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MANAGING MARINE RESOURCES FOR ECONOMIC GROWTH AND ENVIRONMENTAL SUSTAINABILITY IN NIGERIA

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ABSTRACT:

The study examines the essence of managing marine resources for economic growth and environmental sustainability in Nigeria. The objectives were to evaluate the economic impact of marine resource management in Nigeria; analyze the effects of marine resource depletion on ecosystems in Nigeria; and identify integrated management strategies for marine resources in Nigeria. The study adopted the Taro Yamane formula to determine the invited sample size of 297 out of a population of 840 and the accepting sample was 289, giving a response rate of 97.31%. The study used survey design which involved questionnaire and structured interview for the collection of primary data. Responses from 4-point Likert Scale questionnaire administered were analyzed using descriptive statistics. The study finds, amongst others, that proper management of marine resources enhances tourism opportunities, thereby resulting in increased revenue for coastal communities in Nigeria; depletion of marine resources significantly disrupts the balance of marine ecosystems in Nigeria; effective marine resource management leads to a sustainable fishery industry that positively impacts local economies in Nigeria and that marine resource management supports the growth of small businesses that are reliant on marine resources, which contribute to overall economic development in Nigeria. The study recommends that stakeholder engagement should be encouraged towards policy analysis and the identification of best practices for balancing marine resource use with ecological integrity.

Keywords: *marine resource management, biodiversity, environmental sustainability, economic growth, and overexploitation*

INTRODUCTION

The necessity to manage marine resources is against the backdrop of the reality of their being lost in huge quantities in the twenty-first century mostly due to unbridled human activities. Combating marine resource depletion should be considered a priority for governments and nature conservation organizations worldwide, environmentalists and the private sector, which is key player. Activities of companies have an immense impact on the world's marine resources and ecosystems, and this calls for companies to reduce their negative impacts and contribute to the restoration and conservation of the natural world through corporate social responsibility (CSR) and socially responsible investment (SRI) (Lambooy & Levashova, 2012).

Marine resources constitute a critical aspect of all three pillars of sustainable development – economic, social and environmental, which support the healthy functioning of the planet and provide services that contribute to the health, well-being and prosperity of humanity. In order to have a sustainable maritime space, society must make the best use of marine resources so as to leave much more for the future generation. This forms the premise of the concept of Blue Economy, which represents a holistic approach to the sustainable development of oceanic and aquatic resources (Zhang & Chen, 2022).

In the view of Kurniawan et al. (2026), marine environmental degradation, triggered by pollution, climate change, and overexploitation, severely threatens the sustainability of the blue economy as they tend to destroy marine ecosystems, reduce fisheries productivity, and undermine coastal tourism. The authors identified key impacts of marine environmental degradation to include habitat destruction, reduced economic output, and high financial costs for cleanup, with projections suggesting marine litter damage could reach massive levels by 2050. Marine pollution poses a significant threat to the sustainability of the blue economy by disrupting ecosystems and coastal livelihoods.

Nigeria's Federal Ministry of Marine and Blue Economy recognizes the immense potential of maritime resources to drive sustainable economic growth and improve livelihoods. This forms the basis for the need to preserve the environment for future generations. Thus the Ministry aims to harness the country's coastal and marine assets while fostering responsible and inclusive development (Ateme, 2021).

In order to demonstrate the desire to manage marine resources for economic growth and environmental sustainability, the Federal Ministry of Marine and Blue Economy adopted the strategic roadmap to achieving coastal and marine biodiversity conservation in Nigeria. This is built upon: the principle of sustainable marine resource management; the implementation of responsible fishing and conservation practices with the goal of increasing fish stocks as well as reducing illegal fishing incidents and environmental conservation, which aims to protect coastal and marine ecosystems and reduce pollution (the metrics of which is reduced marine pollution towards improved coastal and marine biodiversity (Agunsoye et al., 2025).

Over a period of time, overexploitation, habitat destruction and pollution have been the greatest causes (threats) leading to extinctions and depletions, with invasive species and climate change assuming great importance. As a result of the push towards a Blue Economy, accelerated industrial development, and increasing climate change, the threats to marine life are increasing in intensity and spatial extent, with dire consequences for marine biodiversity and ocean ecosystems. This calls for concerted efforts in managing marine resources through marine conservation to sustain the functioning and services of ocean ecosystems on local to global scales (Lotze, 2021).

The United Nation Environment Programme (UNEP) observes that the world's most critical coastal and ocean challenges (i.e. the triple planetary crisis) include: Climate change, Biodiversity loss, and Pollution. Hence UNEP seeks to promote the protection, conservation, restoration and sustainable management of the world's coastal and marine areas (Zhang & Chen, 2022). Accordingly, an integrated and sustainable management of marine resources is crucial to balancing economic benefits with ecological health in order to ensure that both current and future generations can thrive.

The World Bank recognizes the role of Blue Economy in the management of marine resources and appreciates its link to economic growth and environmental sustainability, and consequently defines it (i.e. Blue Economy) as 'the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem (World Bank, 2017). Moreover, the management of marine resources is in consonance with the drive towards the achievement of the Global Biodiversity Framework and the Sustainable Development Goals. Accordingly, from the perspective of Blue Economy, the management and sustainable use of marine resources falls under ocean economy now classified into traditional ocean economy, emerging sector, sustainable and innovative sub sectors. In the view of Ateme (2021), the significance of marine resources management is underscored by the fact that marine resources contribute to: the well being of communities, job creation, the global economy, food security, and climate resilience.

Thus, this study seeks to examine the essence of managing marine resources towards economic growth and environmental sustainability in Nigeria. The research objectives were to: (a) Evaluate the economic impact of marine resource management in Nigeria (b) Analyze the effects of marine resource depletion on ecosystems in Nigeria (c) Identify Integrated Management Strategies for Marine Resources in Nigeria

The central research question was: *What are some of the possible Integrated Management Strategies for Marine Resources in Nigeria?*

LITERATURE REVIEW AND CONCEPTUAL CLARIFICATION

Marine Resources

As an important part of the Earth's life support system, marine resources are significant for human survival and prosperity. However, as a result of the impact of human behavior towards marine resources, numerous conflicts have arisen between marine resources and economic development. This is the outcome of the large scale of marine resource exploitation by man, and the quest for marine industry development.

According to Zhang and Chen (2022), marine resources refer to the natural resources found in the ocean and coastal areas. These include:

(a) Living resources: fish, shellfish, marine mammals, seaweed, and other organisms used for food, medicine, or industrial products. (b) Non-living resources: oil, natural gas, minerals (e.g., salt, sand, manganese nodules), and freshwater extracted from seawater (via desalination). (c) Ecosystem services: climate regulation, carbon storage (in mangroves and sea grasses), coastal protection, tourism, and recreation.

Marine Resource Management

In the view of [Zhang](#) and [Chen](#) (2022), marine resource management is the key to harmonizing the relationship between economic development and marine resources. Countries in the 21st Century are focusing more on marine resource management and gradually incorporating the integrated management of marine resources into the daily work of countries that appreciate such approach.

The Management of Marine Resources and Economic Growth

According to Ateme (2021), the management of marine resources can contribute to economic growth as follows (a) Sustainable fisheries: Well-managed fisheries ensure long-term profitability and jobs for millions of people. Overfishing leads to collapse; sustainable practices ensure continual yields. (b) Blue economy: Investing in sectors like renewable ocean energy (e.g., tidal, wave), sustainable tourism, and aquaculture can boost GDP and create new industries. (c) Innovation and bio-prospecting: Marine organisms can be sources of new pharmaceuticals and industrial compounds, fueling research and biotech development.

The Management of marine resources and Environmental Sustainability

Agunsoye et al. (2025) posit that the management of marine resources can lead to environmental sustainability in the following ways: (a) Biodiversity conservation: Proper resource management protects marine ecosystems, helps to maintain ecological balance and prevents species extinction. (b) Climate resilience: Healthy ocean systems (like coral reefs, mangroves, and sea grasses) absorb carbon and protect coastlines from storms and erosion. (c) Pollution reduction: Managing marine resources includes reducing marine litter, oil spills, and nutrient runoff, in order to protect ecosystems and human health.

Economic Growth

The Department for International Development [DFID] (2009) cited in [Zhang](#) and [Chen](#) (2022) defines economic growth as the increase in the production and generation of goods and services in an economy. It includes the underlying processes in which a country's economy progressively expands over time leading to an increase in the value of goods and services produced. Economic growth is the sustained short, medium to long term increase in productivity and total output of services and goods, respectively, within a nation's economy.

The United Kingdom (UK) Department for Business Innovation and Skills (BIS) (2011) cited in Agunsoye et al. (2025) have defined economic growth as "the continuous improvement in the capacity to satisfy the demand for goods and services, resulting from increased production scale, and improved productivity". On its part, the DFID, (2009) cited in [Zhang](#) and [Chen](#) (2022) submits that economic growth remains a powerful instrument for reducing poverty as well as improving the quality of life in developing countries. Thus, as observed by Ateme (2021), managing marine resources can contribute to economic growth of a nation.

Empirical Studies

In a study titled "Overview of research on marine resources and economic development", [Zhang](#) and [Chen](#) (2022) acknowledge that the United States recognizes the need for integrated management of marine resources. Accordingly, in 2004, the USA established the National Commission on Ocean Policy to make several important ocean policy recommendations. The US marine resources management system combines both centralized and decentralized

management, with the management of its maritime affairs distributed among the relevant departments of the federal government, whereas maritime law enforcement is managed centrally by the department. State Governments are responsible for managing marine resources within three nautical miles of territorial waters, whereas the Federal Government is responsible for managing marine resources within the Exclusive Economic Zone (which is 200 nautical miles away from the baseline). The laws and plans established by the Federal Government are implemented separately by each federal executive agency according to their functions.

Equally, the United Kingdom typifies a country with a decentralized system of marine resource management. Its Maritime Aviation and Environment Unit of the Ministry of Foreign Affairs is saddled with the responsibility of coordinating foreign maritime policies and laws across government ministries. It has introduced market mechanisms into the maritime, marine management system and established a maritime licensing system ([Zhang & Chen, 2022](#)).

France established the Ministry of the Sea in 1984 in a drive to institutionalize a centralized system of marine resource management. This resulted in the establishment of the Marine Fisheries and Aquaculture Administration, the Marine Hydrocarbon and Other Mineral Resources Administration and the Marine Renewable Energy Administration under the Ministry of the Sea. As a testament to Australia's bold drive towards innovation in marine resource management, in 1995, the country introduced the Integrated Community Services-based Marine Management Project (also referred to as the Coastal Zone Protection Project), to encourage community participation in the protection and management of the coastal zone, with the community and government departments as principal actors ([Zhang & Chen, 2022](#)).

In trying to establish the fact that abundant marine resources can attract international direct investment as an important basis for economic growth, [Wang et al. \(2019\)](#) studied the industrial pathways of marine resource extraction and consumption in China and concluded that China's most significant supply chain pathways begin in the marine resource extraction sector and terminate in the marine construction sector. Thus, Li et al (2019) in their study on China also assert that different marine resource endowments often influence the industrial structure of a country and can have a significant impact on the manufacturing structure. Moreover, while Tsuboi (2019) argues that in China the exploitation and use of marine resources is an important influencing factor for technological development, Ahmadov and van der Borg (2019) have observed that in China, the abundance of marine resources facilitates the development of renewable energy technologies in that country. Nigeria is equally endowed with immense amount of marine resources, however, community-based conservation, collaborative management, science-based conservation and policy and legislative support are required to have a robust Biodiversity Conservation Programs (Eto & Okon, 2026).

METHODOLOGY

The study uses cross-sectional survey design which involves 4-point Likert Scale questionnaire and structured interview to gather data from the population. The population and sample of the study were drawn from the five organizations across the major modes of transport in Nigeria. The sample selection was by multi-stage sampling techniques that involved stratified and random sampling techniques due to its thoroughness and accuracy of representation. In order to analyze the data gathered, descriptive statistics was used. Respondents used a scale of 1 (Strongly Disagree) to 4 (Strongly Agree) for their answers. The description of the qualitative analysis process involved analyzing responses from the 4-point Likert Scale questionnaire aimed to explain the themes and meanings in the data generated. Simple percentage was used to determine the frequency of consensus and variations in the responses in the interview and the questionnaire. Analysis of responses from the interview involved the following steps:

Step 1: (a) Data preparation: Reviewed the responses to ensure completeness and accuracy (b) Organize the data by theme

Step 2: Coding or labeling: (a) Assigned codes or labels to the responses based on their meaning or theme

(b) The codes or labels were derived from the data itself (inductive coding)

Step 3: Categorization or thematic grouping: (a) Grouped similar codes or labels into categories or themes

(b) Identified patterns and relationships between categories or themes

Step 4: Theme identification: (a) Identified underlying themes or patterns in the data

(b) Themes were obvious from the responses provided

Step 5: Meaning interpretation: (a) Interpreted the meaning of the themes in the context of the research objectives (b) Considered the implications of the findings

Step 6: Reporting: The findings are presented under Thematic Analysis Process in a clear and concise manner, using quotes to illustrate the themes.

Table 1 Population of the study

S/N	Respondents	Population
1	Nigerian Maritime Administration & Safety Agency	189
2	Nigerian Ports Authority	171
3	Nigerian Shippers' Council	182
4	Nigerian Institute of Oceanography & Marine Research	155
5	National Inland Waterways Authority	143
	Total	840

Source: Researcher's compilation, 2026

The study adopted the Taro Yamane formula to determine the sample size, out of population of study of 840.

$$\text{Taro Yamane method: } n = \frac{N}{(1+N(e)^2)}$$

Where:

n= sample size required

N = number of people in the population

e = allowable error (%) which is 0.05

After substitution 297 was derived. Hence the sample size for the study was 297.

Table 2: Sample Size Determination

S/N	Respondents	Population	Proportion	Sample size
1	Nigerian Maritime Administration & Safety Agency	189	$\frac{297(189)}{840}$	67
2	Nigerian Ports Authority	171	$\frac{297(171)}{840}$	60
3	Nigerian Shippers' Council	182	$\frac{297(182)}{840}$	64
4	Nigerian Institute of Oceanography & Marine Research	155	$\frac{297(155)}{840}$	55
5	National Inland Waterways Authority	143	$\frac{297(143)}{840}$	51
	Total	840		297

Source: Researchers' Computation (2026)

RESULTS AND DISCUSSION

Summary of Questionnaire Distributed

The questionnaire distributed and the number of copies retrieved is presented in Table 3.

Table 3: Copies of Questionnaire Administered

Number of copies of Questionnaire Distributed	Number of copies of Questionnaire Retrieved	% of Copies of Questionnaire Retrieved
297	289	97.31

Source: Field survey (2026)

A total of 297 copies of the questionnaire were distributed to major stakeholders in the maritime sector. 289 copies were returned to represent 97.31% response rate as shown in the Table above.

4.2 Socio-economic Characteristics of Respondents

The gender distribution of the respondents is shown in Table 4. The distribution shows that 165 or 57% of the respondents were male while 124 or 43% were female. This shows that majority of the respondents were male.

The age distribution in Table 4 shows that respondents that were 18 years of age were nil. Those whose age fell into the age bracket 18-35 years were 58 or 20.07%. Those who fell within the 36-59 years range were 231 or 79.93% and they were the majority. There were no respondents whose age was above 60 years.

The formal education of respondents as shown in Table 4 shows that all the respondents attained various degrees of formal education. There were no respondents with Primary School education. Those who attained Secondary School education were 15 or 5.19% and the respondents who attained Tertiary education were 274 or 94.81%.

Table 4: Demographic Analysis of Respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	165	57
Female	124	43
Total	289	100
Age (Years)		
Less than 18	Nil	Nil
18-35	58	20.07
36-59	231	79.93
60 plus	Nil	Nil
Total	289	100
Educational Level		
Primary	Nil	Nil
Secondary	15	5.19
Tertiary	274	94.81
Total	289	100
Status Distribution		
Top-Level Management	87	30.10
Senior-Level Management	144	49.83
Junior-Level Staff	58	20.07
Total	289	100

Source: Researchers' Field Survey, 2026

Objective 1 aims to evaluate the economic impact of marine resource management in Nigeria. The questions aim to help gather valuable insights into how effective marine resource management leads to sustainability of fisheries, increased tourism revenue and supports the growth of small businesses.

Based on objective 1, Table 5 shows the responses to question 1 which is that: effective marine resource management leads to a sustainable fishery industry that positively impacts local economies in Nigeria. The Table shows that 32 (11.07%) respondents strongly disagreed that effective marine resource management leads to a sustainable fishery industry that positively impacts local economies in Nigeria; 29 (10.04%) disagreed; 52 (17.99%) agreed while 176 (60.90%) strongly agreed. This implies that effective marine resource management leads to a sustainable fishery industry that positively impacts local economies in Nigeria.

The Table also shows responses to question 2, which states that: proper management of marine resources enhances tourism opportunities, resulting in increased revenue for coastal

communities in Nigeria. The Table shows that 41 (14.19%) respondents strongly disagreed that proper management of marine resources enhances tourism opportunities, resulting in increased revenue for coastal communities in Nigeria; 33 (11.41%) disagreed; 61 (21.11%) agreed, while 154 (53.29%) strongly agreed. This implies that proper management of marine resources enhances tourism opportunities, resulting in increased revenue for coastal communities in Nigeria.

Furthermore, the Table shows responses to question 3, which states that: marine resource management supports the growth of small businesses reliant on marine resources, contributing to overall economic development in Nigeria. The Table shows that 38 (13.15%) respondents strongly disagreed that marine resource management supports the growth of small businesses reliant on marine resources, contributing to overall economic development in Nigeria; 24 (8.30%) disagreed; 68 (23.53%) agreed, while 159 (55.02%) strongly agreed. This implies that marine resource management supports the growth of small businesses reliant on marine resources, contributing to overall economic development in Nigeria.

Table 5: Objective 1: Evaluate the economic impact of marine resource management in Nigeria

S/N	Question Items	SD	%	D	%	A	%	SA	%	Total	%
1	Effective marine resource management leads to a sustainable fishery industry that positively impacts local economies in Nigeria	32	11.07	29	10.04	52	17.99	176	60.90	289	100
2	Proper management of marine resources enhances tourism opportunities, resulting in increased revenue for coastal communities in Nigeria	41	14.19	33	11.41	61	21.11	154	53.29	289	100
3	Marine resource management supports the growth of small businesses reliant on marine resources, contributing to overall economic development in Nigeria	38	13.15	24	8.30	68	23.53	159	55.02	289	100

Source: *Researcher's Field Survey, 2026*

Objective 2 aims to analyze the effects of marine resource depletion on ecosystems in Nigeria. The questions aim to help gather valuable insights into how depletion of marine resources disrupts marine ecosystems, contributes to the loss of biodiversity in ocean habitats and how overfishing negatively impacts predator species.

Based on objective 2, Table 6 shows the responses to question 1 which is that: depletion of marine resources significantly disrupts the balance of marine ecosystems in Nigeria. The Table shows that 23 (7.96%) respondents strongly disagreed that depletion of marine resources significantly disrupts the balance of marine ecosystems in Nigeria; 37 (12.80%) disagreed; 54 (18.69%) agreed while 175 (60.55%) strongly agreed. This implies that depletion of marine resources significantly disrupts the balance of marine ecosystems in Nigeria.

The Table also shows responses to question 2, which states that: the decline in fish populations due to overfishing negatively impacts predator species and food web stability in Nigeria. The Table shows that 31 (10.73%) respondents strongly disagreed that the decline in fish populations due to overfishing negatively impacts predator species and food web stability in Nigeria; 39 (13.49%) disagreed; 63 (21.80%) agreed, while 156 (53.98%) strongly agreed. This implies that the decline in fish populations due to overfishing negatively impacts predator species and food web stability in Nigeria.

Furthermore, Table 6 shows responses to question 3, which states that: Marine resource depletion contributes to the loss of biodiversity in ocean habitats in Nigeria. the Table shows that 37 (12.80%) respondents strongly disagreed that Marine resource depletion contributes to the loss of biodiversity in ocean habitats in Nigeria; 28 (9.69%) disagreed; 59 (20.42%) agreed, while 165 (57.09%) strongly agreed. This implies that marine resource depletion contributes to the loss of biodiversity in ocean habitats in Nigeria.

Table 6: Objective 2: Analyze the effects of marine resource depletion on ecosystems in Nigeria

S/N	Question Items	SD	%	D	%	A	%	SA	%	Total	%
1	Depletion of marine resources significantly disrupts the balance of marine ecosystems in Nigeria	23	7.96	37	12.80	54	18.69	175	60.55	289	100
2	The decline in fish populations due to overfishing negatively impacts predator species and food web stability in Nigeria	31	10.73	39	13.49	63	21.80	156	53.98	289	100
3	Marine resource depletion contributes to the loss of biodiversity in ocean habitats in Nigeria	37	12.80	28	9.69	59	20.42	165	57.09	289	100

Source: *Researcher's Field Survey, 2026*

Objective 3 aims to identify Integrated Management Strategies for Marine Resources in Nigeria. The questions aim to help gather valuable insights into how collaboration among stakeholders is vital for effective marine resource management, integrating scientific research into policy decisions would improve the sustainability of marine resource management strategies and how a holistic approach is necessary for the effective management of marine resources.

Based on objective 3, Table 7 shows the responses to question 1 which is that: collaboration among stakeholders (e.g., government, industry, local communities) is essential for effective marine resource management in Nigeria. The Table shows that 25 (8.65%) respondents strongly disagreed that collaboration among stakeholders (e.g. government, industry, local communities) is essential for effective marine resource management in Nigeria; 38 (13.15%) disagreed; 52 (17.99%) agreed while 174 (60.21%) strongly agreed. This implies that collaboration among stakeholders (e.g. government, industry, local communities) is essential for effective marine resource management in Nigeria.

The Table also shows responses to question 2, which states that: integrating scientific research into policy decisions improves the sustainability of marine resource management strategies in Nigeria. The Table shows that 33 (11.42%) respondents strongly disagreed that integrating scientific research into policy decisions improves the sustainability of marine resource management strategies in Nigeria; 41 (14.19%) disagreed; 61 (21.10%) agreed, while 154 (53.29%) strongly agreed. This implies that integrating scientific research into policy decisions improves the sustainability of marine resource management strategies in Nigeria.

Furthermore, the Table shows responses to question 3, which states that: a holistic approach that considers ecological, social, and economic factors is necessary for managing marine resources effectively in Nigeria. The Table shows that 29 (10.04%) respondents strongly disagreed that a holistic approach that considers ecological, social, and economic factors is necessary for managing marine resources effectively in Nigeria; 43 (14.88%) disagreed; 57 (19.72%) agreed, while 160 (55.36%) strongly agreed. This implies that a holistic approach that considers ecological, social, and economic factors is necessary for managing marine resources effectively in Nigeria.

Table 7: Objective 3: Identify Integrated Management Strategies for Marine Resources in Nigeria

S/N	Question Items	SD	%	D	%	A	%	SA	%	Total	%
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1	Collaboration among stakeholders (e.g., government, industry, local communities) is essential for effective marine resource management in Nigeria	25	8.65	38	13.15	52	17.99	174	60.21	289	100
2	Integrating scientific research into policy decisions improves the sustainability of marine resource management strategies in Nigeria	33	11.42	41	14.19	61	21.10	154	53.29	289	100
3	A holistic approach that considers ecological, social, and economic factors is necessary for managing marine resources effectively in Nigeria	29	10.04	43	14.88	57	19.72	160	55.36	289	100

Source: *Researcher's Field Survey, 2026*

What are some of the possible Integrated Management Strategies for Marine Resources in Nigeria?

In response to the question, respondents identified the following possible integrated management strategies for marine resources in Nigeria:

Ecosystem-Based Management (EBM)

100% of the respondents suggested implementing Ecosystem-Based Management (EBM) practices which take into consideration the complex interrelationships between marine species, habitats, and human activities. The respondents assert that this includes “assessing the ecological health of marine ecosystems and adapting management strategies accordingly”.

Community-Based Resource Management

87% of the respondents recognized Community-Based Resource Management. This, according to them “requires engaging local communities in the management of marine resources by incorporating their traditional knowledge and practices”. They explained that “empowering communities through training programs and sustainable fishing cooperatives would promote stewardship of marine ecosystems”.

Marine Protected Areas (MPAs)

100% of the respondents suggested that establishing Marine Protected Areas (MPAs) is a credible Integrated Management Strategy for Marine Resources Conservation which the Federal Government of Nigeria should focus on. According to the respondents, “establishing a network of MPAs would protect critical habitats, such as coral reefs, mangroves, and estuaries”. They further explained that “establishing MPA would serve as nurseries for fish populations and help restore ecosystem resilience while providing benefits to local fisheries”.

Integrated Coastal Zone Management (ICZM)

100% of the respondents asserted that developing a holistic approach to coastal zone management would integrate land and marine resource use planning. They explained that this would “involve collaboration among various stakeholders, including government agencies, the private sector, and local communities”.

Sustainable Fisheries Management

100% of the respondents identified Sustainable Fisheries Management as a veritable Integrated Management Strategy for Marine Resources Conservation. They explained that “implementing Sustainable Fisheries Management regulations would promote sustainable fishing practices, such as quota systems, seasonal closures, and gear restrictions”. Furthermore, the respondents suggested that the Federal Government of Nigeria should “encourage the adoption of alternative

livelihoods for fishermen to reduce pressure on marine resources”.

Monitoring and Data Collection

76% of the respondents suggested that “establishing a robust monitoring and assessment program would aid the collection of data on fish stocks, biodiversity, and marine habitat conditions”. They further opined that the use of this data would lead to well-informed management decisions and adapt strategies as needed”.

Public Awareness and Education

100% of the respondents opined that embarking on public awareness campaign and education are a credible Integrated Management Strategy for Marine Resources Conservation. They further suggested that “conducting awareness campaigns to educate the public about the importance of marine resources and the impacts of depletion would promote conservation of marine resources. Foster a culture of sustainability through outreach programs in schools and communities”.

Collaboration and Partnerships

According to 100% of the respondents, collaboration and partnerships between public and private sectors constitutes an integral part of workable Integrated Management Strategy for Marine Resources Conservation. They opined that “fostering collaboration between governmental, non-governmental organizations (NGOs), private sectors, and academic institutions to share knowledge, resources, and best practices would lead to managing marine resources effectively”

Climate Change Adaptation Strategies

87% of the respondents suggested the need for Climate Change Adaptation Strategies. They explained that “develop strategies to address the impacts of climate change on marine ecosystems, which include habitat restoration projects and the promotion of resilient species and ecosystems would prove to be an effective Integrated Management Strategy for Marine Resources.

Policy and Legislative Framework

100% of the respondents were of the opinion that instituting relevant Policy and Legislative Framework would prove to be a credible aspect of Integrated Management Strategy for Marine Resources. They explained that “reviewing and strengthening existing policies and legislation that are related to marine resource management is crucial. The respondents however, cautioned that Government should ensure that the Policy and Legislative Framework are enforced effectively and include provisions for sustainability and conservation.

Accordingly, by implementing these integrated management strategies, the biodiversity of Nigeria's marine resources would be conserved in order to support and sustain the livelihoods of communities that are reliant on these ecosystems.

CONCLUSION AND RECOMMENDATIONS

The study assesses the contribution of sustainable marine resource management practices to local and national economic growth by focusing on industries such as fisheries, tourism, and small businesses that are reliant on marine resources. The study explores the relationship between ecosystem health and the sustainability of marine industries to propose effective conservation measures and seeks to propose a holistic approach that considers ecological, social, and economic factors for managing marine resources effectively in Nigeria. The findings show that proper management of marine resources enhances tourism opportunities, resulting in increased revenue for coastal communities in Nigeria; the development of an integrated management strategies for marine resources in Nigeria would enhance economic benefits while ensuring long-term sustainability; and the decline in fish populations due to overfishing negatively impacts

predator species and food web stability in Nigeria and the ecological consequences of overexploitation of marine resources, include biodiversity loss and habitat degradation. To this end, the study recommends that stakeholder engagement should be encouraged towards policy analysis and the identification of best practices for balancing marine resource use with ecological integrity.

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