



Towards implementing urban Nature-based Solutions in Zambia

KEY MESSAGES

- **Floods, flash floods and droughts are central climate impacts** in urban areas in Zambia according to the scientific literature. This is underscored by recent examples of flash floods in Lusaka during the 2024/25 rainy season and increasing stress on Lusaka's water supply. These impacts are likely to further aggravate as climate change intensifies.
- **Urban Nature-based Solutions (NbS) like bio-retention basins, permeable pavements and urban gardens** are potential remedies for these challenges and offer environmental and social co-benefits in comparison to conventional grey or engineered solutions. There is **considerable potential for NbS to increase climate resilience** in Zambia's urban areas, particularly in Lusaka.
- **The next necessary step to move towards implementing NbS is to create enabling environments that incentivize the use of NbS**, for example, by presenting proof of concepts and clear NbS investment cases to attract the much-needed resources for implementing NbS. For this, the National Green Growth Strategy 2024-2030 and the National Adaptation Plan 2023 can serve as central leverage points for policymakers.

NBS BENEFITS

78%

Permeable pavements have significant average water retention capacity and potential to decrease water runoff¹.

58%

Bio-retention systems offer substantial average water retention capacity and can decrease water runoff volumes and peak flow rates during storm events¹.

DEFINITION

Nature-based Solutions are *"actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits."*²

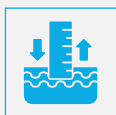
CONTEXT & RATIONALE

The challenges of climate change and rapid urbanization present central obstacles to sustainable development in cities of low- and middle-income countries (LMIC). Urban Nature-based Solutions (NbS) receive growing attention as potential remedies for these challenges because they offer environmental and social co-benefits in comparison to conventional grey or engineered solutions. In practice, NbS co-exist and positively complement conventional grey or engineered solutions.

In the context of the "[Implementation of Urban Nature-based Solutions for Mitigation and Adaptation](#)" project, the UNEP Copenhagen Climate Centre (UNEP-CCC) prepared a technical report based on a literature review of the scientific and grey literatures to understand central climate impacts and risks in Zambia and to gauge how urban NbS could address them ([find the full technical report here](#)).

¹ [Urban stormwater retention capacity of nature-based solutions at different climatic conditions - ScienceDirect](#)

² [Nature-based solutions for supporting sustainable development](#)



Floods, flash floods and droughts

The literature review shows that flooding, and droughts are central climate impacts in urban areas in Zambia, with recent examples of flash floods in Lusaka during the 2024/25 rainy season.

Lusaka City also experiences droughts particularly in the dry season with domestic water supply severely impacted due to dried aquifers that supply the city's water needs. These impacts and extreme events will further increase in frequency, intensity and duration as climate change worsens and expose traditionally marginalized segments of society to further challenges, exacerbating existing vulnerabilities.



Bio-retention systems, permeable pavements and urban gardens,

NbS such as bio-retention systems, permeable pavements and urban gardens, are potential remedies for these challenges because they relieve the load on existing flood management infrastructure by retaining water and can also help to alleviate drought by storing and slowly releasing water.

Bio-retention areas generally demonstrate cost-beneficial outcomes, when considering benefits from the reduction of flood risks, regulation of water flows, and water treatment that often result in a positive net-present value when calculated against the investment, operation and maintenance costs³. Moreover, NbS measures such as

urban gardens can enhance local biodiversity and could provide additional food sources. Hence, it is recommendable to further explore the potential of these NbS for urban areas in Zambia. This includes careful consideration of potential barriers that could hamper the implementation of urban NbS like limited water availability for irrigation or the lithology in some areas of Lusaka where hard soils could render the implementation of infiltration measures potentially difficult and also being cognisant of the limits of NbS to reduce climate risks, particularly under high-end climate change scenarios. Nevertheless, the co-benefits of bio-retention systems, permeable pavements and urban gardens, would also contribute to tackling some of the development challenges such as food and water security.



Towards implementing urban NbS in Zambia

There is considerable potential for NbS to increase climate resilience in urban areas in Zambia. The next necessary step to move towards implementing NbS is to create enabling environments that incentivize the use of NbS, for example, by presenting clear investment cases to attract the required resources needed for implementing NbS⁴.

For example, the Climate Investment Fund (CIF) recently endorsed over \$34 Million for NbS in Zambia⁵. Policymakers can use the National Green Growth Strategy 2024-2030 and the National Adaptation Plan 2023 as central leverage points. Building capacity in the area of NbS will also help to meet international reporting requirements on climate change impacts and adaptation as set out in the Paris agreement.

³ [Cost-Benefit analysis of urban nature-based solutions: A systematic review of approaches and scales with a focus on benefit valuation - ScienceDirect](#)

⁴ [Business Models for Financing Nature-Based Solutions in Urban Climate Action – UNEP-CCC](#)

⁵ [CIF Approves \\$34M for Zambia's Nature-Based Solutions | CIF](#)

UNEP COPENHAGEN CLIMATE CENTRE (UNEP-CCC)

UNEP-CCC assists developing countries in a transition towards more low carbon development paths and supports integration of climate-resilience in national development. This policy brief was developed in the context of the project “Implementation of Urban Nature-based Solutions for Mitigation and Adaptation” funded by the Ministry of Foreign Affairs of Denmark.

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