

FLOOD MANAGEMENT AND ADAPTATION TO CLIMATE CHANGE

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

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Adaptation
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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.

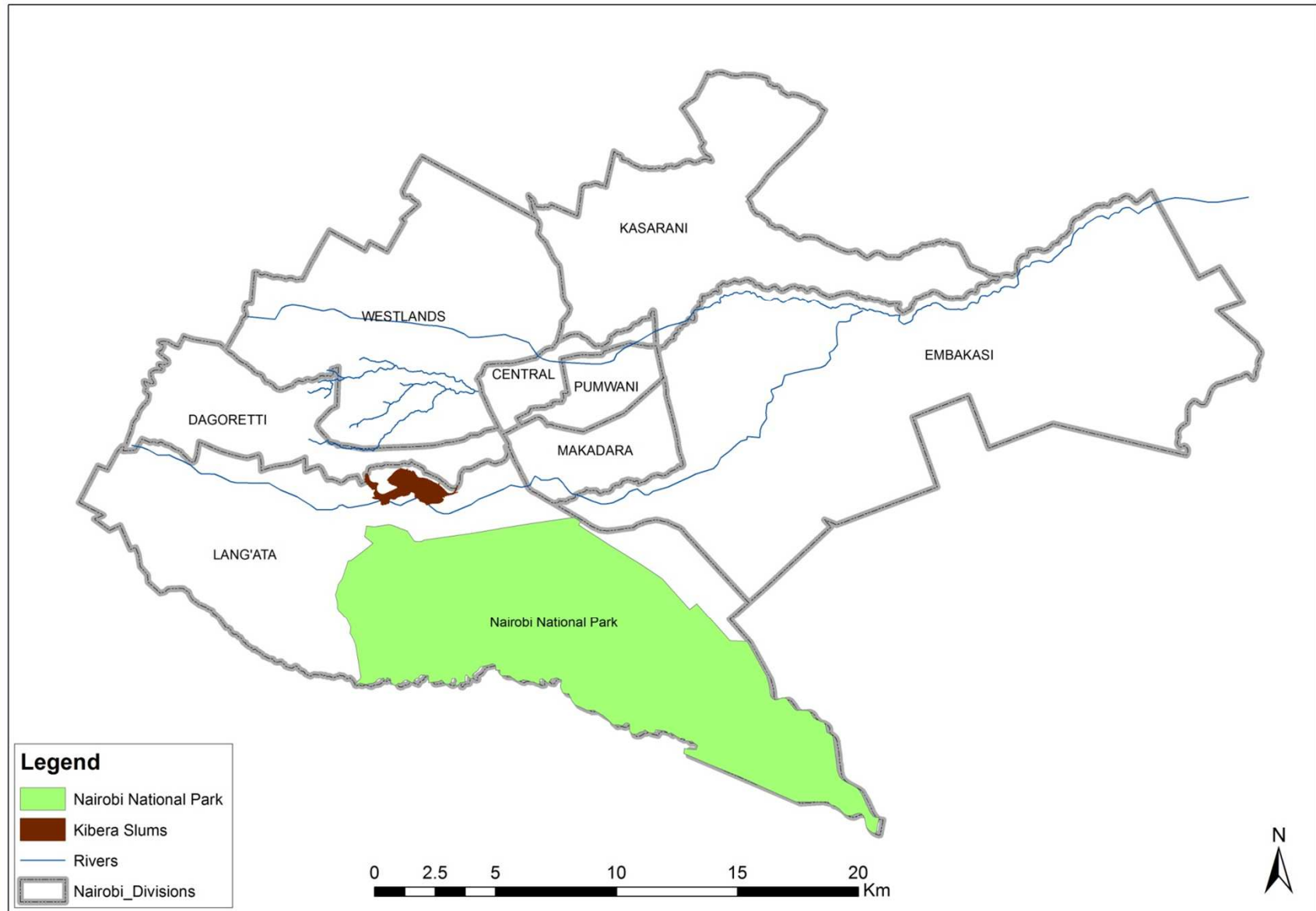
INTRODUCTION

- 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

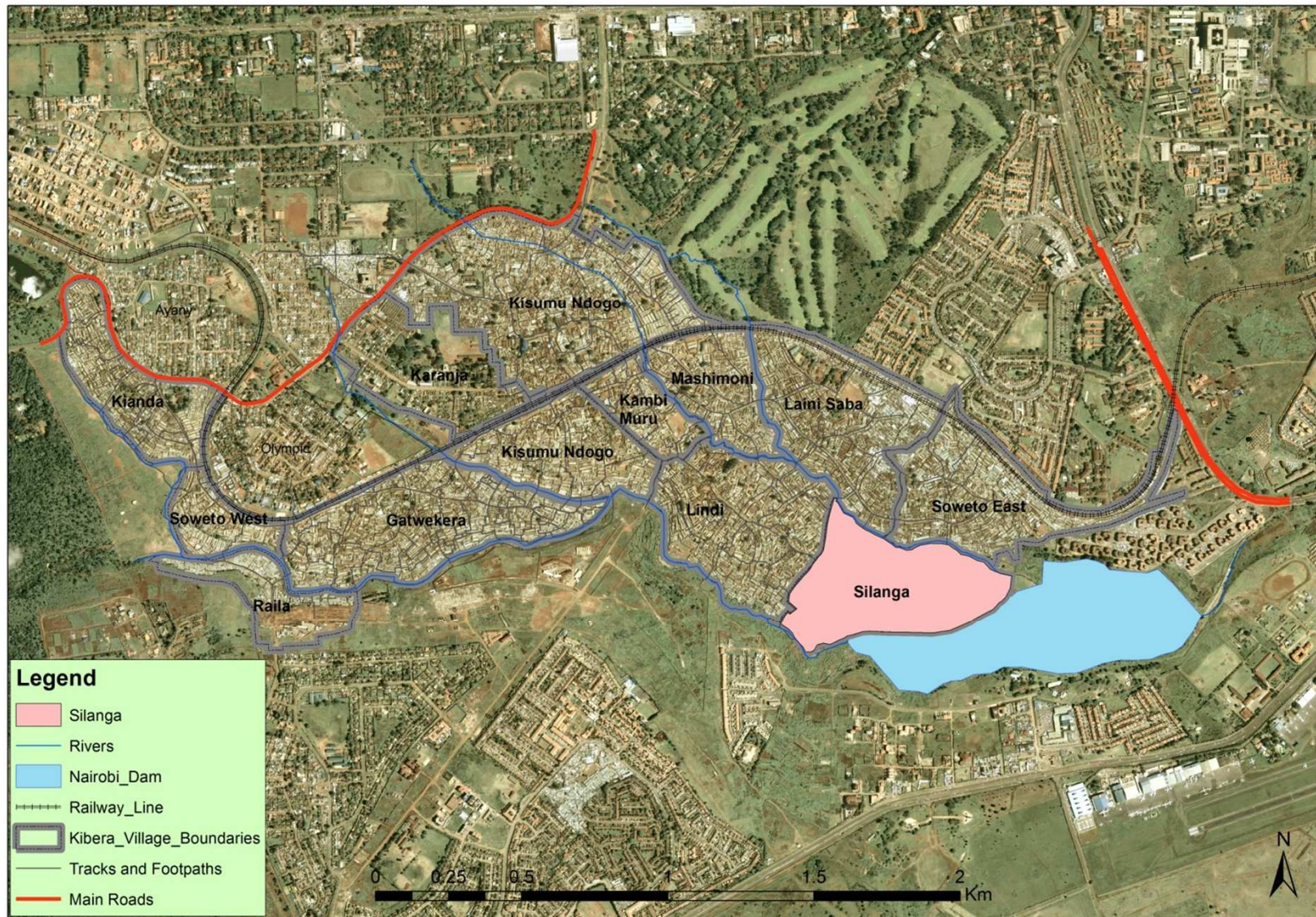
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- Silanga had a population of 17,363 of whom 10,198 were male and 7,165 were female.
 - Households number: 6,164
 - Covers an area of 0.2sq.km
 - Density of 71,072 persons per sq.km

Source: Kenya Census Report 2009

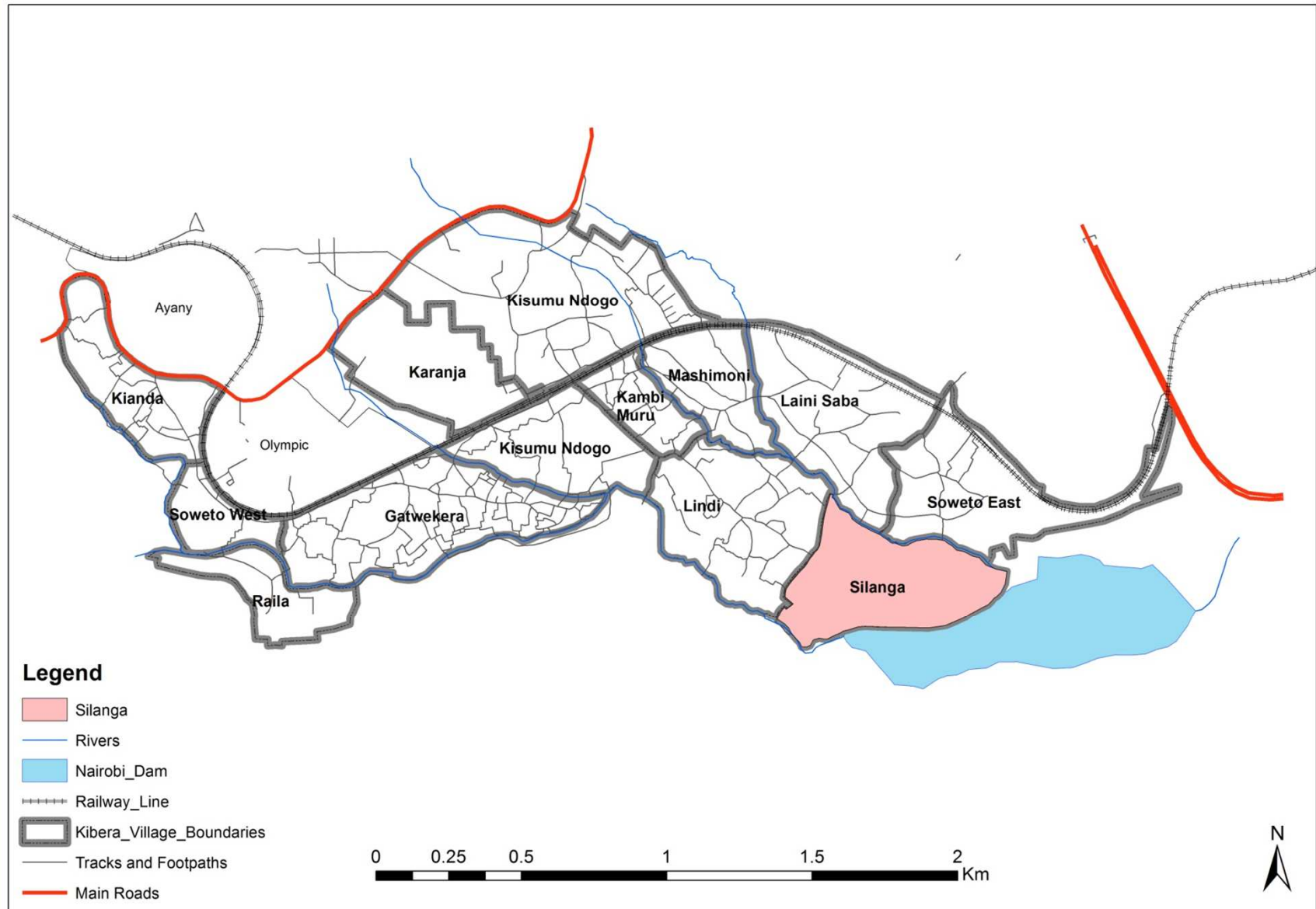
KIBERA SLUM IN NAIROBI CONTEXT



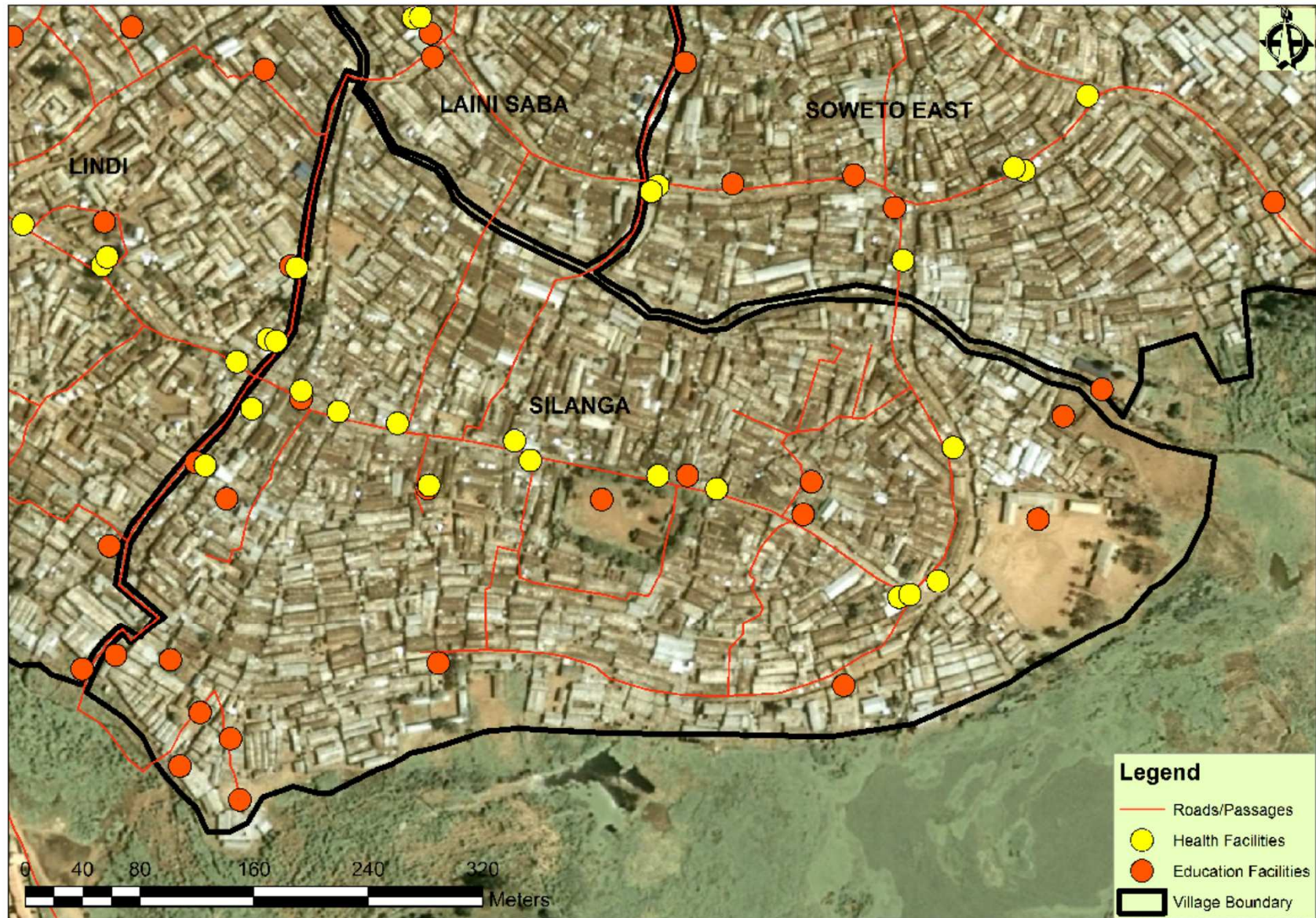
KIBERA SLUM



MAP OF KIBERA VILLAGES



MAP OF SILANGA VILLAGE



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

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- 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.

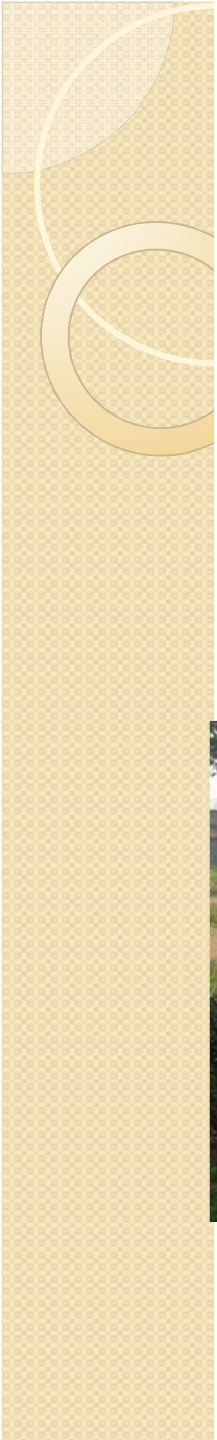


Before



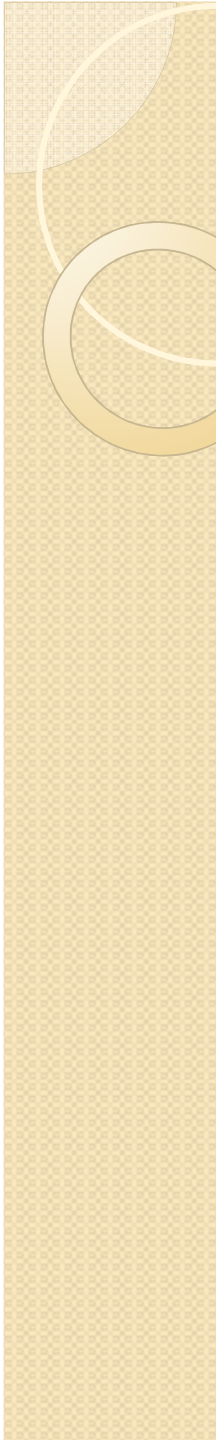
After clean up by KI

Source: Author, 2011



Cleaning of Flooded Field: KI Initiative Project

Source: Author,2011



**From a sea of
garbage to a river. KI
project.**

Source: Author,2011



Planting of Trees : KI initiative

Source: Author,2011



Unblocking storm drains: KI Initiative



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

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- ❑ 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.

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- Incorporate flood Risk Management Principles In Mbagathi River Water Resource Management.
 - Reduction of poverty through preventive & responsive strategies for the vulnerable slum dwellers.
 - Integrating flood risks management in the preparation of Development Plan for Silanga.



THE END
THANK YOU!

