

MARINE DEBRIS AND ITS ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS IN NIGERIA

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DOI: 10.13140/RG.2.2.33952.39688

Abstract

In this essay, we argue that incessant throwing of debris or non-biodegradable elements, especially (plastic, metals, fiber), and other dangerous substances contaminate our water, and injures a wide range of marine life. Hence, these substances have the capacity to transport potentially harmful chemicals and invasive species that are threats to human health. More so, they bring about environmental pollution that has caused loss of biodiversity (human, plant and animal), and affected the economic growth and environmental tranquility of the nation. However, we identify that a substantial, but relatively neglected underlying cause that results in plastic or other debris substances entering the sea from the land, lies within unsustainable production and consumption patterns. This includes the design and marketing of products without regard for the environment or recycling in the locations where sold; inadequate waste management infrastructure; and inappropriate disposal. Our strategy will be to demonstrate the need for considerable synergistic opportunities to conserve habitats, biodiversity and agricultural products, through the reduction of our reliance on non-renewable resources, limiting global carbon emissions, reducing waste and gas flaring within our environment. Using expository and hermeneutical models of explanation, we will call for more recycling factories, and sensitization of the Nigerian government and populace on the hazardous nature of the non-biodegradable element to health and environment.

Keywords: Marine debris, Environment, Socioeconomic, Pollution, Hermeneutics

Introduction

Oceans and rivers are full of man-made debris. The types and quantities of the said debris cannot be ascertained, as a good number of non-degradable elements can be found in countless measures. From the poles to the equator and from shorelines, estuaries and the sea surface to ocean floor. Truly, debris is of high scale globally (Barnes et al; 2009; Ryan et al; 2009; Browne et al; 2011). Environmental hazards or non-degradable elements, especially plastic debris can be harmful to wildlife and to human health (Derraik, 2002; Gregory, 2009). As it has the potential to transport organic and inorganic contaminants (Mato et al; 2001; Teuten et al; 2009), and can present a hazard to shipping, and can be aesthetically detrimental (Mouat et al; 2010). In addition to having consequences for biodiversity and potential indirect effects on ecosystem, goods and services; “marine debris has direct negative economic impacts on many coastal countries and small Island States, of which many are developing countries and countries with economies in transition” (Kershaw et al; 2011; UNEP, 2009). Hence, the developing countries do not have adequate knowledge of how to avoid debris or acquire more recycling factories and mechanisms. This compounds issues and makes the environment more hazardous to both the plant, animal and human inhabitants, and jeopardizes the economy of the affected nations.

Furthermore, when we talk about Marine debris, we simply refer to any form of manufactured or processed material discarded, disposed of or abandoned in the marine environment. It consists of items made or used by humans that enter the sea, whether deliberately or unintentionally,

including transport of these materials to the ocean by rivers, drainage, sewage systems or by wind (Galgani et al; 2010). With this definition in mind, marine debris encompasses all kinds of elements that do not decompose, and are dangerous to the living organisms. This equally affects wildlife considerably because of a shrinking habitat due to human encroachment. It disrupts serene atmosphere and sea water, affecting the sea surface of the electromagnetic radiation, absorption, transmission and reflection. (Doug, 2017). Boat and ship movements are sometimes obstructed due to marine debris. In fact, marine debris has caused and created tension laden existential situations to both ship, boat, fisheries and transportation of goods and services, within the water or sea ways. Many ships and boats have capsized in different oceans and rivers in trying to maneuver the hindrances occasioned by this said debris. Thompson (2011) corroborated this, when he said that troubles that plastic has caused in the waterways are indeed the reason for the manipulations that abhors economic enrichment and societal development.

More so, It is disheartening that people defecate and throw all kinds of things in the river, believing that water will definitely push them to God knows where. Many are involved in this disgusting act knowingly, while others are those who have no knowledge of the negative effects of their actions. It is in view of all these maritime challenges caused by throwing of debris or non-degradable elements into waterways that we call on stakeholders which include government representatives, consumers of packaging products and industries to join hands in ensuring that most of these elements often thrown into rivers and oceans are recycled or burnt to sustain both the habitats and the environment. To do this effectively, there is a need for the industry owners and even the retailers of different products, especially those that are packaged with non-degradable bottles to reeducate the consumers, in keeping with the rules and regulations of the sea and waterways. When this method of thinking or maritime ideologies is prioritized, the bottle-necked situation or issues of marine debris, which affects human, plant and animal in Nigeria will be addressed. Hence, research has shown that marine debris exists as a result of lack of knowledge of its economic and health implications. Having known the socio-economic implications of marine debris, it is, therefore, very essential to always maintain our environment in order to enjoy the advantages thereof. When our environment and waterways are cared for, fishing, tourism and transportation of our goods and services will be enhanced, for economic growth and maritime engagements. It is under this ambience, mechanism and action put together that the problems of marine debris can be holistically curbed or possibly eradicated. When this happens, Nigeria rivers that have been polluted for long will be revitalized, for economic enhancement and sustainability of the environment.

This paper is divided into three major parts. The first part deals with the historical development of marine debris and pollution in Nigeria. Here, it will be shown that the history of marine debris and pollution in Nigeria is connected with the country's diverse natural resources and industrialization. The second part handles the issue of ecosystem and socioeconomic impacts of marine debris and pollution in Nigeria. Under this, we will demonstrate the level at which the ecosystem and economic value of sea based activities, which comprises interdependent industries, such as fishing, merchant shipping and marine tourism have been affected and undermined. After this, the third part will establish marine debris and pollution coping measures and prevention, for environmental sustainability. It will be stated that providing incentive for collection, recycling of waste items, responsible disposal and environmental education and awareness building can in no minimal way, reduce the amount of these waste materials that often bring about environmental pollution and degradation.

Historical Development of Marine Debris and Pollution in Nigeria

The historical development of marine debris and pollution in Nigeria is connected with the

nation's diverse resources, and the excessive and uncontrolled industrialization (Umeh et al; 2024: 441). “Though Nigeria has an extensive coastline spanning over 850 kilometers along the Gulf of Guinea, and can be said to have been favoured with natural or marine resources, there is a progressive decline due to growth of industries, urban development, government insensitivity and lack of responsible environmental management”. It is as a result of these, and fast extension of metropolitan areas, increases in human activities and industrialization that the coastal ecosystem is unintentionally impacted. This, notwithstanding, gas flaring, pipeline vandalization, illegal bunkery, oil exploration and spillage, and industrial effluents have significantly disrupted the fragile marine ecosystem, and affected the well-being of coastal populations, who depend on fishing, farming and other agricultural products for survival. In the 21st century, Nigeria is facing the challenge of balancing economic growth and environmental sustainability. This asymmetrical situation and ambivalences could be said to be the reason for the backwardness and dwindling of the national economy. The issue of marine debris remains imminent; hence, there are non-decomposable elements here and there. No wonder why Andrady (2011), opines that as long as most plastic items cannot decompose, the issue of non-biodegradable elements in the environment is inevitable or cannot be avoided. Due to this acceptable position, the need to strategize in preventing and putting up responsive measures becomes imperative. Since plastics debris and other related items can threaten marine habitats and fish stocks and is also a concern for human health (Macfadyen et al; 2009), it is a clarion call that things be put in place to avert the threat and mayhem, which appearing to be ignorance of the hazardous nature of the marine debris can cause. However, this tension created as a result of the so called elements is to be handled by the government through the provision of trash receptacles in different places and making laws that will determine the mode of operation and sanction. This approach will usher in peace and security to aquatic habitats, and by extension, promote economic development (Ejovi & Ebie, 2013). Hence, there is no living organism that can thrive in a polluted environment. A friendly environment brings about peace and unimaginable growth.

Furthermore, Most of the protests in the Niger Delta region are due to the threats emanating from the sea they are surrounded with. The citizens of the said area often protest as the Nigeria government seems to be insensitive to their hardship, caused by their surroundings that are contaminated with marine debris and pollution. Though, in as much as we agree to the fact that their areas are contaminated because of continuous flaring of gas and bunkery businesses, we disagree with their accusation that the federal government left them or their problems relating to the environment unattended. This is because there is a Niger Delta Development Commission (NDDC) on ground, which was introduced to oversee the problems of the environmentally polluted region. This plan perhaps is to give rise to human development and a habitable environment for all in the region” (Odalonu, 2016). Be that as it may, to address the problems of marine debris and pollution enumerated so far, consumers/users of all the non-degradable elements such as plastic bottles, fishing gear, fast food packaging disposals must be trained to understand how dangerous most of the said items are to human health and environment. There is also a need to dialogue with the key stakeholders in handling the occurrences of marine debris regionally. This will help in controlling the supply chain; from chemical/material producers, to product designers, importers, distributors, and retailers, product users, including the members of the public or commercial sector and those responsible for end-of-life handling of waste products, government representative experts, and civil society. In other words, we can only have environmentally and socio-economically freedom, when all hands are on the deck, and when the above suggested and recommended stakeholders are carried along, in keeping with the marine regulations and sanitization of the sea or waterways.

The Environmental and Socioeconomic Impacts of Marine Debris and Pollution in Nigeria

The environmental and socioeconomic impacts of marine debris are enormous. “There are countless losses for industries such as commercial fishing, shipping, recreation and tourism, caused wholly or partly by various types of marine debris” (UNEP, 2016). Outside the above mentioned issues, marine debris equally affects human health and creates navigational hazards, which in turn jeopardizes smooth movement of boat and ship, in the waterways. To substantiate this, (GESAMP, 2015) re echoed that the presence of macro debris has social and economic impacts, reducing ecosystem services as well as marine species, and compromising perceived benefits. This incessant attack on the ecosystem and existence of non-degradable elements called debris has reduced drastically the aesthetic value of environment and seaways, and by extension, impacted negatively to the economic growth of the nation. This is the situation at hand, even when it is evaluated that more than two third of the worldwide gross marine products depend on a healthy marine ecosystem, which is already under pressure.

Furthermore, plastic debris has turned out to be undermining the long term economic prospects of the nation. In fact, profit expected from fishing, aquaculture and agriculture is affected due to direct or indirect marine pollution. Regarding the health impact of marine debris, it has been proven that consumption of macro plastics by human is detrimental. Hence, micro plastics are carriers of infectious agents and harmful bacteria (Lu et al; 2019). No wonder why it was advised lately that the use of plastic foil in serving food should be avoided. This is because “the said foil can absorb organic pollutants like polychlorinated biphenyls and organochlorine pesticides that are dangerous to human health” (Eleni Aretoulaki et. al; 2021). “Its toxicological consequences are capable of reducing the immune system, causing suppression of hormones and leading to abnormal inflammatory responses and developmental disabilities” (Carney & Eggert, 2019). This shows that micro plastics in the ocean or river spur bacteria and have the potential or detrimental effects on both ecological community or environment and human life. The next section will be stating how to cope with the menaces of debris and pollution, and possible ways or measures they can be prevented, for environmental stability and sustainability.

Marine Debris and Pollution Coping measures and Prevention, for environmental sustainability

Marine debris thrives and obstructs seaways and biosphere, due to the insensitivity of the Nigeria government on the need to implement marine policies and laws, with adequate sanctions to punish those who go about littering the environment. “The way and manner in which the government handles the offenders without any intensive punishment is said to be the reason maritime challenges continued to thrive” (Ezugwu & Ekiyor, 2023). In other words, there are marine related issues today due to the trivial nature of the sanction attached to the maritime offences or lack of implementation of maritime laws and policies. Apart from this negligence from the government, Nigerian populaces are to be blamed too, as they often involve themselves in illegal bunkery, gas flaring or emission, waste littering and other piratic activities that bring about environmental degradation and pollution. These practices persisted, as commensurate incentives for collection and recycling of the waste items have not been provided. To reduce or control or prevent marine debris and pollution attached to it, the government ought to significantly remunerate or give incentive to the factory owners, who are ready for recycling of the waste materials and waste management team, to clean up the environment regularly. Provision of adequate and easily accessible waste disposal facilities in all nooks and crannies of the environment can also encourage the end users of the products packaged with non-decomposable materials to dispose of them responsibly (UNEP, 2016). After all, these domestic wastes can be used to generate energy or electricity for societal use.

More so, there is a need to sensitize and educate the public on why they must reduce or prevent waste materials from entering the marine environment. This kind of awareness campaign, if targeted on a range of audiences in the public or private sector, will help in mitigating the activities that are significant components of recorded marine debris items, such as plastic bags, bottles or cigarette butts. It will equally bring about behavioural change in both children and adults. This gives credence to the position of (Elenwo & Akankali, 2015) that a “sustained enlightenment campaign/advocacy on safer attitudes towards reducing pollution of the marine environment, is of great essence, in fighting against marine debris and environmental degradation”. Consequently, the issues of marine debris and pollution will be effectively addressed, when these awareness tools are built on the mindsets of Nigeria government, schools, churches, communities and masses, to always adhere to the ethics and ensure that the environmental laws and policies are adequately carried out.

Conclusion

The regular contamination of the marine environment through the throwing of non-degradable substances or debris into rivers or seaways is quite alarming. This practice has affected the biosphere and ecosystem and disrupted the economy of the nation. In this research work, we highlighted the need to re educate the consumers and other members of the society on why debris or non-degradable substances should not be thrown into the oceans and rivers, as its boomerang effects have impacted negatively on both habitats and economy of the nation. However, we stated and addressed the reason our rivers are contaminated, in spite of some of the provisions made by the government on where to keep both bio degradable and non-biodegradable elements. Subsequently, it was demonstrated that debris which formed the topic of the discussion in this paper, is the genesis of the upsurge of water accidents, loss of biodiversity, pollution and underdevelopment in different riverine areas.

The research is expected to instigate the Nigeria government to make more provisions as to where plastic and other non-degradable elements can be recycled. Hence, this will provide an enabling environment for economic linkages and access to other countries in marketing our natural resources and vice versa. This interrelationship between and among countries of the world will surely boost the country's economy and create opportunities to handle the problem of unemployment and other related issues that have dealt with the citizens of the nation. In all, the paper reawakened the consciousness of the stakeholders, controllers of industries and consumers on the expediency of following the rules and regulations that guide the sea or river, to kick against marine debris and promote sea stability. It recommends that more incentives should be given to waste management agencies to always manage and dispose of the wastes, in order to abhor environmental pollution, boost national economy and sustain the environment.

Acknowledgement

We deeply and inestimably appreciate and acknowledge TETFUND of Nigeria that gave us grant and sponsorship to carry out this research work. Indeed, this gesture is apt and timely, considering the intensified marine debris or non-degradable elements that are abound or littered in the Nigerian environment, seaways or waterways today.

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