FLOOD MANAGEMENT AND ADAPTATION TO CLIMATE CHANGE

Mapping of Vulnerabilities & Coping Mechanisms In Silanga Village Of Kibera Slum

Elizabeth Kanini Wamuchiru
Department of Urban & Regional Planning
University of Nairobi
PRESENTATION OUTLINE

- Introduction
- Flooding Vulnerabilities
- Climate Change Adaptation
- Flood Coping Mechanisms
- Mapping Of Existing Good Practices
- Institutional Framework
- Recommendations
STUDY OBJECTIVES

• To assess the characteristics of Kibera informal settlements and extent of their vulnerability to flooding and ability to manage floods.

• To establish and assess the existing adaptation strategies to flooding at institutional, community and individual levels in Kibera informal settlement.

• To examine the roles of agencies and actors responsible for urban flood management in Kibera informal settlement and establish the level of local participation in its governance and decision making.

• To design a framework for a sustainable adaptation and mitigation practice in informal settlements.
INTRODUCTION

- Kibera is the largest informal settlement in Nairobi.
- Kibera is situated 7KM Southwest of the CBD of the city of Nairobi.
- Covers an area of approx. 223.2 sq.km.
- Population is 355,188 people*.
- Density of 1,592 per KM square.
- Land – Government owned.
- Inadequate services and poor conditions of shelter.
- 95% of residents are tenants.
- Kibera is made up of 14 villages.
- The study focused on one village: Silanga.
Silanga had a population of 17,363 of whom 10,198 were male and 7,165 were female.

Households number: 6,164

Covers an area of 0.2sq.km

Density of 71,072 persons per sq.km

Source: Kenya Census Report 2009
MAP OF SILANGA VILLAGE

Legend:
- Roads/Passages
- Health Facilities
- Education Facilities
- Village Boundary
FLOODING VULNERABILITIES

Settlement characteristics:
- Overcrowding
- Poor and hazardous structures
- Narrow footpaths which are open trenches
- Poor waste disposal practices
- Poor building materials
- Limited Roof catchment of rain water
Flooding of Mbagathi River which drains into Nairobi dam affecting Kibera residents

Source: Sadique KI, 2011
- Lack of awareness of climate change impacts on flooding.
- Inadequate information and knowledge on climate related issues.
- Inadequate capacities of the slum dwellers to handle flood.
- Lack of flood disaster preparedness.
- Inaccessibility to early warning systems and weather forecasts information.
- No institutional framework at grass root level to deal with flooding.
Climate Change Adaptation

- Settlement upgrading: standard low cost housing and building materials.
- Invest in roof types that allow water harvesting.
- Safer location of human settlement.
- Provision of proper waste disposal facilities and services.
- Promote use of clean energy e.g. solar energy and biogas.
- Reclaiming/salvaging the polluted Ng’ong river.
- Subsequent rehabilitation of Nairobi dam.
- Early warning systems and data availability.
FLOOD COPING MECHANISMS

- Apart from periodic moving away from their houses during floods, the residents use the following local strategies:

  **Use of mobile foot bridge**

  **Use of compacted soil bags**

Source: Author, 2011
Use of barricade e.g. concrete wall

Possible intervention: Planting of vegetation along the drains

Source: Author, 2011
Use of sand bags

Source; Sadique KI, 2011
MAPPING OF EXISTING GOOD PRACTICE

- Flood control and management at the Silanga field and cleaning of the same.
- Building of gabion along Ng’ong river to control flooding.
- Unblocking of existing storm water drains
- Construction of new storm water drains to drain surface runoff e.g. at Silanga field.
- Planting of trees and flowers to add vegetation cover.
- Cleaning of the polluted river.
Before

Source: Author, 2011

After clean up by KI
Cleaning of Flooded Field: KI Initiative Project

Source: Author, 2011
From a sea of garbage to a river. KI project.

Source: Author, 2011
Unblocking storm drains: KI Initiative

Planting of Trees: KI initiative

Source: Author, 2011
INSTITUTIONAL FRAMEWORK

- GOK formulated a Draft National Policy For Disaster Management In Kenya in 2009 to institutionalize mechanisms for addressing disasters.
- Establishment of a National Disaster Management System (NADIMA).
- Responsibilities of various committees, directorates & community level disaster management under NADIMA has not yet been worked out.
- No coordinated policy framework nor legal basis for current disaster management system.
CURRENT FLOOD MANAGEMENT IN KIBERA

- It is spontaneous in nature for informal settlements

Flood Response Institutions Include:
- National Disaster Operation Centre
- The Police
- Department of Defense
- National Youth Service (NYS)
- Fire Brigades
- St. Johns Ambulance
- Kenya Red Cross Society
- Occupational Health and Safety Services
- National Environment Agency (NEMA)
- Provincial administration
INSTITUTIONAL WEAKNESS

- Inadequate policy coordination in the institutional framework
- Inadequate finances, human resources and equipments.
- Inadequate information and data access
- Weak disaster management capabilities within communities and institutions
- Inadequate integration and coordination
RECOMMENDATIONS

- Facilitation of accessibility to information and knowledge with regard to flood and disaster management
- Integration of existing institutional framework
- Building the capacity of local communities to prepare, respond and manage floods.
- Develop the capacity of key institutions to plan and implement flood management activities in slum areas.
- Managing water cycle as a whole.
- Integrating land use and water management.
- Reduction of poverty through preventive & responsive strategies for the vulnerable slum dwellers.
THE END

THANK YOU!