INTEGRATED APPROACH TO URBAN FLOOD ADAPTATION IN THE NIGER DELTA COAST OF NIGERIA
BY
OGBA C.OKOKO (NIGERIA)
AND
UTANG B. PIUS (NIGERIA)

TABLE OF CONTENTS

- Title
- Abstract
- Introduction
- The Niger Delta and Flood Dimension
- Flooding in Port Harcourt
- Implications of urban flooding for development planning
- Integrated Planning for Urban Flood Adaptation in the Coastal City of Port Harcourt
- Conclusion
- References

ABSTRACT

The paper highlights the physical, social, economic, technical and institutional dimensions of urban flooding.
- Delimited flood prone areas.
- Observed spatial shifts in flood areas.
- Documented data and were supported by field observations; the Arc View GIS 3.3 was used to produce the flood prone areas and elevations and map spatial shift in the location of flooded areas were identified.
- The inadequacy of urbanization process, coupled with the phase of urbanization were responsible for the current flood problems in areas not designated as prone.
- Urban master planning became imperative for flood prevention and remedial action.
- The unified urban flood management/planning concept was advocated to facilitate adaptation, and integrated flood management design was illustrated and recommended.

INTRODUCTION

Flood hazards are natural, but human modification of landscape and attenuation nature’s right-of-way can accentuate the problem or create the problem in areas not naturally prone.
- Effects dependent on extent of development and human occupancy of vulnerable areas

Dimensions of urban flooding

- Differs from rural flooding as it involves both bank full discharges and infiltration excess overland flow.
- Consequences usually more monumental because of characteristic increasing concentration of production and population, coupled with concentration of wastes and associated environmental and health problems.
- Appears to be accelerating in coastal cities of the Niger Delta, Nigeria, with complex explanation that requires holistic approach to stem the tide.

FLOODING IN NIGER DELTA

- A common and recurrent phenomenon
- Identified by Zabbey (2007) to include riverine urban flooding
- Major causes include high rainfall regime and low lying elevation, hence coastal flooding from the sea
- Affects settlements significantly because of high concentration of activities
FLOODING IN PORT HARcourt

• The largest and the most urbanized city
• Flood mainly caused by high rainfall and in areas of close proximity to flood plains of the Niger distributaries (see fig 1)
• The most common dimensions of flooding being Riverine flooding in river floodplains settlements

Other dimensions

• Spatial shift currently to less envisaged areas, thus:
• Pondages in construction sites, deforested relatively flat terrain
• Inundation in congested areas
• Over flow from blocked drains and traffic obstruction

Causes of recent flooding in Port Harcourt

• Reports of flooding attributed mainly to high rainfall.
• Little attention is given to human attenuation of the landscape which inhibits infiltration
• Initial stage of urbanization, inadequate planning and inappropriate development are some other contending dimensions for the existing problems

IMPLICATIONS FOR DEVELOPMENT PLANNING

• Rainfall is the first presage of flooding, but lack of adherence to standards as well as inadvertent activities are very compelling
• Increasing occupation of flood-prone areas and congested housing makes flooding appear to be increasing
• The occupants are mainly the poor and low income group
Other implications

- The need for planning and development that integrates climate and the social dimensions
- The need to change our perception and analytical framework
- The new paradigm should be towards both hazard and vulnerability analysis

INTEGRATED PLANNING FOR URBAN FLOOD ADAPTATION IN THE COASTAL CITY OF PORT HARCOURT

- This is mainly a policy driven action
- Harmonizes environment and development, with specific thrust on the welfare of the urban poor.
- A unified approach which incorporates an array of urban flood management activities, including:
  
Other components of the model

- Designing and implementation of land and water use activity zoning and sitting policy
- Contingency plan for human induced and natural flood disasters
- Conservation and restoration of critical habitats such as mangroves (wetlands) and riparian vegetation

Other activities

- Human resource development and training in skills for emergency actions in case of disasters.
- Public education awareness and information for preparedness and emergency action.

Activities involved

- Integration of all sectors of urban development with spatial planning
- Integrating necessary institutional, financial and legislature framework
- The need for master planning and strict adherence
Conceptual framework for urban flood adaptation

- Adopts a systems approach, with both structural and non-structural elements
- All must be integrated for proper urban flood management
- It is linked to the unified model developed after Andejelkovic (2001)

Critical issues in the framework

- The model emphasizes the incorporation of structural measures with emergency response, flood preparedness, legislature, financing and EIA measures
- Also flood recovery measures e.g. insurance financial assistance rehabilitation etc

Other considerations in this paper

- This paper emphasizes the harmonization of these and
- the consideration of technical, economic socio-cultural, policy, legal and political framework of the society
- Involvement of all stakeholders, such as public and private sector, NGOs/CBOs research institutions
- All these are captured in fig 4

CONCLUSION

- Port Harcourt flooding appears to be increasing in space-time dimensions because of development
- Floods cannot be prevented out rightly, but good planning and observance of the rules can reduce the level of vulnerability and facilitate coping.
- Traditional measures to reduce flood damages are mainly structural, but urban flood adaptation involves a variety of additional pre- and post-flood measures which are based on non-structural and recovery measures

Integrated urban flood management model

STAKEHOLDERS
- Various sectors in city council, state and national government; NGOs/CBOs, universities/research institutions, private sector, Donor agencies
- Solid waste management
- Storm water drainage
- Infrastructure housing development
- Flood recovery
- Land use zoning
- Consecration/ restoration
- Sea defenses
- Emergency measure

DIMENSIONS OF FLOODING
- Technical, environmental
- Financial/economic, social, institutional, legal