

# POLICY BRIEF | LUSAKA

## PREPARING FOR INCREASED FLOODING

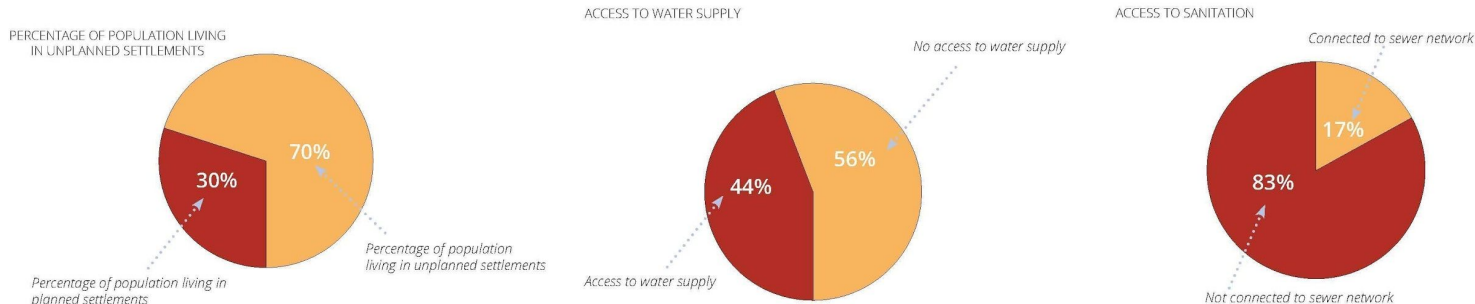


### KEY MESSAGES

Most parts of Lusaka experience flooding during the rainy season. This is mainly due to heavy rains, low topography and highly permeable limestone (sitting on impermeable bedrock) which gets saturated. This is compounded by indiscriminate disposal of waste, poor drainage design and poor solid waste management that cause blocked/silted drains. Uncoordinated developments and building on streams and marshlands increases the risk of flooding. Indications from the latest climate projections suggest heavy rains will occur more often or be more intense.

## LUSAKA CITY PROFILE

Lusaka’s population is estimated at **2.4 million** and is expected to double by 2035 (CSO, 2011<sup>1</sup>). Lusaka is one of the fastest growing cities in Africa in terms of population size: between 2010 and 2015 its annual rate of population growth was 4.15%. It is home to 30% of Zambia’s urban population.



## IMPACTS

Most parts of Lusaka experience flooding during the rainy season.

- Floods have damaged and destroyed structures (including houses, shops and roads) and crops, and increased the incidence of waterborne diseases such as cholera, diarrhoea and dysentery.
- The city experiences perennial cholera cases and fatalities, particularly in unserved informal settlements which have poor living conditions and are prone to flooding.
- It is the urban poor living in informal settlements who are most vulnerable to these impacts. Most unplanned settlements use pit latrines and shallow wells which can get contaminated when flooding occurs increasing the risk of waterborne diseases such as cholera, diarrhoea and dysentery.

**Table 1** Areas in Lusaka that are usually prone to flood incidences.

Constituency	LUSAKA CENTRAL	KABWATA	KANYAMA
Area of Impact	<i>Sikanze Camp</i> The new camp comprising over 50 households.	<i>Kamwala South</i> The western side of Kamwala South Secondary School on the new L400 road.	<i>Munjuli Market (Garden House Market) and other surrounding areas</i> The area is on the M9 road opposite Garden Motel.
Type of Impact	<i>Flooding</i> The entire camp was affected by heavy rain and flooding on the 20-21 January 2017.	<i>Flooding</i> About 13 houses were affected by heavy rain and flooding on the 20-21 January 2017.	<i>Flooding</i> About 300 shops and 100 houses were affected by heavy rain and flooding on the 20-21 January 2017.

Constituency	MATERO	MUNALI	MANDEVU	CHAWAMA
Area of Impact	<i>George Compound</i> Ward 26 of Matero Constituency.	<i>Kamanga, Mtendere East, Chamba Valley, Kaunda Square, Meanwood, Ndeke, Kalingalinga, Mass Media</i> (DMMU, 2016 Report).	<i>Mazyopa</i> The area is in the Mandevu Constituency along Ngwerere Stream.	<i>Kuku Compound</i> Nkholoma Ward 1 off Lime Road.
Type of Impact	Collapse of structures and roofs blown off. About 20 houses and 1 shop were affected.	Flooding of houses; collapse of houses in Kalikiliki; about 20 houses and 1 shop were affected.	About 25 households were affected by heavy rains and flooding on 20-21 January 2017.	A house collapsed due to flooding caused by the heavy rains experienced 20-21 January 2017.

## CAUSES OF FLOODING

### SOCIAL DRIVERS

Urbanisation and the increase of informal dwellings places more people in risk of flooding. Today's peri-urban settlements began as residential areas for the labourers of nearby farms or industries. 70% of Lusaka's population now lives in unplanned settlements. Deficits in housing and services in these areas continue to present major challenges and are a driver for urban flooding. These include:

- The existing water supply infrastructure is old and a large component needs repairing or replacing: some of the operating plants are operating above their design capacity.
- **Poor design and maintenance of drains**, not only regulated drains but also unregulated informal drains built by residents themselves. Drains are not big enough to take the stormwater. Utilities can also block drains.
- **Poor solid waste management**: Indiscriminate disposal of waste blocks natural and artificial drains.
- **Uncoordinated/uncontrolled development**: Planning decisions such as building houses on floodplains can affect the city population's vulnerability to flooding. Informal and unplanned settlements in wetland, marshlands or flood-prone, low lying areas have increased (Nchito, 2007<sup>2</sup>).

### PHYSICAL DRIVERS

- Lusaka is built on a **low lying, flat plateau** (with a gradient of 0.2%) of highly permeable limestone which is easily saturated. The **water table is high** and thus the city is naturally susceptible to flooding. In fact the city was founded on a **swampland** with many flood hotspots.
- Human activity can increase the risk of greater runoff, for example by paving over areas previously covered by vegetation, reducing the capacity of the land to absorb rainfall and causing it to run off quickly. The blocking of natural and artificial drains with waste or unplanned development can have the same effect.

### CLIMATE DRIVERS

- **Heavy rains during rainy season**: Most parts of Lusaka experience flooding during the rainy season, when an excess of rainfall leads to greater surface runoff. The rain can cause the groundwater table to rise, increasing the flooding risk in low-lying areas (e.g. Kanyama) (Nchito, 2007<sup>2</sup>).
- Global climate change is producing a number of effects, including changes in precipitation patterns.
- Analysis of climate projections from the most recent set of global climate models indicate that heavy rainfall will become more frequent and/or intense over Zambia as a whole. In addition, an analysis over Zambia of a recent set of regional climate model projections for Africa suggests that heavy rainfall will become more frequent or intense in the Lusaka region.

### References

[1] Central Statistical Office (CSO) Zambia (2011) 2010 Census of population and housing

[2] Nchito, W. (2007) Flood risk in unplanned settlements in Lusaka Environment and urbanization, 19: 539–551

## RECOMMENDATIONS – SPECIFIC

1. **Construct and rehabilitate drainage networks** to enhance Lusaka City Council's work on improving drainage to allow free flow of stormwater as a flood control measure. Improve connectivity between drainage systems and better manage (including potential capture of) drainage outflows. Implement the highest standard of drains (from the Lusaka Drainage Investment Plan). Have these standards reviewed by climate scientists in consultation with drainage engineers.
2. **Address the issue of solid waste management.** Expedite the formulation, implementation and enforcement of the solid waste management policy; improve recycling rates; sensitise communities to waste disposal by-laws and enforce these.
3. **Relocate households built in dambo/wetland/flood prone areas** especially in informal settlements.
4. **Regularly enforce the planning law on development control** to prevent illegal and improper construction in flood prone areas. Remove structures built on drainages such as wall fences that prevent the free flow of water.
5. **Assess the costs of disaster responses to flooding** and highlight the potential of strategic investments to avoid these.
6. **Promote water harvesting at household and commercial level** to collect rainwater.
7. **Provide opportunities for stakeholder engagement at all levels** i.e. between households/communities, technocrats and politicians, to build the political will to implement enforcement and control actions.

## RECOMMENDATIONS – OVERARCHING

1. **Implement the Citywide Slum Upgrading Strategy** and review the **Comprehensive Urban Development Plan** and update it into an Integrated Development Plan which is in line with the Urban and Regional Planning Act of 2015.
2. **Popularise the Disaster Risk Reduction (DRR) Strategy for Lusaka City Council** and align it with existing policies, laws and regulations addressing development, governance and environmental management at city, national and international levels as set out in the **Sendai Framework for Disaster Risk Reduction 2015-2030**.
3. **Implementation of the Lusaka City Council Strategic Plan** supported by Disaster Management Committees at provincial, district and community levels. Plan informed by **adaptations initiatives** contained in: 7th National Development Plan, Zambia Vision 2030; National Adaptation Programme of Action on Climate Change (NAPA); the 2010 National Climate Change Response Strategy; and 2014 Disaster Management Policy.

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