



Protection of Lagos Marine Environment Through Continuous Monitor And Sanction

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Abstract

The maritime ecosystem is apparently under strain due to the rising population's requirements and numerous usages of coastal and marine regions. These forces deplete marine resources and harm the ecosystem. Excessive activities such as industrial waste and oil leaks damage the ecosystem and result in the yearly loss of marine lives. These detrimental impacts have resulted in the extinction of aquatic organisms and, as a result, the whole cosmos. Given the importance of the sea to economic and social lives, the proper use of the marine environment must be controlled in order to avoid harm to the ecosystem. It appears that the mentioned concerns have not been adequately addressed. In Nigeria, the same practises continue unabated, posing a major threat to the maritime ecosystem. The fundamental goal of this research is to look at the protection of the Lagos maritime environment by constant monitoring and sanctioning inside the Lagos riverine. The study was conducted at 10 selected marine enterprises in the Apapa region of Lagos state, with 500 participants chosen at random. The questionnaire was used to collect the data for the investigation. The analysis was done in a descriptive manner, utilising frequencies and percentages. The study's findings indicated some of the difficulties confronting the Lagos maritime ecosystem, among others. Based on the findings, the research stated that ongoing monitoring of the Lagos maritime environment is critical, and it so encouraged the practise.

Keywords: Marine environment, continuous monitor, Sanction

I. Introduction

Oil exploration and unsustainable fishing practices among other things has caused severe environmental degradation to the Nigeria marine ecosystem, and this is made worse by the fact that none of the Nigerian marine ecosystem is under any legal or formal conservation or protection. With the technological advancements and population growth experienced globally, humans tend to decimate the natural environment (Marcus, 2021). Achieving

sustainable development is subject to the rational use of resources for satisfaction of basic needs. Globally, water bodies of the world are a major source of development empowerment. The marine environment is an important resource for life and encompasses waters of seas and estuaries, coastal habitats, seabed and all marine wildlife, which makes it to be regarded as a precious asset that must be protected and conserved to ensure its safety, cleanliness, health and productivity. The Marine ecosystems serves various environmental functions such as regulating the climate, absorbing carbon dioxide, preventing erosion, maintaining biological control and distributing solar energy. As a contributor to the quality of life, economic prosperity, and social well-being, the marine environment makes up resources that can be utilized in the achievement of greater economic potential. In spite of the foregoing, the marine environment faces severe threats (Fagbohun & Ramos, 2017).

The marine environment is reportedly facing a number of pressures, owing to the growing needs of the population and their multiple uses of the coastal and marine areas. These pressures lead to marine resources being depleted and the environment degraded (Bashir, et al; 2020). The excessive activities such as industrial waste and oil spillage endanger the environment and lead to the loss of marine's lives annually. These harmful effects have the resulting effect of extinction of marine creatures and subsequently, the entire universe. Based on the significance of the sea to economic and social lives, the effective use of marine environment has to be regulated in the bid to minimize damage to the ecosystem. It appears that this challenges identified have not been properly addressed in Nigeria, leading to same activities going unchecked and constituting a serious problem to the marine environment. This buttresses the need to investigate the protection of Lagos marine environment through continuous monitor and sanction.



Statement of research problem

There has been a drop in the number of fish in the world's oceans as a result of increased population and subsequently heavy reliance on fish as a source of protein (Living Planet Report, 2016). Added to this, is the increased technological advancements resulting in over-exploitation and the risks of jeopardizing the future supply of food, and minimizing the variety of life on Earth (Danovaro et al., 2016). The aforementioned factors have made monitoring marine ecosystems an important action towards the sustainable use of ocean resources. With the growth of the coastal populace in Africa, and the negative environmental impact from land-based and marine human activities, the existing resources are being damaged, income opportunities minimized and poverty increased. Other issues affecting the marine environment include marine, land and atmospheric pollution, alteration of river flows to the coast by damming and irrigation. The aforementioned problem is one that calls for close monitoring and sanction of the marine environment to ensure its protection.

Research objectives

1. Identify the challenges associated with protecting the Lagos marine environment
2. Assess the importance of protecting the marine environment
3. Determine the extent to which continuous monitoring and sanction can protect the marine environment
4. Suggest other ways of protecting the marine environment

Research questions

1. What are the challenges associated with protecting the Lagos marine environment?
2. What is the importance of protecting the marine environment?
3. To what extent will continuous monitoring and sanction protect the marine environment?
4. In what other ways can the marine environment be protected?

II. Literature review

Overview of marine protected area

A marine protected area (MPA) refers to an area of sea which is dedicated to the protection and maintenance of biodiversity, as well as natural and associated cultural resources, and which can be managed through legal or other effective means (Abdulkadir & Mashood, 2021). Marine protected areas include marine parks, nature reserves and locally managed marine areas that protect reefs,

seagrass beds, shipwrecks, archaeological sites, tidal lagoons, mudflats, saltmarshes, mangroves, rock platforms, underwater areas on the coast and the seabed in deep water, as well as open water. There is increased focus on the general and better management of coastal and marine environments, given the increased use and access to marine environments, and industries which includes aquaculture, fishing, tourism, and new forms of drug development from marine biodiversity (Marcus, 2021). With the increased use and access, if not well managed, the marine ecosystems tend to threaten, alter and destroy the very processes and resources depended on by its users. Existing management systems appear not to be properly maintaining the productivity, biological diversity and the ecosystems of marine ecosystems (Bashir, et al; 2020). The consequences of this failure are serious and far-reaching.

Protecting the marine areas offer a range of benefits for the environment, the fisheries, and the local economies. Other advantages attached to the protection of the marine environment include the arrest and reversal of fish decline and productivity, the conservation of biodiversity and ecosystems; provision of sites for long term research, as well as educational opportunities and training (Tolulope, et al; 2019).

Key Challenges to the Marine Environment

The marine environment is challenged by the following:

Over Fishing: Fishing is significant source of livelihood in developing countries and serves as a source of protein. In spite of the seeming significance of fishing to humanity, the marine environment is confronted by great danger such as the depletion of fisheries due to the over exploitation of fish stocks. Overfishing describes the act of overexploitation in which stocks of fish are reduced to below acceptable levels. Overfishing can take place in any water regardless of the size and if sustained overtime can lead to depletion of resources, low biomass levels and reduced biological growth rates (Abdulkadir & Mashood, 2021).

Population Increase: Population is recognized to be an important source of development however it contributes greatly to environmental degradation. Population has an impact on the environment through waste production associated with increased pressure on marine ecosystem, and air and water pollution. A growing human population presents serious environmental threats, as an increased population translates to



reduced natural resources such as water, forest, and soil; while leading to increased waste, pollution and greenhouse gases. Environmental pressures from land-based and marine human activities are also on the increase with, leading to damaged habitats that decreases livelihood opportunities and increase poverty (Abdulkadir & Mashood, 2021).

Poverty and Coastal Settlement: The coastal zone has witnessed uncontrolled development and haphazard exploitation of their natural resources causing dangers to the environment and diminishing chances of economic prosperity. It is estimated by the UN that by 2050, extreme poverty could rise by 3 billion in 2050 if no measure are taken to checkmate environmental threats (Abdulkadir & Mashood, 2021). It is further reported that not addressing environmental challenges such as pollution, deforestation, and climate change will affect the progress of human development in poor countries and possibly be reversed. In sum, environmental threats worsen the living situation of humans and affect the livelihood of poor people.

Pollution: Marine pollution encompasses various threats from oil spills, invasive species, acidification, marine litter, coastal and marine habitats destruction and overfishing. Dredging is another threat which involves the discharge of untreated sewage into near-shore waters, leading to nutrients in large quantities spreading into the sea (Abdulkadir & Mashood, 2021).

Nigeria's Marine Environment

Marine environment is described as one of the most delicate resources of planet earth, hence the growing awareness on why it has to be protected from further deterioration. The significance of the marine environment to Nigeria is based on the fact a huge part of its international trade is reliant on marine transport. It is estimated that the total number of passengers that utilize the sea ports annually is about 1500 (Abdulkadir & Mashood, 2021). As a major participant in oil production and export, about 1,000 petroleum tanker vessels most of which carry wastes such as chemical, garbage, bilge amongst others are reported to call at her ports annually. Given the non existence of reception facilities, the ship generated waste are released into the surrounding sea of the ports, contributing to the threats challenging the marine environment. The marine environment is also threatened by Nigerian oil and gas industries, challenging the coastal

ecosystem. Other challenges include oil spillage, sabotage, and manhandling of oil vessels. The aforementioned emphasizes the need for the protection of the marine environment from unnecessary threats.

Theoretical review

The Sustainable Development Theory and Goals

The emphasis of this theory is on unity and sustainability development and improvement of the marine status. The theory opines that there are measures that can be adopted to minimize the effects of such activities on the environment (Umo & Nitonye, 2015). This implies that sustainable development is preoccupied with how the human society reduces reduce the gap of wealth and unemployment rate through the management of population and enhancement of social distribution to attain a geo-social environment, which encourages freedom, contentment, peace and quality of life. As suggested by the sustainability development, promoting the sustainable use of ocean based resources through international law will ensure the mitigation of challenges facing the marine environment. Sustaining the oceans embodies an approach required to manage our oceans and services they provide.

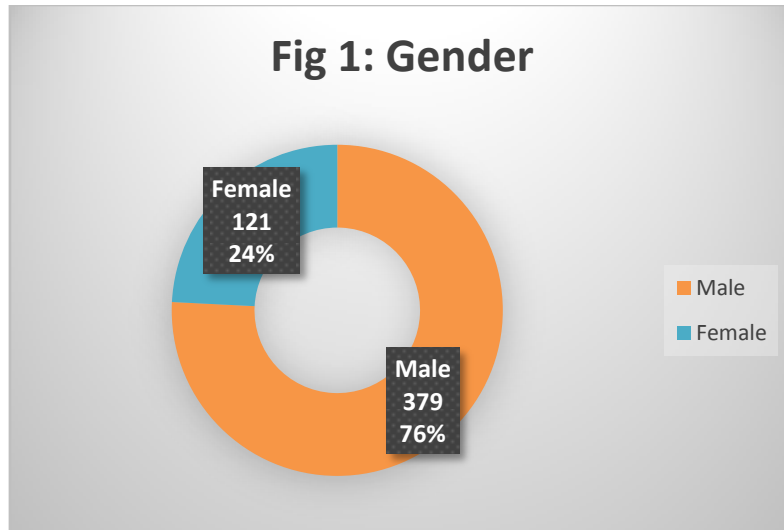
III. Methodology

In order to conduct this study, a descriptive survey was utilized to determine the population number, while a purposive sampling approach was employed to pick 500 inhabitants and fishermen from the riverine areas of Lagos state, especially Apapa, Lagos. This approach allows the researcher to pick individuals of the population for the sample as needed. The study also used a non-probability sample approach called purposive sampling to choose ten (10) maritime enterprises from the Apapa district of Lagos state, Nigeria, from which fifty (50) employees were chosen for the study. This decision was also influenced by the respondents' availability, willingness, and expertise. The questionnaire was used to collect the data. The questionnaire was designed using a four-point Likert scale of Strongly Disagree (SD=1), Disagree (D=2), Agree (A=3), and Strongly Agree (SA=4) as the response options. The analysis was done in a descriptive statistic, including frequencies and simple percentages. Charts and graphs are also used where application.



IV. Data Presentation and Analysis

Demographic data

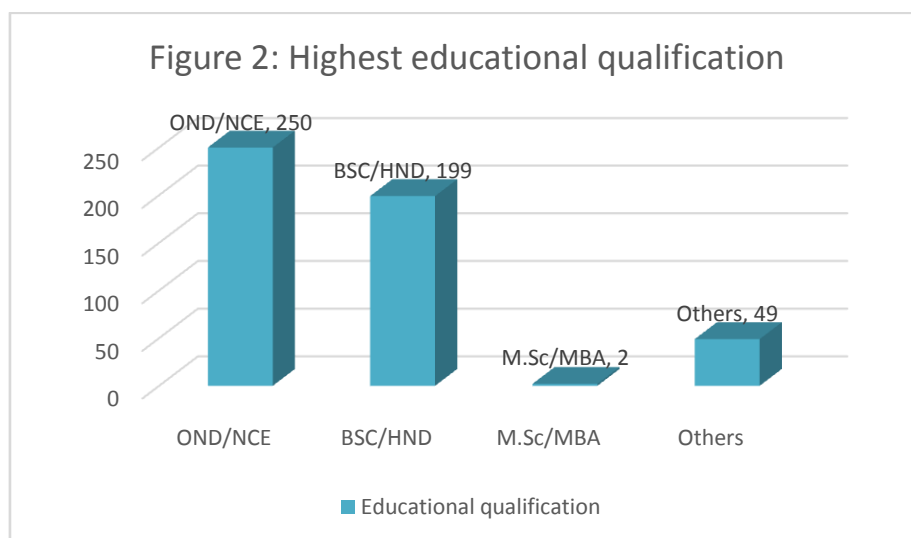


The demographic data shows that 121 of the participants in the study are female and represented 24% of the entire population whereas 379 representing 76% were male indicating that in this profession, majority of the employees were male than female. Thus, maritime business is made up of more male than female (Fig 1).

Education qualification

The educational qualification of the participants in the study comprises individuals with

some degree of formal education. According to figure 2, the highest participants had OND/NCE (250); this is followed by those with bachelor's degree (199), then those with master's degree (2) who were the least participants in the study and about 49 selected others without specifying what others represents. The result clearly indicates that all the participants have some degree of formal education which shows that they can read and understand the questionnaire without assistance.



Years of experience

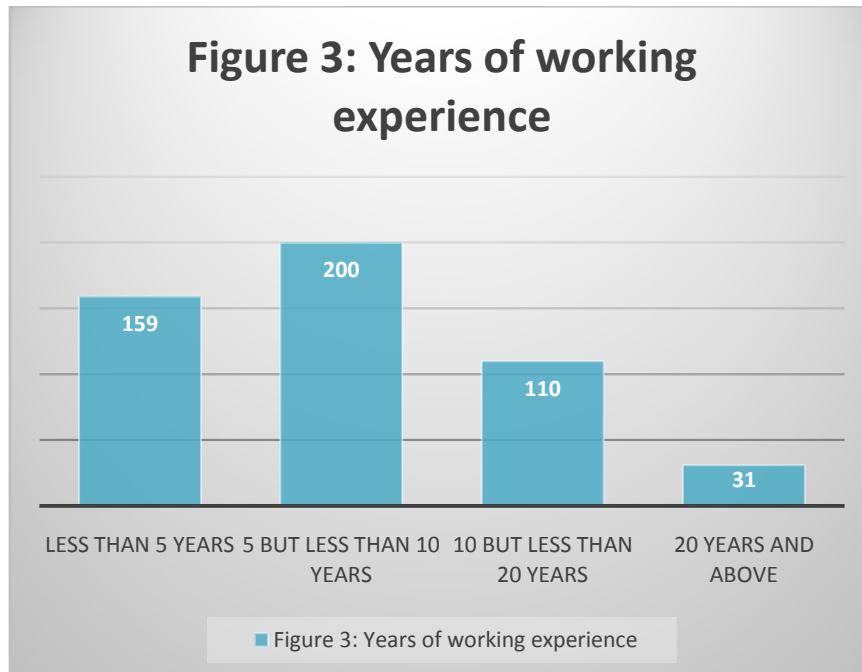
Figure 3 shows that the participants were not novice or inexperienced as they have had

different years of experience in their work. As indicated in the figure below, 159 of the total respondents had work for less than five years in



their respective institutions, 200 had work for less than ten but more than five years; 110 had worked for more than 10 years but less than 20 years and the remaining 31 has worked for above 20years. This

shows that the participants understand not just the theoretical aspect of the subject but also have personal experience on the subject matter. This features make their opinion valuable for this study.



RQ1: What are the challenges associated with protecting the Lagos marine environment?

Table 1 below presents the challenges confronting Lagos marine environment. As shown in the table below, all the items scored between 77.6 person and 98.86%. This shows that all the items were accepted. Thus, the following have been identify as

challenges confronting marine environment to include: over fishing, population growth/increases in population, poverty and coastal settlement, pollution, dredging and oil spillage. This result agrees with previous findings which share similar views such as: Marcus (2021); and Fagbohun, and Ramos (2017).

Table 1: The challenges associated with the Lagos Marine environment

Statement	Strongly agree/agree	Disagree/strongly agree	Total percentage in agreement	Decision
Over Fishing	399	101	79.8	Accepted
Population Increase	491	09	98.2	Accepted
Poverty and Coastal Settlement	398	102	79.6	Accepted
Pollution	493	07	98.6	Accepted
Dredging	388	112	77.6	Accepted
Oil spillage	481	19	96.2	Accepted

RQ2: What is the importance of protecting the marine environment?

The second table below presents the importance of protecting the marine environment. As a result, the following were accepted: Protecting the marine environment provide early warning indicators of when fish stocks are declining; It helps

to ensure continued provision of fish as a source of food and income; It contributes to effective transportation; It helps in Flood control; It improves recreational and commercial activities and,It enables pollution to be controlled. The result supports Abdulkadir and Mashood, 2021; and Bashir. M, et al; (2020) respectively.



Table 2: The importance of protecting the marine environment

Statement	Strongly agree/agree	Disagree/strongly agree	Total percentage in agreement	Decision
Protecting the marine environment provide early warning indicators of when fish stocks are declining	399	101	79.8	Accepted
It helps to ensure continued provision of fish as a source of food and income.	491	09	98.2	Accepted
It contributes to effective transportation	398	102	79.6	Accepted
It helps in Flood control	493	07	98.6	Accepted
It improves recreational and commercial activities	388	112	77.6	Accepted
It enables pollution to be controlled	481	19	96.2	Accepted

RQ3: To what extent will continuous monitoring and sanction protect the marine environment?

The following are the reasons and advantages of continuous monitoring and sanctions to protect the marine environment: It will help protect important habitats and representative samples of marine life; It will assist in restoring the productivity of the oceans and avoid further degradation; It will serve as sites for scientific

study and generate income through tourism and sustainable fishing; It will support the development of new forms of drugs from marine biodiversity; It will possibly reverse the global and local decline in fish populations and productivity; It will provide opportunities for education, training, heritage and culture; and It will assist in restoring the productivity of the oceans and avoid further degradation. This is as indicated in table 3 below.

Table 3: The extent to which continuous monitoring and sanction protect the marine environment

Statement	Strongly agree/agree	Disagree/strongly agree	Total percentage in agreement	Decision
It will help protect important habitats and representative samples of marine life.	499	01	99.8	Accepted
It will assist in restoring the productivity of the oceans and avoid further degradation	490	10	98.0	Accepted
It will serve as sites for scientific study and generate income through tourism and sustainable fishing	399	101	79.8	Accepted
It will support the development of new forms of drugs from marine biodiversity	497	03	99.4	Accepted
It will possibly reverse the global and local decline in fish populations and productivity	398	102	79.6	Accepted
It will provide opportunities for education, training, heritage and culture	480	20	96.0	Accepted
It will assist in restoring the productivity of the oceans and avoid further degradation.	429	71	85.8	Accepted



RQ4: In what other ways can the marine environment be protected?

According to the findings of this study, the following are recommended ways the marine environment can be protected: Establishment of measures to discourage and prevent pollution of the entire coastline and nearshore marine waters; Establishment of coastal protection measures to arrest irreversible negative changes; Encourage the

recreational use of coastal and nearshore marine water-fronts areas for the enhancement of tourism; Discourage upstream water use that can negatively impact estuarine and coastal habitats, water quality and quantity and thus endanger marine life living; Removal of wrecks; and Monitoring of contaminants and their biological effects, as indicated in table 4 below with their respective percentages and frequencies.

Table 4: Other ways the marine environment can be protected

Statement	Strongly agree/agree	Disagree/strongly agree	Total percentage in agreement	Decision
Establishment of measures to discourage and prevent pollution of the entire coastline and nearshore marine waters	399	101	79.8	Accepted
Establishment of coastal protection measures to arrest irreversible negative changes	497	03	99.4	Accepted
Encourage the recreational use of coastal and nearshore marine water-fronts areas for the enhancement of tourism	399	101	79.8	Accepted
Discourage upstream water use that can negatively impact estuarine and coastal habitats, water quality and quantity and thus endanger marine life living	493	07	98.6	Accepted
Removal of wrecks	388	112	77.6	Accepted
Monitoring of contaminants and their biological effects	489	11	97.8	Accepted

V. Conclusions and recommendations

The marine ecosystem is one of the planet's most fragile resources, which is why there is a rising understanding of the need to safeguard it from further deterioration. Given that a sizable portion of Nigeria's foreign trade depends on sea transportation, the marine environment is important to Nigeria. The overall number of travellers using marine ports is thought to be around 1500 each year (Abdulkadir & Mashood, 2021). About 1,000 petroleum tanker tankers, the majority of which carry pollutants including chemical, rubbish, and bilge among others, are said to stop at her ports each year as a significant player in oil production and export. Ship produced trash is dumped into the surrounding water since there are no receiving facilities. The garbage produced by ships is discharged into the water around the ports, posing risks to the marine ecosystem. Nigeria's oil and gas sectors also pose a threat to the maritime

environment, which is a problem for the coastal ecology. Oil spills, sabotage, and management of oil boats are additional difficulties. The aforementioned highlights the requirement for safeguarding the maritime environment from unwarranted dangers. The study recommends;

- that Establishment of measures to discourage and prevent pollution of the entire coastline and nearshore marine waters;
- Establishment of coastal protection measures to arrest irreversible negative changes;
- Encourage the recreational use of coastal and nearshore marine water-fronts areas for the enhancement of tourism;
- Discourage upstream water use that can negatively impact estuarine and coastal habitats, water quality and quantity and thus endanger marine life living;
- Removal of wrecks; and



- Monitoring of contaminants and their biological effects, as indicated in table 4 below with their respective percentages and frequencies.

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Dear Respondent,

I am carrying out a study on “Protection of Lagos marine Environment through continuous monitor and sanction”, and you have been chosen to be part of the study. This questionnaire is only for academic purposes. Kindly select the response which applies to you and all information will be kept confidential

SECTION A

Gender: Male () Female ()

Education qualification

- a) OND/NCE ()
- b) B.Sc./ HND ()
- c) M. Sc./MBA ()
- d) Others () Specify.....

Years of experience

- a) Less than 5 years ()
- b) 5 but less than 10 years ()
- c) 10 but less than 20 years ()
- d) 20 years and above ()

SECTION B:

Instructions: Please tick (√) as appropriate where

SA = Strongly Agree (SA), A = Agree, D = Disagree (D), SD = Strongly Disagree (SD)

Key: Strongly agree (5), Agree (3), Disagree (2), and strongly disagree (1).

S/N	ITEMS	SA	A	D	SD
RQ1	What are the challenges associated with the Lagos marine environment?				
1	Over Fishing				
2	Population Increase				
3	Poverty and Coastal Settlement				
4	Pollution				
5	Dredging				
6	Oil spillage				
RQ2	What is the importance of protecting the marine environment?				
7	Protecting the marine environment provide early warning indicators of when fish stocks are declining				
8	It helps to ensure continued provision of fish as a source of food and income.				
9	It contributes to effective transportation				
10	It helps in Flood control				
11	It improves recreational and commercial activities				
12	It enables pollution to be controlled				
RQ3	To what extent will continuous monitoring and sanction protect the marine environment?				
13	It will help protect important habitats and representative samples of marine life..				
14	It will assist in restoring the productivity of the oceans and avoid further degradation				
15	It will serve as sites for scientific study and generate income through tourism and sustainable fishing				
16	It will support the development of new forms of drugs from marine biodiversity				
17	It will possibly reverse the global and local decline in fish populations and productivity				
18	It will provide opportunities for education, training, heritage and culture				
19	It will assist in restoring the productivity of the oceans and avoid further				



	degradation.				
RQ4	In what other ways can the marine environment be protected?				
20	Establishment of measures to discourage and prevent pollution of the entire coastline and nearshore marine waters				
21	Establishment of coastal protection measures to arrest irreversible negative changes				
22	Encourage the recreational use of coastal and nearshore marine water-fronts areas for the enhancement of tourism				
23	Discourage upstream water use that can negatively impact estuarine and coastal habitats, water quality and quantity and thus endanger marine life living				
24	Removal of wrecks				
25	Monitoring of contaminants and their biological effects				