Impacts of Climate Change on Mangrove Biodiversity and Sustainable Livelihoods along Lagos Coast of West Africa

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OUTLINE

• Introduction
• Mangrove biodiversity along Lagos coast
• Methodology
• Findings
• Challenges and Possible Solutions
• Conclusions
Introduction

• Mangroves are highly beneficial ecosystems
• However, there has been a biodiversity decline in this region occasioned by some factors including climate change
• Aggravated by inadequate management and policy efforts (Njisuh and Gordon, 2011)
• It may be due to insufficient knowledge about the consequences of their degradation.

• Attempt was made to get an insight on the impacts of climate change on biodiversity loss using number of diversity indices.
Mangrove biodiversity along Lagos Coast

• Mangrove biodiversity and expanse in this region is on a continuous decline.
• Adekanbi and Ogundipe (2009) studied 8 mangrove communities along Lagos coast and found out that only two of these had their vegetations relatively well preserved.
Table 1: Mangrove Loss in Coastal Lagos (1986-2006).

<table>
<thead>
<tr>
<th>LOCAL GOVERNMENT</th>
<th>1986</th>
<th>2002</th>
<th>%LOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apapa</td>
<td>14</td>
<td>8.6</td>
<td>38.6</td>
</tr>
<tr>
<td>Eti-Osa</td>
<td>41.8</td>
<td>25.2</td>
<td>39.7</td>
</tr>
<tr>
<td>Lagos-Mainland</td>
<td>17</td>
<td>6.7</td>
<td>60.6</td>
</tr>
<tr>
<td>Shomolu</td>
<td>4.4</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>
Study Area

• Low lying coastal area

• An industrialized, commercialized and emerging megacity in Nigeria.

• Subjected to several episodes and predictions of the negative impacts of changing climate
Figure 1: Study sites
Table 2: Lagos Population Trends (1985-2015)

<table>
<thead>
<tr>
<th>Years</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>5.8</td>
</tr>
<tr>
<td>1990</td>
<td>7.7</td>
</tr>
<tr>
<td>1995</td>
<td>10.2</td>
</tr>
<tr>
<td>2000</td>
<td>13.4</td>
</tr>
<tr>
<td>2005</td>
<td>16.86</td>
</tr>
<tr>
<td>2010</td>
<td>20.19</td>
</tr>
<tr>
<td>2015</td>
<td>24.6</td>
</tr>
</tbody>
</table>

Data Collection

• Primary data
  – Collection of species
  – Interviews
  – Questionnaire administration

• Secondary data
  – Existing Literature
Analysis

- 7 Diversity Indices
- Qualitative Analysis
- Sustainable Livelihoods Framework
Findings

• Indices and qualitative data from four locations considered in this study reveal that the diversity of mangrove flora and fauna are at a low ebb.

• This contributes to impacts on ecosystem and sustainable livelihoods
Figure 2: Conceptual framework principal impacting factors of climate change.

(Source: Ward et al., 2016.)
Findings Cont’d

• Climate change has contributed to mangrove loss and this impacts greatly on the sustainable livelihoods of locals.

• Viz
  – Cost of fish/protein deficiency/income reduction.
  – Temporary/permanent displacement due to flooding
  – Increased health risks
Challenges

• Serious gap regarding information on climate change impacts in West Africa esp. as it relates to mangroves

• Inadequacy of relevant and stringent policies

• Weak legal framework and poor implementation
Possible Solutions

• Research and data gathering using modern technology

• Designation of mangrove protected areas

• Regaining flooded mangroves; afforestation, coastal engineering etc.
Possible Solutions Cont’d

• Enlightenment campaigns to ensure participation

• Establishment of mangrove nurseries

• Improvement of local management (EBA, CBM)

• Attention to vulnerability of coastal population
Conclusions

• There is an urgent need to intensify efforts towards ensuring positive actions for mangrove biodiversity and sustainable livelihoods

• This should be undertaken by relevant authorities and stakeholders to encourage adaptation and mitigation, if mangrove biodiversity and sustainable livelihoods are to be ensured
Thanks for Listening