



FOSTERING COLLABORATIVE APPROACHES FOR PROTECTING NIGERIA'S ECOSYSTEMS THROUGH SUSTAINABLE MANAGEMENT STRATEGIES

BY

UCHI DOMINIC TERHILE

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TO MALVEZZI - UNIVERSITY OF BOLOGNA



INTRODUCTION

Nigeria Coastal Regions

- ❑ The Nigerian coastline, spanning an impressive 853 kilometers, meanders through nine states, namely Akwa-Ibom, Bayelsa, Cross River, Delta, Lagos, Ogun, Ondo, and Rivers. Notably, Lagos State emerges as a significant economic powerhouse within this coastal stretch, single handedly contributing a substantial 25 percent to the nation's overall economy.
- ❑ This ecosystem confronts the mounting challenges posed by sea level rise and the relentless human-induced impacts in Coastal communities, particularly in rural areas which bears the brunt of these adversities, grappling with low adaptive capacities in the face of multiplying challenges.

HYDROLOGICAL MAP OF NIGERIA



MAP OF NIGERIA SHOWING COASTAL REGIONS LINK WITH ATLANTIC OCEAN





POLLUTION IN THE COASTAL REGIONS

- ❑ Nigeria stands as one of the highest global contributors to plastic pollution, generating approximately 2.5 million tonnes of plastic waste annually. Alarming, more than 88% of this plastic waste remains within the country's coastal areas.
- ❑ The pervasive issue extends beyond land, with a substantial portion finding its way into water bodies, including rivers, lakes, drains, lagoons, and eventually the ocean.
- ❑ The coastal region is being significantly impacted by climate change, by rising sea levels, rising temperatures, and changing water colors. Sea level rise is a serious concern to coastal locations, increasing the hazards and vulnerabilities faced by the populations that live there.

POLLUTED SITES OF COASTAL REGIONS IN NIGERIA



Picture by Guardian Newspaper

POLLUTED SITES OF COASTAL REGIONS IN NIGERIA



Plastic bottles, containers and other waste washed up from the Lagos lagoon at one of the waterfront jetties Stefan Harris/AFP via Getty Images

HUMAN ACTIVITIES CONTRIBUTING POLLUTION AT THE COASTAL REGIONS



CHARACTERISTICS OF THE COASTAL REGIONS

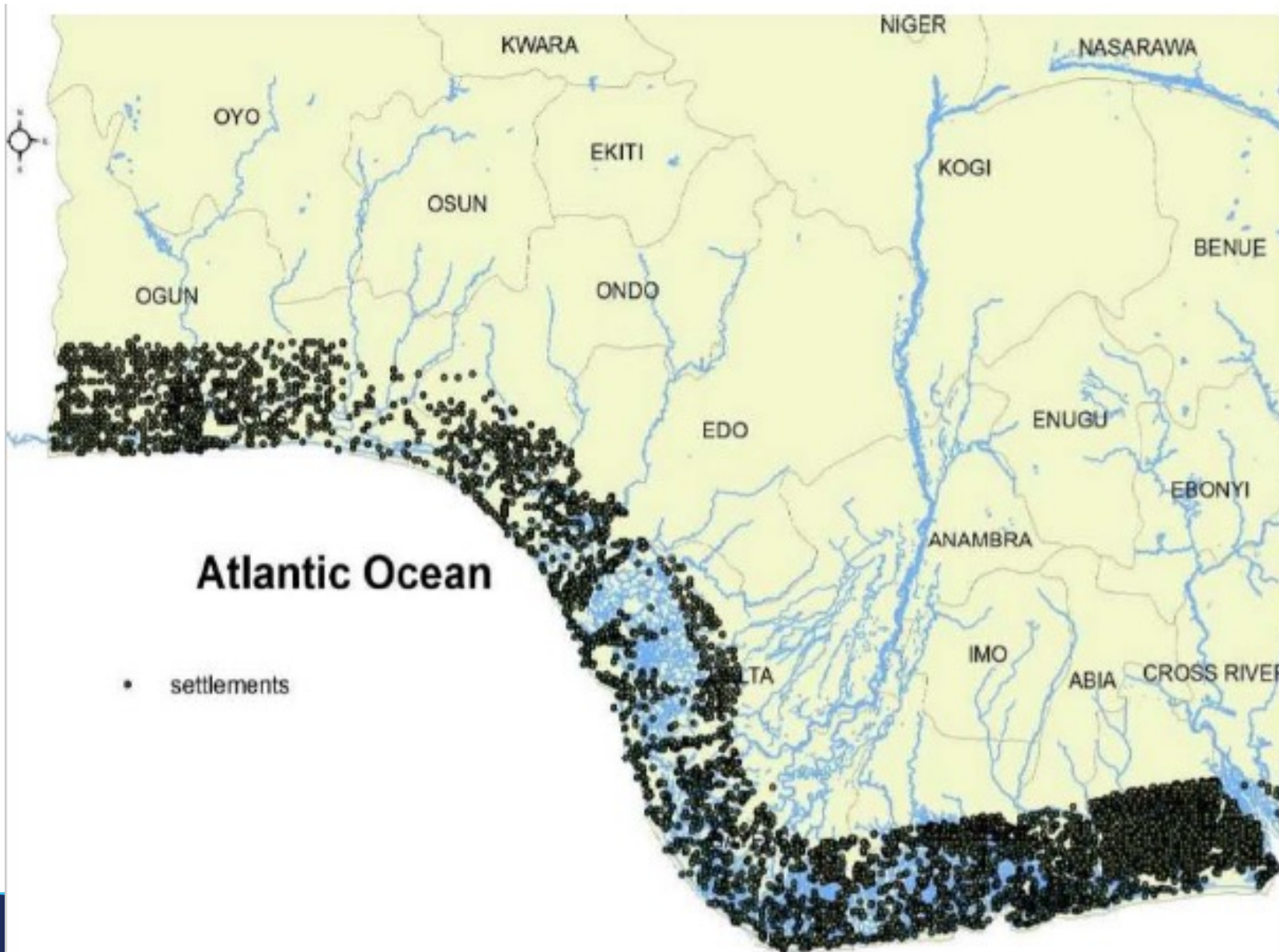
- ❑ Frequent floods are a major threat to coastal towns and inability to secure food supplies because seawater flooding makes farmlands unusable.
- ❑ These areas struggle with increasing pressure from residential and industrial developments, even though they are home to many towns within 100 kilometers of the shore. Land usage, greenhouse gas emissions, pollution of the biodiversity are all impacted by agricultural methods, which also make environmental problems worse.
- ❑ Excavation, building breakwaters, mining exploration, port development, clearing backshore vegetation, and building embankments constitute a few of the local activities that further affect coastlines.



Characteristics of the Coastal Regions Con`t..

- ❑ Agricultural land, tree crops, freshwater, mangroves, salt marsh, settlement, and a body of water make up the ecosystem. These coastal areas, which are distinguished by estuaries where freshwater rivers meet the ocean, are essential to both fishing and agriculture.
- ❑ The varied variety of soil types found in Nigeria's coastal regions can be attributed to several variables, including vegetation, drainage patterns, and proximity to the ocean. These places are mostly home to saltmarsh, mangrove, sandy, clayey, and alluvial soils.

COASTAL REGION SETTLEMENTS





APPROACHES FOR PROTECTION

- ❑ Promoting seaweed growth is a multipurpose approach that is essential to protecting coastal areas and meeting the demands of coastal populations for a living.
- ❑ Giving people in coastal areas that rely largely on the ocean as their source of income becomes essential. By supporting organic agricultural methods and removing the need for harmful chemicals that harm the ecology and biodiversity in the ocean, seaweeds provide a sustainable option.
- ❑ Seaweed farming, especially kelp farming, benefits coastal farmers financially in addition to promoting ecological health.



Approaches for protection Con`t..

- ❑ Since seaweeds planted along beaches function as natural buffers, strengthening regions susceptible to erosion and storm surges, this all-encompassing technique includes erosion management.
- ❑ Moreover, encouraging seaweed beds to proliferate increases biodiversity and creates ideal homes for a variety of marine organisms. Seaweeds are essential for the absorption of nutrients, particularly for the reduction of phosphorus and nitrogen pollution in coastal waters.
- ❑ Seaweed farming promotes environmentally friendly agricultural methods and increases the economic stability of coastal towns.
- ❑ Seaweeds also serve as organic filters, drawing pollutants and enhancing the general cleanliness of the water.

Approaches for protection Con`t..

- ❑ The community participation through awareness activities and educational initiatives is essential. Data from ongoing monitoring and assessment are crucial for adaptive management, and community participation in inclusive decision-making processes guarantees sustainability and cultural relevance of kelp management.
- ❑ Enforcing adherence to sustainable seaweed management techniques is crucial for limiting the exploitation of coastal ecosystems, and policy implementation plays a key role in this regard.
- ❑ A shared commitment to sustainable practices among coastal communities should be fostered through behavioral change assisted by opinion leaders and local officials, which instills good attitudes toward seaweed conservation. Others include sand dune protections, natural based solutions, making protections wall and wind breakers.



Approaches for protection Con`t..

- ❑ Initiatives in African coastal regions to recycle plastics can be financially supported by carbon credits. Credits can draw funding for garbage collection, community education, and recycling infrastructure by providing incentives for sustainable activities.
- ❑ This helps to mitigate the effects of climate change, promote a circular economy, and offset carbon emissions in addition to addressing environmental challenges
- ❑ In order to improve coastal resilience and ecosystem preservation in vulnerable places, it is possible to empower people through the establishment of workshops that bridge agricultural land management and ocean.



SUSTAINABLE MANAGEMENT

- ❑ Modern instruments such as ocean observation systems, which combine chemical, biological, and physical sensors to collect data in real time, are essential to sustainable coastal management.
- ❑ These mechanisms are essential for making well-informed decisions. They provide vital information on water movement along the shore by measuring the direction and speed of ocean currents.
- ❑ Furthermore, sensors evaluate the levels of salinity, dissolved oxygen, and nutrients, providing information on the composition of coastal waters and possible pollution. Understanding the effects of climate change requires regular monitoring of ocean acidity.

Sustainable Management Con`t..



- ❑ The amount of phytoplankton is measured using chlorophyll sensors, which indicate the health of the marine food web. Information transport is guaranteed to be smooth when satellite communication and data transmission techniques are used.
- ❑ These thorough observations help resilient marine ecosystems and the sustainable use of coastal zones by enabling efficient management techniques.
- ❑ In overall the sustainable ensures a method generation of predictions that take risks, ranging from severe occurrences to wider climate patterns, into consideration by combining evidence from observations with numerical simulations.
- ❑ To create capacity, foster international cooperation, and accomplish environmental goals, developing countries must be equipped with the knowledge and abilities to employ environment-specific coastal forecast monitoring systems.

References



David and Solomon, 2011 West Management and water Quality Issues in Coastal States of Nigeria. The Ogun State Experience. Journal of sustainable Development in Africa (Volume 13, No.6,2011) JSSN:1520-5509 Clarion University of Pennsylvania.

First Workshop on Observing and Predicting the Global Coastal Ocean Venue: Lecce, Italy. 11-13 May 2023. <https://predictontime.org/workshop-summary-and-outcomes/workshop-11-13-may-2023/>.

Lelia Croitoru, Juan José Miranda, Abdellatif Khattabi and Jia Jun Lee, 2020. The Cost Of Coastal Zone Degradation In Nigeria: Cross River, Delta And Lagos States.

Oluseyi Fabiyi, 2021 Nigerian Coastal Environment System Processes <https://www.researchgate.net/publication/353999253>

Thank you!

