P zbrief 03

Climate-compatible development in African cities

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HOW CAN URBAN AUTHORITIES CONSTRAINED BY EXISTING NATIONAL FRAMEWORKS AND RESOURCES MEANINGFULLY ADDRESS CLIMATE CHANGE ADAPTATION REQUIREMENTS?
Take long-term, future-oriented view; minimise waste and pollution; take precautions to reduce/avoid resource depletion and environmental degradation

Address inequalities; foster economic growth and investment; provide access to infrastructure, services and employment; increase liveability of cities; avoid depletion and environmental degradation

Proactively adjust to reduce negative impacts and harness any new opportunities from changing climatic conditions, learning to navigate complexity and uncertainty across multiple scales

Source: Taylor and Peter, 2014.
The effects of climate change will be severe on Africa’s rapidly growing cities. To increase their resilience, city-level climate change adaptation strategies and action plans that focus on the urban poor, who are most affected by climate change, need to be developed. This will require assessing local climate vulnerabilities and gaps using scientific and anecdotal evidence. Local authorities should also invest in low-carbon, large-scale infrastructure and service delivery that align with local climate and disaster risk management strategies.

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Policymakers and government officials need to:

- Collect, update and monitor data relating to citywide vulnerabilities, gaps and opportunities to inform local planning and decision-making.

- Support city-level technical departments (for example, land use, water and sanitation) to contribute to adaptation strategies, emphasising the need for basic services that improve the urban poor’s resilience.

- Align adaptation and mitigation strategies with long-term developmental investments in infrastructure and service delivery (for example, renewable energy, green building and public transport) to get a competitive edge.

- Invest in city-level disaster risk management to reduce losses, enable faster recovery and encourage wider investment by improving their cities’ risk profiles.

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1 OECD 2014: 4
2 Taylor & Peter 2014: 3
3 OECD 2014: 3
4 Taylor & Peter 2014: 2
5 Taylor & Peter 2014: 3
6 World Bank 2011: 4
7 CCAPS 2015: 3; OECD 2014: 3
8 CCAPS 2015: 5
9 World Bank 2011: 48
10 CCAPS 2014: 7; World Bank 2011: 4
11 CLUVA 4-5
12 CLUVA 35
13 Taylor & Peter 2014: 12
14 World Bank 2011: 4
15 Taylor & Peter 2014: 14
16 Taylor & Peter 2014: 13
17 IIED 2013: 4
INTRODUCTION

Climate change stands in a complex relationship with poverty, migration, urbanisation and economic development – issues that are critical to understanding African cities. Cities are both particularly vulnerable to and influential drivers of climate change effects. Effects related to temperature, rainfall, sea level, erosion, groundwater and extreme events (such as fires, floods, heat waves and storm surges) all threaten African cities. Decisions made today concerning city infrastructure will determine cities' ability to adapt to changing circumstances and manage unforeseen events.

Rapid urban growth in Africa's cities is occurring mostly in slums that lack infrastructure or services to withstand climate change effects. Multiple pressures – including lack of building regulations, minimal bulk infrastructure and public services (such as waste, water and transport), insecure employment and unregulated trade – combine with climate change effects to worsen pre-existing vulnerabilities and inequalities. Poor households are also vulnerable to climate-related shifts in availability and/or prices of food, water, energy and transport.

Adaptation, particularly at a city level, is a vital part of climate change policy. Adaptation means preparing for and proactively adjusting to both the negative impacts and potential opportunities of climate change. Cities face multiple climate impacts and, as such, city adaptation strategies must be tailored to specific local circumstances. However, administrative and financial centralisation of national frameworks can limit local government's ability to act. National frameworks rarely include any direct line of accountability to ensure that adaptation measures at city level are in place. Furthermore, due to its unpredictable nature, city residents often do not view climate change as a priority. The urban poor – least able to protect themselves from extreme events – are most vulnerable to the effects of climate change.
ASSESSING VULNERABILITIES

The first step in formulating an adaptation policy is to understand a city's exposure and sensitivity to a given set of effects\textsuperscript{10}.

Cities can assess existing climate hazards, vulnerability, land use and governance strategies\textsuperscript{11} using up-to-date high-resolution terrain data; reliable long-term reference data from ground observation stations; information on services important to adaptation like solid waste management, drainage and water provision at the neighbourhood scale (including informal areas)\textsuperscript{12}; and recent records of extreme weather events within particular settlements\textsuperscript{13}.

Collecting information using a collaborative approach grounded in anecdotal evidence and community priorities, and supported by scientific evidence, is recommended\textsuperscript{14}.

Community participation through interviews and focus groups provides insight into local priorities and specific social consequences of climate change. Long-term residents can also help link local-level insights to city-level patterns when adequate historical climate data is lacking\textsuperscript{15}. Participatory processes can also raise public awareness of and support for adaptation measures.

Universities and nongovernmental organisations are useful partners when different expertise is needed\textsuperscript{16}. Regional and/or city networks also provide forums for sharing strategies and knowledge on how to sensitise communities\textsuperscript{17}.

\textsuperscript{10} CLUVA 4
\textsuperscript{11} OECD 2014: 7-8
\textsuperscript{12} Taylor & Peter 2014: 5; World Bank 2011: 48
\textsuperscript{13} CLUVA 33
\textsuperscript{14} Taylor & Peter 2014: 5; World Bank 2011
\textsuperscript{15} CLUVA 26-29
\textsuperscript{16} CLUVA 32; Taylor & Peter 2014: 3
\textsuperscript{17} CLUVA 26
\textsuperscript{18} New Climate Economy 8; Taylor & Peter 2014: 6
**TRENDS DRIVING VULNERABILITY AND LIMITING ADAPTIVE CAPACITY**

**OF INFORMAL SETTLEMENTS**

<table>
<thead>
<tr>
<th>GLOBAL AND NATIONAL TRENDS</th>
<th>LOCAL TRENDS</th>
<th>CONDITIONS CREATING VULNERABILITY OR LIMITING ADAPTIVE CAPACITY</th>
<th>ILLUSTRATIONS OF CLIMATE CHANGE IMPACTS (IF NO ACTION IS TAKEN)</th>
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</thead>
<tbody>
<tr>
<td>Inadequate urban economic development</td>
<td>Weak land administration and regulation</td>
<td>Deterrence of public and private investment and service provision, because of insecure tenure and/or illegality of settlement</td>
<td>Exacerbated flooding because of substandard drains blocked with uncollected garbage</td>
</tr>
<tr>
<td>Rural-urban migration leading to rapid urbanisation</td>
<td>Creation of informal and unplanned settlements on marginal land (for example, floodplains, steep hillsides, or landfills)</td>
<td>Lack of economic assets (for example, property, money, or credit), political power, and education needed to adapt affectively</td>
<td>Mortality and property loss, both localized and distributed across multiple communities</td>
</tr>
<tr>
<td>Lack of affordable formal housing in urban areas</td>
<td>Lack of secure land tenure•</td>
<td>Concentrations of vulnerable communities and economic assets exposed to extreme hazards (for example, flooding from heavy rains or storm surges in coastal areas)</td>
<td>Faster spread of communicable diseases (for example, cholera and malaria) from stagnant flood waters and compromised immune systems</td>
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<td></td>
<td>Lack of access to infrastructure and basic services (for example, water, sanitation, public health, or electricity)•</td>
<td>Structural weaknesses in housing and infrastructure, including inadequate drainage</td>
<td>Exacerbated poverty and barriers to economic development</td>
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<td></td>
<td>Overcrowding and stress on existing infrastructure•</td>
<td>Environmental degradation (for example, uncollected solid waste, untreated wastewater, contaminated waters near landfills, or reduction of protective ecosystem functions)</td>
<td>Increased stress on city services (for example, emergency response) in the future</td>
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<td></td>
<td>Social fragmentation, conflict, and crime</td>
<td>Public health concerns that weaken the adaptive capacity of an individual or community (for example, diarrhea or infant mortality)</td>
<td>Further social fragmentation</td>
</tr>
</tbody>
</table>

The boldfaced local trends (lack of secure land tenure, lack of access to infrastructure and services, and overcrowding) are also actual features of informal settlements.

CITY-LEVEL INTERVENTIONS

Most African cities lack a city-level climate strategy, and the issue is often viewed as complex and inaccessible\(^{18}\). But local government departments can have a major effect on transport regulation, construction, spatial planning, and economic and environmental matters. Local authorities are also best placed to respond quickly to local conditions\(^{19}\).

Local government can address climate change risks by providing and upgrading basic services critical to the urban poor’s ability to recover from disasters\(^ {20}\). Identifying and addressing problems that resonate with a wide range of stakeholders (for example, floods and drainage)\(^{21}\) will help local authorities gain support for investing in additional resilience measures.

Local authorities can identify collaborative ways of furthering adaptation goals across different sectors. Priority areas include:

- **Land-use management**: Promoting compact spatial form and affordable housing; upgrading slums with increased access to services; enhancing land tenure security to foster stability; and investing in higher-quality infrastructure that can better withstand climate change effects\(^ {22}\).

- **Upgrading drainage and storm water management**: Assessing activities that affect storm water drainage like street cleaning, litter regulations and run-off treatment; and identifying opportunities to upgrade infrastructure to maintain water quality and retain natural run-off where possible\(^ {23}\).

- **Maintaining healthy ecosystems**: Mapping a network of urban green spaces\(^ {24}\); supporting development-free river corridors; promoting urban agriculture where appropriate; and planting trees to reduce heat, sequester carbon (long-term storage of carbon), and provide timber and fruit\(^ {25}\).

Because informal infrastructure upgrades take time, governance structures should regularly communicate with poor communities to handle situations as they arise\(^ {26}\).
ADAPTATION FOR A COMPETITIVE EDGE

Africa’s existing deficits in large infrastructure and service provision represent an opportunity to develop resilient, sustainable, low-carbon cities\textsuperscript{27}. Combining climate change adaptation and mitigation agendas with mainstream development\textsuperscript{28} can lead to future urban growth that is efficient, compact and developed around mass public transport and clean energy\textsuperscript{29}. In addition, climate-resilient infrastructure vastly improves a city’s competitive profile to private sector investors\textsuperscript{30}. Areas of potential investment include:

- **Energy**: Smart energy grids and locally viable cost recovery mechanisms to increase energy access and affordability while reducing carbon emissions\textsuperscript{31}.

- **Green buildings**: Innovative construction techniques can provide natural cooling while reducing greenhouse gas emissions and increasing energy efficiency and cost savings\textsuperscript{32}.

- **Sustainable urban transport**: Reduced transport emissions, particularly in rapidly urbanising countries, can contribute to sustainability goals. Local government can contribute through land-use planning for transportation\textsuperscript{33}.

- **Appropriate technologies**: Mixing low- and high-tech solutions is an affordable and accessible approach. It also creates local jobs in production, installation and maintenance\textsuperscript{34}.

Although low-carbon, climate-resilient urban infrastructure costs a little more than traditional infrastructure upfront (10\% or less), operating costs\textsuperscript{35} are lower due to energy savings. Financing from new adaptation funds such as the United Nations Framework Convention on Climate Change is now available to support innovative projects and programmes, especially where capacity development focuses on vulnerable populations\textsuperscript{36}.
AVOIDING DISASTER:
INVESTING IN THE FUTURE

Implemented through early warning systems, vulnerability and risk assessments, protective infrastructure, education, land-use policies and building codes, disaster risk management is often viewed by poorer countries as a luxury. Although reliable data is difficult to obtain, the average percentage of development aid allocated to disaster risk management is below 2% (reported in 2012). Disaster risk management spending is seen as coming at the expense of growth and development, but the opposite is true – for every US$1 equivalent spent on prevention, US$7 equivalent is spent on relief. The increasing frequency of disaster in developing countries is a barrier to poverty reduction, threatens macro-level socioeconomic stability and can affect economic activity and growth for years.

Because the risk of disaster affects present-day investment decisions, failing to invest in disaster risk management hurts the economy even before disaster strikes. Investing in disaster risk management stimulates innovation, entrepreneurship and higher risk/return investments, unlocking productive potential and triggering further income-generating and growth-promoting activities. City officials can address both issues by integrating disaster risk management and climate change adaptation with urban planning and management practices.

28 Taylor & Peter 2014: 2
29 Ibid.
30 World Bank 2011: 5
31 Taylor & Peter 2014: 3
32 World Bank 2011: 5
33 OECD 2014: 12
34 Taylor & Peter 2014: 3-4
35 OECD 2014: 6
36 IIED 2013: 4
37 Van Niekerk 2013: 27-28
38 ODI 2015: 8
39 ODI 2015: 7
40 ODI 2015: 5
41 ODI 2015: 11
42 World Bank 2011: 48
In the informal settlements of Kampala, Uganda, mass construction of unregulated shelters has increased rainfall run-off to six times the natural rate. After the floods of 1960, a channel was built in the Bwaise III Parish to help prevent future devastation. Unfortunately, flooding has increased in recent decades, and every small downpour generates run-off. Silt and rubbish reduced the original channel from 2m to 30cm, and additional unregulated shelters block smaller channels. Meanwhile, Kampala locals say that flooding has become more frequent, severe and unpredictable. Both land-use change and climate change are making residents more vulnerable to flooding. Drainage channels are not unblocked frequently because daily survival takes higher priority. Locals have identified potential interventions, including:

- Reclaiming downstream wetlands from commercial property development and industrial activity to mitigate flooding.
- Desilting the main drainage channel and preventing new housing construction from blocking smaller channels.
- Improving the construction (foundations and linings) of all channels so they are less prone to collapse and siltation.
- Replanting the trees that lined the main drainage channel to absorb some of the flood waters.
- Installing rain-harvesting mechanisms on houses to reduce run-off.

Source: Action Aid, 2008

“Many opportunities exist for local authorities to build climate change adaptation and mitigation strategies into overall development agendas,”
African cities face many basic service and infrastructure pressures, making it difficult to find the resources or political support to address the threats posed by climate change. The impact of these threats on African cities is likely to be severe due to the high number of people living and working in vulnerable urban spaces. Many opportunities exist for local authorities to build climate change adaptation and mitigation strategies into overall development agendas, particularly where service delivery and infrastructure are concerned. Much of the immediate work will entail collecting information and building effective governance structures to be able to effectively prioritise actions that fulfil both development and adaptation mandates to the greatest effect. Financing mechanisms that fund innovative urban climate change adaptation programmes, as well as using infrastructure development to bypass carbon-intensive models, provide opportunities for African cities to lead the way in developing climate-compatible development strategies.

REFERENCES


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