

**URN** URBANISATION  
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**HOW CAN NIGERIA  
BENEFIT FROM  
URBANISATION?**

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## ADAPTATION TO ENHANCE CLIMATE RESILIENCE OF NIGERIAN URBAN SYSTEMS



# INTRODUCTION

## Climate threats in Nigeria

Nigerian cities are subject to **multiple climate threats**

There is a **lack of evidence in the Nigerian context** related to integration of risk perception, vulnerability factors, adaptive capacity and coping strategies across multiple hazards.

**This project** explores the potential to adapt urban infrastructure or adopt **sustainable water and drainage concepts** in Nigerian urban systems and infrastructure to reduce risk from multiple climate hazards through understanding of the **vulnerability** and **resilience** of communities at risk.

# INTRODUCTION

## Project Objectives

**This project** explores the potential to adapt urban infrastructure or adopt **sustainable water and drainage concepts** in Nigerian urban systems and infrastructure to reduce risk from climate hazards through understanding of the **vulnerability** and **resilience** of communities at risk.

Project **objectives** include:

- To evaluate the contribution of urban form to climate hazards
- To explore perceptions and priorities around adaptation to climate hazards
- To explore the vulnerability of communities to climate hazards
- To identify coping strategies and resilience of communities at risk
- To establish measures of assessment targeted at improving community resilience to climate stress

# Methods

## Four phases of data collection

- **Literature review and city scoping**
  - **4 target cities (Calabar, Enugu, Lokoja and Makurdi)**
- **Practitioner workshops and opinion survey**
  - **62 participants in Calabar**
  - **58 participants in Makurdi**
- **Household and business surveys and focus groups**
  - **33 research assistants recruited**
  - **questionnaires administered to 3,300 households**
  - **questionnaires administered to 330 businesses**
  - **2 focus groups with community and business leaders**
- **Stakeholder validation workshop (Lagos)**
  - **24 participants representing twenty organisations**



# Results

## Urban planning and climate hazards

Perception of the contribution of urban form to climate hazards

**Flood:** Human dimension is emphasised: unregulated urban development, inadequate urban drainage systems, poor refuse disposal, poor planning and enforcement; government and community allocation of lands without recourse to planning standards and lack of building codes.

**Urban heat:** Lack of greenery emphasised linked to increasing urban density and infilling

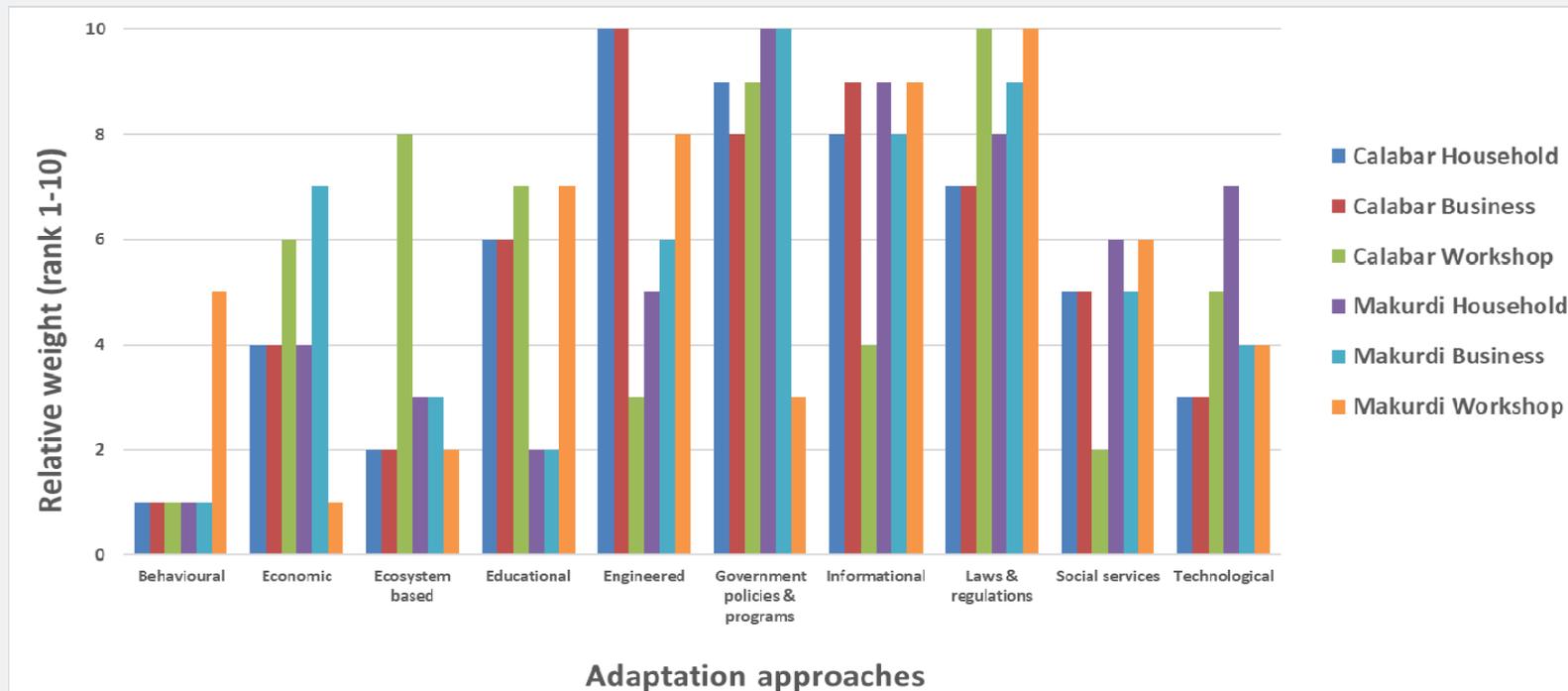
**Drought** is seen as naturally occurring phenomenon but water shortage is seen as partly man made

**Windstorm** is even more accepted as a natural hazard unaffected by human action and unrelated to urban planning and management.



# Results

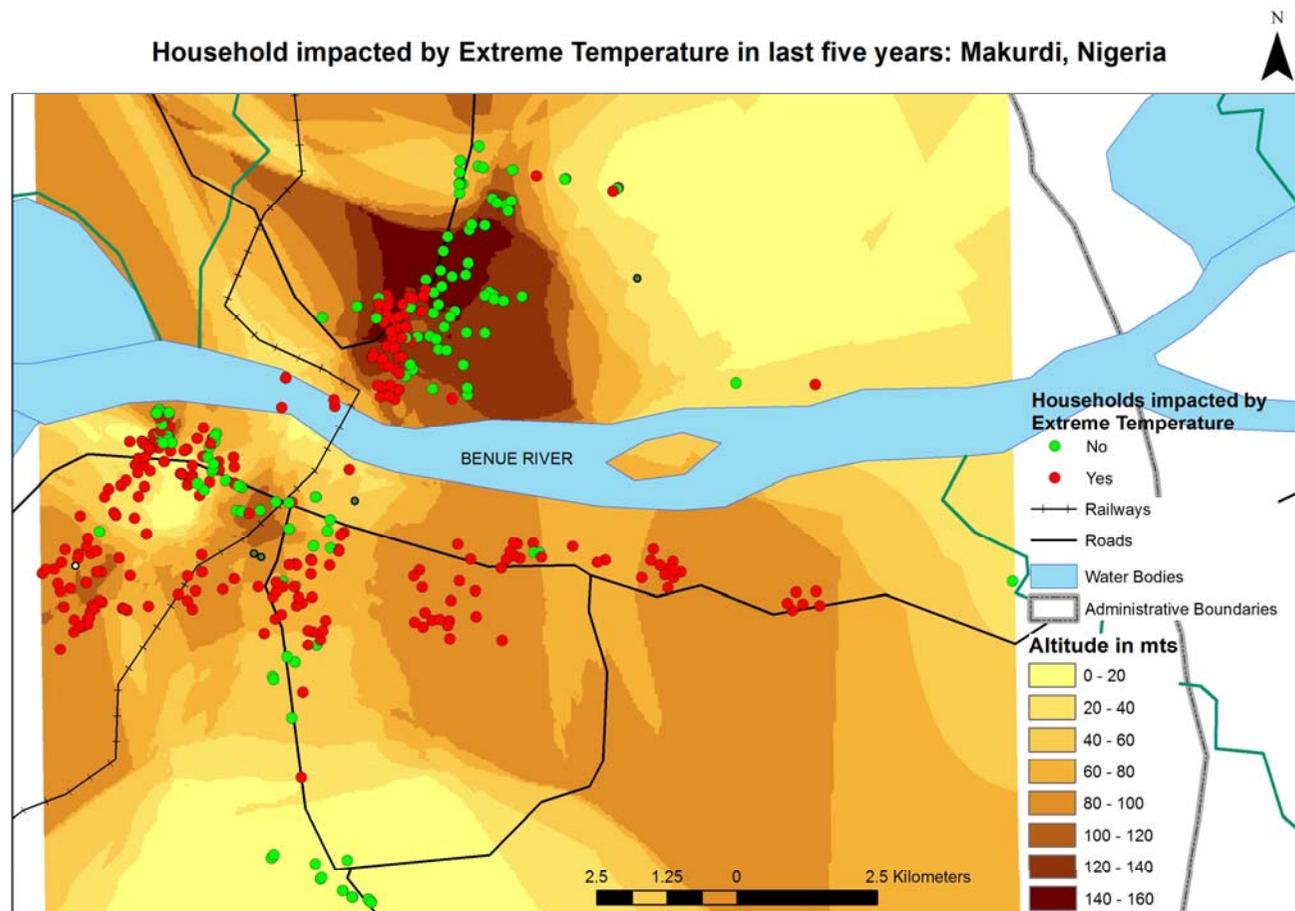
## Perceptions and priorities around adaptation



Different cities and stakeholders preferring different approaches. Stakeholders prefer laws and regulations; households and businesses preferred government to take direct action. Community leaders more or less agreed.

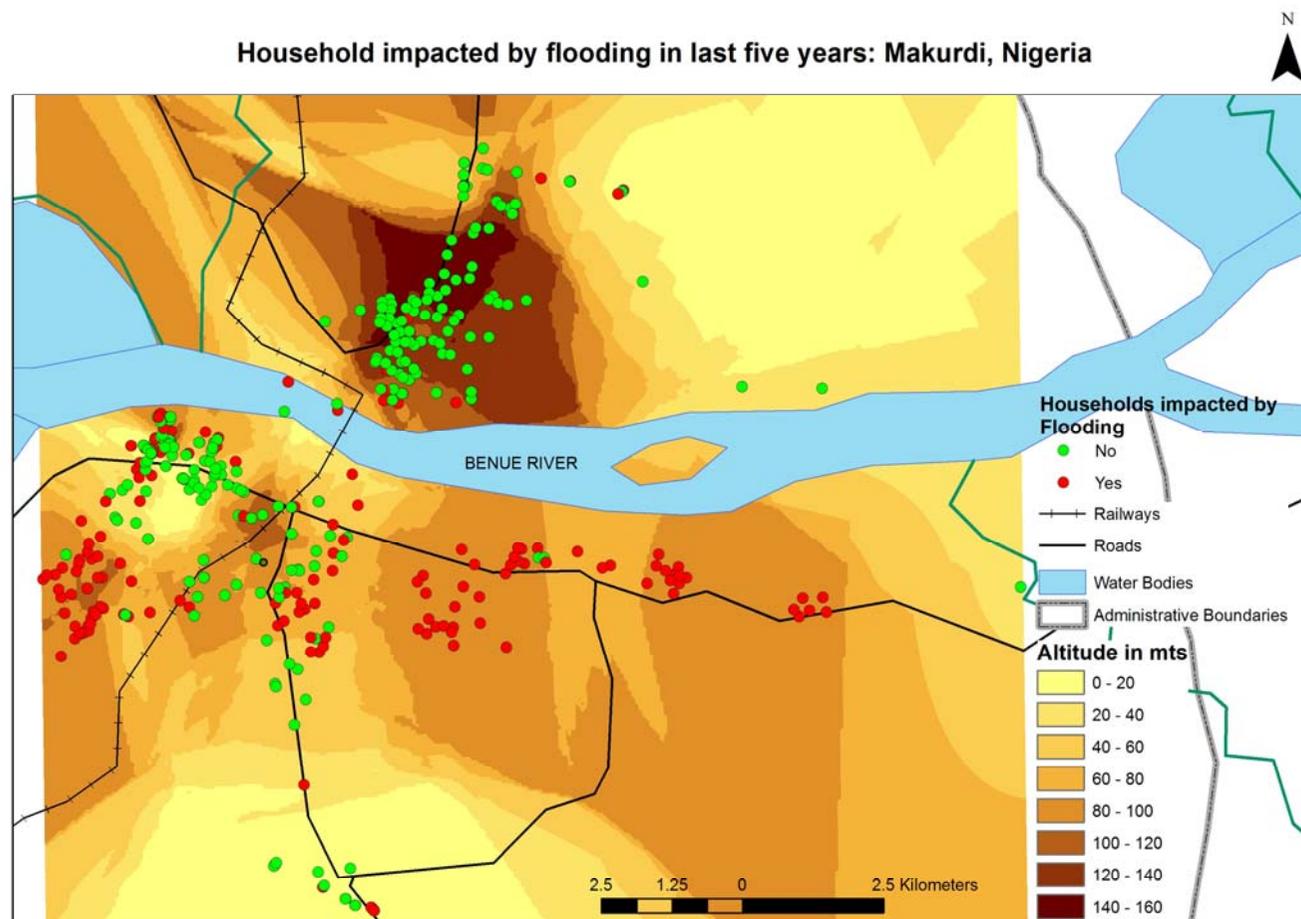
# Results

## Spatial distribution of hazard



# Results

## Spatial distribution of hazard



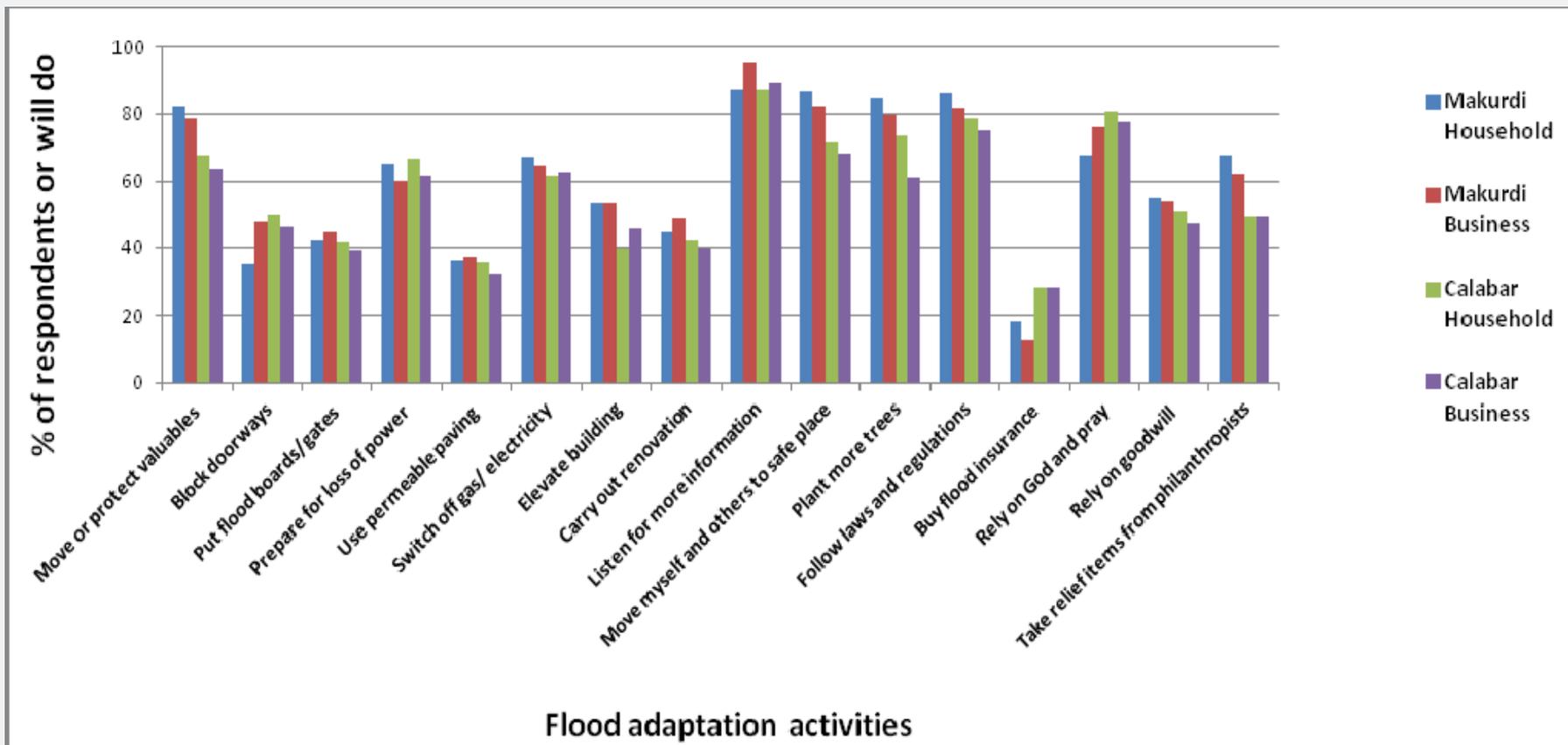
# Results

## Vulnerability to hazards

- Differing exposure to hazards are seen both across and within cities.
- Households and businesses are highly vulnerable to hazards and are most concerned about direct impacts of hazards.
- Impacts related to long term degradation of natural or cultural capital are of lesser concern.
- Vulnerability is linked to resilience of infrastructure as well as socio demographic characteristics.
- Major challenge in household and business adaptation is seen as lack of financial resources but also tenure.
- Differing concern is expressed about impacts across and within cities, not always related to exposure as sometimes experience can increase coping strategies.

# Results

## Coping strategies (flooding)



A large number of adaptations are already carried out or are planned in the event of a hazard occurring. Communities widely adopt soft options.



# Results

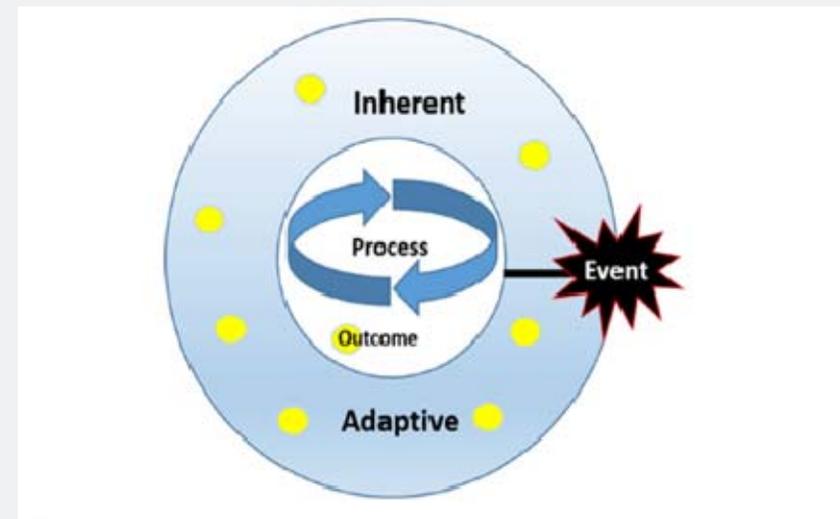
## Methods of assessment

Resilience indicators were based on the household and business surveys

Indicators and key markers were taken from Cutter (2010)

The measures of key markers used a mix of factual answers around demographics and perception in regards to concerns and preparedness.

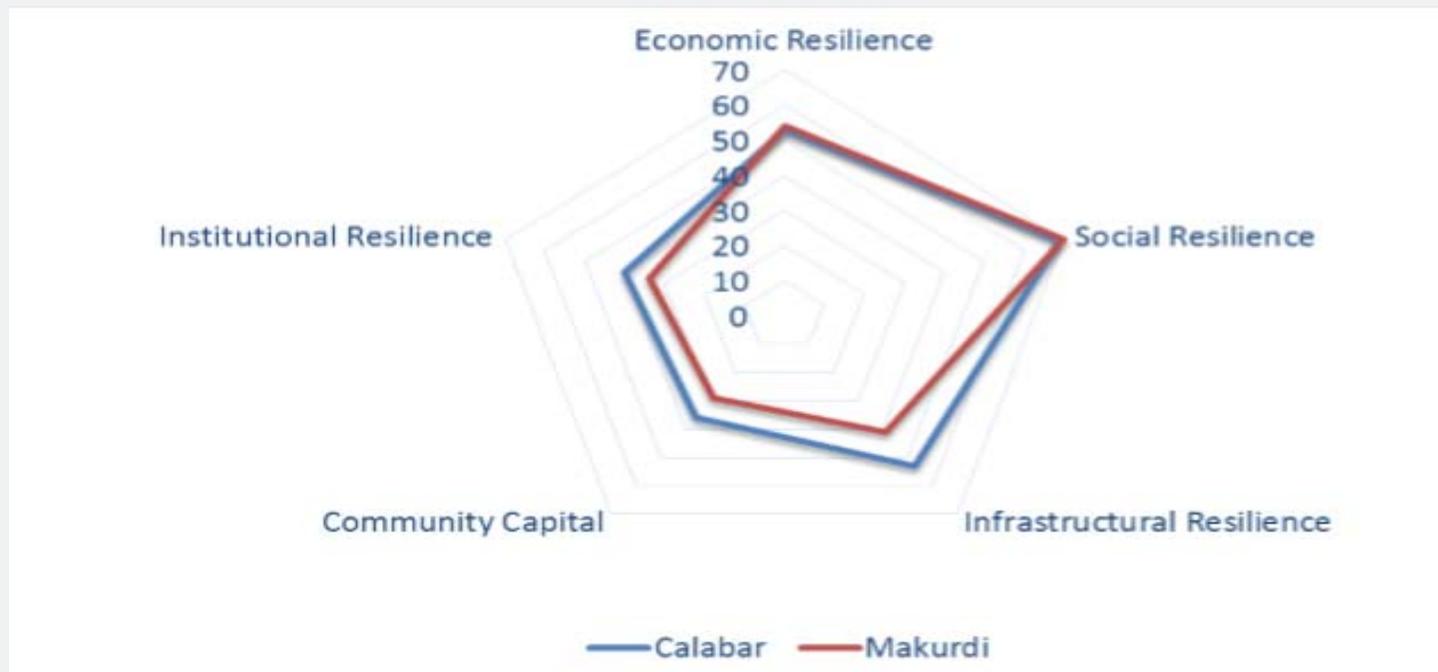
Underlying and hazard specific factors were included



*Adaptive process (Source: Cutter (2016))*

# Results

Measures of assessment for improving community resilience to climate stress

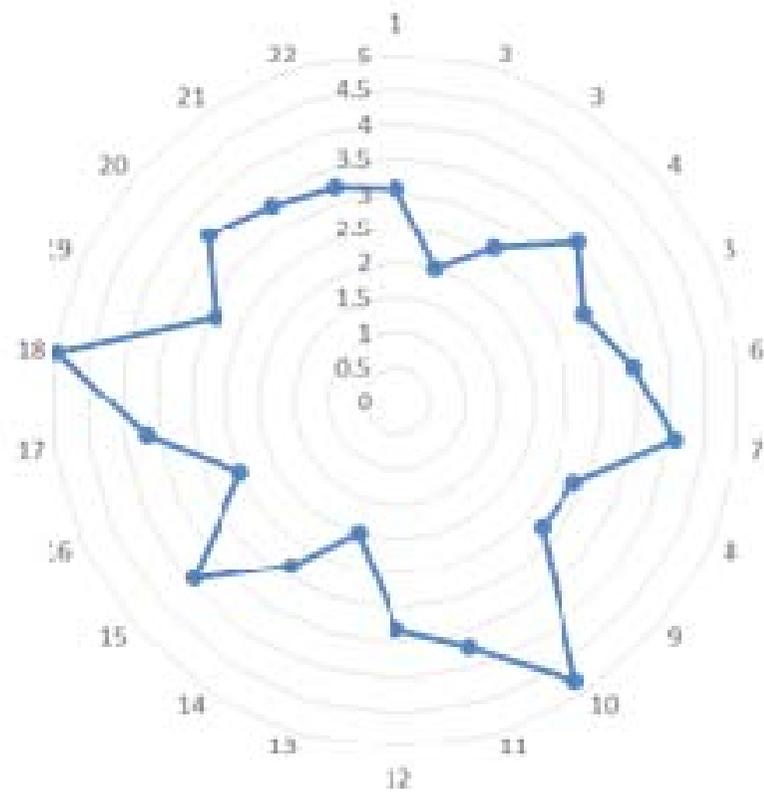


Similar but slightly higher resilience in Calabar

Difference is most evident in the community capital, infrastructural and institutional resilience

# Results

Measures of assessment for improving community resilience to climate stress



Household economic resilience by ward for Calabar.

# Conclusions

## Conclusions

- Climate hazards are an important issue in Nigerian cities and set to worsen, flooding and extreme heat of most concern as perceived by stakeholders and communities
- Shared belief in the human causes of hazards and the role of urbanisation in increased impacts.
- Shared concern in the lack of necessary compliance with existing and much needed regulation designed to tackle the issues.
- Calls infrastructural measures to reduce risk remain high but mostly for hard engineered adaptation. Multifunctional, ecosystems and behavioural approaches are less favoured.
- Hazard experience varies within cities and some communities are more vulnerable due to their location and characteristics.
- Household and business adaptation approaches are common, but community based or community led approaches to cope with and adapt to climate hazard appear to be under-developed in the case study cities.

# Conclusions

## Implications

- Sustainable planning and drainage are appropriate adaptation measures to employ (tackling flooding and urban heat) and could benefit cities more widely and in the future.
- Lack of capacity including detailed hazard maps and poor compliance means that these plans need to be backed by new information and capacity building.
- There will be a need to educate and promote dialogue around the new approaches and they may be more widely taken up as a result.
- Great willingness to take household level action implies a potential resource to tap into for community based resilience.
- Indiscriminate application of laws and regulations will impact the most vulnerable and regulations need to reflect awareness of equity issues.
- The resilience indicators developed in this project could be adopted as a tool to help agencies in prioritising support to the most vulnerable and in enhancing resilience.

# Conclusions

## Recommendations

- State governments should consider climate adaptation on a cross departmental basis to provide synergy across programmes (through a climate ministry).
- There should be promotion of climate champions within communities perhaps by keying into already established community development associations which are community run and greater involvement of local (city) government.
- Risk assessments at multiple spatial scales (building in climate change) including participatory assessment should be undertaken to equip governments in their planning and management to enhance resilience and increase dialogue.
- More resources should be made available on an anticipatory basis to prevent impacts rather than deal with the aftermath.
- Strong consideration should be given to enactment of national urban building codes in governance of urban centres, especially in areas prone to flood.
- Agencies (including NGOs) consider the use of vulnerability and resilience measures between and within cities and the further development of resilience indicators.

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## Research team and participants

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- Research Assistants
- Participants in Calabar and Makurdi

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# THANK YOU

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