

- ▶ SUSTAINING COASTAL MANAGEMENT / ADAPTATION OF CLIMATE CHANGE AND SEA LEVEL RISE IN THE NIGER – DELTA OF NIGERIA.

BY

ANGELA KESIENA ETUONOVBE,(MRS). LSM,MNIS, NIGERIA

PRESENTED AT THE FIG WORKING WEEK , 14-19 JUNE 2008 IN STOCKHOLM, SWEDEN.

HISTORY

LOCATION

- ▶ The Niger Delta is located in the Atlantic Coast of Southern Nigeria . It is the second largest delta in the world with a coastline of about 450 kilometers .

SIZE

- ▶ The region spans over 20,000 square kilometers and it has been described as the largest wetland in Africa and among the three largest in the world .

FEATURES

- ▶ About 2,370 square kilometers of the Niger Delta area consist of rivers, creeks and estuaries and while stagnant swamp covers about 8600 square kilometers, and with largest mangrove swamp (1900 square kilometers) in Africa.

STATE COMPONENTS

- ▶ The region consists of nine states in southern Nigeria viz: Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and River States (as shown in figure 1.0 and 1.1 below).

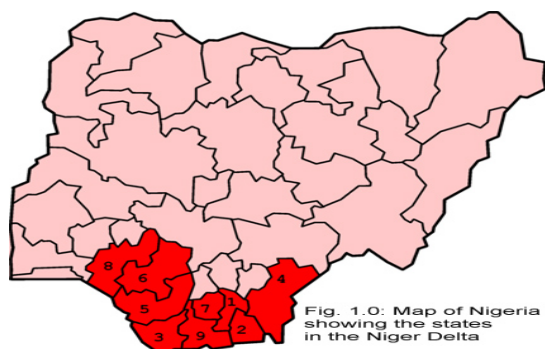


Fig. 1.0: Map of Nigeria showing the states in the Niger Delta



FIGURE 1.1 NIGER DELTA MAP SHOWING ALL THE STATES WITHIN THE REGION

THE PROBLEMS

- ▶ The Niger Delta region is the bedrock of Nigeria's oil production, which accounts for 97% of the government total revenue.
- ▶ Since the discovery of oil in the region, oil prospecting have caused severe climate and environmental changes .
- ▶ The hydrology and natural terrain of the region have always caused certain environmental problems, such as, erosion, flooding, siltation, occlusion, and the derth of land for development.
- ▶ Communities, roads and farmlands are partially or totally submerged from channels or by water flowing over the levees.
- ▶ In the Mangrove Swamp Forest areas, diurnal tidal movements result in floods exacerbated by rising sea levels, coastal erosion and land subsidence.

PROBLEMS CONT'D

- ▶ The floods also causes continual modification of river courses in the area, rendering the rivers useless as modes of transportation.
- ▶ Communities are displaced and forced to relocate due to the flood.
- ▶ Public facilities, houses and other economic assets have been lost.
- ▶ Around the world, the reality of dangerous climate change can not be over emphasized and the people most affected are the least equipped.
- ▶ The Niger delta has been caught in man-made environmental disasters, and in many cases relief is reaching them last.

EFFECTS OF SEA LEVEL RISE

- ▶ The following have been identified as impacts of climatic changes on coastal systems:
 - increased coastal erosion
 - higher storm-surge flooding
 - inhibition of primary production processes
 - more extensive coastal inundation,
 - changes in surface water quality and groundwater characteristics
 - increased loss of property and coastal habitats
 - increased flood risk and potential loss of life
 - loss of non-monetary cultural resources and values
 - impacts on agriculture and aquaculture through decline in soil and water quality
 - and loss of tourism, recreation, and transportation functions.

Note these impacts are highly variable in time and space and will not necessarily be negative in all situations.

EVIDENCE OF CLIMATIC CHANGE IN THE REGION

- ▶ —Erosion
- ▶ —Flooding
- ▶ —Migration
- ▶ —Infrastructure
- ▶ —Agriculture
- ▶ —Changes in rainfall pattern
- ▶ —Poor health.

EROSION

- ▶ The most important environmental problem facing the Niger Delta is coastal erosion.
- ▶ Although the World Bank has rated coastal erosion as needing moderate attention in the region, it is the most important impact of sea level rise in the region and should be given high priority attention. As with the case of the people of Awoye in Ondo, Ogula in Forcados South Point, where some oil wells have been lost to the ocean due to erosion (Etuonobe, (2006); and more recently the people of Sagana in Bayelsa State as shown in the excerpt from Vanguard, Tuesday, June 3, 2008, as shown below as example of settlements in the coastal region have been uprooted by coastal erosion.



FLOODING

- ▶ Flood in general has impacted negatively on the lives of many communities in the region.
- ▶ Flood and erosion
 - remove top soil
 - affect fresh water resources
 - threaten lives and properties
 - rendered many homeless
 - destroy roads

In fact the usefulness of several roads has become impassable or seasonal, as could be seen in the fig below.

- ▶ Floods causing hardships and paralyzing economic activities in the region cannot be over emphasized.

FIGURE 2.0. FLOODED ROAD IN WARRI



FIGURE 2.1 FLOOD IN GINUWA ROAD , WARRI



MIGRATION

- ▶ The Intergovernmental Panel on Climate Change (IPCC) noted that the greatest single impact of climate change could be on human migration-with millions of persons displaced by shoreline erosion, coastal flooding and agricultural disruption (as shown in excerpt 1 above)
- ▶ In the Niger Delta, forced migration has hindered development in various ways. An example is increased pressure on urban infrastructure and services as in Warri in Delta State, and Port-Harcourt in Rivers State, and recently Yenagoa in Bayelsa State. This has increased the risk of conflict in the area as a result undermining economic growth, due to the high demand on the meager health, educational and social facilities available in the area.

STRUCTURES.

- ▶ Flooded roads and subways, railroad tracks and weakened bridges may be the wave of the future with continuing global warming, a new study says. Climate change will affect every type of infrastructure through rising sea levels, increased rainfall and surges from more intense storms and heat.
- ▶ Also, in the past three years there have been cases of collapsed buildings in the region. Several cases occurred in Warri and Port-Harcourt and other places in the region. This has made the Ministry of Lands, Surveys and Urban Development in Delta State to review the building approval laws. The laws are good quite all right but the real issues causing the problems has not been addressed (see Excerpt 2 – Rainstorm injures 16 people in Jigawa).

EXCERPT 2



AGRICULTURE

- ▶ Adverse effect of sea level rise in the Niger Delta are
 - increased salinity of both surface and underground water due to the intrusion of sea water.
 - The salinity of underground water will lead to shortage of fresh water.
 - Inhabitants of the region depend on underground water as their main source and the lack of it will cause adverse consequences
 - This will lead to the death of aquatic plants and animals that cannot tolerate high salinity.
 - The brackish water is the home of several species of fishes and it is the breeding sites for several others. The ecology of the brackish waters will greatly be affected by this phenomenon and this may lead to loss of species.
 - Sea water intrusion will have serious impact on food security in the region of water for drinking and for other domestic use.

CHANGES IN RAINFALL PATTERN

- ▶ The Niger Delta depends on climate-sensitive sectors such as agriculture and fishery. The changing climate has created uncertainty in the timing and amount of rainfall in every part of Nigeria. The problem is more severe in the rain forest zone of the region where rain-fed agriculture is mainly practiced.
- ▶ **HEALTH RELATED HAZARDS**
- ▶ Other impact of sea level rise on the region is the emergence of health-related hazards. Poor health arising from damp, cold housing is likely to worsen.

CONCLUSION / RECOMMENDATION

- Obviously, the people of the Niger Delta are faced with myriads of environmental problems caused by climate change and the activities of multinational oil companies operating in the area.
- I propose an integrated approach in order to solving the problem in the Niger Delta.
 - There is a need to conduct a comprehensive and up-to-date study to assess the likely impact of climate change on the Niger Delta.
 - Coastal education has a great role to play as regards managing coastal environmental problems.
 - The government authorities need detailed record of rainfall data from year to year to aid farmers and their traditional practice of prediction of rainfall.
 - Planning plays a major role in the protection of natural resources, of habitats and biodiversity. Closer attention should be focused on detailed research, proactive environmental planning, impact assessment and management
 - Finally, the world must respond to climate change and other environmental challenges now while the cost is low or else pay a stiffer price later for its indecision.

THANK YOU FOR LISTENING