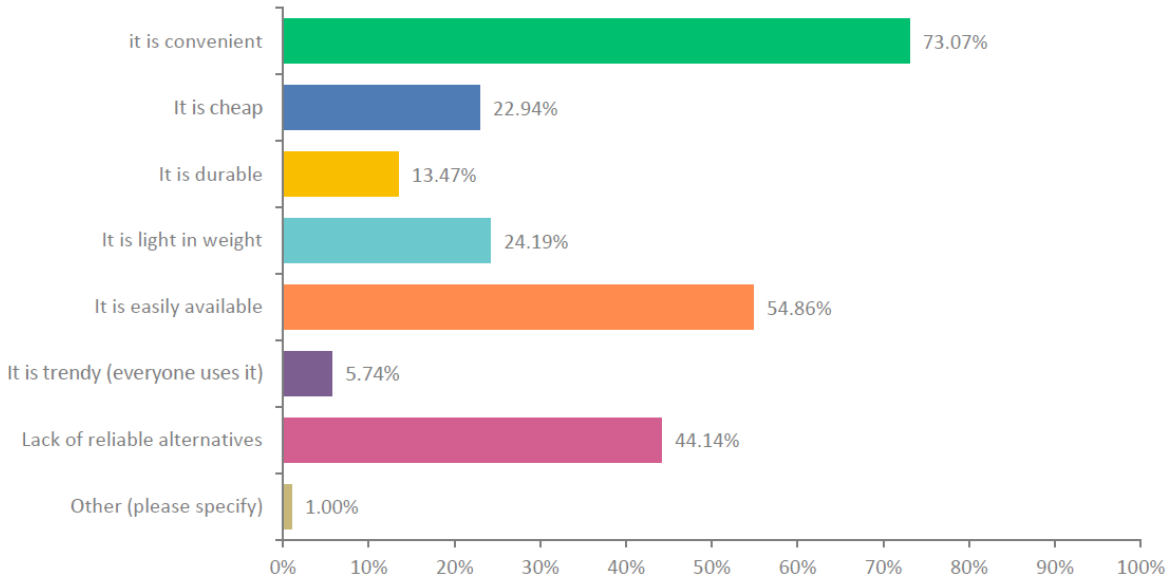

Figure 3 Reasons for use of plastic bags

Chapter 4.2.4. Plastic Waste and the Environment

On the crucial issue of the harmfulness of plastics to the environment, 85.79% of respondents agreed that plastics are harmful to the environment while about 10% stated that they have no knowledge of whether it is harmful or not. Table 4.3 show that respondents displayed a very good knowledge of some of the harmful impacts of plastic bags on the environment. This is unsurprising considering the level of education of most of the respondents. These include blockage of drainage and sewages (92.79%), deterioration of the beauty of the natural habitat (65.92%), and flooding (57.46%).

Table 4 Harmful impacts of plastic bags to the environment

ANSWER CHOICES	RESPONSES	
None of the above	0.50%	2
Contamination of drinking water	30.85%	124
Flooding	57.46%	231
Blockage of drainage/sewages	92.79%	373
Human health problems	32.84%	132
Animal health problems	37.31%	150
Destruction of plants	28.61%	115
Food security challenges	13.93%	56
Deterioration of natural beauty of	65.92%	265

Chapter 4.2.5. Regulation and Alternatives to Plastic

The data results on the Bill Prohibiting the Manufacturing, Importation and Use of all Plastic Bags for Commercial and Household Packaging in Nigeria, 2019 (Plastic Bill) show that 83.58% of respondents are not aware of the Plastic Bill. Respondents are split on their support for a total ban on plastic bags. While 52.87% are in support of the ban, 47.13% are opposed to it. With respect to whether they are willing to be frequent customers of retailers that ban plastic bags, 44.36%

"strongly agreed". Similarly, 27.32% of respondents "agreed" while 13.53% of respondents "somewhat agreed". This shows a significant majority of respondents indicating they are willing to be frequent customers of retailers that may ban the use of plastic bags. Respondents are mostly opposed to paying for plastic bags when shopping with 64.25% opposed to it while 35.75% are willing to pay for plastic bags when shopping.

Attesting to their high level of education, most respondents are aware of alternatives to the use of plastic bags. It shows that 86.32% are familiar with such alternatives while 13.68% are not. They are also willing to use these alternatives to plastic bags with 95.03%. Paper bags top their choice of alternatives to use if available at 71.89%, followed by biodegradable plastic bags at 42.29%. Table 4.4 gives a breakdown of their choice of alternative to plastic bags. A significant majority of respondents (74.31%) agreed they would "very likely" recommend a switch to biodegradable material while 14.96% say they would "likely" do so (see Figure 4).

Table 5 Alternatives to use if available

ANSWER CHOICES	RESPONSES	
Paper Bags	71.89%	289
Woolen Bags	24.38%	98
Biodegrdable Plastic Bags	42.29%	170
Jute Bag	20.65%	83
Cotton Bag	25.87%	104
Basket	35.07%	141
Other (please specify)	1.74%	7
TOTAL		892

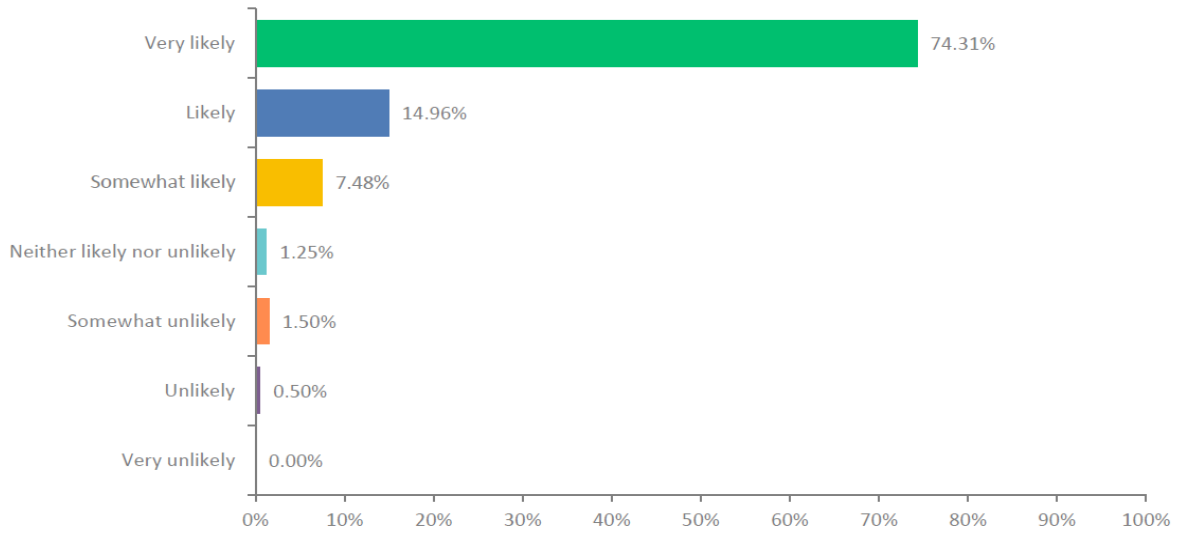

Figure 4 Recommending switch to biodegradable material

The difficulty in getting reusable bags or alternatives is the main reason why most respondents (55.86%) find it difficult to use alternatives when shopping. Figure 4.4 presents the various reasons why respondents have difficulty using alternatives to plastic bags when shopping. Importantly, many of the respondents (60.05%) strongly agree that the use of alternatives or reusable bags is long overdue and 26.13% agree. In total, 86.16% of respondents reckon that the use of alternatives to plastic bags is long overdue (see Table 4.5). Interestingly, most respondents (89.53%) are not aware of any campaigns to reduce plastic bag pollution in their area or state. This is crucial because it indicates that while the problem of plastic pollution rages, there is very little or no measures, especially from state governments, producers/corporations, and non-governmental organisations in tackling the plastic pollution challenge. It thus, emphasises the need for public awareness campaigns on the harmful effects of single-use plastics on humans, animals, and plants. These campaigns should also highlight the need to use alternatives to plastic

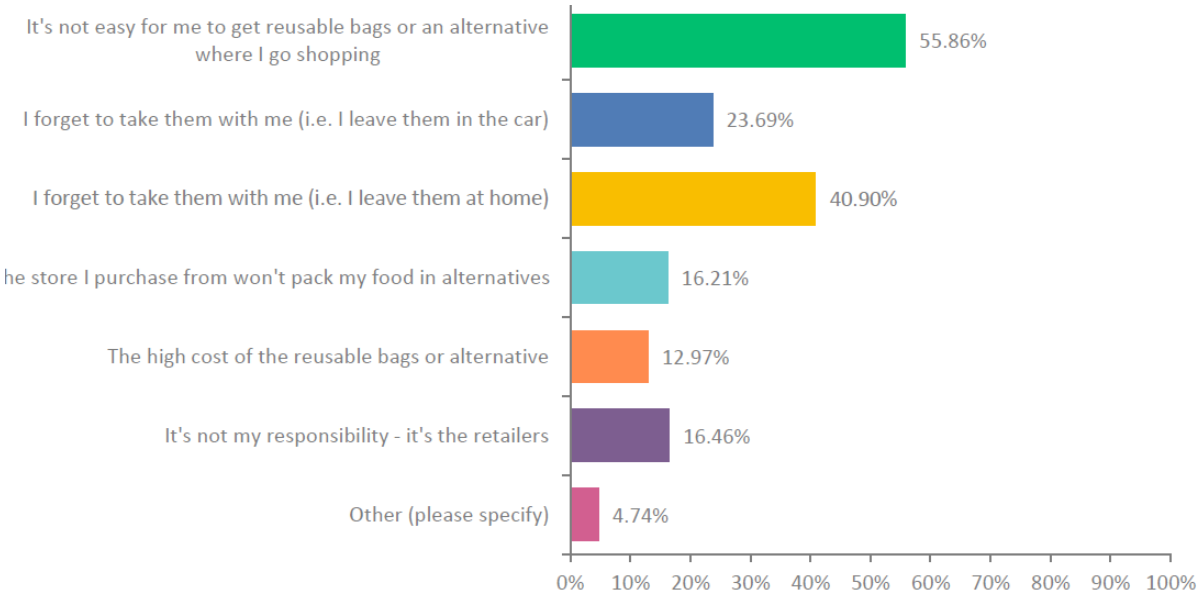

Figure 5 *Factors affecting the use of alternatives*

Table 6 *The use of reusable or alternative bags is long overdue*

ANSWER CHOICES	RESPONSES	
Strongly agree	60.05%	239
Agree	26.13%	104
Somewhat agree	9.80%	39
Neither agree nor disagree	2.76%	11
Somewhat disagree	0.50%	2
Disagree	0.75%	3
Strongly disagree	0%	0
TOTAL		398

Respondents also expressed their views on whether retailers should regulate the use of plastic bags by implementing a total ban. They are mostly supportive of a ban by retailers although there are those who are opposed to such a move. For instance, one respondent observed that “it is not advisable”, and another respondent said, “the time is not ripe as the country’s economy does not support that now”. Some have expressed support for a gradual approach to banning of plastics by

retailers. A respondent stated that “I strongly support the total ban but…ban should be done progressively”. Similarly, this respondent stated thus: “it shouldn’t be an outright ban. I’d prefer a gradual withdrawal…”.

There are those who support the ban with conditions such as the availability of alternatives and the use of awareness campaigns to highlight the negative effects of SUPs. This respondent was emphatic in stating that, “If the retailer can provide the customers with an alternative or biodegradable plastic bags…”.

Respondents also expressed views on the need for awareness campaigns. For instance, it is stated that “it is practicable, but there is a need to sensitise the public”. Another respondent noted that “there is need to intensify awareness of the dangers of using plastic bags amongst the populace”.

The call for alternatives before banning resonated in the responses. Respondents maintained the need for biodegradables as alternatives. It was observed that “only ban if there are alternatives”. Another respondent stated that “there need to be sustainable alternatives easily accessible by consumers”. It is also observed that “a ban without an alternative won’t be that effective. And importantly, the cost of the alternative should be affordable”. Similarly, this respondent noted that “the availability of sustainable and environmentally friendly alternatives which are cost-effective will be good incentives”. This respondent was clear that “alternatives must be readily available and accessible to all. The cost burden must be shared by retailers and consumers. In proposing a solution to the cost problem, one respondent stated that “those retailers that have royalty cards should give customers more points for using their bags”. Respondents are not only mostly concerned about alternatives, but want an alternative that is sustainable, environmentally friendly, affordable, and readily available.

The issue of improvements to existing reusable bags was also an issue for consideration as respondents suggested various improvements. This includes adding wheels, longer handles, and making new designs or large sizes. Although on wheels, one respondent was apt in noting that “wheels will be a challenge in a country like Nigeria with bad road network”. Respondents also suggested the need for stronger textures, stronger handles, and sturdier bases “in order not to break

under the weight of so many items". Respondents also wanted fanciful designs. As one respondent stated, "fanciful designs to attract a wide range of people, and quality to ensure durability". Importantly, they did not fail to state the need for affordability. One respondent stated thus: "a new design that will fit into multiple uses and yet be affordable should be considered". A respondent noted that "they should also be priced reasonably", while another observed that "it should be cheaper and readily available in supermarkets and other stores…"

Respondents were also asked to suggest measures that can promote the use of reusable plastic bags or curb or properly manage their use. Some important suggestions were made by respondents that include the following:

1. That retailers should charge a fee for the use of new plastic bags to encourage people from re-using their bags.

2. That retailers should offer discounts/incentives for bringing reusable bags to supermarkets and shops.

3. That the government should offer some form of incentives such as tax relief to retailing companies that comply with a reusable bags policy.

4. That the government should prohibit the dumping of plastics in open places and/or prohibit the landfill practice

5. That the government should place a ban on non-reusable plastic bags.

6. That the government should make alternatives available and free.

7. That awareness campaigns should be carried out to enlighten the public on the dangers of the use of single-use plastics on the environment.

8. That there should be recycling points for plastic bags at local stores and/or positioning of recycling machines in strategic locations with signs encouraging recycling.

Chapter 4.3. Doctrinal Analysis

Legal measures for managing the problem of plastic pollution are required at the international, regional and domestic levels. These laws are either hard law (enforceable) or soft law (unenforceable) and are discussed in that order in this section.

Chapter 4.3.1. International Hard Law

Chapter 4.3.1.1. UNCLOS

Part XII (articles 192-237) of the ***United Nations Convention on the Law of the Sea (UNCLOS)*** is devoted to safeguarding and preserving the maritime environment. States are required to prevent, reduce, and control pollution of the marine environment from any source. They are to use the best practicable means at their disposal and in accordance with their capabilities, and harmonise their policies in this connection (Article 194). Even though UNCLOS acknowledges the distinctions between pollution from land and those from the sea, it does not go into great detail about the kinds of pollutants and the technical guidelines (Palassis, 2011).

Chapter 4.3.1.2. London Dumping Convention

Waste disposal at sea is prohibited by the ***1972 London Dumping Convention*** and its 1996 Protocol on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. While the primary goal of the Convention is to prevent the wilful discharge of wastes into the ocean that might harm the marine ecosystem, the ***1996 Protocol*** significantly expands the scope of the convention. Articles 1 and 2 prohibit states from producing or allowing marine plastic pollution from marine and terrestrial sources. States must "protect and preserve the marine environment from all sources of pollution". Pollution is defined as "the introduction, directly or indirectly by human activity of waste or other matter into the sea…", resulting in harm. It prohibits the entry of waste, "directly or indirectly" from "all sources". Therefore, the fact that waste may be washed into the sea from land by the action of wind, rain, streams, or rivers is not a justification (Kosior and Crescenzi, 2020).

Chapter 4.3.1.3. MARPOL Convention

The ***1973 International Convention for the Prevention of Pollution from Ships (MARPOL)*** are both responsible for preventing pollution from ships (Joyner and Frew, 1991). It forbids the disposal of plastics anywhere at sea. ***Annex V*** (came into effect in 2013 and further amended in March 2018) is significant in relation to anthropogenic debris. The waste from ships must be disposed of at facilities on land. ***Annex V*** "requires nations to provide reception facilities at ports and terminals for rubbish." States around the world are at various stages of implementing their domestic policies that reflect this legislation, but compliance with the law still poses a serious problem (Ryan, 2015).

Chapter 4.3.1.4. Basel Convention

The ***Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)*** aims at reducing the transboundary movement of hazardous waste and their disposal, as well as at preventing the transfer of such garbage from developed to developing nations. It has 190 State parties (as of September 2022) and entered into force on 5 May 1992, with Nigeria having ratified it on 13 March 1991 (Basel Secretariat, no date).

The “illegal traffic” of waste is prohibited; that is, the movement of “hazardous wastes” or “other wastes” from one state into the territory of another state without consent and permission from the receiving state (Article 2 and 9.1). Hazardous waste may fall under either Annex I category under Article 1(1)(a) or be classed as “hazardous waste” by the domestic law of the importing, exporting or transit country under Article 1(1)(b). “Other wastes” fall under Annex II categories. While SUPs are not covered in Annex 1 and no action can be taken thereunder. Action may, however, be taken if the exporting, importing or transit country such as Nigeria classifies SUPs as hazardous waste in its domestic law via Article 1(1)(b). Similarly, Annex II comprises “Category Y46 wastes collected from households” (i.e., not waste thrown into the environment randomly). It means some SUPs may qualify as “other wastes”. Article 1(1)(b) is the most viable

option for States to enforce Basel because all that is required is the classification of SUPs as "hazardous waste" in its domestic laws.

The Basel Convention has undergone changes. For instance, ***the Basel Convention Ban Amendment*** (came into effect on 5 December 2019) added a new paragraph to the preamble, a new Article 4A, and Annex VII (Basel Secretariat, 1995). Annexes VIII and IX were added to the Convention in 1998. The ***Plastic Waste Amendment*** (Amendments to Annexes II, VIII and IX to the Basel Convention), which took effect on 1 January 2021 enhanced the control of the transboundary movements of plastic waste (Basel Secretariat, 2019). The amendment to Annex VIII (with the insertion of a new entry A3210), clarifies the scope of plastic wastes presumed to be hazardous and therefore subject to the Prior Informed Consent (PIC) procedure. The second amendment is to Annex IX (with a new entry B3011 replacing the old entry B3010) makes it clearer what kinds of plastic wastes are presumed not to be hazardous and, therefore, not subject to the PIC procedure.[1] The third amendment added a new entry, Y48, to Annex II for plastic wastes, including mixtures of plastic wastes, unless these wastes are hazardous (in which case they would fall under A3210) or are presumed not to be hazardous (in which case they would fall under B3011) (SEPA, 2020). Only Basel Parties that had not submitted a notification of non-acceptance are affected by these changes, which includes Nigeria (Basel Secretariat, 2019). The existing code for non-hazardous plastic wastes, B3010 (in effect until 31 December 2020) was replaced by Code B3011.

4.3.1.5. Global Plastic Treaty?

The international community will start negotiating a United Nations treaty against plastic pollution. On 2 March 2022, the United Nations Environment Assembly (UNEA) fifth session in Nairobi resulted in the historic adoption of the ***UNEA-5.2 Resolution***, which calls for the elimination of plastic pollution and the creation of an international legally enforceable accord by

[1] The wastes listed in entry B3011 include: a group of cured resins, non-halogenated and fluorinated polymers, provided the waste is destined for recycling in an environmentally sound manner and almost free from contamination and other types of wastes; mixtures of plastic wastes consisting of polyethylene (PE), polypropylene (PP) or polyethylene terephthalate (PET) provided they are destined for separate recycling of each material and in an environmentally sound manner, and almost free from contamination and other types of wastes.

the year 2024. It creates the possibility of a binding agreement that addresses the actual causes of plastic pollution rather than merely its effects. This entails actions that take into account plastics' whole lifecycle, from production to product design to waste management, providing possibilities to design waste out of the equation before it even occurs as part of a functioning circular economy.

Chapter 4.3.2. Regional Hard Laws

Chapter 4.3.2.1. Bamako Convention

The ***Bamako Convention*** (Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa) was adapted for use in Africa pursuant to Article 11 of the Basel Convention. It was adopted by 12 nations of the then Organisation of African Unity (now African Union) in Mali on 30 January 1991 and entered into force on 22 April 1998. It now has 35 signatures and 27 Parties. As of 25 March 2022, Nigeria is yet to ratify the Convention but signed on 22 December 2008 (African Union, 2022). Very little will be said of this Convention since it is yet to be ratified by Nigeria.

It expressly forbids the import of any hazardous waste, including radioactive waste (Article 2(2)). Compared to Basel, the Bamako Convention uses a far broader definition of hazardous waste (Article 2). They are wastes of any category in Annex I. Although some plastic wastes (e.g., Y13, Y17 and Y18)[2] are listed in Annex I, not all plastic wastes are included. However, as with Basel, State parties may via domestic laws, designate specific waste classifications as "hazardous" substances not listed under Annex I (Article 3). It is not clear if any Member State has taken action in this regard (UNEP, 2020b). Any transboundary movement of hazardous wastes shall be deemed to constitute illegal traffic if undertaken without the agreement of a State involved (Article 9(b)). In order to safeguard both people and the environment, Article 4 also mandates "the adoption of Precautionary Principle": It essentially serves as an alternative to the

[2] These include: "Y13 Wastes from production, formulation and use latex, plasticizers, glues/adhesives"; "Y17 Wastes resulting from surface treatment of metals and plastics"; "Y18 Residues arising from industrial waste disposal operations".

due diligence requirement of customary international law, which calls for the reduction of risk of harm (Kaminsky, 1992). It is not supported by either economic analysis or scientific evidence (Gudofsky, 1998).

The ***Durban Declaration of 2019*** commits to fully support international efforts to reduce plastic pollution, including through a new global accord (UNEP, 2019). This was reaffirmed in February 2021 by the Bamako Convention COP decision, which called for a "new legally binding worldwide accord to address plastic pollution, covering the complete life cycle of plastics" (Gray, 1996).

Chapter 4.3.2.2. OSPAR Convention

The North-East Atlantic Ocean around Europe is protected by the Convention for the Protection of the Marine Environment of the North-East Atlantic (***OSPAR Convention***). In addition to the EU, it consists of 15 states.[3] On 25 March 1998, it came into effect, taking the place of the Oslo and Paris Conventions. Contracting Parties must take all necessary measures to protect the maritime area against detrimental impacts of human activities (Article 2).

Article 3 requires Contracting Parties to take all necessary measures to avoid and remove land-based pollution, as provided in Annex 1. Arguably, the language in Article 2 is the strongest. Furthermore, it employs the precautionary principle and establishes a low bar for proving that marine plastic pollution harms marine ecosystems. Additionally, it enforces the "polluter pays" principle, requiring polluters to pay all expenses associated with cleaning up after pollution and repairing any damage.

OSPAR approved a ***Regional Action Plan (RAP) for Marine Litter*** for the years 2014–2021 to minimise levels of litter in the marine environment from sea-based and land-based sources (OSPAR Commission, 2014). This involved outreach, education, and removal efforts that were driven by collaborative efforts such as the Intersessional Correspondence Group on Marine Litter

[3] Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

(ICG-ML). The implementation period ended in June 2021 with some positive results indicating reduced marine litter on beaches, shorelines or at sea (OSPAR Commission, 2021).

Chapter 4.3.2.3. Other Regional Regimes

The Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area (the ***HELCOM Convention***) established the prevention of all causes of pollution in 1974 and was updated in 1992. Nine coastal nations who are also HELCOM signatories in the Baltic Sea signed a Regional Action Plan addressing marine litter in the Baltic Sea in 2015. (HELCOM, 2015).

The ***Barcelona Convention***, adopted in 1976 and last reviewed in 1995, protects the Mediterranean's marine environment and coastal regions against pollution coming from both land and sea sources. The ***Regional Plan for Marine Litter Management in the Mediterranean*** of the Barcelona Convention, was adopted by the Mediterranean countries in 2013.

A legally binding environmental pact for managing marine debris in the greater Caribbean is the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (***Cartagena Convention***). It was put into effect in 1986 and ratified by 25 UN member countries. The Gulf of Mexico, the Caribbean Sea, and portions of the Atlantic Ocean are all covered, but the parties' "internal waters" are not.

Marine litter is one of the indicators of a good environmental status, according to the ***Marine Strategy Framework Directive (MSFD)***, which was accepted by EU member states in 2008. By 2020, the MSFD mandates that EU Member States take steps to guarantee that "properties and amounts of marine litter do not cause harm to the coastal and marine environment." [4]

Regional soft laws for the regulation of marine plastic pollution include the regional seas programme already discussed. There is also the **Regional Action Plan on Marine Litter for the**

[4] Other regional hard laws (treaties) for the regulation of marine plastic pollution include the Abidjan Convention, Tehran Convention, and Bucharest Convention

Wider Caribbean Region (RAPMaLi) (Corbin et al., 2014). Small Islands Developing States (SIDS), which are increasingly involved in marine pollution challenges, are also a focus of this action plan (Vince and Hardesty, 2018). The Association of Southeast Nations (ASEAN) has also issued several non-legislative documents to address marine plastic litter such as the **Bangkok Declaration on Combating Marine Debris in ASEAN Region** (UNEP, 2020). Furthermore, in September 1994, Japan, China, the Republic of Korea, and the Russian Federation agreed an ***Action Plan for the Protection, Management, and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP)***, also a component of UNEP's Regional Seas Programme. The protection of biodiversity and active monitoring of marine pollutants, including plastic litter, are included in the medium-term strategy (2018-2023) envisioned in NOWPAP (ibid).

Chapter 4.3.3. International Soft Law

Agenda 21 of the UN Conference on Environment and Development promotes comprehensive, preventive, and proactive maritime environmental protection (UN, 1992). It lays forth a strategy for tackling the negative effects of air, land, and water pollution, recycling, sewerage treatment, and the avoidance, mitigation, and control of ship-sourced pollution (Palassis, 2011).

Participants in the 5th International Marine Debris Conference endorsed the **Honolulu Strategy** (UNEP, 2012), an international plan to lessen marine litter. It seeks the reduction of land-based and sea-based sources of marine debris, including solid waste, and abandoned, lost, or otherwise discarded fishing gear (ALDFG).

The ***Global Partnership of Marine Litter (GPML)***, an initiative of the UNEP, was also introduced in 2012. The UN Environment Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-based Activity includes the GPML. It brings together stakeholders working on the management and prevention of marine debris at all levels, such as governments, private sector, and civil society organisations (CSOs) (Global Ocean Commission, 2014).

The ***Sustainable Development Goals (SDG)***, particularly SDG 14.1, have also placed more emphasis on reducing global plastic pollution. Significant progress has been achieved toward achieving these sustainability development targets (Haward, 2018).

The ***Stockholm Declaration of 1972*** also governs marine pollution, including plastic waste in the sea. It highlights the need for States to take all reasonable precautions to prevent marine pollution by substances that endanger human and marine life (Principle 7).

Chapter 4.3.4. Domestic Law Approaches

This section will provide a breakdown of some plastic bag policies and laws used in the UK, Kenya, and Nigeria. The UK was selected because as a former coloniser, it influenced many laws in Nigeria. Kenya was selected to highlight harsh prohibitive legislation and the challenges of implementation and enforcement. These countries are also commonwealth countries with similar legal systems.

Chapter 4.3.4.1. Kenya

Recent legislation enacted by the Kenyan government, Environmental Management and Coordination Act of 2017, forbids the manufacture, importation, and sale of plastic bags. Up to US$40,000 in fines may be imposed for any violations (or up to 4 years in jail (ABC News, 2017). Since the restriction will result in the loss of thousands of jobs, the Waste and Environment Association of Kenya has opposed it (Dena, 2022). Kenya has the strictest plastic bag prohibition law in the world (UNEP, 2018). The law in Kenya recognizes some exceptions; certain kinds of SUPs are still allowed for garbage bin liners, medical waste, construction, and packaging foods like bread, as well as the use of cling film (Mbugua, 2020). This is a more thoughtful legislation after Kenya's 2007 and 2011 failed attempt to prohibit plastic bags because of lack of enforcement. Manufacturers and retail outlets threatened to pass on the cost of using other materials to consumers. As of August 2019, Kenya has made more than 500 arrests (mostly traders, small-scale businesses and citizens found with banned bags), and about 300 people have been prosecuted, according to National Environmental Management Authority

(NEMA), tasked with enforcing the ban. NEMA's data shows the law seems successful as approximately 80% of the population has stopped using plastic carrier bags since the ban was adopted (NEMA, 2020). However, the reality seems different with calls for effective implementation of the law.

Chapter 4.3.4.3. United Kingdom

The government's 25-Year Plan on the environment outlines ways to reduce the use of plastics that contribute to pollution, and broader steps to encourage recycling and the more thoughtful use of resources. This plan is adding to the success recorded by the introduction of a market-based instrument (tax or charge) on plastic bags. Since 2015, when a five-pence ($0.06 USD) charge was initially levied by the ***Single Use Carrier Bags Charges (England) Order 2015***, the number of plastic bags being used is down by 90% (Chappel, 2019). The average consumer now buys 10 bags yearly, down from 140 bags in 2014 before the charge came into force, according to data from the Department for Environment, Food and Rural Affairs (DEFRA) (Smithers, 2019). The charge increased to 10 pence since 21 May 2021 for all retailers by virtue of the ***Single Use Carrier Bags Charges (England) (Amendment) Order 2021***. There is a similar charge on single use carrier bags in Wales, Scotland and Northern Ireland.

4.3.4.5. Nigeria

4.3.4.5.1. Nigeria Plastic Bag Prohibition Bill

On 21 May 2019, the House of Representatives passed the ***Plastic Bag Prohibition Bill*** that could result in jail time for plastic bag violators. The bill prohibits commercial and household use, production, importation, and sale of plastic bags (Dumbili and Lesley, 2020). Retailers must give customers paper bags at the time of sale. Violators face a N500,000 (approximately US $1165) fine, a three-year prison sentence, or both. Businesses or merchants that are found guilty must pay a N5 million fine (approximately US $11,165) (ibid).

Sachet water remains the cheapest form of (possibly) safe water in Nigeria (Dumbili and Lesley, 2020). Thus, the poor status of the nation may hinder the ban on plastic. Second, Nigeria has

almost no waste management practices, which was vital to Rwanda's ban's success. The regulation also offers paper bags as an alternative to plastic but considering the harmful impact paper manufacture has on the environment, that is not a sustainable alternative.

The Nigerian Bill may present an opportunity to close loopholes in current law and policy relating to plastic pollution. It can be strengthened by adding an enforcement procedure, waste management strategies, permissible alternatives, market base instruments (e.g., taxation), monitoring, assessment, and public waste management education.

The Global Commitment to eliminate plastic waste at source, joined by more than 250 organisations, accounts for 20% of all plastic packaging produced globally. It does not include Nigeria or its businesses (Ellen Macarthur Foundation, 2019). One of the three goals established by the commitment is the recycling of wasted materials into new goods. Businesses who sign up for the promise must also eliminate SUPs packaging by 2025 and make sure it can be recycled, composted, or reused. Governments who sign up to the commitment promise to develop measures to support a circular economy (Ellen Macarthur Foundation, 2019). Nigeria can join and take similar pledges to step up the battle against SUP pollution.

The government, businesses, and individuals can choose less hazardous alternatives to make the ban on plastic bags successful. Jute, biodegradable, and reusable bags are a few of the alternatives to plastic bags that are widely available. These alternatives should be evaluated for their environmental and social impacts across their life cycles because some of them may also have adverse environmental effects (Jalil and Mian, 2011). For instance, paper bags may be recyclable but require more fossil fuels to produce (Schnurr et al., 2018). Jute bags, durable and made from renewable vegetable fibre, risks bacterial contamination due to cleaning issues (Tanguay, 2019).

4.3.4.5.2. National Environmental (Domestic and Industrial Plastic, Rubber and Foam Sector) Regulations of 2011

The primary goal of this regulation is to prevent and reduce environmental pollution in Nigeria from all activities and support operations in the residential and industrial sectors of plastics, rubber, and foams. The regulation also calls for each business to establish a voluntary action programme, and such industrial processes will take energy-saving measures while preserving the best technologies. Individual violators risk up to N200,000 (approximately US $465) fine or six months in jail, and N1,000,000 (about US $2322) for corporate violator (Regulation 55).

4.3.4.5.3. National Policy on Plastic Waste Management, 2020

This policy aims to enhance Nigeria's plastic waste management by making all plastic packaging recyclable or biodegradable by 2030, phasing out SUPs and Styrofoam by 2028, and cutting plastic waste by 50% by 2025. It lays the groundwork for a circular economy for plastics, in which the 5Rs are fully followed during design and production (Reduce, Reuse, Repair, Recycle and Recovery). Realising the ineffective disposal, recycling, and waste management systems, the government has constructed plastic recycling facilities all around the nation. The new policy will be tested in these sites as a pilot project.

4.3.4.5.4. National Policy on Plastic Lifecycle Management, 2020

It was developed to regulate the lifecycle of plastics in Nigeria. It provides for a ban on single use plastic packaging and encourages biodegradable alternatives. It places a tax on use of thicker plastics (above 30 microns). It provides further for labelling requirements for wet wipes and sanitary towels. It calls for an Extended Producer Responsibility (EPR) scheme to be implemented. It also provides for separate collection objectives for wet wipes.

Chapter 4.3.5. Community-Led Initiatives

Communities can provide governance solutions as well. For instance, grassroots initiatives, such as the ***#breakfreefromplastic movement*** was introduced in September 2016

(www.breakfreefromplastic.org). Since then, more NGOs from around the world have gotten behind the movement calling for drastic cuts in SUP and supporting long-term alternatives to plastic pollution (Legesse and Diriba, 2011). One recent, effective community-based effort that has been fuelled by a shift in public opinion is called ***Bye Bye Plastic Bags*** (see http://www.byebyeplasticbags.org/). In Bali, Indonesia, young people are driving this social effort. Their locally based campaign, which focuses on education, group messaging, and youth empowerment, aims to decrease the usage of SUPs and has grown into a well-known international movement.

Chapter 4.3.6. Self-Regulation and Market-Based Measures

The cost of marine plastic pollution economically should also be considered when developing and testing market governance solutions (McIlgorm et al., 2011). For instance, the clean-up of the well "Pacific Garbage Patch" (Kaiser, 2010; Moore et al., 2001) may be difficult to carry out and unlikely to have the desired outcomes (Rochman, 2016; Sherman and Van Sebille, 2016).

Alternative strategies, such as external third-party certification systems, have been created to overcome perceived regulatory failures. With the help of product certificates and ecolabels, these strategies bypass State-based regulation and directly reach the market and customers (Potts and Haward, 2007). Industry best practises are promoted via certification and labelling programmes, which have an impact on the market (such as sustainability labelling, green labelling, etc.). They are viewed as "new markets of governance" (Foley and Hébert, 2013).

With the help of Extended Producer Responsibility (EPR), the industry is also urged to assume responsibility for the entire product lifecycle. This can be driven voluntarily by Corporate Social Responsibility (CSR) initiatives, or in the case of many European countries, EPR legislation has been adopted to boost the reuse and recycling of plastics and decrease the usage of plastics (Tibbetts, 2015; Worm et al., 2017).

Chapter 4.4. Conclusion

This chapter presented the results from the data collected from the survey questionnaire as well as analysed the legal and non-legal approaches to curbing SUPs aimed at protecting the marine environment. With the aid of SurveyMonkey, the data was collected and analysed, and it showed that there needs to be a shift from the use of plastics to biodegradable alternatives. Respondents have mostly noted their support for a ban on SUPs provided there are affordable, durable, sustainable, and environmentally friendly alternatives. Further doctrinal analysis has revealed the provisions of various hard and soft international, regional, and domestic laws and their shortcomings. It also discussed community-led measures and self-regulatory and market-based approaches. It is shown, through these measures, that any action to tackle the plastic pollution challenge needs to be a bottom-down, holistic strategy that combines the various approaches.

Chapter 5. Conclusions

Chapter 5.1. Introduction

This chapter concludes this study with a synthesis of the results and its implications for a policy and legal pathway in tackling marine plastic pollution in Nigeria as well as the implications for the academic literature on plastic pollution. The study investigated the use of Single-Use Plastics (SUP) in Nigeria with a view to proffering robust, holistic, bottom-up and multi-layered legal and non-legal measures in curbing the marine plastic pollution challenge. It explored the current regulatory approach of Nigeria in tackling SUP marine pollution. In achieving this aim, the study sought to understand the reasons or motivation for the use of SUP and the environmental challenges of SUP especially as it relates to marine pollution. It further identified the various hard and soft international, regional, and domestic regimes that regulate the issue of SUP marine pollution as well as community-led initiatives and self-regulatory and market-based measures.

The study utilised a socio-legal methodology that combined qualitative and doctrinal research approaches. It is an interdisciplinary and multidisciplinary study of law from the social sciences knowing that law is a product of society and exists for society. It lends itself to an analysis that provides evidence-based findings that can help shape Nigeria's regulatory response in tackling SUP marine pollution. The study utilised an online survey questionnaire for collecting the relevant primary data on SurveyMonkey from 403 random participants. Primary data was also collected from primary legislation as well. The collected data was analysed using Survey Monkey's Data Analysis Tool, an Artificial Intelligence (AI)-based feature. This method was limited by the restricted access to the internet for many in Nigeria as well as the fact that the study could have benefited from interviewing key stakeholders in the industry in Nigeria. Nonetheless, the findings of the study are not diminished by these limitations.

Chapter 5.2. Findings and Results

The review of the academic and grey literature on plastic pollution provided some understanding of its history from 1950s to 70s with the rise of the petrochemical industry. Humanity was initially oblivious of its adverse effect at the time. We also saw the global scale of the plastic challenge with nearly 85% of the marine waste in the ocean globally. Nigeria is also badly hit by the MPP challenge, ranking 9th in the world for plastic pollution.

The sources, causes and effects of plastic pollution were also revealed in the literature. It was found that sachet water as single-use plastics has not only helped in alleviating Nigeria's water shortages (70% use it as drinking water) but also facilitated business transactions as a shopping bag. It is shown that SUPs are discarded carelessly in Nigeria indicating poor waste management practises among Nigerians. There is inadequate hygiene, and sanitation practises, and whether thrown down the drain, at dumpsites or burnt, plastics pose significant risks to humans, animals, plants and the environment.

The literature showed that the bad plastic disposal behaviour is attributable to the lack of values, culture, and knowledge of the people on proper hygiene or waste management. It is also attributable to the lack of supportive infrastructure in the form of litter facilities (waste bins) and recycling facilities. It was shown that about 80% of people residing in most Nigerian cities, towns, and villages do not receive the services of waste collectors and must therefore dispose of their waste themselves.

It is emphasised that waste management is an important governance solution, but it requires recycling infrastructure, skilled labour, and other relevant factors. Interestingly, Nigeria's waste management was dealing with lack of funding, shortage of waste collection staff, and a lack of waste collection vehicles. It was argued that the non-privatisation of the waste collection and management system in Nigeria is a significant contributing cause to Nigeria's marine plastic pollution.

The literature reviewed also identified several measures or approaches for tackling plastic pollution in Nigeria aimed at policy and legal reforms. These included waste management systems, market-based mechanisms, the use of normative frameworks as well as community-led initiatives and self-regulatory or industry approaches. For instance, the use of industry licencing with Extended Producer Responsibility (EPR) schemes is one market-based mechanism that was discussed.

Normative frameworks discussed included international, regional, and domestic laws. For instance, the discussions also centred around domestic policies and laws regulating plastics in

Nigeria. The domestic laws of the United Kingdom and Kenya were also discussed. Nigeria's policies and laws on plastic pollution were further examined such as the Plastic Bag Bill; Plastic Regulation; Plastic Waste Policy; and Plastic Lifecycle Policy.

From an international law lens, hard and soft laws have dominated the space in the regulation of plastic pollution. The laws also operate either on a global or regional scale. For instance, while the MARPOL, UNCLOS, Basel, and London treaties are international hard laws, Bamako, OSPAR, Helsinki, Barcelona, and Caribbean conventions are regional hard laws. Similarly, while Honolulu, Stockholm, SDGs, and Agenda 21 are international soft laws, the Northwest Pacific Action Plan (NOWPAP), Regional Action Plan on Marine Litter for the Wider Caribbean Region (RAPMaLi), and the ASEAN Framework of Action on Marine Debris are regional soft laws. Interestingly, there is currently a move to enact a global plastic treaty vide the United Nations Environmental Assembly (UNEA) Nairobi Resolution 5.2 that seeks to "End Global Plastics" with a legally binding instrument.

Although soft law benefits from having a moral force and expressing the consensus opinion of the international community on issues, their drawback remains non-binding and unenforceable. The reality is that while several MPP hard laws are binding and enforceable, an assessment of these regimes shows that they are fragmented. They fall short of holding players fully accountable for both legal and financial issues. Furthermore, the focus of current international and regional hard laws is on prevention and mitigation, which makes them rarely effective (Borrelle et al., 2017). They also fail to cover the entire value chain of plastics or the lifecycle of plastics.

Chapter 5.3. Recommendations

Chapter 5.3.1. Waste Management Practices

Importantly, the gap in the literature revealed the need for a holistic governance approach to genuinely minimise plastic waste. Obviously, improving waste management in Nigeria would be

the first policy action in tackling marine plastic pollution (MPP). This would require supporting the proper and improved waste collection and recycling schemes. Respondents' data suggest prohibiting the dumping of plastics in open places and/or landfills. It is also recommended that there should be recycling points for plastic bags at local stores and/or positioning of recycling machines in strategic locations with signs encouraging recycling. This means the Nigerian government and plastic producers should invest in local recycling operations, including industrial recycling plants. It is further suggested that awareness campaigns should be carried out to enlighten the public on the dangers of the use of single-use plastics on the environment. Importantly, decision-making at the top needs to consider building up infrastructure for waste management while also including key players in the transformation process to ensure that new infrastructures function for all people.

The circular economy calls for a departure from the "take, make, throw away" paradigm that governs most of Nigerian society to a more robust, reusable, repairable, and recyclable system to prolong the life of single-use plastics. Besides, there is a need to move away from single-use items in favour of reuse alternatives like reusable coffee cups under a circular economy. Furthermore, SUP items need re-designing to eliminate hazardous ingredients. There is need to reduce the thousands of different forms of plastic now in use to just a few core polymer types that can be quickly detected, sorted, and recycled (Nkwachukwu et al. 2013).

Chapter 5.3.2. Self-Regulatory or Industry Measures

Tackling MPP further requires industry-based solutions that make use of market- and economic-based efforts provided they are ethical in terms of both the environment and society. Driving such transformation in the market can be mutually advantageous for profit and CSR objectives. The Extended Producer Responsibility (EPR) model, which originated in Sweden in the 1990s, is one industry and market-based mechanism that has become relevant in scaling up the fight against MPP.

Interestingly, Nigeria's National Environmental Standards and Regulations Enforcement Agency (NESREA) has introduced EPR as an environmental protection tool. It ensures that producers of

plastic products take responsibility for the entire lifecycle of their products, especially in the recycling phase. They are required to incorporate environmental protection concerns into the design, packaging, process and disposal of their plastic products. This could include reducing harmful substances, preventing plastic pellet loss, usage of recycled plastic materials (rPM), reusing and recycling plastic products, and transparency about the ingredients and production processes (GESAMP, 2015; Messenger, 2017). It is a collaborative arrangement among government, business, and environmental NGOs toward a zero-waste society. NESREA's EPR guidelines, first published in 2014, became operational in 2016, starting with the food and beverage industry which is considered the largest producer of plastic waste in Nigeria. Figure 5.1 shows the EPR model and how it functions in Nigeria, including the stakeholders covered. The Producers Responsibility Organizations (PROs), such as the Food and Beverage Recycling Alliance (FBRA) a third-party organisation that collectively manages the process with NESREA. It also covers producers (manufacturers, distributors, and importers), recyclers and collectors (waste pickers).

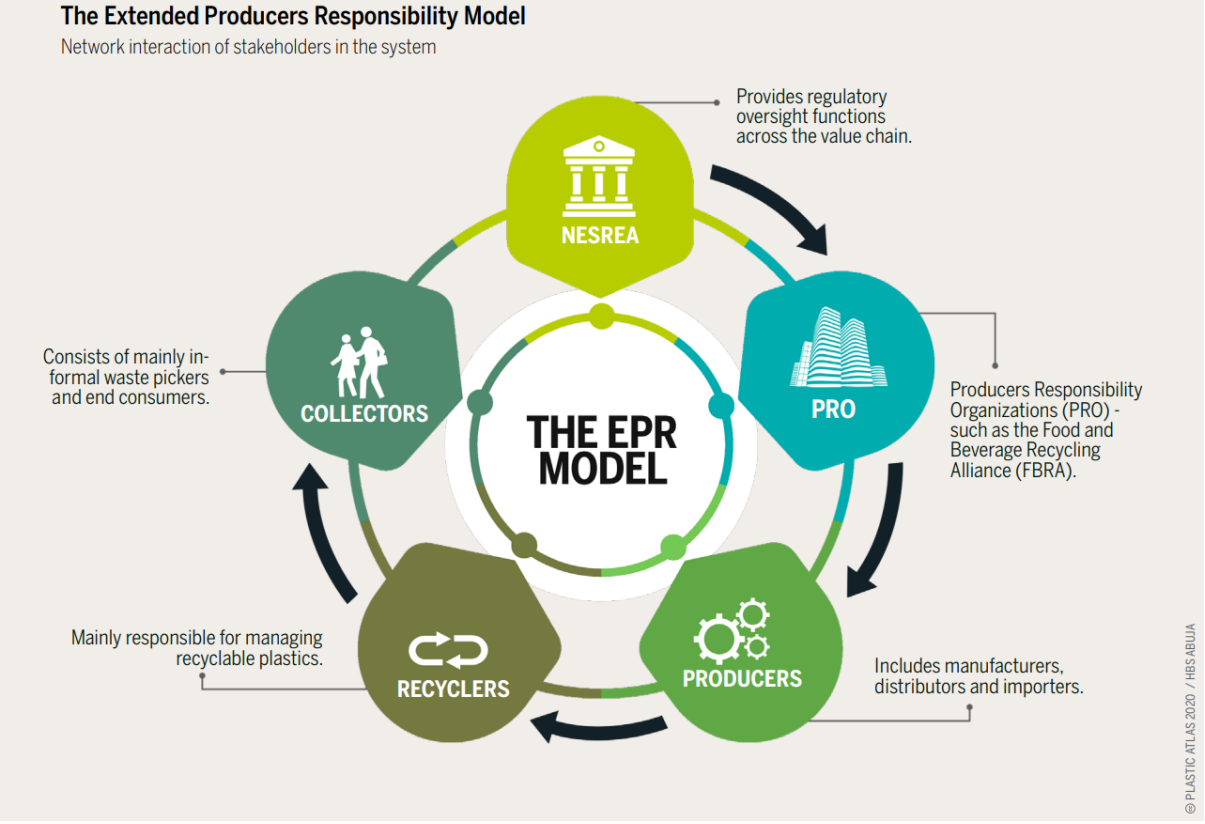

Figure 6 Stakeholders performing critical roles in the Extended Producers Responsibility (EPR) programme [source: Heinrich Boll Stiftung (2020, p.51].

Importantly, the informal sector's role in a circular economy of a developing nation such as Nigeria should be considered in tackling MPP via industry measures. Waste pickers are crucial in collecting plastics for recycling. With the recycling industry's history of labour abuse and child labour issues, it is important that the labour of waste pickers is supported and that they are included in more established employment arrangements with protected rights.

The circular economy encourages supply chain investments to address marine plastic pollution (MacArthur et al., 2016; Moss et al., 2017). Financial incentives must be incorporated into these investments. One such incentive is the Container Deposit Legislation (CDL), which has been noted for reducing plastic pollution in coastal areas by up to 40% (Schuyler et al., 2018). CDL is a law requiring the collection of a monetary deposit on plastic containers (refillable or non-refillable) at the point of sale. It is also called a deposit-return system, or bottle bill. The deposit is partially or completely returned when the container is delivered to an approved redemption centre. The aim of CDL is to encourage recycling programmes or to ensure a high rate of recycling or reuse (CM Consulting Inc., 2016).

Chapter 5.3.3. Community-Led Initiatives

It is also argued that, in addition to market-based regulation, a complete, integrated approach that incorporates community-led mechanisms can help with solutions to the problem of marine plastic pollution. It has proven as an adaptive governance model for reversing the "tragedy of the commons" as described by Dietz et al. (2003). For instance, community-led initiatives such as ***Ocean Cleanup***, aim to get rid of 80,000 tonnes of floating plastic in the ocean. Also, fishing communities in Thailand participate in the ***Net Free Seas*** recycling programme that removed eight tonnes of discarded plastic fishing nets from the ocean. This was then recycled to make over 50,000 items, including visors for Covid-19 protection. The initiative will be expanded to communities in Ghana and Indonesia.

Community-led approaches are criticised as merely making a small dent in a larger global plastic challenge because plastics are widely scattered in the oceans (Schroder et al., 2022). However,

community-led measures are considered one puzzle in the game to defeat MPP or close the loop on plastic waste in oceans. It also empowers coastal communities to clean their oceans of plastic waste. The success of community-led governance models depends on the socio-economic environment and the goodwill of the people (Feeny et al., 1990).

Chapter 5.3.4. Normative or Legal Frameworks

Chapter 5.3.4.1. Domestic Law

The use of normative or legal frameworks in tackling MPP remains crucial, apart from waste management, voluntary or self-regulatory mechanisms such as EPR and community-led initiatives. Domestic laws have been touted as an apparent solution to the plastic challenge (Dauvergne, 2018; Raubenheimer and McIlgorm, 2017; Worm et al., 2017) because they are said to have been somewhat successful (Dauvergne, 2018). It is suggested that some SUPs should be outrightly banned because they are hazardous. Some research respondents suggested the use of a plastic ban. Governments, however, must be careful in using a legislative ban because they are a blunt instrument.

Nigeria has formulated policies and enacted laws to regulate plastic pollution such as the Plastic Bag (Prohibition) Bill and NESREA's regulation. However, neither of these policies and laws address the larger issues of plastic pollution nor provide a workable strategy for dealing with plastic waste. They, therefore, fail to consider the whole complexity of waste production and disposal. They seem to be another example of poorly drafted laws because they do not address other methods for managing and reducing plastic waste. It is suggested that the law is revised to not only include punitive measures, but also a plastic reduction goal, alternatives to plastics, industry, or market mechanisms such as plastic taxes, and metrics or performance indicators for gauging its success. It is also suggested by research respondents that government offers incentives such as tax reliefs to retailing companies that comply with a reusable bags policy.

Chapter 5.3.4.2. International Law

Still, on the use of legal instruments, it is argued that considering the global scale of the plastics problem, tackling it requires global treaties or international law. There is currently a move for a global treaty to regulate plastic pollution. The United Nations Environment Assembly (UNEA) Nairobi Resolution 5.2 seeks to "End Plastic Pollution" with a legally binding instrument. It offers an opportunity for remedying the mistakes of previous plastic treaties. A global treaty may help States coordinate their domestic policies on plastic wastes and assist in ending the current fragmented international approach to regulating plastic wastes.

Authors have suggested the use of a multilateral agreement like the ***Montreal Protocol on Substances that Deplete the Ozone Layer*** in enacting this global treaty for major change to occur (Gold et al., 2014; Chen, 2015; Haward, 2018). The Montreal Protocol has become well-known because it is thought to be the most successful multilateral agreement for resolving an environmental issue and encouraging worldwide collaboration by accomplishing defined goals.

Notwithstanding the model adopted, it is recommended that such a treaty or international hard law should be multi-sectoral, inclusive, and supported by all stakeholders such as governments, producers, recyclers, collectors, and consumers. These key stakeholders must take responsibility in their own ways (Law, 2017). The treaty, therefore, needs to incorporate market or financial mechanisms such as the EPR as will efforts to lower consumer waste. Importantly, it should give legally binding and punitive measures aimed at holding players fully accountable for their actions. It is also recommended that any global treaty should consider all phases of plastics' lifespan to be effective (production, consumption, disposal, and contamination). It should also address the production of plastic on land and do not merely address plastic pollution from ships (Nyka, 2019). It is also suggested that any global treaty should make efforts to be completely interwoven with domestic policies and laws. Additionally, such initiatives should build upon and supplement current regional frameworks such as Bamako. For instance, the Basel amendments have shown a real progress with a regional framework in contributing within its core competencies. It has filled the significant gaps that must be addressed in order to eliminate the long-term discharge of plastic pollution into the oceans and promote a safe, just, and environment-safe circular economy for

plastic. It is further suggested that the Nigerian government ratifies and implements the Bamako Convention because it not only bans the import of hazardous wastes but also controls intra-African trade or export of hazardous wastes. It should also use its Observer Status to ensure that current efforts at amending the Bamako to include plastic wastes is achieved. It is also important that pursuant to Basel and Bamako, "plastic wastes" are categorised as "hazardous wastes" in Nigeria's environmental laws such as the Plastic Bag Prohibition Bill to allow for easy enforcement in the event of the importation of plastics into the country

It is emphasised that enacting a global treaty or agreement takes time (Haward, 2018) because of the complexities of treaty negotiations and the support or cooperation that all parties must give to it (Barboza et al., 2019; Schröder and Chillcott, 2019). Accordingly, important international State players such as the US, China, and India must support a global plastic treaty because of their dominance as major producers and consumers of plastics.

Chapter 5.4. Final Thoughts

Many experts agree that the best way to bring about change is to move toward a circular economy (Löhr et al., 2017). The circular economy concept would lessen resource waste, pollution, and carbon emissions if accepted as global governance or regulatory model for the plastics pollution challenge. Perhaps, Nigeria needs to key into the Chatham House-supported "Garbage In Value Out" (GIVO) initiative for plastic waste management. It delivers modular containers to support the local processing of plastic waste with one centre recycling 109,500 kilograms of plastic annually. States need to understand that a circular economy would create jobs, boost economic competitiveness, conserve resources, and prevent harmful wastes like plastic from entering our oceans. For instance, the GIVO initiative seeks to create 20,000 operational centres, a franchise run by women aimed at empowering them to take control of their lives. However, the political harmony and will of State parties cannot be overstressed. A bottom-up, holistic, and multi-layered solution for plastic governance should be supported by strict regulatory measures aimed at sustaining a systemic change at the domestic, regional, and international levels.

It is essential that science informs policy and legal decisions so that decisions are based on the best information available when addressing MPP. This would support a holistic strategy for managing plastic pollution. Scientific data identifying and quantifying the quantity of plastic pollution and its effects on biodiversity, the economy, and society should be used to inform all policies and legislation, whether local, national, regional, or global. The usefulness of evidence-based information at relevant scales is acknowledged in the regional, national, and subnational plans of action (Hardesty et al., 2017).

The plastic commons catastrophe is resolvable, but we are not envisioning a world without plastics because it is a very useful material. We, however, want a plastic free of plastic pollution. Global, regional, national, and individual actions will require public will and cooperation. International, regional, national, and local governance structures, including self-regulatory and community-led initiatives, will regulate MPP. Some of these regulatory procedures will succeed if the requisite infrastructure is built and maintained. Industry-based solutions that leverage market- and economic-based initiatives are also crucial if they are ethical for the environment and society. Aligning these factors should boost consumer support. Consumers need to follow, reduce, recycle, and reuse (3Rs) strategy aimed at reducing plastic pollution. Consumers can change legislative, social, and cultural attitudes and habits by limiting their use of single-use plastics, using alternatives or biodegradables, and recycling plastics whilst perhaps, being incentivised. Public awareness initiatives must educate consumers on plastics' risks and should be willing to participate in clean-ups, boycotts, and protests that can reduce plastic wastes (Worm et al. 2017). The plastic problem has no "silver bullet" remedy. Instead, a continually shifting array of acts, activities, and legislative and cooperative solutions will tackle marine plastic pollution.

Chapter 5.5. Further Research

This study has shown that the plastic challenge is not only widespread and global, but it is very complex on many levels and scales. One area of complexity is the transboundary trade of plastics. It is thus, necessary to conduct more research on transboundary plastic waste in the sea to determine who is responsible, what restrictions are in place, and how to demonstrate and make restitution in the event that a country suffers losses as a result of the presence of certain plastic

waste in its marine environment. It will also be interesting for academic purposes to undertake a study that further explores the role of legislation or regulation on some key stakeholders in the plastics industry such as producers, recyclers, and collectors (waste pickers) in Nigeria.

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Appendix 1 Online Survey Questionnaire

Research Project: Regulating Single-Use Plastic Marine Pollution: A Case Study Nigeria

Dear Respondent,

My name is Oseghale Anthony Ebhaleme, a postgraduate student at the World Maritime University (WMU). I am undertaking a research project entitled, "Regulating Single-Use Plastic Marine pollution: A Case Study of Nigeria. It explores the regulation of single-use plastics (SUP) in Nigeria aimed at the protection of the marine environment. To do this, I have designed a survey questionnaire to aid in gathering information that can help the research project.

Summary of Research Project

The aim of this research work is to assess the regulation of single-use plastic (particularly plastic bags) in Nigeria. This survey questionnaire seeks to determine the public's current use and disposal of single-use plastic and show their understanding of the environmental impacts of the use of single-use plastic in Nigeria, particularly its impacts on the marine environment. It is aimed at identifying the factors that shape the use of single-use plastic and understanding their perception of the abolishment of the use of single-use plastic bags. The survey also seeks to understand what barriers or challenges prevent the use of reusable bags or other alternatives and to identify measures on how to holistically tackle the challenges of the use of single-use plastic bags. The

outcomes of the survey will be used to design a holistic framework for curbing the problems of single-use plastic aimed at the protection of the marine environment.

Your views are extremely important to the success of the study. Thus, you are kindly requested to take out time from your busy schedules to provide responses to the survey. Multiple responses are possible for a few of the survey questions.

Approval

This research project has received the approval of the Ethics Committee of the World Maritime University (WMU).

Participation

Your participation in this research project is entirely voluntary and can be withdrawn at any time. You are selected to participate in the survey because you have access to the internet, are 18 years and above, and are a citizen and/or resident of Nigeria. In order to make this data as valid as possible, please answer the questions as accurately as possible. The survey should take no longer than 10 minutes. Upon receiving the data, the results will be interpreted and analyzed, comparing against other previous studies and theories/findings to discover any similarities or contradictions.

Privacy

Participants are not required to state their names and will accordingly, remain anonymous throughout the survey. Participants are only required to state their state of origin, age, and gender at the beginning of the survey.

For any questions or concerns regarding this study please do not hesitate to contact me. Email:

Appreciation

Thank you in advance for taking the time to complete this survey.

By ticking this box, I agree to take part in this study 

Survey Questionnaire

1. Which state are you from in Nigeria?

2. What is your gender?
Male
Female

3. Please specify your age range?
18 - 25
26 - 30
31 - 40
41 - 50
50 and above

4. What is your level of education?
Primary School
Secondary School
National Diploma/Higher National Diploma
Undergraduate
Post-Graduate
Vocational Training

5. What is your occupation?
Student
Unemployed
Employed
Self-employed
Apprentice
Unemployed (pensioner or retired)

6. Which of the following best describes your household?
Single household
Family with children
Family without children
Young consumer 18 - 24-year-old
Retired
Other (please specify)

7. How many plastic bags have you used today?
0 – 3
4 – 6
7 – 10
More than 10
I am not sure

8. Do you always request a new plastic bag when you buy something in a shop or at the market?
Yes
No, I often carry my own plastic bag
No, I often carry my own bag

9. What do you normally use to carry your shopping content?
Plastic bags provided by the retailer

I bring my own reusable bags
I do not use any carrier (i.e., I carry the goods by hand)
Others (please specify)

10. Where do you normally request a plastic bag? (Tick as applicable)
Supermarkets
Smaller supermarkets/convenience stores
Local Open markets
Street corner shops
Sewing/Tailor shops
Health shops/Pharmacy
Restaurants
Hospitals
Offices
Others (please specify)

11. How often do you visit these places (supermarket, etc)?
Daily
One to Two times a week
Three to Five times a week
Fortnightly
Once a month

12. Would you avoid retailers or shops that do not give customers plastic bags?
Yes
No
Maybe

13. What happens to the plastic bag when you remove the item bought with it?
I keep it for re-use
I throw it in a bin
Bury them
Burn them
Take them for recycling
I don't use plastic bags
Other (Please specify)
I don't know

14. How do you discard your plastic/plastic bags?
Inside the nearest dumpster or dustbin
I drop it on the ground/floor
I dump it in the gutter
Other (Please specify)

15. Are plastic/plastic bags harmful to the environment?
Yes

No
I don’t know

16. What do you know are some of the environmental impacts of the indiscriminate disposal of plastic/plastic bags?
Contaminated drinking water
Flooding
Drainage/sewage blockage
Human health problems
Animal health problems
Deterioration of natural beauty of the environment
Others (Please specify)
I don’t know

17. Why do you use plastic bags?
It is convenient
It is cheap
It is durable
It is light in weight
It is easily available
It serves the purpose
It is trendy (everyone uses it)
Lack of reliable alternatives
Others (state reasons)

18. Are you aware of the proposed 2019 plastic bag prohibition bill?
Yes
No

19. Would you support a total ban on plastic?
Yes
No

20. Would you pay for a plastic bag when next you go shopping?
Yes
No

21. Are you aware of alternatives to plastic bags such as paper bags, woolen bags, bioplastic bags?
Yes
No

22. Would you use alternatives to plastic bags?
Yes
No
I don’t know

23. Which of these alternatives would you use if they were available?
Paper bags
Woolen bags
Bioplastic bags
I still prefer a plastic bag

24. Considering your knowledge about the harmful effects of Plastic/Plastic bags, how likely would you be to recommend a friend or colleague to switch to degradable material? (Eg: paper bags, paper cups) 0 Very Unlikely to 10 Very Likely]
1 2 3 4 5 6 7 8 9 10

25. What makes it difficult for you to use reusable bags or alternatives, instead of single-use plastic bags when shopping?

It's not easy for me to get reusable bags or an alternative where I go shopping
I forget to take them with me - I leave them in the car
I forget to take them with me - I leave them at home
The store I purchase from won't pack my food in reusable bags/containers
The cost of the reusable bags or alternative
It's not my responsibility - it's the retailers
Others (please specify)

26. Please state your level of agreement with the following statements:
Plastic/plastic bags are harmful to the environment
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

27. I am open to the idea of using reusable bags
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

28. I am willing to be a frequent customer of supermarkets that abolish plastic bags
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

29. Are you aware of any campaigns to reduce plastic and/or plastic bag use in your area?
Yes

No
There are no campaigns

30. What are your views on supermarkets and shops/retailers abolishing use of plastic bags completely?

31. What improvements do you think could be made to existing reusable bags? (e.g. Wheels, Longer handles, Larger size, New designs)

32. Do you have any Comments/Suggestions to help promote the use of degradable or reusable items and/or bags?

33. What other measures can be taken to curb or properly manage the use of plastic/plastic bags?

34. Please provide any additional comments/ideas you may have

The End