THE ROLE OF PUBLIC HEALTH LAWS IN COMBATING PLASTIC POLLUTION IN NIGERIA: LESSONS FROM OTHER SELECTED JURISDICTIONS

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ABSTRACT

As humans continue to populate the globe, plastic use has become increasingly popular and has had a significant impact on the environment. Due to poor waste management practices, plastic pollution is a major concern. Plastic has severe environmental and health consequences. Single-use plastic products, in particular, have contributed to this pollution crisis. Many nations worldwide have enacted regulations to reduce plastic use in an effort to mitigate the adverse effects of plastic pollution. This Article examines the environmental impacts of plastic waste and the roles legislation may play in combating plastic pollution. In evaluating the dangers of plastic pollution, this Article canvasses effective waste management practices,

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the possibility of practical recycling centers, and strategies to create behavioral change. Specifically, this Article evaluates poor waste management practices in Nigeria and explores attempted programing and regulation. Nigeria would be wise to emulate best practices from nations that have had more success in sustainable plastic production, such as Rwanda, Kenya, Russia, and China. This Article recommends strong legislation and enforcement to disincentivize the use of harmful plastic products, particularly single-use plastic products. This Article also stresses the importance of strong institutions and improved waste management and recycling schemes. Research into economically viable alternatives and strong political leadership is required to drastically reduce the impact of plastic pollution and protect the health of living species.

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INTRODUCTION

Plastic is widely used in society for products and packaging.[1] Plastic is cheap, light, and can be molded into different shapes for various uses.[2] For example, plastic bags have various uses from packing groceries to carrying everyday items.[3] However, plastic use comes with numerous problems. First, plastic gets stuck in drainage systems and obstructs the flow of water.[4] This blockage creates unpleasant smells and can cause flooding.[5] Second, after waste management agencies remove the plastic, the plastic products are dumped into landfills and other sites. Consequently, plastic permeates rivers and oceans.[6]

Pollution is currently one of the environment's greatest challenges.[7] Pollution drastically impacts the health of all living species, humans, and biodiversity alike.[8] Manufacturers around the world are generating an enormous amount of plastic, and a large amount of that plastic is entering the ecosystem.[9] Addressing this issue is increasingly important, especially considering plastic degradation takes over 400 years.[10] Plastic is often disposed of in one of three ways: recycling, incinerating, or dumping.[11] Roughly fourteen percent of

1. Ahmed Umer Sohaib, *Battling Plastic Pollution*, YOUR COMMONWEALTH (June 17, 2019), http://www.yourcommonwealth.org/economic-development/environment-climate-change/battling-plastic-pollution/.

2. *Id*.

3. *Id*.

4. *Id*.

5. *Id*.

6. *Id*.

7. Brian Hutchinson, *7 Ways to Reduce Ocean Plastic Pollution Today*, OCEANIC SOC'Y, https://www.oceanicsociety.org/blog/1720/7-ways-to-reduce-ocean-plastic-pollution-today (last visited Dec. 29, 2019).

8. *Id*.

9. *Time to Tackle the Plastic Problem*, JAPAN TIMES (Apr. 30, 2018), https://www.japantimes.co.jp/opinion/2018/04/30/editorials/time-tackle-plastic-problem/#.XsMBoS2ZOq.

10. *Id*.

11. *Id*.

plastic is recycled.[12] Nine percent of plastic is incinerated while the rest remains in the environment.[13]

The number of plastic products produced globally is increasing and is estimated to double during the next ten to fifteen years.[14] This escalating production will increase the amount of pollution and adversely affect developing nations in particular.[15] Less than fifty percent of households in developed countries recycle, and very little of recovered plastic materials is reused in packaging.[16] Recycling has become largely ineffective due to "bad packaging design, lack of infrastructure, and the absence of a means to track plastic waste."[17]

The increase in plastic manufacturing has made the enormous amount of plastic difficult to address.[18] For example, developing Asian and African nations have struggled with plastic pollution because waste collection systems are frequently nonexistent.[19] However—even in developed countries—recycling turnouts have been low.[20]

Economic development in Nigeria has been adversely impacted by poor waste management practices.[21] Nigeria suffers from a large amount of pollution, which presents challenges for the nation's

12. *Id*.

13. *Id*.

14. Sandra Laville, *Report Reveals 'Massive Plastic Pollution Footprint' of Drinks Firms*, GUARDIAN (Mar. 30, 2020), https://www.theguardian.com/environment/2020/mar/31/report-reveals-massive-plastic-pollution-footprint-of-drinks-firms.

15. *Id*.

16. *Learn About Plastic Pollution*, GREENPEACE INT'L, https://www.greenpeace.org/international/campaign/learn-about-plastic-pollution/ (last visited March 14, 2020).

17. *Id*.

18. Laura Parker *The World's Plastic Pollution Crisis Explained*, NAT'L GEOGRAPHIC, https://www.nationalgeographic.com/environment/habitats/plastic-pollution/ (last visited Feb. 17, 2020).

19. *Id*.

20. Laura Parker, *A Whopping 91% of Plastic Isn't Recycled*, NAT'L GEOGRAPHIC (Dec. 20, 2018), https://www.nationalgeographic.com/news/2017/07/plastic-produced-recycling-waste-ocean-trash-debris-environment/.

21. NATIONAL POLICY ON THE ENVIRONMENT (Revised 2016), http://extwprlegs1.fao.org/docs/pdf/nig176320.pdf.

economy and health of its citizens.[22] Nigeria is among the top twenty nations that contribute eighty-three percent of "total volume of land-based plastic waste that end up in the oceans/seas."[23] An estimated 200,000 metric tons of Nigerian plastic waste pollutes the Atlantic Ocean annually.[24] A report generated in September 2019 by the Voice of America "showed that Nigeria generated an estimated 32 million [tons] of solid waste per year."[25] This makes Nigeria one of the highest producers of waste in Africa.[26] Moreover, large amount of the waste in Nigeria is mismanaged.[27]

Similarly, North America and Europe contribute much of the plastic that washes into the ocean because these continents supply a large amount of plastic to Asia.[28] In Thailand, for example, consumers use an estimated 200 billion plastic bags per year.[29] China has long since been the largest recycler of plastic, but China has recently begun rejecting plastic from Western countries due to contamination worries.[30] Until 2018, China was responsible for processing roughly two-thirds of the plastic waste produced worldwide.[31] When China banned the importation of many plastic products, smaller Asian countries began accepting more of the worldwide trade in plastic waste, but the burden proved to be too great.[32] This great burden resulted in much of that plastic waste winding up loose in the environment.[33]

22. *Id*.

23. Godwin Oritse, *NIMASA Raises Alarm Over Increase in Marine Waste*, VANGUARD (Feb. 26, 2020), https://www.vanguardngr.com/2020/02/nimasa-raises-alarm-over-increase-in-marine-waste/amp/#aoh.

24. *Id*.

25. *Id*.

26. *Id*.

27. *Id*.

28. Susannah Shmurak, *Ocean Plastic Pollution: Here's How You Can Help*, EARTHEASY (Apr. 23, 2019), https://learn.eartheasy.com/articles/ocean-plastic-pollution-heres-how-you-can-help/.

29. *Id*.

30. *Id*.

31. *Id*.

32. *Id*.

33. *Plastic Bag Levy Should Only Be Used to Fight Pollution*, PLASTICS SA (July 23, 2019), https://www.plasticsinfo.co.za/2019/07/23/plastic-bag-levy-should-only-be-used-to-fight-pollution/.

Therefore, consumers often end up dumping their waste because "collection services are either unreliable or non-existent."[34] If these poor practices continue, "by 2050 our oceans will have more plastic than fish."[35]

However, there has also been global progress in combating plastic pollution. At its 2017 meeting, the African Ministerial Conference on Environment encouraged African countries to reduce pollution.[36] In addition, the U.N. Environment Assembly Declaration of December 2017, in its bid for a pollution-free planet, adopted a resolution on applicable international and local organizations and conventions.[37] Its goal was to reduce marine pollution and coordinate appropriate means to attain this goal.[38]

Several policies have already been enacted, including additional taxes on plastic items and banning certain types of plastics altogether.[39] For example, some countries like Bangladesh, Cameroon, China, and Kenya, have banned the production of single-use plastic bags.[40] In Europe, several countries implemented taxes on plastic bags.[41] In Ireland, these taxes are estimated to have reduced single-use plastic bag use by ninety-five percent.[42] Hopefully, these bans encourage people to find more environmentally friendly alternatives.[43]

I. PUBLIC HEALTH LAW AND COMBATING PLASTIC POLLUTION

Plastic pollution occurs when "plastic has gathered in an area and has begun to negatively impact the natural environment and create

34. *Id*.

35. *High Level Working Session on Banning Plastic in Africa; Towards a Pollution-Free Africa*, AFRICAN UNION (Feb. 10, 2019), https://au.int/en/newsevents/20190210/high-level-working-session-banning-plastics-africa-towards-pollution-free-africa.

36. *Id*.

37. *Id*.

38. *Id*.

39. David Evans, *Legislation Against Plastic Pollution*, PLASTIC EDU (Dec. 26, 2019), https://plastic.education/legislation-against-plastic-pollution/.

40. *Id*.

41. *Id*.

42. *Id*.

43. *Id*.

problems for plants, wildlife, and even the human population."[44] Pollution can have a lethal effect on animals and ecosystems.[45] While plastic is incredibly useful, it is not biodegradable, and is often made from a variety of toxic chemicals.[46]

Plastic pollution harms marine life because marine organisms may "ingest it or become entangled."[47] Plastic pollution affects animals, which can have an adverse effect on human health as those animals make their way to restaurants for human consumption.[48] For humans, plastic pollution can cause certain health defects including "immune system suppression and developmental problems in children."[49] Political action is required to address plastic pollution.[50] However, some politicians are reluctant to implement change because they do not want to upset commercial entities that support them.[51]

A. What is Plastic Pollution and Why is it a Problem?

"Since the 1950s around 8.3 billion tons of plastics have been produced worldwide."[52] This weight is comparable to roughly 800,000 Eiffel Towers.[53] Most of these plastic products have ended up in landfills or scattered throughout the environment.[54] Collectively, humans consume about one million plastic bottles and two million

44. Rinkesh, *What is Plastic Pollution?*, CONSERVE ENERGY FUTURE, https://www.conserve-energy-future.com/causes-effects-solutions-of-plastic-pollution.php (last visited Mar. 11, 2020).

45. *Id*.

46. Charles Moore, *Plastic Pollution*, BRITANNICA, https://www.britannica.com/science/plastic-pollution (last updated May 8, 2020).

47. Cris Andrews, *6 Ways Engineers are Fighting Back Against the Global Plastic Waste Problem*, CREATE DIGITAL, https://www.createdigital.org.au/engineers-fighting-global-plastic-waste-problem/amp/ (last visited May 4, 2020).

48. *Id*.

49. *Id*.

50. *Id*.

51. *Id*.

52. Senea Mwamba, *10 Plastic Pollution Facts That Show Why We Need to do More*, GLOBAL CITIZEN (June 14, 2018), https://www.globalcitizen.org/en/content/plastic-pollution-facts/.

53. *Id*.

54. *Id*.

plastic bags each minute.[55] This rate of consumption would seem less daunting if there were stronger recycling systems in place; however, this is not the case. The reality is, plastic products are not being properly managed throughout their lifecycle.[56]

Plastic was considered revolutionary when it was developed in 1907.[57] Plastic products became extremely popular and began to replace market staples, such as glass.[58] For quite a while, people enjoyed the benefits of plastics and did not understand the negative effects on the environment.[59] They became ubiquitous, with many used to package food and beverages. But, many of these plastics actually have damaging effects on human health due to toxic chemicals.[60] "Food stored or heated inside [plastic] containers becomes contaminated, and the chemicals make their way directly into our bodies."[61]

In particular, plastic is problematic because it remains in the environment for roughly 1,000 years longer than other types of waste.[62] If plastic is burned, the air becomes poisoned.[63] If disposed of in rivers, it ends up polluting and clogging them.[64] If deposited in landfills, "it produces a poisonous liquid that seeps into our agricultural soil."[65] Additionally, "plastic can never be completely recycled—it can only be down cycled once."[66]

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55. Kyle Arsenault, *The Plastic Industry Vows to End Plastic Waste*, PLASTIC FACTS (Apr. 18, 2019), https://www.plasticsfacts.com/blog/2019/4/18/the-plastic-industry-vows-to-end-plastic-waste.

56. *Id*.

57. Ola Solinska-Nowak, *End Plastic Pollution on Earth Day and Beyond!*, GAMES4SUSTAINABILITY (Apr. 19, 2018), https://games4sustainability.org/2018/04/19/end-plastic-pollution/.

58. *Id*.

59. *Id*.

60. *Rethinking the Convenience of Single-Use Plastics*, THE RISING (Sep. 22, 2019), https://therising.co/2019/09/22/rethinking-the-convenience-of-single-use-plastic/.

61. Solinska-Nowak, *supra* note 57.

62. Sarah Engler, *10 Ways to Reduce Plastic Pollution*, NRDC (Jan. 5, 2016), https://www.nrdc.org/stories/10-ways-reduce-plastic-pollution.

63. Srichchha Pradham, *Drowning in Plastic*, KATHMANDU POST (Dec. 14, 2018), https://kathmandupost.com/opinion/2018/12/14/drowning-in-plastic.

64. *Id*.

65. *Id*.

66. *Id*.

In 2015, the U.N. General Assembly adopted the 2030 Agenda for Sustainable Development, which aims to "prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution" by the year 2025.[67] However, this goal may be difficult to achieve because each country implements different strategies in addressing waste management.[68]

The legal framework addressing marine pollution has proven ineffective.[69] A productive shift toward a pollution-free planet will require collective and individual behavioral changes.[70] Campaigns on risks and available solutions, pollution prevention and management, teaching materials in education curricula, and improved consumer and product information play strong roles in enhancing awareness and promoting behavioral change at all levels.[71] According to a U.N. report, 127 countries implemented policies to regulate plastic bags in 2018.[72] Fortunately, it has become easier to source reusable items, and these alternatives are becoming more common.[73]

"Mismanagement and inappropriate disposal have resulted in millions of [tons] of plastic waste escaping oceans, posing a serious threat to marine life, littering beaches and threatening everything from fisheries to tourism."[74] A research study found at least 700 species of

67. *The 2025 Targets for Solutions on Marine Plastics Litter*, IUCN, https://www.iucn.org/sites/dev/files/content/documents/framework_for_action_.pdf (last updated June 2016).

68. Daria Casilevskaia, *Marine Plastic Pollution: Can Law Help?*, LEGAL DIALOGUE (Oct. 22, 2018), https://legal-dialogue.org/marine-plastic-pollution-can-law-help.

69. *Id*.

70. TOWARDS A POLLUTION-FREE PLANET BACKGROUND REPORT, UNITED NATIONS ENV'T ASSEMBLY OF THE UNITED NATIONS ENVTL. PROGRAMME 62 (2017).

71. *Id*. at 102.

72. Carole Excell et al., *Legal Limits on Single-Use Plastics and Microplastics: A Global Review of National Laws and Regulations*, United Nations Environment Programme 3 (2018).

73. Suzie Hall, *Living a Plastic Free Life - How to Do it*, AZO CLEANTECH (Aug. 27, 2019), https://www.azocleantech.com/article.aspx?ArticleID=929.

74. Michael Marshall, *Plastics 101: What You Need to Know About Plastic in The Environment*, THE TELEGRAPH (Mar. 21, 2019), https://www.telegraph.co.uk/business/reducing-plastic-waste/plastic-in-the-environment/.

marine life have been adversely affected by plastic pollution.[75] Styrofoam products, which contain several carcinogenic chemicals, are also extremely dangerous if ingested.[76] The chemicals can leak into food and drinks held in Styrofoam products.[77]

B. Public Health Law as a Strategy to Halt Plastic Pollution

Public health law is the study and application of the legal authorities to preserve and promote population health.[78] Public health law also includes the legal means necessary for the government to understand the right to health for all members of the population.[79] Regulation in various countries depends on historical factors of each geographical region, as well as the particular challenges each country has previously encountered.[80] These may include laws regulating food safety, sanitation, and the collection and management of health data.[81]

In many countries, governments use a variety of strategies to regulate health hazards and to establish healthier routines. These strategies include legislation, decrees, and executive orders.[82] These strategies form the body of public health laws, which "provide governments with the tools to protect their populations from avoidable injury and disease."[83]

The law must outline the expectations for society and identify means of compelling cooperation.[84] Administrative regulation and

75. Andrew Merrington, *New Study Reveals the Global Impact of Debris on Marine Life*, UNIVERSITY OF PLYMOUTH (Feb. 19, 2015), https://www.plymouth.ac.uk/news/new-study-reveals-the-global-impact-of-debris-on-marine-life.

76. CLAUDIA GIACOVELLI ET AL., SINGLE-USE PLASTICS: A ROADMAP FOR SUSTAINABILITY, United Nations Environment Programme 14 (2018).

77. *Id*.

78. ROGER MAGNUSSON, ADVANCING THE RIGHT TO HEALTH: THE VITAL ROLE OF LAW, GENEVA: WORLD HEALTH ORGANIZATION 27 (2017).

79. *Id*. at 1.

80. *Id*. at 2.

81. *Id*. at 28.

82. *Id*. at 30.

83. *Id*. at 102.

84. Alanson Wilcox, *The Role of Law in Public Health*, 79 PUB. HEALTH REP. 647 (1964).

expenditures of public funds must be authorized by law.[85] Public health law can be a powerful tool for changing unhealthy behaviors and ensuring clean and pollution-free environments. The enactment of laws to restrict single-use plastic products is one potential strategy to reduce plastic use and protect the planet.

C. Challenges in Protecting the Environment Against Plastic Pollution

On top of the problems addressed above, plastic pollution also poses complex concerns including threats to food security, economic activity, water safety, and marine life.[86] Humans will be affected by threats to our oceans and marine biodiversity.[87] The lack of effective multilateral environmental agreements is a major fracture in addressing environmental challenges.[88] The multiplicity of governance frameworks often leads to coordination difficulties amongst the various agencies with control over the future plastic waste.[89] As a result, entities are less likely to take responsibility for the plastic pollution in their respective countries.[90]

Countries with specific regulations designed to address plastic waste typically focus on one type of plastic product without addressing other types of plastic waste.[91] These *ad hoc* measures can be effective for certain types of plastic, but may also be a way for a country to go for the low-hanging fruit where political will is nonexistent for more comprehensive approaches.

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85. *Id*.

86. Oritse, *supra* note 23 (statement of Dr. Dakuku Peterside) ("The challenges of marine litter and plastic pollution are multiple, and include threat to food security, threat to economic activities, navigational hazard, water safety, threat to ecosystem, harmful effects on marine life and bio-diversity among others.").

87. *Id*. (statement of Dr. Dakuku Peterside) (**"**It is known fact that our oceans and seas sustain lives but when the threats to ocean health are numerous, it also affects human beings.**"**).

88. FUTURE SHAPE OF INTERNATIONAL LAW TO ADDRESS POLLUTION OF GLOBAL SIGNIFICANCE AFFECTING THE EARTH'S ECOSYSTEMS, UNITED NATIONS ENV'T REPORT 19 (2018) [hereinafter *U.N. Report*].

89. *Id*. at 12.

90. *Id*. at 9.

91. *Id*.

Given the global scale of plastic pollution, nations worldwide would pay a high price if required to effectively remove harmful plastic from the environment.[92] Therefore, most solutions to plastic pollution focus on preventing improper disposal and limiting the use of single-use plastics.[93] While fines for littering have proven difficult to enforce, other tactics such as fees for purchasing plastic items and incentives for taking items to recycling centers have been more effective[94] Extended Producer Responsibility schemes hold manufacturers of certain plastic items responsible for creating programs to recycle the products they produce.[95] A plastic ban may also provide an opportunity to use more environmentally-friendly and affordable alternatives.[96] If plastic bags are banned with no affordable alternative, people are more likely to turn toward black markets.[97]

It is of concern that many countries imposing bans do not have information available to determine the effectiveness of the measures they promulgate.[98] This is largely due to the recentness of the measures' adoptions and the need to accurately monitor and analyze the results.[99] Bans could lead to follow-up actions, which entail expenditure from the relevant authorities to enforce the ban or extend the ban to imports of various products.[100]

Solutions to managing the tragedy of plastic pollution range from local community efforts to global actions.[101] Globally, the need to address plastic pollution is increasingly recognized. Discussions on

92. Charles Moore, *Plastic Pollution in Oceans and On Land*, BRITANNICA, https://www.britannica.com/science/plastic-pollution/Plastic-pollution-in-oceans-and-on-land (last visited Feb. 18, 2020).

93. *Id*.

94. *Id*.

95. *Id*.

96. Gabriela Troncoso Alarcón, *Are Bans the Solution to Plastic Pollution?*, ENHESA (Jan. 4, 2019), https://blog.enhesa.com/are-bans-the-solution-to-plastic-pollution.

97. GIACOVELLI, *supra* note 76, at 49.

98. *Id*. at viii.

99. *Id*.

100. *Id*. at 72.

101. Joana Vince & Britta D. Hardesty, *Plastic Pollution Challenges in Marine and Coastal Environments: From Local to Global Governance*, RESTORATION ECOLOGY (May 2016), https://onlinelibrary.wiley.com/doi/abs/10.1111/rec.12388.

marine plastic pollution are occurring at international fora such as the World Oceans Summit and by recent meetings of the top global economies.[102]

A viable approach to addressing the root cause of environmental pollution is to use bio-related polymers as ecofriendly substitutes to replace petroleum-based polymer.[103] The only way to permanently eliminate plastic waste is through the use of destructive thermal treatment, such as combustion.[104]

II. ENVIRONMENTAL PROTECTION LAWS IN NIGERIA

A. Constitution of the Federal Republic of Nigeria

The Constitution of the Federal Republic of Nigeria ("the Constitution") is "supreme and its provisions shall have binding force on the authorities and persons throughout the Federal Republic of Nigeria."[105] According to section twenty of the Constitution, the state is empowered to protect the environment and safeguard resources such as water, air, land, forest, and wildlife.[106] Unfortunately, section twenty, which is placed under Chapter II of the Constitution, is non-justiciable.[107] Therefore, the Nigerian government cannot be held responsible for failing to perform under this chapter. The non-justiciable nature of Chapter II of the Constitution has been judicially confirmed in several cases.[108]

For example, in *A.G. Ondo v. A.G. Federation*, the Supreme Court held, *inter alia*, courts cannot enforce any provisions of Chapter II of

102. Joana Vince & Britta D. Hardesty, *Governance Solutions to the Tragedy of the Commons That Marine Plastics Have Become*, FRONTIERS MEDIA SA (June 19, 2018), https://www.frontiersin.org/articles/10.3389/fmars.2018.00214/full.

103. Terry Smith, *Why is Single-Use Plastic Causing Such a Problem to the Marine Environment Today and for the Future*, PELAGIC DIVE TRAVEL (May 1, 2019), https://www.pelagicdivetravel.com/post/single-use-plastic-actions.

104. *Id*.

105. CONSTITUTION OF THE FEDERAL REPUBLIC OF NIGERIA (1999).

106. *Id*.

107. Olu Awolowo, *Fundamental Objectives and Directive Principles of State Policy as Panacea for National Transformation and Sustainable Development*, 65 J.L. POL'Y AND GLOBALIZATION 23, 24 (2017).

108. *Id*.

the Constitution.[109] According to the Supreme Court, the objectives and principles that serve as the constitutional policy of governance remain mere declarations that cannot be enforced by legal means.[110] However, it would seem irresponsible if the state were to disregard them completely.[111]

B. National Environmental Standards and Regulations Enforcement Agency Act

The National Environmental Standards and Regulations Enforcement Agency ("NESREA") Act empowers the National Environmental Standards and Regulations Enforcement Agency to take responsibility for enforcing environmental laws.[112] The NESREA Act provides a collection of enforcement mechanisms for environmental standards.[113] These mechanisms include issuance of permits, licenses, certificates for environmental compliance, inspections, and criminal sanctions for violations.[114] NESREA is authorized to:

> [E]nforce compliance with laws, guidelines, policies, and standards on environmental matters, carry out activities necessary for the performance of its functions, prohibits processes and use of equipment or technology that undermine environmental quality, conduct field follow-up of compliance with set standards and take procedures prescribed by law against any violator, conduct public investigations on pollution and the degradation of natural resources, develop environmental monitoring networks and do such other things other than in the oil and gas sector as are necessary for the efficient performance of the functions of the Agency.[115]

The Minister of Environment is allowed to suggest guidelines under the NESREA Act to effectively enforce environmental standards.[116]

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109. *Id*.

110. *Id*. at 25.

111. *Id*.

112. NATIONAL ENVTL. STANDARDS AND REGULATIONS ENFORCEMENT AGENCY (ESTABLISHMENT) ACT (2007), at Section 34 [hereinafter NESREA Act].

113. Agbazue et al., *The Role of NESREA Act*, 10 J. APPLIED CHEMISTRY 32, 35 (2017).

114. *Id*.

115. *Id*. at 34

116. NESREA Act, *supra* note 112.

C. National Environmental Regulations

One important regulation is the 2009 National Environmental (Sanitation and Waste Control) Regulations ("NESWC").[117] NESWC prohibits people from littering in public, drainage systems, or other undesignated places.[118] Although NESWC seeks to decrease litter, the lack of enforcement does not deter Nigerians from littering.[119] NESWC has a provision for an Extended Producer Responsibility program that holds producers responsible for product packaging.[120] The purpose of NESWC is to minimize pollution by promoting sustainable practices in sanitation and waste management.[121] Under NESWC:

No person is to discard, throw, or drop any litter or any similar refuse anywhere except in designated litter bins; no owner, operator, occupant or person in care, management or control of premises is to allow the release of litter into the environment; no occupant or passenger of any vehicle is to throw or drop any litter onto the streets, roads, highways, public spaces, and other undesignated places; any person whose activities generate waste shall ensure that the waste is handled by a person licensed to transport and dispose of the wastes in designated waste management facility.[122]

III. INTERNATIONAL INSTRUMENTS ON POLLUTION

A. The U.N. Convention on the Law of the Sea

The U.N. Convention on the Law of the Sea ("UNCLOS") aims to protect the marine environment.[123] UNCLOS provides all States have a duty to protect and preserve fragile ecosystems and species

117. Muhammed Ladan, *Legal Issues in Environmental Sanitation and Waste Management in Nigeria: Role of Environmental Courts*, SSRN (October 5, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2676646#references-widget.

118. *Id*. at 26.

119. *Id*. at 47.

120. *Id*. at 20.

121. *Id*. at 26.

122. NESREA Act, *supra* note 112, at Section 27.

123. *United Nations Convention on the Law of the Sea of 10 December 1982 Overview and Full Text*, UNITED NATIONS, https://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm (last visited Dec. 15, 2019).

habitats.[124] The duty to preserve extends to all sources of pollution.[125] Specifically, States are obliged to develop a legal framework "to prevent, reduce and control pollution of the marine environment by dumping."[126] Article 207(1) of UNCLOS obliges "States [to] adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources . . . ."[127] Article 207(4) adds that States "shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources."[128]

Further, Part XII of UNCLOS is specifically dedicated to the protection and preservation of the marine environment.[129] States are required to enact measures "that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavor to harmonize their policies in this connection."[130] The U.N. Conference on the Environment and Development's Agenda 21 is a nonbinding action plan that encourages integrated and precautionary marine environmental protection.[131] The U.N. Environment Program ("UNEP") has also enacted guidelines to reduce marine pollution.[132]

Another global strategy to reduce marine debris is the Honolulu Strategy, which was adopted by participants of the Fifth International Marine Debris Conference.[133] In 2012, the UNEP Global Partnership

124. *Id*. at 2.

125. *Id*. at 5.

126. PREAMBLE TO THE UNITED NATIONS CONVENTION OF THE LAW OF THE SEA, PART XII, art. 210.

127. *Id*. art. 207.

128. *Id*.

129. *Id*. art. 192.

130. *Id*. art. 194.

131. U.N. Conference on Env't and Dev., *Report of the United Nations Conference on Environment and Development*, June 3-14, 1992, U.N. Doc. A/CONF.151/26 (vol. II) (June 3-14, 1992).

132. Anthony Cheshire & Ellik Adler, *Guidelines on Survey and Monitoring of Marine Litter*, United Nations Environment Programme 1 (2009).

133. *The Honolulu Strategy: A Global Framework for Prevention and Management of Marine Debris*, United Nations Environment Programme 1 (2012).

of Marine Litter was announced, which is part of the U.N. Environment Global Programme of Action for the Protection of the Marine Environment from Land-based Activity.[134] This global partnership is a coordinating forum for stakeholders working on marine pollution prevention and management.[135] Each of these strategies is important because, in order to reduce plastic pollution, governments, private actors, and public actors need to work together.[136]

Recently, there has been focus on addressing plastic pollution through Sustainable Development Goals ("SDGs").[137] Substantial efforts have been made to implement SDGs through various conferences.[138] The U.N. Environment Assembly passed a nonbinding resolution on marine pollution in 2017.[139] This resolution encourages member states to "develop integrated and source-to-sea approaches to combat marine litter and microplastics from all sources" and it recognized "that private sector and civil society, including non-governmental organizations, can contribute significantly to prevent and reduce marine litter and microplastics."[140] The issue with a nonbinding resolution, similar to a non-justiciable constitution discussed above, is that States are not required to follow it. Thus, it will take time to find a sustainable and global solution for plastic waste.[141] A viable solution will also benefit from a holistic approach, considering both social and economic interests.[142]

B. The International Convention for the Prevention of Pollution from Ships

While the above conventions work to manage marine pollution, the International Convention for the Prevention of Pollution from Ships

134. *Id*. at 3.
135. *Id*. at ES-1.
136. *From Decline to Recovery: A Rescue Package for the Global Ocean*, GLOBAL OCEAN COMM'N 1, 56 (2014).
137. Vince & Hardesty, *supra* note 102, at 5.
138. *Id*.
139. *Id*.
140. *Id*.
141. *Id*.
142. *Id*.

("MARPOL") works to regulate ship pollution.[143] Annex V of MARPOL prohibits the disposal of garbage at sea and requires ships to dispose of their waste at land-based waste facilities.[144] Further, MARPOL "requires states to provide reception facilities for garbage at ports and terminals, and to present a list of these facilities to the IMO."[145] Compliance, however, remains an issue. States around the world are in varying phases of implementing domestic policies that reflect this regulation.[146]

C. Control of Transboundary Movements of Hazardous Wastes and Their Disposal

The Basel Convention of 1992 addresses transboundary movements and the environmentally sound management of hazardous wastes and other wastes.[147] Transboundary movement is the movement of waste from one jurisdiction to another.[148] The Basel Convention's objective is to protect human health and the environment from hazardous waste.[149] Although the Basel Convention deals with issues relevant to plastic waste, most plastic waste is not subject to the Basel Convention's provisions, unless it exhibits specific properties.[150] "Additionally, the [Basel] Convention merely restricts the transboundary movement of the waste that is covered, but contains no provisions on indicators, timelines, or targets to reduce plastic waste."[151]

143. Peter G. Ryan, *A Brief History of Marine Litter Research*, MARINE ANTHROPOGENIC LITTER 1, 15 (2015).

144. *Id*.

145. *Id*.

146. *Id*.

147. *Convention Overview*, BASEL CONVENTION, https://www.basel.int/index.html (last visited Jan. 15, 2020).

148. *Guidance Manual for the Control of Transboundary Movements of Recoverable Wastes*, ORG. FOR ECON. CO-OPERATION AND DEV. 11 (2001).

149. Giulia Carlini, *One Small Edit for a Legal Text, One Giant Leap for Addressing Pollution: A New Plastic Waste Proposal for the Basel Convention*, CTR. FOR INT'L ENVT'L L. (Aug. 30, 2018), https://www.ciel.org/plastic-waste-proposal-basel-convention/.

150. *Id*.

151. *Id*.

As of 2019, 187 States have taken a significant step toward solving the plastic pollution crisis by adding plastic to the Basel Convention.[152] The Basel Convention amendments include trade bans on plastic and are meant to track and limit the trade of lower-quality and contaminated plastics.[153] Limiting the amount of plastics will have a lasting effect on the environment and increase the Basel Convention's control.[154]Driven by concerns over the marine pollution crisis, the fourteenth conference of the parties to the Basel Convention met on May 10, 2019, and adopted the following:[155]

An amendment to Annex II of the Convention that will, in effect, bring most plastic wastes under the control of the Convention, unless certain narrow exceptions apply; a mandate for an expert working group to consider the need to expand the universe of plastic wastes classified as hazardous; the launch of a "partnership on plastic wastes" that will be open to parties, nonparties, and observers, including industry observers; and a mandate to update existing Technical Guidelines for the environmentally sound management of wastes that will inform national and international management and recycling practices and could influence the acceptability of chemical recycling for plastics overseas.[156]

D. The Bamako Convention and the Management of Hazardous Wastes in Africa

Africa has its own transboundary regulation referred to as the Bamako Convention of 1998. The Bamako Convention is a response to Article 11 of the Basel Convention.[157] The Bamako Convention is

152. Paul Hagen et al., *Basel Convention Recasts the Circular Economy for Plastics*, BEVERIDGE & DIAMOND PC (May 15, 2019), https://www.bdlaw.com/publications/basel-convention-recasts-the-circular-economy-for-plastics/.

153. *Id*.

154. *Id*.

155. *Id*.

156. *Id*.

157. *The Bamako Convention*, UNITED NATIONS ENV'T PROGRAMME, https://www.unenvironment.org/explore-topics/environmental-rights-and-governance/what-we-do/meeting-international-environmental (last visited June 2, 2020).

motivated by the failure of the Basel Convention to "prohibit trade of hazardous waste to less developed."[158] The Bamako Convention covers more wastes than the Basel Convention by including hazardous wastes.[159] The purpose of the Bamako Convention is as follows:

To prohibit the import of all hazardous and radioactive wastes into the African continent for any reason; to minimize and control transboundary movements of hazardous wastes within the African continent; to prohibit all ocean and inland water dumping or incineration of hazardous wastes; to ensure that disposal of wastes is conducted in an environmentally sound manner; and to promote cleaner production over the pursuit of a permissible emissions approach based on assimilative capacity assumptions, and to establish the precautionary principle.[160]

E. Strategies on the International Level and Other Regional Approaches

In 2016, the international community adopted the 2030 Agenda for Sustainable Development, including seventeen SDGs and numerous targets.[161] Specifically, SDG 14 and Target 14.1 attempt to significantly reduce marine pollution by the year 2025.[162] Overall, "four of the SDGs have targets relevant to marine plastic pollution."[163]

The U.N. Environment Assembly is committed to reducing the manufacturing of single-use plastics by the year 2030.[164] The Fourth Session of the U.N. Environment Assembly adopted a resolution on single-use plastic products production and marine plastic pollution that:

Encourages Member States to take comprehensive action on single-use plastics, including through improvements in waste management and infrastructure; promotes innovative approaches to solving this problem,

158. *Id*.
159. *Id*.
160. *Id*.
161. Ansje Löhr et al., *Solutions for Global Marine Litter Pollution*, 28 CURRENT OP. IN ENVTL. SUSTAINABILITY 90, 97 (2017).
162. *Id*.
163. *Id*.
164. *Id*. at 92.

including through extended producer responsibility and development of alternatives; and calls on Member States and other stakeholders to build on existing instruments like the Basel Convention, the International Maritime Organization, the Regional Seas Conventions and Programmes, and the Global Partnership for Marine Litter.[165]

The European Union ("E.U.") strategy for plastic aims to revolutionize the design and recyclability of plastics.[166] The strategy is part of the E.U.'s effort to transition toward using resources in a more sustainable way.[167] Indeed, the EU recently agreed to ban certain single-use plastic items such as plates, straws, beverage stirrers, and other expanded polystyrene products.[168]

Innovative companies are also developing new technologies to make more sustainable products including coffee cups, coffee machine pods, bottles, and straws.[169] Among these new technologies is the development of novel polymeric materials with unique biodegradable properties.[170] This is a step in the right direction because biodegradable materials reduce the environmental impact of plastic because they break down and do not add to marine pollution.[171]

Some novel production options utilize biologically derived feedstocks, such as plant matter combined with chemical processing.[172] The renewable nature of these feedstocks deters plastic production's dependence on traditional non-renewable feedstocks and reduces the environmental impact of traditional plastic.[173] Other approaches focus on reducing existing plastic pollution. One of these approaches is to use worm species capable of digesting commonly-used plastics.[174] These

165. Hagen, *supra* note 152, at 5.

166. James Snaith, *Plastic Waste: Cost or Opportunity?*, KILBURN & STRODE (Jan. 22, 2019), https://www.kilburnstrode.com/knowledge/technology/plastic-waste-cost-or-opportunity.

167. *Id*.

168. *Parliament Seals Ban on Throwaway Plastics by 2021*, EUR. PARLIAMENT (Mar. 27, 2019), https://www.europarl.europa.eu/news/en/press-room/20190321IPR32111/parliament-seals-ban-on-throwaway-plastics-by-2021.

169. Snaith, *supra* note 166, at 2.

170. *Id*.

171. *Id*.

172. *Id*.

173. *Id*.

174. *Id*.

approaches may be useful in tackling the pollution contaminating the environment.[175]

Currently, there is a global response to marine plastic pollution.[176] Plastic pollution is a transboundary challenge and, when pollution occurs in areas beyond national jurisdiction, it becomes challenging to issue responsibility.[177]

Worldwide, there are a number of regional sea conventions and action plans underway to address plastic pollution.[178] One example is the Regional Action Plan on Marine Litter Management for the Wider Caribbean Region.[179] This plan addresses pollution issues in the Caribbean basin and is supported by the U.N.'s Caribbean Environment Programme.[180] Similarly, the Northwest Pacific Action Plan aims to protect the marine environment from land-based activities in the Pacific Northwest Region.[181] The Northwest Pacific Action Plan has developed regional activity centers and conducted coastal environment assessments to address plastic pollution.[182]

Specifically, pollution issues in Europe have been addressed through regional sea conventions. In 1972, the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area recognized all forms of pollution.[183] In 2015, nine coastal Baltic Sea states, who are signatories of the Helsinki Convention, adopted a plan for the Baltic Sea.[184]

In 2016, the U.N. introduced the Integrated Monitoring and Assessment Programme, which aims to enable a "quantitative, integrated analysis of the state of the marine and coastal environment, covering pollution and marine litter, biodiversity, non-indigenous

175. *Id*.
176. Vince & Hardesty, *supra* note 102, at 1.
177. *Id*.
178. *Id*. at 6.
179. *Id*.
180. *Id*.
181. *Id*.
182. *Id*.
183. *Id*.
184. *Regional Action Plan for Marine Litter in the Baltic Sea*, HELCOM 1 (2015).

species, coast, and hydrography, based on common regional indicators, targets and Good Environmental Status descriptions."[185]

The Oslo/Paris Convention for the Protection of the Marine Environment of the North-East Atlantic focuses on inter alia port reception facilities, fishing for pollution, education and outreach, and reduction of single-use items.[186] The Black Sea Region, under the sponsorships of the Bucharest Convention, is the last region yet to develop a plan for that geographic area.[187]

Finally, the Marine Strategy Framework Directive, adopted by the E.U., identifies marine pollution as one of the descriptors of good environmental status.[188] The Marine Strategy Framework Directive requires E.U. Member States to ensure that by 2020, "properties and quantities of marine litter do not cause harm to the coastal and marine environment."[189]

IV. PLASTIC BAN PRACTICES

According to the U.N.'s environmental data, 300 million tons of plastic are produced every year.[190] A 2018 U.N. report states that twenty-seven countries have enacted legislation banning specific plastic products. [191]

In 2008, the Rwandan government banned the manufacturing and use of plastic bags.[192] In response, many locals "design alternative bags

185. *Launch of the Integrated Monitoring and Assessment Programme and Related Assessment Criteria*, UNITED NATIONS ENV'T PROGRAMME, https://web.unep.org/unepmap/launch-integrated-monitoring-and-assessment-programme-and-related-assessment-criteria-imap (last accessed Feb. 15, 2020).

186. *Marine Litter Regional Action Plan*, OSPAR 5, 8 (2014).

187. Vince & Hardesty, *supra* note 102, at 6.

188. *Our Oceans, Seas, and Coasts*, EUR. COMM'N, https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index_en.htm (last updated Apr. 10, 2019).

189. *Id*.

190. *Beat Plastic Pollution*, UN ENV'T, https://www.unenvironment.org/interactive/beat-plastic-pollution/ (last accessed Apr. 6, 2018).

191. Excell, *supra* note 72, at 3.

192. Ken Fullerton, *Reflection on Rwanda's Plastic Bags Ban*, INT'L DEV. J. (Apr. 24, 2017), https://idjournal.co.uk/2017/04/24/reflecting-rwandas-plastic-bags-ban/.

– mainly made from cotton or banana leafs – that are more environmentally friendly and sustainable."[193] Along with the ban, companies were offered tax incentives for investing in recycling equipment or environmentally friendly bags.[194]

Critics of Rwanda's approach claim the poorest fractions of the population were not considered in enacting the ban.[195] Investments in recycling technologies were deficient.[196] People began smuggling plastic bags from other areas and, soon enough, there was a black market for plastic bags. [197] Eventually, citizens adjusted to the ban and the capital of Rwanda was noted as the cleanest city in Africa in 2008.[198]

"In 2003, the Government of South African introduced a ban on single-use plastic bags less than thirty microns thick."[199] Retailers were also taxed 0.04 South African Rand on twenty-four liter bags.[200] The tax was reduced to 0.03 South African Rand three months later, in part due to pressure from plastic bag manufacturers.[201] A percentage of the tax revenues was used to create a non-profit organization to encourage proper waste management and create job opportunities.[202]

In February 2017, the Kenyan government declared a ban on production and use of plastic bags.[203] Under the ban, offenders can face fines of up to $38,000 or four years in jail.[204] This is one of the strictest penalties in the world.[205]

193. *Id*.
194. GIACOVELLI, *supra* note 97, at 49.
195. Sophie Pilgrim, *Smugglers Work on the Dark Side of Rwanda's Plastic Bag Ban*, ALJAZEERA AMERICA (Feb. 25, 2016), http://america.aljazeera.com/articles/2016/2/25/rwanda-plastic-bag-ban.html.
196. GIACOVELLI, *supra* note 97, at 49.
197. *Id*.
198. *Id*. at 50.
199. *Id*.
200. *Id*.
201. *Id*.
202. *Id*.
203. *Id*. at 52.
204. *Id*.
205. *Id*.

In 1999, the Chinese government banned the production and use of all single-use plastic tableware.[206] However, China never effectively enforced the ban and it was officially lifted in 2013.[207] In 2008, the Chinese government introduced a ban on bags thinner than twenty-five micrometers and a tax on thicker ones to lessen the burden of plastic bags.[208] Bags used in handling certain foods are exempted from the ban for hygienic reasons.[209]

A. The Plastic Bag Ban Debate

Plastics are vital to modern healthcare and medicine.[210] Without plastic there would be no internet, space travel, fresh water, cities, remote villages, or refugee camps.[211] Disposable syringes, blood bags, pill sheaths, and heart valves all contain plastic.[212] Clearly, the aforementioned represent positive uses of plastic. Conversely, these qualities are what contribute to eight million tons of plastic ending up in the oceans each year.[213]

Plastic bag production is more environmentally friendly than reusable alternatives.[214] A 2018 study by the Ministry of Environment and Food of Denmark showed the manufacturing and disposal of plastic bags had a lower environmental impact than six alternative bags offered as replacements.[215] The study also showed alternative materials must

206. Shi Yunhan, *The Long Battle Over "White Pollution"*, CHINA FILE (May 1, 2013), https://www.chinafile.com/reporting-opinion/media/long-battle-over-white-pollution.

207. *Id*.

208. Dirk Xanthos & Tony R. Walker, *International Policies to Reduce Plastic Marine Pollution From Single-Use Plastics (Plastic Bags and Microbeads): A Review*, 118 MARINE POLLUTION BULL. 17, 21 (2017).

209. *Id*. at 20.

210. *Plastics—The Good, The Bad, and The Ugly*, PENTATONIC, https://www.pentatonic.com/blog/plastics-the-good-the-bad-and-the-ugly (last visited Mar. 9, 2020).

211. *Id*.

212. *Id*.

213. *Id*.

214. Jon Behm, *Pros and Cons of the Plastic Bag Ban Debate*, DUMPSTERS.COM, https://www.dumpsters.com/blog/plastic-bag-bans (last updated July 25, 2019).

215. *Id*.

be reused a certain number of times to negate its pollution production while a plastic bag needs to be used only once.[216]

In addition, the plastic industry employs nearly one million Americans.[217] The companies that manufacture the bags themselves employ thousands of people across the United States.[218] Critics argue every new plastic bag ban raises the risk of extensive layoffs.[219] In 2017, the plastic industry employed around 989,000 people in the United States.[220]

Plastic bags also reduce food safety risks.[221] Although fabric bags are useful in transporting dry foods, they can quickly absorb substances, leading to odors and bacteria growth.[222] Despite the overwhelmingly negative effects of plastics in the ocean, bacteria and algae benefit from plastics.[223] Bacteria and algae settle on plastic surfaces, which will likely have an overwhelmingly negative effect.[224] By colonizing on plastic, as opposed to natural substrates that tend to degrade or sink quicker, plastics remain in the upper ocean for long periods, heightening the risk of spreading disease.[225]

Overall, plastic plays a huge role in product sustainability.[226] For example, plastic packaging extends the shelf life of many food items.[227] Plastic production also benefits motor vehicles because light and durable plastic materials have made for more fuel efficient vehicles, which has reduced carbon dioxide emissions.[228]

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216. *Id*.
217. *Id*.
218. *Id*.
219. *Id*.
220. *Id*.
221. *Id*.
222. *Id*.
223. *This Study Has Just Put a Price on Plastic*, POSITIVE LUXURY (Apr. 2, 2019), https://www.positiveluxury.com/blog/2019/04/02/plastic-pollution-price/.
224. *Id*.
225. *Id*
226. Jim Fitterling, *We Must Stop Coking the Ocean with Plastic Waste. Here's How*, WORLD ECON. F. (Jan. 9, 2019), https://www.weforum.org/agenda/2019/01/we-can-stop-choking-our-oceans-with-plastic-waste-heres-how/.
227. *Id*.
228. *Id*.

Many in favor of banning plastic bags argue it would be one of the most effective ways to reduce the volume of plastic waste in the ocean. This would have major health benefits for both sea life and humans.[229] A study conducted in 2015 by researchers at University of California, Davis, found that one quarter of fish sold at California markets contained plastic in their stomachs.[230]

Unlike reusable fabric bags, plastic bags may take several hundred years to biodegrade. Over time, plastic bags' light weight allow them to be carried long distances, effecting various aspects of the environment.[231] Recycling is especially difficult because plastic bags cannot be sorted from other materials by machinery at recycling facilities.[232] Plastic bags often get stuck in the machinery, so it does not make sense for plastic bags to be collected with curbside waste pick-up.[233] Additionally, plastic is made from toxic materials, such as benzene and vinyl hydrochloride.[234] These chemicals are known to cause cancer, and the manufacturing byproducts contaminate our air and soil.[235]

B. The Plastic Bag Ban's Limited Effectiveness

Critics argue the rules for achieving "ecofriendly" status for plastics are too weak, and that manufacturers are not transparent enough about the environmental impact of their products.[236] As awareness of plastic pollution continues to grow, more innovations aimed at producing truly ecofriendly products to replace disposable plastics are

229. Behm, *supra* note 214.

230. Kat Kerlin, *Plastic for Dinner: A Quarter of Fish Sold at Markets Contain Human-Made Debris*, U.C. DAVIS (Sep. 24, 2015), https://www.ucdavis.edu/news/plastic-dinner-quarter-fish-sold-markets-contain-human-made-debris/.

231. Behm, *supra* note 214.

232. *Id*.

233. *Id*.

234. Willow Cohn, *Stop Plastic Pollution at the Source. Reduce, Reuse, Recycle!*, CTR. FOR ECOTECH. (Dec. 5, 2017), https://www.centerforecotechnology.org/plastic-pollution/.

235. *Id*.

236. Suzie Hall, *Biodegradable Plastics: Solution or Confusion?*, AZO CLEANTECH (Apr. 23, 2019), https://www.azocleantech.com/article.aspx?ArticleID=877.

produced.[237] However, consumers are urged to turn away from single-use items wherever possible, opting instead for simple switches which have a cumulative effect. These include buying a reusable water bottle and coffee mug, bringing bags to the supermarket, reusing food containers, and repurposing everyday items for continued use.[238] One reason why plastic pollution continues is because the global regulation of plastic bags is imbalanced.[239] The following paragraphs describe several reasons plastic bag regulations are not yet effective in slowing pollution.[240]

Very few countries regulate the lifecycle of plastic bags from manufacturing, to use, to disposal.[241] Moreover, only fifty-five countries restrict the retail production, distribution, and import of plastic bags.[242] Many other countries' laws include loopholes that allow continued plastic pollution.[243] For example, although China bans plastic bag imports and mandates that retailers charge consumers for plastic shopping bags, the production and exportation of plastic bags is not restricted.[244]

Research shows countries favor partial bans over total bans.[245] Partial bans may include requirements on the composition of bags, rather than banning plastic bags entirely.[246] Several countries tax plastic bags that are deemed too thin, and this compromise seems to be more likeable for consumers.[247]

Many countries do not offer incentives for using a more ecofriendly alternative to plastic bags.[248] Governments often fail to provide

237. *Id*.
238. *Id*.
239. Carole Excell, *127 Countries Now Regulate Plastic Bags. Why Aren't We Seeing Less Pollution?*, WORLD RES. INST. (Mar. 11, 2019), https://www.wri.org/blog/2019/03/127-countries-now-regulate-plastic-bags-why-arent-we-seeing-less-pollution.
240. *Id*.
241. *Id*.
242. *Id*.
243. *Id*.
244. *Id*.
245. *Id*.
246. *Id*.
247. *Id*.
248. *Id*.

subsidies for reusable bags and do not require plastic bags be manufactured from recycled materials.[249] Only sixteen countries reviewed had guidelines regarding the use of alternatives to plastic.[250]

In African countries, several guidelines exist regarding taxes on plastic and suggestions for ecofriendly alternatives; however, many people still use plastic bags illegally.[251] Therefore, the effectiveness of the bans and incentives is not yet evident.[252]

To control the plastic problem, three steps should be made. First, people need to be more conscious of their consumption of single-use plastic items.[253] Second, garbage collection and recycling systems need to be improved.[254] And third, scientists need to develop mechanisms to break plastic down so that it can serve other valuable uses.[255]

V. RECOMMENDATIONS

In addition to banning common single-use plastic products, the Nigerian legislature should pass legislation including Extended Producer Responsibility regulations holding corporations accountable for addressing the entire lifecycle of plastic products.[256]

The Nigerian government should also establish policy guidelines for plastic utility to ensure sustainable management of plastic waste with the goal of preventing plastic waste proliferation and its negative effect on the environment. Additionally, the Nigerian Government should also initiate an action plan to encourage behavioral change in the country, improve development, and enable the enforcement of new initiatives to tackle plastic pollution.

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249. *Id*.

250. *Id*.

251. Herdrine Katche, *AU to Discuss Ways of Fighting Plastic Pollution in Africa*, VENTURES AFR. (Feb. 12, 2019), http://venturesafrica.com/the-african-union-will-discuss-ways-of-fighting-plastic-pollution-at-a-working-session/.

252. *Id*.

253. Andrea Thompson, S*olving Microplastic Pollution Means Reducing, Recycling—and Fundamental Rethinking*, SCI. AM. (Nov. 12, 2018), https://www.scientificamerican.com/article/solving-microplastic-pollution-means-reducing-recycling-mdash-and-fundamental-rethinking1/.

254. *Id*.

255. *Id*.

256. U.N. Report, *supra* note 88, at 6.

In addition, federal, state, and local governments in Nigeria should provide incentives and discourage indiscriminate disposal of plastics. Moreover, the Nigerian Government should invest in infrastructure to manage waste and implement more environmental-friendly policies and initiatives.

Plastic producers should innovate new processes and incentives to stimulate effective recycling practices. Investing in alternative non-plastic products and technologies may improve the efficiency of plastic waste recycling. Companies should invest in managing their plastic production in a more circular approach, ensuring all post-use plastic is responsibly recycled or into materials for new products.

The behaviors and habits of consumers, retailers, and manufacturers also require change. Strict enforcement and monitoring of laws and policies are necessary. Legislative framework should give sufficient authority to the public health and environmental protection agencies to properly regulate and enforce hazardous waste disposal.

The private and public sectors need to collaborate to find innovative ways to minimize plastic pollution and protect the environment. Strong, meaningful collaborative partnerships between government, industry, and consumers are also necessary. Synergy among relevant government agencies and the private sector will strengthen the fight against plastic pollution.

Robust public awareness programs on the potential environmental and public health effects of plastic pollution should be developed to educate citizens about sustainable plastic waste management. With education, the public should be more inclined to contribute toward reducing plastic pollution. An awareness of the three R's—Reduce, Reuse, and Recycle—should be encouraged.

Sustainability experts also have suggested the need to shift toward a circular economy model.[257] In a linear economy, a product is disposed at the end of its life, but a circular economy will lend to a more sustainable environment.[258] Taxes on plastic bags should be used for waste management and environmental initiatives, such as recycling programs.

257. *War on Plastic*, SUNWAY FOR GOOD (Mar. 4, 2019), http://www.sunwayforgood.com/stories/war-on-plastic/.

258. *Id*.

Plastic pollution is an international concern, necessitating the urgent need for a specific, legally binding international treaty with clear targets, standards, and focus on prevention and regulation of waste disposal. A shift toward a plastic-free lifestyle through the use of items, such as bamboo toothbrushes, edible cutlery, wheat straws, and biodegradable bags should be explored.

CONCLUSION

Extensive plastic use irresponsibly hampers the environment, public health, and tourism. The present approach to the production, use, management, and disposal of plastic is not working. This threat posed by plastic can only be eradicated with a more resource-efficient and sustainable approach to plastic management.

Despite numerous bans, plastic use is still prevalent in many parts of the world. A few reasons for the limited success of the bans include political opposition and poor enforcement. The need to use law and other strategic and proactive approaches as veritable tools to tackle pollution is urgent. A variety of legal strategies such as international agreements, federal legislation, and state laws could be employed to address this problem. The inherent difficulties in law enforcement requires devising strategies such as Extended Producer Responsibility programs, investment in alternative non-plastic products and technologies, and other awareness programs. Ending plastic pollution will require governments, individuals, and companies around the world to implement practices that reduce plastic waste. Holding manufacturers accountable for responsible waste handling is essential in addressing plastic pollution.

The battle against plastic pollution will continue for as long as plastic is produced and consumed. Reducing plastic pollution can be achieved through tough pollution abatement laws, adequate infrastructures, efficient waste management systems, recycling, reuse, and more ecofriendly product design. A reduction in manufacturing unnecessary single-use plastics and meaningful partnerships between policymakers, individuals, manufacturers, waste and resource management actors, and civil society organizations will also be necessary to achieve eradication of plastic pollution.