

# POLICY BRIEF

## STRENGTHENING THE ADAPTIVE CAPACITIES OF NIGERIAN CITIES: **PREPARING FOR TOMORROW'S CLIMATE TODAY**

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### EXECUTIVE SUMMARY

Nigeria's response to the threats of climate change requires taking relevant actions that will communicate the future climate conditions in a reliable and effective manner to policy makers. Our study revealed that the places in the past with similar climate conditions to the future of Nigerian cities are to the south of the corresponding cities (this is an indication of warming and at 0.93°C increase in average temperature across the RCPs) and in the neighbourhood of longitude (10°W to 20°E). Thus, interactions between cities and drawing lessons from their future look-a-like climates could be the key to a climate sustainable city in accordance to the sustainable city goals (SDG 11).

### INTRODUCTION

The global effects of climate change are clearer as scientific evidence continues to show that climate conditions are changing and the people, and their habitats are threatened. In sub-Saharan Africa, the situation is further aggravated by the low adaptive capacity (WMO, 2020). For example, Nigeria's temperature is projected to increase by at least 2.0°C in the RCP8.5 and 1.5°C in the RCP4.5 climate scenarios. While these projections are critical for climate change response, they are usually of limited meaning to the general public because they are not tied to reflect critical socioeconomic impacts (Rising et al., 2022). This contextual gap has been attributed to the limited understanding of the underlying science and complex data (Asonibare et al., 2024). Thus, translating these complex scientific predictions into personal experiences will help overcome the barriers to the public recognition of the risks of climate change.



**Figure 1:** Expression of Climate Change Impacts: Urban Infrastructural Damages from Climate Change Induced Flood in Ungogo Area, Kano

## RESEARCH APPROACH

The study adopts an analogy innovative approach that presents the location of the current and future climatic conditions of a place in the past (a statistical approach that analyses and quantifies the similarities between locations). The future climates of the cities were identified in the past under two representative concentration pathways RCP4.5 and RCP8.5 and the results informed where the future climate of Nigerian cities area located in the past based on the IPCC climate scenarios.

## KEY RESEARCH FINDINGS

### 1. Shifts in Urban Climate Conditions

Nigerian cities in the current and future periods will experience changes in climate conditions that will be similar to other places in the past. The best places identified are to the south of the corresponding cities ( $10^{\circ}\text{W}$  to  $20^{\circ}\text{E}$ ), thus indicating increased vulnerability to a warmer future (See Figure 2 for Abuja, Kano, Port Harcourt and Makurdi).

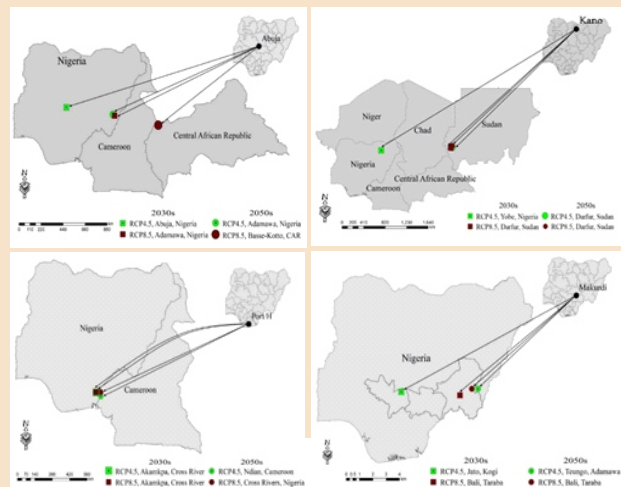


Figure 2: Climate Analogues of some Nigerian Cities for 2030s and 2050s

### 2. Optimistic Scenario for the Urban Climates

Despite the use of the highly optimistic IPCC scenario, the city of Kano had the lowest similarity score of 64% for temperature when compared to other cities. This represents a drastic change in the future temperature conditions of Kano and an indication of future climate novelty for the city (See Figure 3 & 4).

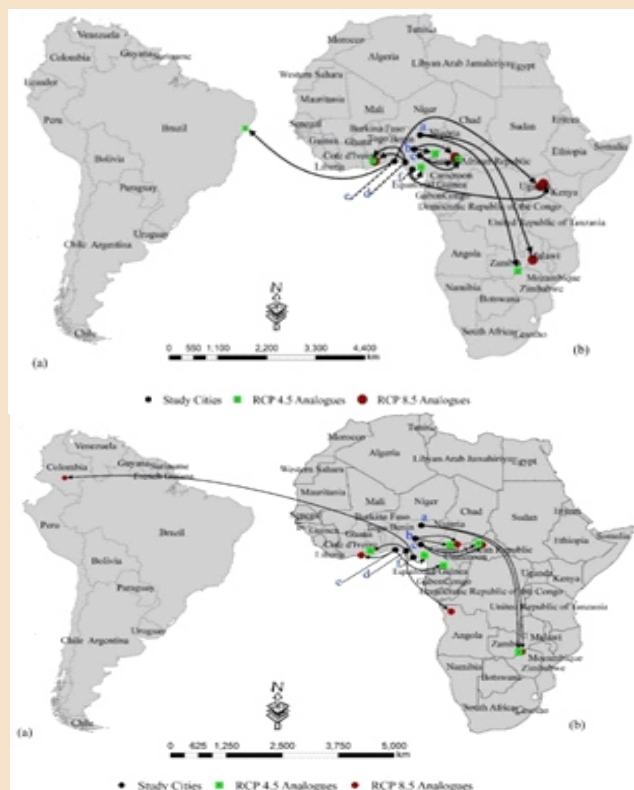


Figure 3: Temperature Analogues of Nigerian Cities for RCPs 4.5 and 8.5

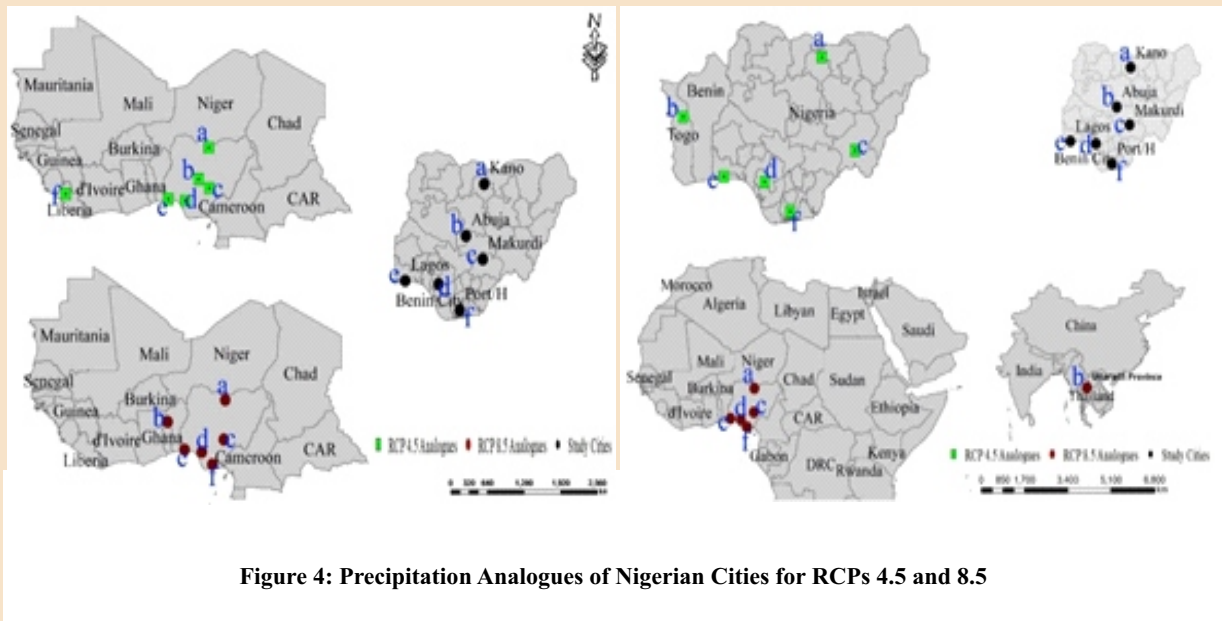


Figure 4: Precipitation Analogues of Nigerian Cities for RCPs 4.5 and 8.5

### 3. Magnitude of Change in Climate

The significantly increasing trend in the hot and warm indices and the decreasing trends in the occurrence of cool days at 95% confidence level between 1990 and 2020 is also an indication of warming for most Nigerian cities (See Figure 5).

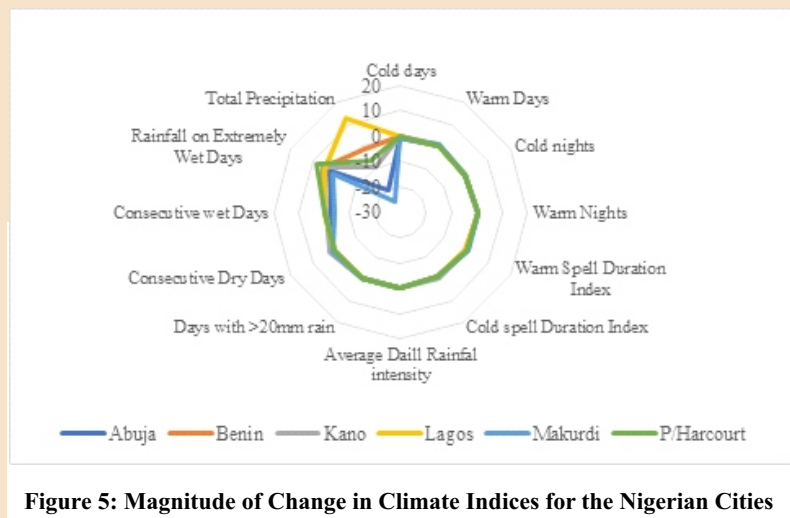


Figure 5: Magnitude of Change in Climate Indices for the Nigerian Cities

## IMPLICATION OF FINDINGS

Drawing from the interaction between the cities and their analogues, the study advances the urban climate resilience literature by illuminating the future impacts of different climate scenarios on urban settlements in Nigeria. City to city interactions can form the foundation for direct informed decision-making while urban climate management can address the possible challenges and opportunities.

